


## LIST of COs and POs of ALL SCHOOLS

Schools	UG/PG
Anthropology	2.6.1-CO list-UG and PG-English
Biotech	2.6.1- CO list-Biotechnology
Botany	2.6.1- CO list-Botany
Chemistry	2.6.1- CO list-Chemistry
Commerce	2.6.1- CO list-Commerce
Computer Science	2.6.1-CO list-PG Comp Sc
Economics	2.6.1-CO list-UG and PG-Economics
Education	2.6.1-CO list-UG and PG-Education
English	2.6.1-CO list-UG and PG-English
Geography	2.6.1-CO list-UG-PG - Geography
Hindi	2.6.1-CO list-PG - Hindi
History	2.6.1-CO list-UG-PG - History
IST	2.6.1-CO list-UG-IST
Library and Information science	2.6.1- CO list -Library and Information Science.docx
Mathematics	2.6.1-CO list-UG and PG-Mathematics
MBA	2.6.1-CO list-UG-PG MBA
MCA	2.6.1 - CO list - MCA
Odia	2.6.1-CO list-UG-PG Odia
Philosophy	2.6.1-CO list-UG-PG Philosophy
Physics	2.6.1-CO list-UG-PG Phy.xlsx
Political Science	2.6.1-CO list-UG-PG Pol Sc
Psychology	2.6.1-CO list-UG-PG Psychology
Sanskrit	2.6.1-CO list-PG sanskrit.xlsx
Sociology	2.6.1-CO list-UG-PG Sociology
Statistics	2.6.1-CO list-UG-PG statistics
Zoology	2.6.1-CO list-PG Zoology

  
Director, IQAC  
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SAMBALPUR

### List of Cos of UG Syllabus of School of Political Science

Course Code	Course Title	Course Outcome
CC.I	UNDERSTANDING POLITICAL THEORY	CO1 -Understand and get familiarized with the traditions, approaches, and Critical and Contemporary Perspectives of political theory.
		CO2 - Understand the significance of the factors guiding day-to-day life.
		CO3 - Realize the importance of major political values guiding political life.
		CO4 - Critically analyse the theory and practice of political theory.
CC.II	CONSTITUTIONAL GOVERNMENT AND POLITICS	CO 1- Understand the role of the constituent assembly and the essence of the preamble, Fundamental Rights, Fundamental Duties, and DPSP
		CO 2 - They will be able to gather the basic information on the structure of the legislature, executive, and judiciary of the Indian political system
		CO3 - Understand the nature of Indian Federalism with recent development
		CO 4 - Understand the importance of local self-government for decentralisation
CC.III	POLITICAL THEORY CONCEPTS AND DEBATES	CO1 -Understand and get familiarized with the fundamental areas of Political theory.
		CO2-Comprehend the fundamental concepts of Political theory.
		CO3 -Examine the day-to-day Political happenings in the light of new insights.
		CO4 -Critically analyse the theory and debates on political theory.
CC.IV	POLITICAL PROCESS IN INDIA	CO1-Understand the Indian Party system and its development by focusing on the ideology of dominant national parties.

		CO2 -Understand the challenges arising due to caste, class, gender and religious diversities and understand the nature of state in the light of these diversities
		CO3-Understand the electoral process in India with a focus on the role of t h e election commission and future reforms
		CO4 - Gain insights into the interconnections between social and economic relations and the political process in India
CC.V	COMPARATIVE GOVERNMENT AND POLITICS	CO1 -Understand different political aspects prevailing in different countries.
		CO2 -Have the capacity to compare and analyze political systems operating in different countries.
		CO3 -Develop the capacity to point out the merits and demerits of different political systems and suggest a better system.
		CO4 - Ability to critically analyze the political systems and ecosystems of different countries.
CC.VI	INTRODUCTION TO PUBLIC ADMINISTRATION	CO1 -Understand the fundamental and key concepts in Public Administration.
		CO2 -Understand how these concepts can be used to explain the working of modern public administration.
		CO3 -Realize the importance of major Public Policy and Governance values to guiding the political life.
		CO4 -Critically analyse the theory and practice of Public Administration.
CC.VII	PERSPECTIVES ON INTERNATIONAL RELATION	CO1 -Understand the fundamental and key concepts of International Relations.
		CO2 -Understand different theories of International Relations.
		CO3 -Understand different aspects of World War I and World War II.

		CO4 - Understand origin of the Cold War and Third World.
CC.VIII	POLITICAL PROCESSES AND INSTITUTIONS IN COMPARATIVE PERSPECTIVE	CO1 -Understand different political aspects prevailing in different countries.
		CO2 -Have the capacity to compare and analyze political systems operating in different countries.
		CO3 -Develop the capacity to point out the merits and demerits of different political systems and suggest a better system.
		CO4 -Analyse how the political systems of different countries operate within their socio-cultural environments.
CC.IX	PUBLIC POLICY AND ADMINISTRATION IN INDIA	CO1 -Understand the fundamental and key concepts in Public Policy.
		CO2 -Understand how decentralization can be used to explain Public Policy.
		CO3 -Realize the importance of major Budget and Social Welfare policies to guiding the Administration.
		CO4 -Critically analyse the role of Administration in Public life.
CC.X	GLOBAL POLITICS	CO1 -Develop fundamental clarity about the idea of globalization in Global Politics.
		CO2 -After Completing Graduation in the department students go for higher education. This course will provide a conceptual understanding and a clear overview of major events that happened in Global Politics.
		CO3 -Understand basic ideas in Global Politics.
		CO4 -Understandthe currentchallengesoftheworld and developfundamentalclarityabouttheideaofglobalizationinGlobal Politics.
CC.XI	WESTREN POLITICAL THOUGHT	CO1 -Summarize the passage of political thought through the classical periods based on the works of Plato, and Aristotle.

		CO2 -Explain the historical and intellectual context in which the political thought of Machiavelli and Hobbes will help to develop the modern state came to be.
		CO3 -Compare and contrast the differences between Locke and Rousseau with regard to their understandings of the nature of the person, ethics, society.
		CO4 -It will create understanding related to the contribution of J.S Mill and Karl Marx
CC.XII	INDIAN POLITICAL THOUGHT (ANCIENT&MEDIEVAL)	CO 1 -Understand the modern political traditions that existed in the past related to thinkers like Raja Ram Mohan Roy & Pandita Ramabai
		CO2 -Develop interest in reading about thinkers like Mahatma Gandhi and Dr. B. R. Ambedkar
		CO3 -Develop an ability to read and reflect upon the major contributions of identified thinkers like Shree Rabindranath Tagore & V. D. Savarkar.
		CO 4 -Derive inspirations from thinkers like J. L. Nehru, Ram Manohar Lohia & J. P. Narayan and preserve the values that integrate and help them to build a healthy society.
DSE.I	INTRODUCTION TO HUMAN RIGHTS	CO 1 -Develop fundamental clarity about the idea of Human Rights.
		CO 2 -Acknowledge conceptual understanding and a clear overview of major events that happened in the Universal Declaration of Human Rights.
		CO3 -Understand basic ideas related to the national constitutions of South Africa and India.
		CO4 -Understand the current Human Rights challenges of the world.
DSE.I.C	Human Rights: Indian Perspective	CO 1 -Understand the conceptual background of rights.
		CO2 -Understand the conceptual background of duties.

		CO3 -Understand the rules, regulations, and agencies related to rights.
		CO4 -Understand the relevance of human rights in contemporary scenarios.
DSE.II	DEVELOPMENT PROCESS AND SOCIAL MOVEMENTS IN CONTEMPORARY INDIA	CO 1 -Gain knowledge of development policies and planning in India since independence
		CO2 - Understand the development strategies and their impact on industrial and agricultural sphere
		CO3 -Understand the emergence of social movements in response to the development policies adopted by successive governments
		CO4 -Understand the issues raised by social movements in India and the response of the state
DSE.II. C	Colonialism and Nationalism in India	CO 1 -Understand the theoretical aspect of concepts.
		CO 2 -Understand the history of India through various phenomena.
		CO3 -Understand the role of various movements in changing the circumstances.
		CO4 -Understand the role of various movements in changing the circumstances.
DSE.III	India's Foreign Policy in a Changing World	CO 1 -Understand India's Foreign Policy in a changing world.
		CO2 -Become aware India's Relation with major powers(USA & USSR)
		CO3 - Know the relationship between India China and South Asia
		CO4 -Understand the role of India in the international Sphere
DSE.III. C	South Asian: Political System	CO 1 -Understand the theoretical aspect of concepts.
		CO2 - Understand the theoretical aspect of concepts.
		CO3 - Understand the theoretical aspect of concepts.
		CO4 - Understand the theoretical aspect of concepts.

DSE.IV	WOMEN, POWER AND POLITICS	CO 1 -Develop fundamental clarity about different aspects of Feminism which are covered in the syllabus.
		CO2 -Develop fundamental clarity about different aspects of Feminism which are covered in the syllabus.
		CO3 -Develop fundamental clarity about different aspects of Feminism which are covered in the syllabus.
		CO4 -Develop fundamental clarity about different aspects of Feminism which are covered in the syllabus.
DSE.IV. C	Gender and Environment	CO 1 -Understand the theoretical aspect of concepts.
		CO2 -Understand the economic, political and legal system related to women and the environment.
		CO3 - Understand the role of the women's movement.
		CO4 - Understand the relevance of the concepts.
GE.I	Feminism: Theory and Practice	CO 1 -The students will have fundamental clarity about the feminist approach to political theory.
		CO2 -The students will have fundamental clarity about the feminist approach to political theory.
		CO3 -It is understanding the significance of the ideology-feminism.
		CO4 -Critically analyse the theory and practice of feminist theory in the contemporary scenario.
GE.II	GOVERNANCE: ISSUES AND CHALLENGE	CO 1 -The students were introduced to understand the concept and different scopes of governance in Indian administration.
		CO2 -The students were introduced to understand the concept and different scopes of governance in Indian administration.
		CO3 -This is a paper devoted to understanding the relationship between local governance and democracy.
		CO4 -This is a paper devoted especially to the Indian context, so the students will become familiar with details of the Governance of India.
GE.III	GANDHI AND THE CONTEMPORARY WORLD	CO 1 -The students were introduced to understand the concept and different scopes of governance in Indian administration.
		CO2 -The students were introduced to understand the concept and different scopes of governance in Indian administration.
		CO3 -The students were introduced to understand the concept and different scopes of governance in Indian administration.
		CO4 -The students were introduced to understand the concept and different scopes of governance in Indian administration.
GE.IV	United Nations and Global Conflicts	CO1 -Students will know about the history of the United Nations.
		CO2 -Students will get knowledge about different structures within the United Nations.
		CO3 -Students will understand the causes and consequences of different wars.
		CO4 -Students will get progressive ideas related to the performance

		of the United Nations.
SEC.I	LEGISLATIVE PRACTICES AND PROCEDURES	CO 1 -The students introduced to understand power and function of representatives in different spheres.
		CO2 -The students introduced to understand the legislative practices and procedures.
		CO3 -The students will know the budget process of India.
		CO4 -This is a paper devoted especially to the Indian context, so the students will become familiar with the role of media in the legislative process.
SEC.II	PEACE AND CONFLICT RESOLUTION	CO 1 -This course provides students with theoretical understanding &Critical thinking related to war and conflict.
		CO2 -This course provides students with theoretical understanding &Critical thinking related to war and conflict.
		CO3 -The students were introduced to more equitable, cooperative, and non-violent methods that can be used to transform unjust, violent, or oppressive world situations
		CO4 -The students were introduced to more equitable, cooperative, and non-violent methods that can be used to transform unjust, violent, or oppressive world situations



## School of Physics

### UG SYLLBUS CO PO MAPPING

#### PROGRAMME OUTCOMES

**(Chosen from the allowed list as set by UGC)**

PO-1: Disciplinary Knowledge: Demonstrate comprehensive knowledge and skills of the disciplines that constitute a programme of study.

PO2-: Communication Skill: Ability to express thoughts and ideas effectively in writing and orally; Communicate with others using appropriate media; confidently share one's views and express herself/himself; demonstrate the ability to listen carefully, read and write analytically, and present complex information in a clear and concise manner to different groups.

PO-3: Critical Thinking: Capability to apply analytic thought to a body of knowledge; analyse and evaluate evidence, arguments, claims, beliefs on the basis of empirical evidence; identify relevant assumptions or implications; formulate coherent arguments; critically evaluate practices, policies and theories by following scientific approach to knowledge development.

PO-4: Problem solving: Capacity to extrapolate from what one has learned and apply their competencies to solve different kinds of non-familiar problems, rather than replicate curriculum content knowledge; and apply one's learning to real life situations.

PO-5: Research related skills: Demonstrate a sense of inquiry and capability for asking relevant questions; ability to recognize cause-and effect relationships, define problems, formulate and test hypotheses, analyze, interpret and draw conclusions from data; plan, execute and report the results of an investigation.

PO-6: Scientific reasoning: Ability to analyse, interpret and draw conclusions from quantitative/qualitative data; and critically evaluate ideas, evidence and experiences from an open-minded and reasoned perspective.

PO-7: Multicultural competencies: Possess knowledge of the values and beliefs of multiple culture and a global perspective; capacity to work effectively in multiple socio-cultural context and interact respectfully with diverse social groups

Po-8: Information/digital literacy: Capability to use ICT in a variety of learning situations, demonstrate ability to access, evaluate, and use a variety of relevant information sources; and use appropriate software for analysis of data.

### **PROGRAMME SPECIFIC OUTCOMES**

#### **(Set by School of Physics)**

PSO-1: Demonstrate the critical knowledge in Physical Sciences.

PSO-2: Apply theoretical Knowledge of Physics to solve various practical problems.

PSO-3: Interpret various Mathematical techniques and Mathematical models of physical behavior to apply in various ICT based techniques.

PSO-4: Learn to design and conduct an experiment and understand the basic physics behind it.

PSO-5: Develop the proficiency in the handling of laboratory instruments.

PSO-6: Enhance Intellectual, Computational, Experimental and Analytical skills of Physical Science.

PSO-7: Develop aptitude of doing research through undertaking small projects and research centre visit.

### **FIRST SEMESTER**

#### **GENERIC ELECTIVE -1**

Course Name- MECHANICS

#### **Course Outcomes**

CO1: Understand the rotational properties like angular momentum, moment of inertia in various coordinate systems.

CO2: Apply the laws of gravity for satellite systems.

CO3: Apply theory of Elasticity to determine various properties of matter

CO4: Differentiate various oscillating systems like simple harmonic, damped and forced oscillations.

Core Course Paper -I

Course Name- Mathematical Physics-1

Course Outcomes

CO1: Understand the mathematical methods to solve the 1st and 2nd order linear differential equations.

CO2: Understand the methods to solve exact differentials and to optimize a multivariable function.

CO3: Apply vector algebra to scalar and vector triple products and vector rotations.

CO4: Determine various vector derivatives associated with related physical quantities in various coordinate system (Cartesian, Spherical-polar and cylindrical).

CO5: Apply vector differentiation (grad, div and curl) for evaluation of line, surface and volume integral of scalar and vector fields.

Core Course Paper -II

Course Name- MECHANICS

Course Outcomes

CO1: Understand the mechanics of inertial and non-inertial Physical systems.

CO2: Interpret the properties of matter to quantify various physical properties of elastic bodies also for fluid systems.

CO3: Apply laws of gravitation for various satellite systems.

CO4: Differentiate various types of oscillations.

CO5: Develop understanding of special theory of relativity and its applications.

## **SECOND SEMESTER**

GENERIC ELECTIVE -II

Course Name- ELECTRICITY, MAGNETISM AND EMT

Course Outcomes

CO1: Understand the mathematical methods of vector differentiation and vector integrations.

CO2: Interpret the theory of electrostatic for dielectrics to be used in capacitors

CO3: Apply theory of magneto-static for electromagnetic induction

CO4: Design the Maxwell's electrostatics equation for electromagnetic wave propagation.

Core Course Paper -III

Course Name- ELECTRICITY AND MAGNETISM

Course Outcomes

CO1: understand the basic concepts of electric and magnetic fields.

CO2: Apply theory of magnetism for working of Ballistic galvanometer

CO3: Analyze the electromagnetic induction principles for various applications

CO4: Design various electrical networks by the principle of network theorems.

Core Course Paper -IV

Course Name- WAVES AND OPTICS

Course Outcomes

CO1: Understand the laws associated with geometrical and wave optics.

CO2: Understand the Physics associated with various wave motions.

CO3: Apply the coherent superposition for various interferometer.

CO4: Differentiate Fresnel and Fraunhofer diffraction

### **THIRD SEMESTER**

GENERIC ELECTIVE -III

Course Name- THERMAL PHYSICS AND STATISTICAL MECHANICS

Course Outcomes

CO1: Understand the laws of thermodynamics and principles of free energy; describe thermodynamic processes and heat engines and master the use of the chemical potential to describe diffusive equilibrium, phase equilibrium and chemical processes. CO2: Understand the kinetic theory of gases and behaviour of real gaseous systems.

CO3: Determine the energy distribution using the theory of radiation.

CO4: Correlate thermodynamic functions in various ensembles.

Core Course Paper -V

Course Name- MATHEMATICAL PHYSICS-II

Course Outcomes

CO1: Understand the Fourier series expansion of periodic and nonperiodic functions and their importance.

CO2: Solve ordinary second order differential equations using Frobenius Method

CO3: Differentiate the various types of polynomials (Legendre and hermite) in various problems of Physics.

CO4: Solve partial differential equations using separation of variables

Core Course Paper -VI

Course Name- THERMAL PHYSICS

Course Outcomes

CO1: Understand the laws of thermodynamics and principles of free energy; describe thermodynamic processes and heat engines.

CO2: Use of the chemical potential to describe diffusive equilibrium, phase equilibrium and chemical processes.

CO3: Understand the kinetic theory of gases and behaviour of real gaseous systems.

CO4: Apply the laws of thermodynamics and chemical potentials to know the behaviour of real gas system.

Core Course Paper -VII

Course Name- ANALOG SYSTEMS AND APPLICATIONS

Course Outcomes

CO1: understand the basics of p-n junction diodes like barrier formation, current flow mechanism; application as rectifiers and some special diodes like Zener diode, photodiode and solar cells.

CO2: Apply the concept of hybrid parameters of bipolar junction transistor to be used as various power amplifiers.

CO3: Use the barkhausen criterion for various transistor based oscillators.

CO4: Design various OP-AMP for mathematical operations.

## FOURTH SEMESTER

### GENERIC ELECTIVE -IV

Course Name- WAVES AND OPTICS

#### Course Outcomes

CO1: Understand the laws associated with geometrical and wave optics.

CO2: Understand the Physics associated with various wave motions.

CO3: Apply the coherent superposition for various interferometer.

CO4: Differentiate Fresnel and Fraunhofer diffraction

### Core Course Paper -VIII

Course Name- Mathematical Physics-III

#### Course Outcomes

CO1: Solve the complex integrations through Cauchy's integral concept and by using residue theorem.

CO2: Apply Fourier sine, cosine and complex integrals for determination of Fourier transforms.

CO3: Solve one dimensional Wave and Diffusion/Heat flow Equations by using the theory of Fourier transformations.

CO4: Apply Laplace transformation to solve differential equations and to determine voltage for half wave and full wave rectifiers.

### Core Course Paper -IX

Course Name- ELEMENTS OF MODERN PHYSICS

#### Course Outcomes

CO1: Understand the proposed models by experiments to describe the structure of atoms and nuclei

CO2: Interpret the dual nature of matter and experiments that describe the either nature.

CO3: Determine nuclear stability, binding energy on the basis of various nuclear models.

CO4: Apply the theory of radioactivity on nuclear fission/fusion to meet the demand for energy in today's world.

Core Course Paper -X

Course Name- DIGITAL SYSTEMS AND APPLICATIONS

Course Outcomes

CO1: Understand the fundamentals of number systems used in computers, binary arithmetic, logics and Boolean functions.

CO2: Apply basic Boolean algebra for logic gates.

CO3: Understand the basic working mechanism of CRT and CRO.

CO4: Use the multivibrator circuit for working of timer and arithmetic circuits.

CO5: Apply the idea of computer hardwares for computing purposes.

### **FIFTH SEMESTER**

Discipline Specific Elective (DSE) Paper-I

Course Name: CLASSICAL DYNAMICS

Course Outcomes

CO1: Solve the mechanics of various oscillating system through Lagrangian mechanism.

CO2: Use Hamiltonian formulism to find shortest distance between two points in a plane, Geodesic Problem, minimum surface of revolution, Brachistochrone problem

CO3: Understand central force motion and coupled oscillators.

CO4: Apply special theory of relativity to determine space time diagrams, Times-dilation, length contraction.

CO5: Apply the four vector form of energy-momentum to understand the conservation principles with respect to relativity.

Discipline Specific Elective (DSE) Paper-II

Course Name: NUCLEAR AND PARTICLE PHYSICS

Course Outcomes

CO1: Understand the basic properties of nucleus and the associated radioactive decay process.

CO2: Interpret the nuclear stability, angular momentum, parity through nuclear models.

CO3: Understand the basic principle of detectors as used in nuclear reactors and particle accelerators.

CO4: Differentiate various types of particle interaction with associated symmetry and conservation principles.

Core Course Paper -XI

Course Name- QUANTUM MECHANICS AND APPLICATIONS

Course Outcomes

CO1: Understand the origins of quantum mechanics and explain the differences between classical and quantum mechanics and the idea of wave packets satisfying uncertainty relation.

CO2: Apply the various types of operator formalism to find the expectation value of physical observables.

CO3: Use time independent Schrodinger equation to solve the problem of 1D harmonic oscillator and various bound state problems.

CO4: Apply the general theory of quantum mechanics to determine the spectral splitting due to LS and JJ-Coupling.

Core Course Paper -XII

Course Name- SOLID STATE PHYSICS

Course Outcomes

CO1: Understand the basics of crystal structure: lattice, basis, unit cells, reciprocal lattice concept and diffraction experiment

CO2: Understand crystal vibrations: phonon heat capacity and thermal conductivity CO3: Understand the dielectric properties of matter.

CO4: Understand the mechanism of Lasing action for various LASERS.

CO5: understand electrons in periodic potential: energy bands theory classification of metals, semiconductors and insulators

CO6: understand the dielectric, magnetic properties of materials and theory of superconductivity which are frontier areas of research today.

**SIXTH SEMESTER**



### Discipline Specific Elective (DSE) Paper-III

Course Name: Nano Materials and Applications

Course Outcomes

CO1: Understand the effect of dimensionality of the object at nanoscale on their properties

CO2: Understand synthesis technique to control size and shape of nanomaterials and their future applications in industry.

CO3: Understand important characterization techniques to analyze nanomaterials properties

CO4: Apply nano materials for various smart applications.

### Discipline Specific Elective (DSE) Paper-IV

Course Name: PROJECT

CO1: Develop the skill to plan, execute and report the result of extended experimental and theoretical Physics.

Core Course Paper -XIII

Course Name- Electro-Magnetic Theory

Course Outcomes

CO1: Use Maxwell's equation for energy conservation in electrodynamics.

CO2: understand electromagnetic wave propagation in different type of mediums.

CO3: Interpret the laws of electromagnetic wave propagation through bounded media.

CO4: Apply the laws of polarization for proper understanding of the mechanism of of various polarizing devices.

Core Course Paper -XIV

Course Name- Statistical Mechanics

Course Outcomes

CO1: Evaluation of the laws of classical thermodynamics for macroscopic systems using the properties of its atomic particles.

CO2: Understand the nature of statistical errors and variations of thermodynamic parameters.

CO3: Understand micro and macrostates, fermions and bosons

CO4: Understand radiation and radiation laws



1. The Objective of the Course is to provide elementary knowledge on symbolic logic.
2. To introduce certain derivation through which students can identify the validity of an argument.

**Course Outcome**

- CO1.** After completion of the course, it is expected that students can demonstrate and exhibit logical reasoning.
- CO2.** Students can identify and apply logical inference.
- CO3.** The course will enable students to identify and analyze logical symbolization.
- CO4.** Students would develop and apply critical thinking.

**CC-V:ETHICS**

**Course Objectives**

1. To introduce students with the definition and scope of moral philosophy and its relation with other social sciences.
2. To acquaint the students with various moral concepts and their usages in our daily life.
3. To expose students to different dimensions of moral reasoning.

**Course Outcome**

- CO1.** The students would be capable to distinguish moral concepts from non-moral concepts.
- CO2.** Students can differentiate between statements concerning morality from statements concerning matters of fact.
- CO3.** One can apply moral philosophy in personal as well as professional life.
- CO4.** Students can exhibit and apply moral reasoning.

**CC- VI HISTORY OF GREEK PHILOSOPHY**

**Course Objectives**

1. The Objective of the course is to understand some of the important ideas of early Greek philosophers.
2. It would enable students to have philosophical understanding about metaphysics, epistemology and ethics in Greek tradition.

**Course Outcome**

- CO1.** Students can estimate and analyze the points of academic rigor the Greek Philosophy exhibited.
- CO2.** Students can estimate and enlist the major philosophical contributions of Socrates, Plato and Aristotle.
- CO3.** Students can critique major philosophical axioms taken by Greek thinkers.
- CO4.** Students can compare and contrast philosophical contributions of major Greek philosophers.

**CC- VII**

**SYSTEMS OF INDIAN PHILOSOPHY (II)**

**Course Objectives**

1. The Objective of the Course is to acquaint the students with Indian philosophical traditions.
2. The course aims to relating to truth and knowledge and how these issues are dealt in Indian schools of thought.

**Course Outcome**

- CO1.** The students will assess fundamental principles of Upanisadic thought.

- CO2.** Students can enlist different pramanas propounded by nyaya and vaisesika philosophers.
- CO3.** Students can demonstrate basic principles of Vedantic philosophers.
- CO4.** Students can compare and contrast between different philosophical arguments provided by Ramanuja and Sankara.

### **CC-VIII CONTEMPORARY INDIAN PHILOSOPHY**

#### **Course Objectives**

1. To address the transition of traditional Indian philosophical reflections to the contemporary Indian philosophy through concepts of Reality, Man, religion and society.
2. To critically engage students' various philosophical ideas of Vivekananda and Aurobindo
3. To evaluate the issue of nationalism and humanism in Tagore's philosophy

#### **Course Outcome**

- CO1.** Students will engage in the projects demonstrated by contemporary Indian thinkers.
- CO2.** Students will demonstrate the assumptions taken by modern Indian thinkers.
- CO3.** Students identify major variations of philosophical arguments taken by Indian thinkers especially Gandhi, Tagore, Vivekananda and Sri Aurobindo etc.
- CO4.** Students will compare and contrast major philosophical axioms recorded by contemporary thinkers.

### **CC-IX HISTORY OF MODERN EUROPEAN PHILOSOPHY**

#### **Course Objectives**

1. The objective of the course is to introduce Western modern philosophy of Descartes, Spinoza, David Hume, Locke and Berkeley
2. This course will enable the students to apply rational and empirical methods of philosophizing.

#### **Course Outcome**

- CO1.** Students are expected to define basic metaphysical and epistemological assumptions of modern European philosophers.
- CO2.** Students can propose alternative outlooks against the existing metaphysical outlooks demonstrated in the course.
- CO3.** Students are also students can analyze major philosophical concepts proposed by modern philosophers
- CO4.** Students can compare and contrast between basic assumptions of rationalists and empiricists.

### **CC-X PHILOSOPHY OF LANGUAGE**

#### **Course Objectives**

1. To make the students comprehend the basic structure and function of language.
2. To make students aware of fundamental concepts in philosophy of language.

#### **Course Outcome**

- CO1.** Students can dictate and enlist vague and ambiguous sentences used in common discussion.
- CO2.** Students will analyze various notions of truth.
- CO3.** Students can identify various definitions used in translation or meaning prescription.
- CO4.** Students can enlist various criteria of meaning and thereby they can determine meaning to a sentence.

## CC-XI

### WESTERN CLASSICS: MEDITATIONS OF RENE DESCARTES

#### Course Objectives

1. The objective of the course is to introduce one of the important classics of western philosophy.
2. This course will give a brief overview about the Descartes notion of Cogito Ergo sum

#### Course Outcome

- CO1.** At the end of the course student will understand the method of doubt and reasons.
- CO2.** Students can identify the strength and weakness of Cartesian system.
- CO3.** Students can identify different types of mental reasoning.
- CO4.** Students can apply Cartesian method or the method of doubt in philosophical reasoning.

## CC-XII INDIAN TEXT: ISA UPANISAD

#### Course Objectives:

1. The objective of the Course is to acquaint the students with the classical thoughts of Indian tradition.
2. Students will be able to make a distinction between vidya and avidya.

#### Course Outcomes:

- CO1.** Students will understand and analyze general philosophical outlook depicted in the text.
- CO2.** Students can identify the strength and weakness in the philosophical reasoning depicted in the Isa Upanisad.
- CO3.** Students will demonstrate the philosophical rigor prescribed in the Isa Upanisad.
- CO4.** Students will identify and apply moral reasoning preached in the text into their personal life.

## CC-XIII

### SOCIAL & POLITICAL PHILOSOPHY

#### Course Objectives

1. To introduce students' various philosophical ideas and principles of state and society.
2. To critically engage with the idea of secularism as a principle of state.
3. To address and evaluate various social and political revolutions as in form of socialism, Marxism, feminism and humanism etc.
4. To ensure a critical approach to understand the problems with these philosophical ideas.

#### Course Outcome

- CO1.** Students will examine some fundamental concepts of Political philosophy.
- CO2.** Students shall engage and organize various normative theories related to the origin

n and nature of the state.

**CO3.** Students shall identify major philosophical arguments employed in political philosophy.

**CO4.** Students shall construct and evaluate major philosophical arguments of political philosophy.

## **CC-XIV**

### **APPLIED ETHICS**

#### **Course Objectives**

1. To understand the practical aspects of ethics in reference to modern technology
2. To critically engage students about the ethical issues evident in medical practices
3. To develop an understanding of moral consciousness in business practices
4. To analyze the modern-day mainstream and social media from an ethical point of views.

#### **Course Outcome**

**CO1.** Students shall define various normative theories to be applied in practical life.

**CO2.** Students can identify moral problems occurred in Medical Ethics.

**CO3.** Students shall list different moral dilemmas in business.

**CO4.** Students will apply moral reasoning to solve moral deadlocks in the media.

## **DSE-I**

### **PHILOSOPHY OF BHAGVADGITA**

#### **Course Objectives**

1. The objective of the course is to widen the values and moral conflicts that are available in the text Gita.

#### **Course Outcome**

**CO1.** Students will understand the theoretical background of moral reasoning used in the Gita.

**CO2.** Students shall examine various arguments employed in the Gita.

**CO3.** Students shall organize basic moral concepts and examine their logical sequence.

**CO4.** They can identify moral dilemmas in personal life and apply the solutions given by the Gita to solve them.

## **DSE-II.**

### **PHILOSOPHY OF RELIGION**

#### **Course Objectives**

1. To introduce students to understand the distinction between religion and philosophical reflections of religion
2. To critically address the arguments for the existence of God
3. To evaluate the arguments for the nonexistence of God and different other

- ideas that are incompatible with the notion of God
4. To examine various philosophical issues concerning religious language

### **Course Outcome**

- CO1.** Students shall engage in the philosophical projects undertaken by medieval philosophers.
- CO2.** Students can define fundamental concepts like god, soul, evil etc. as used in philosophy of religion.
- CO3.** Students can identify and analyze various arguments in relation to the existence of God.
- CO4.** Students can organize and construct their own arguments to prove or disprove the existence of God.

## **DSE- III GANDHIAN STUDIES**

### **Course Objectives**

1. The objective of the course is to enlighten the students about M.K Gandhi's philosophical ideas.
2. To enable students to comprehend the moral thoughts of Gandhi.

### **Course Outcome**

- CO1.** This course makes the students to practically use and experiment the method and means of Gandhi in their lives and daily activities.
- CO2.** Students will deconstruct the moral thoughts of Gandhi's philosophy.
- CO3.** Students will compare and contrast the political and economic models that are being discussed by Gandhi.
- CO4.** Students will apply Gandhian thought into solving contemporary moral crisis.

## **DSE- IV**

### **A student has to opt for any one of the following:**

#### **I. PROJECT WORK**

The aim of this paper is to encourage the students to write a dissertation on different fields of philosophy. It will help the student to understand how the research paper has to be written and what are the methods used to write a qualitative paper. It will also give a broader outlook to the student for enhancing their skill on references and their usage in research articles and dissertation.

#### **II. RECENT WESTERN PHILOSOPHY**

### **Course Objectives**

1. The objective of the course is to introduce the recent thinkers in Western philosophical tradition.
2. To facilitate on philosophical writing.

### **Course Outcome**

- CO1.** Students will engage in basic philosophical assumptions taken by philosophers like James, Sartre.



- CO2.** Students demonstrate the uniqueness of the recent philosophers.
- CO3.** Students will compare and contrast among philosophical systems developed by Sartre and James.
- CO4.** Students will critique major flaws of these philosophers.

### **GENERIC ELECTIVE SYMBOLIC LOGIC ( I )**

#### **Course Objectives**

1. The Objective of the Course is to provide elementary knowledge on symbolic logic.
2. To introduce certain derivation through which students can identify the validity of an argument.

#### **Course Outcome**

- CO1.** After completion of the course, it is expected that students can demonstrate and exhibit logical reasoning.
- CO2.** Students can identify and apply logical inference.
- CO3.** The course will enable students to identify and analyze logical symbolization.
- CO4.** Students would develop and apply critical thinking.

### **GE-II INDIAN PHILOSOPHY**

#### **Course Objectives**

1. The Objective of the Course is to acquaint the students with Indian philosophical traditions.
2. The course aims to relating to truth and knowledge and how these issues are dealt in Indian schools of thought.

#### **Course Outcome**

- CO1.** The student can compare and contrast how the earliest thinkers thought about the creation of the world, our knowledge of that world and what ought to be the purpose of our life in that world.
- CO2.** Students can examine and locate the fundamentals of Indian traditional thought.
- CO3.** Students can estimate the idea of reality in relation to Indian philosophy.
- CO4.** Students can list the basic components of knowledge.

### **GE- III HISTORY OF MODERN EUROPEAN PHILOSOPHY**

#### **Course Objectives**

1. The objective of the course is to introduce Western modern philosophy of Descartes, Spinoza, David Hume, Locke and Berkeley
2. This course will enable the students to apply rational and empirical methods of philosophizing.

#### **Course Outcome**

- CO1.** Students are expected to define basic metaphysical and epistemological assumptions of modern European philosophers.
- CO2.** Students can propose alternative outlooks against the existing metaphysical outlooks demonstrated in the course.
- CO3.** Students are also students can analyze a major philosophical concept proposed by modern philosophers

**CO4.** Students can compare and contrast between basic assumptions of rationalists and empiricists

**GE-IV  
ETHICS: THEORY AND PRACTICE**

**Course Objectives:**

1. To acquaint the students with various moral concepts and their usages in our daily life
2. To acquaint the students with various moral concepts and their usages in our daily life.

**Course Outcomes:**

- CO1.** Students can distinguish moral actions from non-moral actions.
- CO2.** Students can identify and enlist moral judgements and matters of fact.
- CO3.** Students will analyze various theories of moral standard.
- CO4.** Students can apply various theories of moral standard to solve problems occurred in environment and different professions.

**SEC-1  
CRITICAL THINKING**

This course will help the student to develop the critical thinking abilities which will help to build their arguments logically.

**SEC-II  
APPLIED REASONING**

The course is primarily designed to introduce different logical fallacies. Further it will introduce the different types of reasoning. It will also give a clarity on the difference between science and superstition.

# SYLLABUS FOR UNDERGRADUATE COURSE IN HISTORY

## PROGRAMME OBJECTIVES (POS)

**PO-1:** Disciplinary Knowledge: Acquaint with the deeper and multi- disciplinary knowledge, aware about recent innovations in the academic field

**PO-2:** Critical Thinking: Able to critically analyze, synthesis and evaluate the theories, their development and application context.

**PO-3:** To develop problem solving innovative thinking with robust communication and academic writing skills

**PO-4:** Research Aptitude: Scientific and research thought and abilities not only to carry out independent research but also disseminate

**PO-5:** Individual and Team work: Acquire the competency to work responsibly as an individual or as a member or leader of the group in multi-disciplinary environments

**PO-6:** Life-Long Learning: Aptitude to apply knowledge and skills that are necessary for participating in learning activities throughout life.

**PO-7:** Ethics: Capability to identify and apply ethical issues related to one's work, avoid unethical behaviour such as fabrication of data, committing plagiarism and unbiased truthful actions in all aspects of work.

**PO-8:** Investigation of Problems: Ability of critical thinking, analytical reasoning and research based knowledge including design of experiments, analysis and interpretation of data to provide conclusions.

## PROGRAMME SPECIFIC OUTCOMES

1. The students will familiarize themselves with India's ancient, mediaeval, and contemporary history. Their study will involve a comprehensive examination of human development, archaeological findings, global civilizations, various ruling dynasties, diverse orthodox and heterodox religious groups, the formation of states, and the process of democratization in colonial-era India.
2. The students will gain knowledge of the socio-economic and political frameworks that were present in India during the ancient, mediaeval, and modern eras. This

includes understanding agrarian relationships, trade and commerce, urbanization, merchant guilds, as well as art and architecture.

3. The students will gain knowledge about European politics during the 18th century, including the French Revolution and the American Revolution. This will enable them to understand the shift from mediaeval to modern times, which had a global impact, particularly in Europe.
4. The students will gain acquaintance with a diverse range of materials, encompassing written, oral, visual, and archaeological, that enable them to recreate history. The content would also include components such as historical facts, causation, and objectivity.
5. By enrolling in this program, students will acquire the skills to actively engage in archaeological expeditions, visit significant historical sites, and analyse historical maps and charts.

**Core Paper I  
HISTORY OF INDIA- I**

Course Outcome	CO Statement
CO1	Describe the antiquity of India's past and methods of construction of past. Describe the different sources which are scientifically corroborated to construct the past.
CO2	To understand the early human dispersals; lithic technology and tool typology of Palaeolithic, Mesolithic and Neolithic period. Archaeological evidence from Mesolithic and Neolithic sites of India, including the evidence of emergence of art and religion. Describe the antiquity of India's past and methods of construction of past
CO3	Describe the beginning of farming communities and scientific methods which have come up in recent years
CO4	Understand the Vedic roots of Indic civilization

**Core Paper II  
SOCIAL FORMATIONS AND CULTURAL PATTERNS OF THE ANCIENT  
WORLD**

Course Outcome	CO Statement
<b>CO1</b>	To understand Evolution of Man, Pre-Historic period i.e. Paleolithic Cultures, Mesolithic Culture, Settlement Pattern, Subsistence Pattern, Stone tools and the Material used, Religion and belief, Important sites of these cultures
<b>CO2</b>	To understand Neolithic Culture, Transition from Hunting Gathering to Agriculture, Food production, Development of Agriculture, Animal Husbandry

<b>CO3</b>	To understand Bronze Age Civilizations i.e. Egypt, Mesopotamia (Sumeria and Babylonia), China (Shang), Their contributions to world in the field of culture, polity, economy, art and architecture, trade and commerce and their decline
<b>CO4</b>	To understand Ancient Greece, Rise of city states of Athens and Sparta, Evolution of Democracy, economic condition, and development of culture i.e. art and architecture, painting, literature.

**Core Paper III**  
**HISTORY OF INDIA-II (300BCE-750CE)**

<b>Course Outcome</b>	<b>CO Statement</b>
<b>CO1</b>	It could give a better idea of <b>economy and society (circa 300 BCE to circa CE 300) and other perspectives like the</b> expansion of the agrarian economy, production relations, urban growth, trade and commerce, social stratification, class, <i>Varna, Jati</i> , and gender.
<b>CO2</b>	To understand the <b>changing political formations (circa 300 BCE to circa 300 CE) and other perspectives of</b> the Mauryan Empire, the role of Chandragupta Maurya and Asoka in their conquest, administration, and state-craft This part of the study could give more information on post-Mauryan polities such as Kushanas, Satavahanas, and Cholas.
<b>CO3</b>	It could give students a better idea of <b>Early Medieval India (circa CE fourth century to CE 750); further, it could give the</b> Gupta Age its agrarian expansion, land grants, granted land rights, and peasantry. To understand the <i>Varna, the proliferation of Jatis</i> , changing norms of marriage and property, the nature of polities, and the Gupta Empire, This part is about studies on post-Gupta polities of petty kingdoms that emerged in India, such as Pallavas, Chalukyas, and Vardhanas.
<b>CO4</b>	To know the various ideas (circa 300 BCE to CE 750) of <b>religion, culture, philosophy, and society, it could be given other ideas like</b> consolidation of the Brahmanical tradition, <i>Dharma, Varnashram, and Purusharthas</i> . origin of heterodox religions such as Buddhism and its various branches, Hinayan and Mahayana, as well as Jainism and its major principles. In this part, students could learn about the development of art and architecture in the Mauryan and Gupta eras.

**Core Paper IV**  
**SOCIAL FORMATIONS AND CULTURAL PATTERNS OF THE MEDIEVAL WORLD**

<b>Course Outcome</b>	<b>CO Statement</b>
<b>CO1</b>	Understand the Polity and Economy of Ancient Rome.

<b>CO2</b>	Examine the Economic developments in Europe from 7 <sup>th</sup> to 14 <sup>th</sup> century AD.
<b>CO3</b>	Analyse the culture and religion of Medieval Europe.
<b>CO4</b>	Illustrate about the socio-religious conditions of Islamic Lands.

**Core Paper V**  
**HISTORY OF INDIA-III (c. 750 -1206)**

<b>Course Outcome</b>	<b>CO Statement</b>
<b>CO1</b>	It may provide a clearer understanding of the political structures of early mediaeval India through the study of literary and archaeological sources. It will also highlight some significant issues, such as the evolution of political structures like the Rajput and Chola families; fundamental concepts regarding the legitimacy of theories of kingship; the function of Brahmanas and temples as agencies; and the causes and effects of the Arab conquest of Sindh.
<b>CO2</b>	The development of new crop varieties, the increase in the number of landlords and peasants in the early medieval India, the spread of castes, the birth of new forms of writing, and the peasantization of new genres are all important factors to consider when trying making sense of the agrarian structure and social change that occurred during this time.
<b>CO3</b>	Students may gain a greater understanding of the commercial activities and interregional commerce that took place in early mediaeval India through the use of river routes, sea trade and exchange, and the urbanisation movement.
<b>CO4</b>	In order to be familiar with Al-Biruni's Islamic Intellectual Traditions, one must be knowledgeable of his many theories regarding religious and cultural evolution, including the Puranic traditions, new Buddhist and Jain texts, and other similar works. As an example, students could study the development of regional styles like Kalingan and Dravidian temple building, as well as becoming fluent in the regional languages and literature.

**Core Paper VI**  
**RISE OF THE MODERN WEST – I**

<b>Course Outcomes</b>	<b>CO statement</b>
<b>CO1</b>	To understand the transition from feudalism to capitalism, Development of town and urban centers and trade and commerce.
<b>CO2</b>	To understand colonial expansion through voyages and exploration, economic activities like mining and plantation on conquered land.

<b>CO3</b>	To understand causes of Renaissance and Reformation, development of Art, Architecture, Sculpture, Painting, Literature, state system of Spain, France, England, Russia.
<b>CO4</b>	To understand the economic developments of 16 <sup>th</sup> century, Causes and nature of commercial revolution and the growth of industries and its impact.

**Core Paper VII**  
**HISTORY OF INDIA IV (c.1206 - 1526)**

<b>Course Outcome</b>	<b>CO Statement</b>
<b>CO1</b>	Understand the sources and political structure of sultanate period.
<b>CO2</b>	Examine the theories of emergence of regional kingdoms and their development in art and architecture.
<b>CO3</b>	Analyse the society and economic condition of the sultanate period.
<b>CO4</b>	Illustrate about the socio-religious conditions of the sultanate period.

**Core Paper VIII**  
**RISE OF MODERN WEST - II**

<b>Course Outcome</b>	<b>CO Statement</b>
<b>CO1</b>	In this unit student will know about the English revolution and European politics in the 18 <sup>th</sup> Century, socio-economy and political crises in 17 <sup>th</sup> century Europe.
<b>CO2</b>	To understand the development of science from renaissance to the 17 <sup>th</sup> century and impact of modern science.
<b>CO3</b>	They should know about the origin and spread of mercantilism and industrial revolution.
<b>CO4</b>	After the end of this unit students should learn the political, socio-economy issues and significant of the American revolution.

**Core Paper IX**  
**HISTORY OF INDIA V (c. 1526 – 1750)**

<b>Course Outcome</b>	<b>CO Statement</b>
<b>CO1</b>	In this unit, the students will learn the foundation of the Mughal rule in India and military technology: fire arms
	This unit focuses on the evolution of administrative institution

<b>CO2</b>	consolidation of Mughal rule in India and the Maratha empire expansion under peshwas.
<b>CO3</b>	To understand land rights and revenue system, trade routes and patterns of internal commerce.
<b>CO4</b>	After the study of this unit the students should know the religious tolerance, Sufi mystical and Mughal and Rajput paintings.

### **Core Paper X**

#### **HISTORICAL THEORIES & METHODS**

<b>Course Outcome</b>	<b>CO Statement</b>
<b>CO1</b>	It can enhance comprehension of the significance, definition, characteristics, extent, purpose, and importance of history, with particular emphasis on scientific examination and its connection to the fundamental principles of science and ethics within the discipline.
<b>CO2</b>	To be familiar with the historical writing traditions from various global perspectives, such as the Greek and Roman traditions, which drew from the works of Herodotus, Thucydides, Polybius, Livy, and Tacitus; to be aware of the mediaeval understanding, which centred on the works of Western scholars like St. Augustine; and the deeper Arabic intellectual tradition written by Ibn Khaldun.
<b>CO3</b>	By studying history as an interdisciplinary practise, students may acquire a deeper grasp of its connections to various academic disciplines, such as political science, literature, psychology, anthropology, and archaeology.
<b>CO4</b>	Through a variety of sources, including written, oral, visual, and archaeological, students can examine the historical techniques used to reconstruct our history. The objective of the outcome may encompass elements such as historical facts, causation, and objectivity.

### **SEC II**

#### **MUSEOLOGY AND ARCHIVES**

<b>Course Outcome</b>	<b>CO Statement</b>
<b>CO1</b>	Students will get the knowledge of definition, Scope and History of Museums in India. They will get the idea of types, collection and interpretation of museum study.
<b>CO2</b>	Students will explore the knowledge of museum and its Management – Staff, Insurance and Security. They will get the knowledge of conservation, preservation and exhibition,



<b>CO3</b>	Students will get the knowledge of definition, Scope and History Archives in India. They will get the idea of functions of Archives.
<b>CO4</b>	They will get the information of documentation and interpretation

### **Core Paper XI**

#### **History of Modern Europe- I (c. 1780-1880)**

<b>Course Outcome</b>	<b>CO Statement</b>
<b>CO1</b>	By studying French Revolution and its succeeding events the students will be able to engage with one of the most transformative periods in Indian history.
<b>CO2</b>	This paper will help them understand the rise of Nationalism, democratic ideas among people.
<b>CO3</b>	The students will be able to learn about the causes and consequences of political revolutions as well as challenges and opportunities it brings.
<b>CO4</b>	Through studying industrial revolution, the student can be informed about the process of changing production process and the positive as well as the negative impacts of this rapid innovation.

### **CORE-XII**

#### **(HISTORY OF INDIA VII -c.1750-1857)**

<b>Course Outcome</b>	<b>CO Statement</b>
<b>CO1</b>	To understand foreign trade of colonial power and economic exploitations in Bengal and Expansion of colonial power in Bengal, Mysore and Odisha
<b>CO2</b>	To understand the army, police and law of colonial power, imperial ideology of Orientalism and Utilitarianism, Indigenous and modern education system introduced by colonial power
<b>CO3</b>	To understand various land revenue system (permanent, ryotwari and mahalwari) introduced by British, Commercialization of agriculture and its consequences, causes and consequences of Drain of Wealth and growth of modern industries
<b>CO4</b>	To understand Santhal uprising(1856-57), Indigo Rebellion (1860) and the causes and consequences of movement of 1857 against the Colonial Power

**Core Paper XIII:  
HISTORY OF INDIA VIII (c. 1857 - 1950)**

<b>Course Outcome</b>	<b>CO Statement</b>
<b>CO1</b>	Through studying socio-religious reform movements the students will be able to trace the development of the sense of nationalism and democratization of society in India from the colonial period.
<b>CO2</b>	They will be able to learn about the rise of national organizations and changes occurred in it through the British period.
<b>CO3</b>	They will be able to understand the role of Gandhi in national movement and transforming it into a mass movement.
<b>CO4</b>	They will be able to critically analyze the idea of partition, its preceding and following events.

**Core Paper XIV  
HISTORY OF MODERN EUROPE II (c. 1880 - 1939)**

<b>Course Outcome</b>	<b>CO Statement</b>
<b>CO1</b>	Through this paper, the pupil will learn about the rise of the two opposing ideologies of capitalism and socialism in modern Europe and the reason behind its rise.
<b>CO2</b>	They will learn about the events responsible for the occurrence of two Great Wars that was fought between the two power blocks of the world.
<b>CO3</b>	The students will be able to understand the intellectual development that occurred in 19th century and how it gave new meaning to the study of Social Science.
<b>CO4</b>	They will be able to critically analyze the idea of intellectual developments since circa 1850, and development of major intellectual trends such as Darwin and Freud.

**Discipline Specific Elective Paper- II  
History and Culture of Orissa – I**

<b>Course Outcome</b>	<b>CO Statement</b>
<b>CO1</b>	The students will understand the difference between Historical regions and present day administrative regions and early inscriptions of war and political achievements.
<b>CO2</b>	Students will develop teams to discuss and present various archaeological sites of early historical Odisha.
<b>CO3</b>	Students will understand the process of the making of the historical region of Orissa through the intertwined process of land grants, peasant caste, integration of cult
<b>CO4</b>	Students will with social and cultural life in early and medieval Odisha and growth and decay of urban centers and trade and commerce.

**Discipline Specific Elective Paper-II**  
**History and Culture of Orissa –II**

Course Outcome	CO Statement
CO1	Students will have an understanding of the causes and effects of the Afghan, Mughal, Maratha, and British occupations of Odisha upon completion of this lesson. Comprehend the three external forces that occupied Odisha's territory and the British subjugation of Puri, the seizure of Cuttack, Sambalpur, and Balasore. Understand the factors that led to the British governance of Odisha. Comprehend the process of land revenue settlement and get knowledge about the governance of justice and police administration.
CO2	After studying this lesson, the students will be able to know the causes of the resistance movement in the 19th century. Understand the Khurda rising of 1804-05. Know about the Paik rebellion of 1817; evaluate the causes and results of the Paik rebellion of 1817; the causes of the revolt of Surendra Sai; the British measures to suppress the revolt; the results of the revolt; evaluate the revolt of Surendra Sai against the British Government; the Ghumsar Rising under Dora Bisoi; the Khond Rising under Chakra Bisoi; the Bhuyan Rising under Ratna Naik; and Dharani Dhar Naik. After studying this lesson, the students will be able to know the natural calamities in Odisha during the British period, the famine of 1866 in Odisha, the causes and effects of the famine of 1866 in Odisha, the growth of modern education in Odisha, and such steps taken by the British administrators, as well as the growth of the press in Odisha and the growth of journalism in Odisha.
CO3	Following their study of this lesson, students will be able to identify the reasons behind the social and cultural shifts that occurred in this region throughout the 19th century, as well as the history of the creation of the independent province of Odisha. In order to have a comprehensive understanding of the Odia Bhasha Movement and its impact on the development of socio-political organisations, it is essential to examine the emergence of public associations throughout the 19th century and the subsequent establishment of Utkal Sammilini (1903–1920).
CO4	The lessons learned in this lesson will enable the students to understand the nationalist movements in Odisha, including the non-cooperation, civil disobedience, and Quit India movements. To get insight into the involvement of ordinary individuals in the Quit India movement throughout several regions of Odisha. It provides insights into the non-congress and congress ministries (1937–1947), shedding light on their accomplishments and uncovering the reality of the non-congress ministries in Odisha during the period from 1937 to 1947. The focus could be placed on the British association with the Princely States of Odisha and the progression of the Prajamandal Movement. Ultimately, we acquired knowledge on the amalgamation of the states with Odisha. Consequently, a new epoch commenced in the chronicles of Odisha subsequent to the amalgamation of the indigenous princely states with Odisha.

**Discipline Specific Elective Paper-III  
History and Culture of Odisha - III**

Course Outcome	CO Statement
CO1	Students will explore the social context of the continuities of Buddhism as well the strong footing of AtiMarga and Mantra Marga traditions that challenged existing brahmanical social and religious orders
CO2	Students will get the knowledge of sakta cults and Jagannath cult. It will be helpful for the students to know the growth of Odia literature and Panchasakha.
CO3	Students will appreciate the stylistic features of Kalinga temple and also be aware about Buddhist and Jain art.
CO4	Students will get the information about the Christian Missionaries of various denominations work and Socio-religious reforms of missionaries in Odisha in 19th and 20th century.

**Discipline Specific Elective Paper-IV  
(Optional/ Project) History of Contemporary Odisha (1947-1980)**

Course Outcome	CO Statement
CO1	This paper will help the students to understand the new political development that occurred in Odisha during the transition as well as the post-independence phase.
CO2	The students will learn about the making of modern Odisha state.
CO3	They will know about the development projects that were undertaken in post-independence era to boost Odisha's economic growth.
CO4	They will be able to trace the development in the social fabric of the life of common people of Odisha after independence.

**Generic Elective Paper I**

**History of India - I (Early Times to 1750)**

Course Outcome	CO Statement
CO1	Understand the source, religious and political structure of Ancient India.
CO2	Examine the theories of emergence of Mauryans, Guptas and Vardhanas with their polity.
CO3	Analyse the society and economic condition of the post Gupta period with Sultanate period.
CO4	Illustrate about the socio-religious and political conditions during the Mughal period.

**Generic Elective Paper II**  
**History of India - II (1750-1950)**

<b>Course Outcome</b>	<b>CO Statement</b>
<b>CO1</b>	Understand the way how British created a Political India.
<b>CO2</b>	Critically examine the Consolidation of British Rule and Indian Responses against British Raj.
<b>CO3</b>	Analyse the socio-religious and cultural policies of the colonial period.
<b>CO4</b>	Illustrate about the Gandhian Movements against British Raj.

**Generic Elective Paper III**  
**RISE OF THE MODERN WEST – I**

<b>Course Outcomes</b>	<b>CO statement</b>
<b>CO1</b>	To understand the transition from feudalism to capitalism, Development of town and urban centers and trade and commerce.
<b>CO2</b>	To understand colonial expansion through voyages and exploration, economic activities like mining and plantation on conquered land.
<b>CO3</b>	To understand causes of Renaissance and Reformation, development of Art, Architecture, Sculpture, Painting, Literature, state system of Spain, France, England, Russia.
<b>CO4</b>	To understand the economic developments of 16 <sup>th</sup> century, Causes and nature of commercial revolution and the growth of industries and its impact.

**Generic Elective Paper IV**  
**G.E. IV: RISE OF THE MODERN WEST - II**

<b>Course Outcome</b>	<b>CO Statement</b>
<b>CO1</b>	In this unit student will know about the English revolution and European politics in the 18 <sup>th</sup> Century, socio-economy and political crises in 17 <sup>th</sup> century Europe.
<b>CO2</b>	To understand the development of science from renaissance to the 17 <sup>th</sup> century and impact of modern science.
<b>CO3</b>	They should know about the origin and spread of mercantilism and industrial revolution.
<b>CO4</b>	After the end of this unit students should learn the political, socio-economy issues and significant of the American revolution.

**SCHOOL OF GEOGRAPHY**

Semester	Paper Code	Courses run in the department	Course Outcome (CO)	Details of Course Outcomes (CO)
I	CC-I	Geomorphology	CO-01	Assess the internal and external structure and functioning of the Earth (OBE Level: Analyze)
			CO-02	Evaluate different movements of Earth and associated theories (OBE Level: Evaluate)
			CO-03	Examine Geomorphic Processes and associated theories to understand the overall functions and process going on Earth surface (OBE Level: Evaluate)
			CO-04	Evaluate the processes and outcomes of Geomorphic agents and landforms (OBE Level: Evaluate)
	CC-II	Cartography	CO-01	Showcase a comprehensive understanding of basics for Map-making (OBE Level: Understand).
			CO-02	Gain a Comprehensive understanding of basic geodesy required for map-making (OBE Level: Apply)
			CO-03	Use the techniques and principles of map making and designing (OBE Level: Analyze)
			CO-04	Read and assess various maps (e.g. slope and geology) (OBE Level: Evaluate)
	GE-I [A]	Geography of India	CO-01	Review physiographic and climatic characteristics of India (OBE Level: Understand)
			CO-02	Assess demographic characteristics of India (OBE Level: Apply)
			CO-03	Examine natural resources of India (OBE Level: Analyze)
			CO-04	Examine agricultural resources of India (OBE Level: Analyze)
	GE-I [B]	Sustainable Development	CO-01	Explain the core concepts and principles of sustainable development. (Knowledge)
			CO-02	Analyse the environmental, social, and economic challenges to achieving sustainability across diverse geographical contexts. (Analysis)
			CO-03	Evaluate and propose sustainable development solutions considering spatial, cultural, and political considerations. (Evaluation & Synthesis)
			CO-04	Propose and critically evaluate potential solutions and strategies for achieving sustainable development in real-world scenarios. (Synthesis)
II	CC-III	Human Geography	CO-01	Describe what human geography is by understand the population dynamics (OBE Level: Apply)
			CO-02	Explore the trend patterns of population characteristics across the globe (OBE Level: Analyze)
			CO-03	Examine demographic characteristics of population (OBE Level: Evaluate)
			CO-04	Evaluate the impact of humans on Earth through Urbanization (OBE Level: Evaluate)
	CC-IV	Climatology	CO-01	Gain knowledge of atmospheric composition, weather and climate dynamics, energy balance processes, global temperature patterns, and temperature inversion phenomena, facilitating comprehension of meteorological principles and their environmental implications. (Knowledge)
			CO-02	Gain understanding of global atmospheric circulation patterns, including pressure systems and wind movements, and their impact on weather phenomena, climate variability, and air transport. (Understanding)

II	CC-IV	Climatology	CO-03	Develop knowledge of atmospheric moisture, condensation processes, cloud and precipitation types, and climate classification methods, enabling interpretation of weather patterns and climatic characteristics for various geographical regions. (Application)	
			CO-04	Gain understanding of air mass dynamics, severe weather phenomena, including thunderstorms, tornadoes, and cyclones, and methods of weather forecasting, facilitating analysis of weather patterns and prediction of atmospheric conditions. (Synthesis)	
	GE-II	Geography of Odisha	CO-01	Understand the basics of geographies of Odisha (OBE Level: Understand)	
			CO-02	Understand the spatial distribution and problems and prospects of agricultural products and minerals in Odisha (OBE Level: Apply)	
			CO-03	Assess the resources of Odisha (OBE Level: Analyze)	
			CO-04	Evaluate the problems and management of Odisha's (OBE Level: Evaluate)	
	III	CC-V	Oceanography	CO-01	The outcomes of oceanography studies are multifaceted and encompass various aspects of scientific understanding, technological innovation, environmental stewardship, and societal impact. Here are some key outcomes:
				CO-02	Oceanography studies generate a wealth of scientific knowledge about the physical, chemical, biological, and geological processes of the oceans. This knowledge contributes to our understanding of Earth's systems, climate dynamics, marine ecosystems, and biodiversity (Remember).
				CO-03	Oceanography drives technological innovations in ocean exploration, observation, and data collection. Advanced instruments, platforms, and sensors developed for oceanographic research have broader applications in fields such as marine engineering, remote sensing, and environmental monitoring (Describe).
				CO-04	Oceanography studies contribute to the prediction and mitigation of natural hazards such as hurricanes, tsunamis, and coastal erosion (Analyze).
CC-VI		Statistical Methods in Geography	CO-01	Students should be able to identify and differentiate between spatial and attribute data, understand the geographical data matrix, distinguish between types and sources of data, and recognize different scales of measurement (nominal, ordinal, interval, ratio). They should also be able to analyze data distribution, including normal and binomial distributions. (Knowledge)	
			CO-02	Students should be able to construct frequency distributions for data sets, calculate measures of central tendency, and understand the principles and applications of various sampling techniques. (Understanding)	
			CO-03	Students should be able to calculate and interpret measures of dispersion, understand their significance in analyzing data variability, and apply the Chi-square test for assessing the association between categorical variables. (Application)	
			CO-04	Students should be proficient in calculating and interpreting various measures of association, determining the strength and direction of relationships between variables, conducting significance tests, and performing linear regression analysis for predictive modeling. (Synthesis)	
				CO-01	Understand the basics of geographies of Odisha (OBE Level: Understand)



<b>CC-VII</b>	<b>Geography of Odisha</b>	<b>CO-02</b>	Understand the spatial distribution and problems and prospects of agricultural products and minerals in Odisha (OBE Level: Apply)
		<b>CO-03</b>	Assess the resources of Odisha (OBE Level: Analyze)
		<b>CO-04</b>	Evaluate the problems and management of Odisha's (OBE Level: Evaluate)
<b>GE-III</b>	<b>Climatology</b>	<b>CO-01</b>	Gain knowledge of atmospheric composition, weather and climate dynamics, energy balance processes, global temperature patterns, and temperature inversion phenomena, facilitating comprehension of meteorological principles and their environmental implications. (Knowledge)
		<b>CO-02</b>	Gain understanding of global atmospheric circulation patterns, including pressure systems and wind movements, and their impact on weather phenomena, climate variability, and air transport. (Understanding)
		<b>CO-03</b>	Develop knowledge of atmospheric moisture, condensation processes, cloud and precipitation types, and climate classification methods, enabling interpretation of weather patterns and climatic characteristics for various geographical regions. (Application)
		<b>CO-04</b>	Gain understanding of air mass dynamics, severe weather phenomena, including thunderstorms, tornadoes, and cyclones, and methods of weather forecasting, facilitating analysis of weather patterns and prediction of atmospheric conditions. (Synthesis)
<b>CC-VIII</b>	<b>Evolution of Geographical Thought</b>	<b>CO-01</b>	Provide the basic conceptual understanding of temporal succession of geographical views from ancient times to the present time (OBE Level: Understand);
		<b>CO-02</b>	Understand and interpret the evolution of the philosophy, methods and approaches of Geography in the present context (OBE Level: Apply);
		<b>CO-03</b>	Compare different approaches and methods to study geographical phenomena (OBE Level: Analyze);
		<b>CO-04</b>	Analyze the paradigm shift in Geographical philosophy, methods and approaches (OBE Level: Evaluate);
<b>CC-IX</b>	<b>Economic Geography</b>	<b>CO-01</b>	Provide the basic conceptual understanding of economic activities and its association with geography (OBE Level: Understand);
		<b>CO-02</b>	Examine different economic theories (OBE Level: Apply);
		<b>CO-03</b>	Explore different economic activities (OBE Level: Analyze);
		<b>CO-04</b>	Evaluate the problems and management associated with different activities (OBE Level: Evaluate);
<b>CC-X</b>	<b>Environmental Geography</b>	<b>CO-01</b>	Understand the concepts and scope of Environmental Geography, distinguish between biotic, abiotic, and cultural environmental components, and analyse environmental contrasts on global, continental, and local scales.
		<b>CO-02</b>	Comprehend the structure and functions of ecosystems, explore trophic levels, food chains, and food webs, and explain the bio-geochemical cycles of nitrogen and carbon. Gain insights into energy flow within ecosystems.
		<b>CO-03</b>	Define the concept of Biome, identify major world biomes (Equatorial, Subtropical, Temperate, Polar), and analyse the nature and characteristics of environmental pollution in water and air.

IV			<b>CO-04</b>	Recognize environmental degradation causes and consequences, assess methods for environmental conservation, and evaluate India's environmental conservation programs and policies. Understand the role of international agencies (UNO, UNEP, UNDP, IUCN) in environmental management. Explore sustainable development concepts and strategies, and comprehend the functions of the Green
	SEC-II	Research Methods in Geography		
			<b>CO-01</b>	Demonstrate the ability to formulate research questions, design research studies, and select appropriate methodologies for data collection and analysis. (OBE Level: Create)
			<b>CO-02</b>	Develop skills in conducting literature reviews, synthesizing research findings, and critically evaluating research studies. (OBE Level: Assess)
			<b>CO-03</b>	Apply ethical principles in research, including obtaining informed consent, ensuring confidentiality, and avoiding bias in data collection and analysis. (OBE Level: Evaluate)
			<b>CO-04</b>	Communicate research findings effectively through written reports, presentations, and other forms of academic writing. (OBE Level: Create)
	GE-IV [A]	Human Geography		
			<b>CO-01</b>	Describe what human geography is by understand the population dynamics (OBE Level: Apply)
			<b>CO-02</b>	Explore the trend patterns of population characteristics across the globe (OBE Level: Analyze)
			<b>CO-03</b>	Examine demographic characteristics of population (OBE Level: Evaluate)
			<b>CO-04</b>	Evaluate the impact of humans on Earth through Urbanization (OBE Level: Evaluate)
	GE-IV [B]	Climate change and vulnerability		
			<b>CO-01</b>	Explain the fundamental causes, mechanisms and consequences of climate change. (Knowledge)
			<b>CO-02</b>	Identify and analyze vulnerable populations and ecosystems to climate change. (Understanding)
			<b>CO-03</b>	Evaluate the effectiveness of adaptation strategies at different scales. (Application)
			<b>CO-04</b>	Propose sustainable solutions for addressing climate change based on geographical and social context. (Synthesis)
	CC-XI	Regional Planning and Development		
			<b>CO-01</b>	Provide the conceptual understanding of regional study in Geography (OBE Level: Understand)
			<b>CO-02</b>	Interpret different approaches and methods of delineating regions to study Geographical phenomena (OBE Level: Apply)
			<b>CO-03</b>	Analyze the different policies and programs of India to reduce regional imbalances in the present context (OBE Level: Analyze)
		<b>CO-04</b>	Compare the different theories and models of regional planning in the context of India as well as the world (OBE Level: Evaluate)	
CC-XII	Remote Sensing & GIS			
		<b>CO-01</b>	Gain a thorough understanding of remote sensing technologies, such as satellite sensors, aerial photography, LiDAR, and drone imagery.	
		<b>CO-02</b>	Develop skills in image processing, data manipulation, and spatial analysis techniques. They learn how to extract meaningful information from remote sensing imagery and combine it with other spatial datasets for in-depth analysis.	
		<b>CO-03</b>	Use GIS software to display and communicate spatial data effectively. They gain knowledge of cartographic principles, symbolization, and map design to produce clear and informative maps.	
		<b>CO-04</b>	Drawn to remote sensing and GIS because of their applications in environmental and natural resource management.	

V	DSE-I	Population Geography	CO-01	Gain a comprehensive understanding of the field of population geography and interpret its role (OBE Level: Apply)	
			CO-02	Analyze the factors and determinants influencing population (OBE Level: Analyze)	
			CO-03	Examine the determinants of Population Growth (OBE Level: Analyze)	
			CO-04	Assess composition and characteristics of population (OBE Level: Evaluate)	
	DSE -II [A]	Resource Geography	CO-01	Gain a comprehensive understanding of the Resource Geography covering its types and functions (OBE Level: Apply)	
			CO-02	Analyze spatial distribution and characteristics of various natural resources at national and international scale (OBE Level: Analyze)	
			CO-03	Examine problems associated with various natural resource (OBE Level: Analyze)	
			CO-04	Evaluate different theory and approach associated with resources (OBE Level: Evaluate)	
	DSE -II [B]	Geography of Crime and Policing	CO-01	Understand the Geographies of crime in a particular region, Explain the relationship between crime and social change at the local, national and global level (OBE level to be achieved – remember)	
			CO-02	Review, interpret, discuss, relate and evaluate the different research methods in Geography of crime studies (OBE level to be achieved – describe)	
			CO-03	Understanding and evaluate the dynamics of the geography of crime and its impact on society (OBE level to be achieved –Evaluate)	
			CO-04	Understanding and applying the knowledge of Units 1,2 and 3 in the context of India (OBE level to be achieved –Evaluate)	
VI	CC-XIII	Geography of India	CO-01	Review physiographic and climatic characteristics of India (OBE Level: Understand)	
			CO-02	Assess demographic characteristics of India (OBE Level: Apply)	
			CO-03	Examine natural resources of India (OBE Level: Analyze)	
			CO-04	Examine agricultural resources of India (OBE Level: Analyze)	
	CC-XIV	Disaster management	CO-01	Disaster management studies contribute to identifying and addressing vulnerabilities within communities and infrastructure. Through risk assessments and analysis, appropriate measures can be implemented to reduce vulnerability to hazards (Remember)	
			CO-02	Studies help in analysing and improving emergency response mechanisms. By studying past disasters and evaluating response strategies, more efficient and coordinated response systems can be developed (Describe).	
			CO-03	Disaster management studies contribute to enhancing resilience at the individual, community, and institutional levels (Analyze).	
			CO-04	Disaster management studies generate new knowledge, insights, and best practices through research, case studies, and analysis. This knowledge helps inform policies, guidelines, and decision-making processes related to disaster management (Evaluate).	
				CO-01	Gain a comprehensive understanding of the Urban Geography with its history, trend and patterns (OBE Level: Apply)
				CO-02	Analyze the components, shapes and types of cities (OBE Level: Analyze)
				CO-03	Examine the theories and problems associated urban areas (OBE Level: Evaluate)

		<b>CO-04</b>	Evaluate different cities based on the understanding developed through previous objectives (OBE Level: Create)
<b>DSE -III [B]</b>	<b>Population and Society</b>	<b>CO-01</b>	Understand the demographic behavior, population and social change at the local, national and global level (OBE level to be achieved – Apply)
		<b>CO-02</b>	Review, interpret, discuss, relate and evaluate the different research methods in population studies (OBE level to be achieved – Analyze)
		<b>CO-03</b>	Understanding and evaluate the dynamics of population growth and its impact on society (OBE level to be achieved –Evaluate)
		<b>CO-04</b>	Understanding and applying the knowledge of Unit 1,2 and 3 in the context of India (OBE level to be achieved –Evaluate)
		<b>CO-01</b>	Enable students to develop a general understanding of the methodology of research in geography (OBE Level: Apply)
		<b>CO-02</b>	Understand the value of Field Work and Primary Data in geographical research (OBE Level: Analyze)
		<b>CO-03</b>	Encourage students to strengthen the need of interdisciplinary research (OBE Level: Apply)
		<b>CO-04</b>	Inculcate the role of Case Study analysis in the methodology of geography (OBE Level: Create)

**LIST of COs for the UG syllabus in English-2023-24**

**FIRST SEMESTER**

Course cos	Name of the Course	Course Outcome
<b>CORE-I</b>	<b>British Poetry and Drama: 14th to 17th Centuries</b>	<p>milestones of 14th to 17th-century British poetry and drama.</p> <p>CO-2: Explain the Renaissance's influence on modern English poetry and drama.</p> <p>CO-3: Analyze and interpret themes and contexts of selected early modern texts.</p> <p>CO-4: Critique and compare the evolution of poetic forms and dramatic structures.</p> <p>CO-5: Evaluate the impact of early modern British poetry and drama on later literary traditions.</p>
<b>CORE-II</b>	<b>British Poetry and Drama: 17th and 18th Century</b>	<p>works from the Jacobean and 18th-century periods of British literature.</p> <p>CO-2: Elucidate the characteristics of acid satire, comedy of humours, and comedy of manners in Jacobean and 18th-century British poetry and drama.</p> <p>CO-3: Scrutinize the themes, literary devices, and social commentary present in representative texts from these periods.</p> <p>CO-4: Compare the stylistic and thematic differences between Jacobean satire and 18th-century satiric poetry.</p> <p>CO-5: Estimate the enduring influence of Jacobean their writing effectively.</p>
<b>GE-I</b>	<b>Academic Writing and Composition</b>	<p>CO-2: Explain the principles of summarizing and paraphrasing, ensuring they can accurately rewrite content in their own words without altering the original meaning.</p> <p>CO-3: Apply critical thinking skills to analyze and synthesize information from various sources, constructing well-argued academic papers.</p> <p>CO-4: Differentiate between various citation styles and evaluate the credibility of sources, applying these techniques in their own academic writing.</p> <p>CO-5: Produce comprehensive book and media reviews, synthesizing their understanding of the content with their critical evaluation skills to generate original, insightful critiques.</p>

<p><b>CORE-III</b></p>	<p><b>British Prose: 18th</b></p>	<p>works from the 18th century.  CO-2: Describe the characteristics of the essay as a literary form and the period's shift from reason to emotion.  CO-3: Explore the themes and rhetorical strategies used in 18th-century British essays.  CO-4: Compare the approaches of different essayists in addressing social, cultural, and philosophical issues.  CO-5: Assess the impact of 18th-century British prose on the development of modern literary forms writing in English from the past century.</p>
<p><b>CORE-IV</b></p>	<p><b>Indian Writing in</b></p>	<p>CO-2: Explain the dual influence of indigenous and foreign perspectives in Indian writing in English.  CO-3: Examine the themes and stylistic features of selected poems, novels, and plays from Indian literature in English.  CO-4: Compare the representation of postcolonial themes across different genres in Indian writing in English.  CO-5: Evaluate the contribution of Indian writing</p>
<p><b>GE-II</b></p>	<p><b>Gender and Human</b></p>	<p>CO-1: Gain an understanding of the historical and social contexts that contribute to inequality and oppression related to caste, race, and gender.  CO-2: Critically analyze how social structures perpetuate discrimination and marginalization based on caste, race, and gender.  CO-3: Evaluate the effectiveness of various human rights frameworks in addressing issues of inequality and oppression.  CO-4: Develop gender sensitivity and awareness, recognizing the importance of inclusivity and equality in societal development.  CO-5: Apply their understanding of gender and human rights to advocate for social justice and equality in diverse contexts.</p>

<b>AECC-II</b>	<b>MIL (Alternative English)</b>	<p>CO-1: Improve their ability to comprehend and analyze diverse prose content, forming a strong foundation for communication skills.</p> <p>CO-2: Expand their vocabulary through targeted language exercises, enhancing their expressive capabilities.</p> <p>CO-3: Develop a solid grasp of grammar, enabling them to use English more accurately and effectively.</p> <p>CO-4: Engage with reading materials critically, improving their ability to interpret and respond to various texts.</p> <p>CO-5: Apply their enhanced reading, vocabulary, and grammar skills to achieve greater fluency and confidence in English communication.</p>
		<b>THIRD SEMESTER</b>
<b>CORE-V</b>	<b>British Romantic</b>	<p>CO-1: Identify key writers and seminal works of the Romantic period.</p> <p>CO-2: Explicate the core ideas of Romanticism, such as return to nature, subjectivity, and personal freedom.</p> <p>CO-3: Probe how Romantic writers expressed their defiance of classicism-imposed restrictions on poetic form.</p> <p>CO-4: Compare the treatment of nature, emotion, and freedom in the works of different Romantic writers.</p> <p>CO-5: Determine the impact of Romanticism on the evolution of literary forms and its lasting influence on modern literature.</p>
<b>CORE-VI</b>	<b>British Literature: 19th Century</b>	<p>CO-1: Identify key authors and works in 19th-century British fiction, cultural criticism, and Victorian poetry.</p> <p>CO-2: Explain the major themes and social issues addressed in 19th-century British literature.</p> <p>CO-3: Examine the narrative techniques and literary styles used in 19th-century British prose and poetry.</p> <p>CO-4: Differentiate the representation of cultural and social concerns in fiction, criticism, and poetry of the Victorian era.</p> <p>CO-5: Estimate the influence of 19th-century British literature on contemporary literary and cultural thought.</p>

CORE-VI	British Literature: Early 20th Century	<p>CO-1: Recognize key modernist writers and their contributions to early 20th-century British literature.</p> <p>CO-2: Describe the defining characteristics of modernism in poetry, novels, and literary criticism.</p> <p>CO-3: Examine the themes and techniques used by modernist writers to convey the complexities of early 20th-century life.</p> <p>CO-4: Contrast the approaches of different modernist authors in their exploration of fragmentation, disillusionment, and innovation in form.</p> <p>CO-5: Assess the impact of modernist literature on the evolution of literary thought and its influence on subsequent literary movements.</p>
GE-III	Nation, Culture, India	<p>CO-1: Gain a foundational understanding of the key concepts and values that shape Indian cultural identity as reflected in literature.</p> <p>CO-2: Analyze how Indian literature reflects and engages with the nation's cultural diversity and historical context.</p> <p>CO-3: Explore the intersections between literature, culture, and other disciplines to appreciate the broader implications of Indian cultural ethos.</p> <p>CO-4: Critically engage with literary texts to examine the portrayal of national and cultural themes in Indian literature.</p> <p>CO-5: Cultivate a culturally informed perspective that enhances their understanding of India's rich literary and</p>
SEC-I	English Communi	<p>CO-1: Develop effective verbal and non-verbal communication skills, enhancing their ability to convey ideas clearly and confidently.</p> <p>CO-2: Improve their writing abilities by learning to structure their thoughts coherently and express them in grammatically correct English.</p> <p>CO-3: Acquire a strong understanding of English grammar, enabling them to write and speak more accurately.</p> <p>CO-4: Learn to edit and revise their written work, refining their writing for clarity, coherence, and correctness.</p> <p>CO-5: Apply their communication, writing, and grammar skills in practical situations, preparing them for professional and academic success.</p>
		<b>FOURTH SEMESTER</b>



<b>CORE-VII</b>	<b>American Literature</b>	<p>CO-1: Highlight key periods, movements, and authors that have shaped American literature into its rich and diverse form.</p> <p>CO-2: Identify prominent authors and their celebrated works that define American Literature.</p> <p>CO-3: Acknowledge and appreciate American texts' aesthetic value and literary merit, highlighting their beauty, significance, and impact.</p> <p>CO-4: Gain insight into the country's values, beliefs, and experiences through poetry.</p> <p>CO-5: Investigate how the pursuit of the American Dream and the devastation of World Wars influenced the national identity and consciousness.</p>
<b>CORE-IX</b>	<b>European Classical Literature</b>	<p>CO-1: Examine the influence of the Greco-Roman world in shaping the course of Western literary tradition.</p> <p>CO-2: Explore the foundational texts, authors, and ideas that shaped European literary history.</p> <p>CO-3: Investigate the central ideas and literary devices employed in ancient European texts.</p> <p>CO-4: Trace the trajectory and metamorphosis of literary genres like tragedy, comedy, and epic poetry.</p> <p>CO-5: Evaluate the lasting legacy of classical luminaries like Sophocles, Homer, and Aristotle on literary development.</p>
<b>CORE-X</b>	<b>Women's Writing</b>	<p>CO-1: Examine the development of women's literary traditions and contributions.</p> <p>CO-2: Consider how women's writing reflects and shapes societal attitudes towards gender, sexuality, and power</p> <p>CO-3: Explore the representation of women's experiences, perspectives, and voices in literature.</p> <p>CO-4: Analyze power relationships and dynamics in women's literature.</p> <p>CO-5: Recognize and appreciate the literary value and significance of seminal works by women.</p>

<b>GE-IV</b>	<b>Language and Linguistics</b>	<p>CO-1: Understand the complexity and nuance of language.</p> <p>CO-2: Gain insight into the multiple facets of linguistic analysis.</p> <p>CO-3: Investigate the linguistic and social outcomes of language adaptation and diversification.</p> <p>CO-4: Examine how language is used in larger units like conversations, texts, and genres to create meaning and achieve social goals.</p> <p>CO-5: Develop linguistic creativity and innovation, highlighting the importance of cultivating original, imaginative, and effective language use.</p>
<b>SEC-II</b>	<b>Soft Skills</b>	<p>CO-1: Understand the core principles of Soft Skills to navigate complex social situations, achieve goals, and succeed in professional life.</p> <p>CO-2: Respond to unexpected events with agility, resilience, and clear communication.</p> <p>CO-3: Enhance communication and interpersonal skills to effectively interact with others, build strong relationships, and convey ideas.</p> <p>CO-4: Embrace continuous learning and self-improvement to establish as a reliable and trustworthy communicator.</p> <p>CO-5: Promote appreciation and inclusivity of diverse perspectives and backgrounds instilling a sense of responsibility and commitment to shared goals.</p>
<b>FIFTH SEMESTER</b>		
<b>CORE-XI</b>	<b>Modern European</b>	<p>CO-1: Trace the development of groundbreaking and avant-garde dramatic literature in Modern Europe.</p> <p>CO-2: Examine the influence of historical events, cultural movements, and intellectual currents on modern dramatic literature.</p> <p>CO-3: Highlight the transformation of the dramatic landscape that paved the way for future dramatic practitioners.</p> <p>CO-4: Explore how various movements and playwrights challenged conventional theatrical forms and themes, leading to innovation and experimentation.</p> <p>CO-5: Analyze non-linear narrative structures and fragmented storytelling in the dramatic works of Ibsen, Ionesco, and Brecht.</p>

<b>CORE-XI</b>	<b>Indian Classical Literature</b>	<p>CO-1: Develop a deeper appreciation for the richness and diversity of Indian literary heritage.</p> <p>CO-2: Understand the cultural, aesthetic, and literary values of Indian classical literature.</p> <p>CO-3: Examine the role of classical literature in shaping Indian identity and tradition.</p> <p>CO-4: Enrich critical thinking and analytical skills in understanding classical literature.</p> <p>CO-5: Analyze the foundational texts of Indian classical literature that shaped Indian thought, art, and culture for centuries</p>
<b>DSE-I</b>	<b>Literary Theory</b>	<p>CO-1: Understand the fundamental concepts and principles of literary theory.</p> <p>CO-2: Explore the historical and cultural contexts of literary movements and theories.</p> <p>CO-3: Cultivate a deeper understanding of the complexities of human experience through literature.</p> <p>CO-4: Investigate the role of power, identity, and ideology in shaping literary texts.</p> <p>CO-5: Engage with diverse perspectives and approaches in literary theory.</p>
<b>DSE-II</b>	<b>World Literature</b>	<p>CO-1: Explore the diversity of human experiences and cultures through literature.</p> <p>CO-2: Highlight the importance of literary works that reflect, shape, and facilitate global perspectives, cultural exchange, and cross-cultural understanding.</p> <p>CO-3: Develop a more inclusive literary appreciation by embracing the diverse voices and experiences of global cultures.</p> <p>CO-4: Enhance a nuanced understanding of the global human experience, emphasizing the importance of balancing appreciation for diversity with recognition of shared humanity.</p> <p>CO-5: Cultivate critical thinking skills in comparative literary</p>

**SIXTH SEMESTER**

<b>CORE-XII</b>	<b>Postcolonial Literature</b>	<p>CO-1: Develop a contextual understanding of colonialism, acknowledging its historical roots, cultural manifestations, and ongoing consequences.</p> <p>CO-2: Examine the intersections between literature, power, and identity in the context of colonialism, imperialism, and decolonization.</p> <p>CO-3: Investigate the role of literature in resisting, subverting, and challenging colonial power dynamics.</p> <p>CO-4: Cultivate empathy and understanding of diverse postcolonial experiences and perspectives.</p> <p>CO-5: Enrich critical thinking skills in evaluating the complexities of colonial and postcolonial experiences.</p>	
<b>CORE-IV</b>	<b>Popular Literature</b>	<p>CO-1: Study the historical and cultural context of popular literature</p> <p>CO-2: Recognize the widespread influence and far-reaching consequences of popular literature on a global scale.</p> <p>CO-3: Analyze the representation of power dynamics and social hierarchies in popular literature.</p> <p>CO-4: Examine the representation of diversity, inclusivity, and social justice in popular literature.</p> <p>CO-5: Develop critical thinking skills in evaluating the literary merit and cultural value of popular literature.</p>	
<b>DSE-III</b>	<b>Partition Literature</b>	<p>CO-1: Understand the profound historical significance and enduring impact of the Partition.</p> <p>CO-2: Investigate the role of Partition literature in shaping national and cultural narratives.</p> <p>CO-3: Cultivate empathy and understanding of the human experiences and emotions expressed in Partition literature.</p> <p>CO-4: Understand the role of Partition literature in shaping cultural memory and heritage.</p> <p>CO-5: Develop critical thinking skills in evaluating the complexities of Partition and its aftermath.</p>	

<b>DSE-IV</b>	<b>Dissertation/Research Project</b>	CO-1: Conduct original research that contributes to the field of study. CO-2: Demonstrate the ability to communicate complex research findings effectively. CO-3: Develop and apply theoretical frameworks to literary analysis. CO-4: Contribute to the ongoing scholarly conversation about literary works and their significance. CO-5: Enrich and refine critical thinking, close reading, and analytical skills.
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**LIST of COs for the UG syllabus in English-2022-23**

**FIRST SEMESTER**

Course code	Name of the Course	Course Outcome
<b>CORE-I</b>	<b>British Poetry and Drama: 14th to 17th Centuries</b>	<p>British poetry and drama.</p> <p>CO-2: Explain the Renaissance's influence on modern English poetry and drama.</p> <p>CO-3: Analyze and interpret themes and contexts of selected early modern texts.</p> <p>CO-4: Critique and compare the evolution of poetic forms and dramatic structures.</p> <p>CO-5: Evaluate the impact of early modern British poetry and drama on later literary traditions.</p>
<b>CORE-II</b>	<b>British Poetry and Drama: 17th and 18th Century</b>	<p>works from the Jacobean and 18th-century periods of British literature.</p> <p>CO-2: Elucidate the characteristics of acid satire, comedy of humours, and comedy of manners in Jacobean and 18th-century British poetry and drama.</p> <p>CO-3: Scrutinize the themes, literary devices, and social commentary present in representative texts from these periods.</p> <p>CO-4: Compare the stylistic and thematic differences between Jacobean satire and 18th-century satiric poetry.</p> <p>CO-5: Estimate the enduring influence of Jacobean and 18th-century satirical poetry</p>
<b>GE-I</b>	<b>Academic Writing and Composition</b>	<p>academic writing process, enabling them to outline and plan their writing effectively.</p> <p>CO-2: Explain the principles of summarizing and paraphrasing, ensuring they can accurately rewrite content in their own words without altering the original meaning.</p> <p>CO-3: Apply critical thinking skills to analyze and synthesize information from various sources, constructing well-argued academic papers.</p> <p>CO-4: Differentiate between various citation styles and evaluate the credibility of sources, applying these techniques in their own academic writing.</p> <p>CO-5: Produce comprehensive book and media reviews, synthesizing their understanding of the content with their</p>

<b>CORE-III</b>	<b>British Prose: 1</b>	<p>influential works from the 18th century.</p> <p>CO-2: Describe the characteristics of the essay as a literary form and the period's shift from reason to emotion.</p> <p>CO-3: Explore the themes and rhetorical strategies used in 18th-century British essays.</p> <p>CO-4: Compare the approaches of different essayists in addressing social, cultural, and philosophical issues.</p> <p>CO-5: Assess the impact of 18th-century British prose on the development of modern writing in English from the past century.</p>
<b>CORE-IV</b>	<b>Indian Writing</b>	<p>CO-2: Explain the dual influence of indigenous and foreign perspectives in Indian writing in English.</p> <p>CO-3: Examine the themes and stylistic features of selected poems, novels, and plays from Indian literature in English.</p> <p>CO-4: Compare the representation of postcolonial themes across different genres in Indian writing in English.</p> <p>CO-5: Evaluate the contribution of Indian writing in English to global literature and its</p>
<b>GE-II</b>	<b>Gender and Hu</b>	<p>contexts that contribute to inequality and oppression related to caste, race, and gender.</p> <p>CO-2: Critically analyze how social structures perpetuate discrimination and marginalization based on caste, race, and gender.</p> <p>CO-3: Evaluate the effectiveness of various human rights frameworks in addressing issues of inequality and oppression.</p> <p>CO-4: Develop gender sensitivity and awareness, recognizing the importance of inclusivity and equality in societal development.</p> <p>CO-5: Apply their understanding of gender and human rights to advocate for social justice and equality in diverse contexts.</p>

<b>AECC-II</b>	<b>MIL (Alternative English)</b>	<p>CO-1: Improve their ability to comprehend and analyze diverse prose content, forming a strong foundation for communication skills.</p> <p>CO-2: Expand their vocabulary through targeted language exercises, enhancing their expressive capabilities.</p> <p>CO-3: Develop a solid grasp of grammar, enabling them to use English more accurately and effectively.</p> <p>CO-4: Engage with reading materials critically, improving their ability to interpret and respond to various texts.</p> <p>CO-5: Apply their enhanced reading, vocabulary, and grammar skills to achieve greater fluency and confidence in English communication.</p>
<b>THIRD SEMESTER</b>		
<b>CORE-V</b>	<b>British Romantic</b>	<p>Romantic period.</p> <p>CO-2: Explicate the core ideas of Romanticism, such as return to nature, subjectivity, and personal freedom.</p> <p>CO-3: Probe how Romantic writers expressed their defiance of classicism-imposed restrictions on poetic form.</p> <p>CO-4: Compare the treatment of nature, emotion, and freedom in the works of different Romantic writers.</p> <p>CO-5: Determine the impact of Romanticism on the evolution of literary forms and its lasting influence on modern literature.</p>
<b>CORE-VI</b>	<b>British Literature: 19th Century</b>	<p>British fiction, cultural criticism, and Victorian poetry.</p> <p>CO-2: Explain the major themes and social issues addressed in 19th-century British literature.</p> <p>CO-3: Examine the narrative techniques and literary styles used in 19th-century British prose and poetry.</p> <p>CO-4: Differentiate the representation of cultural and social concerns in fiction, criticism, and poetry of the Victorian era.</p> <p>CO-5: Estimate the influence of 19th-century British literature on contemporary literary and cultural thought.</p>



<b>CORE-VII</b>	<b>British Literature: Early 20th Century</b>	<p>CO-1: Recognize key modernist writers and their contributions to early 20th-century British literature.</p> <p>CO-2: Describe the defining characteristics of modernism in poetry, novels, and literary criticism.</p> <p>CO-3: Examine the themes and techniques used by modernist writers to convey the complexities of early 20th-century life.</p> <p>CO-4: Contrast the approaches of different modernist authors in their exploration of fragmentation, disillusionment, and innovation in form.</p> <p>CO-5: Assess the impact of modernist literature on the evolution of literary thought and its influence on subsequent literary movements.</p>
<b>GE-III</b>	<b>Nation, Culture, India</b>	<p>concepts and values that shape Indian cultural identity as reflected in literature.</p> <p>CO-2: Analyze how Indian literature reflects and engages with the nation's cultural diversity and historical context.</p> <p>CO-3: Explore the intersections between literature, culture, and other disciplines to appreciate the broader implications of Indian cultural ethos.</p> <p>CO-4: Critically engage with literary texts to examine the portrayal of national and cultural themes in Indian literature.</p> <p>CO-5: Cultivate a culturally informed perspective that enhances their understanding of India's rich literary and cultural heritage.</p>
<b>SEC-I</b>	<b>English Comm</b>	<p>CO-1: Develop effective verbal and non-verbal communication skills, enhancing their ability to convey ideas clearly and confidently.</p> <p>CO-2: Improve their writing abilities by learning to structure their thoughts coherently and express them in grammatically correct English.</p> <p>CO-3: Acquire a strong understanding of English grammar, enabling them to write and speak more accurately.</p>
		<b>FOURTH SEMESTER</b>

<b>CORE-VII</b>	<b>American Literature</b>	<p>CO-1: Highlight key periods, movements, and authors that have shaped American literature into its rich and diverse form.</p> <p>CO-2: Identify prominent authors and their celebrated works that define American Literature.</p> <p>CO-3: Acknowledge and appreciate American texts' aesthetic value and literary merit, highlighting their beauty, significance, and impact.</p> <p>CO-4: Gain insight into the country's values, beliefs, and experiences through poetry.</p> <p>CO-5: Investigate how the pursuit of the American Dream and the devastation of World Wars influenced the national identity and consciousness.</p>
<b>CORE-IX</b>	<b>European Classical Literature</b>	<p>CO-1: Examine the influence of the Greco-Roman world in shaping the course of Western literary tradition.</p> <p>CO-2: Explore the foundational texts, authors, and ideas that shaped European literary history.</p> <p>CO-3: Investigate the central ideas and literary devices employed in ancient European texts.</p> <p>CO-4: Trace the trajectory and metamorphosis of literary genres like tragedy, comedy, and epic poetry.</p> <p>CO-5: Evaluate the lasting legacy of classical luminaries like Sophocles, Homer, and Aristotle on literary development.</p>
<b>CORE-X</b>	<b>Women's Writing</b>	<p>CO-1: Examine the development of women's literary traditions and contributions.</p> <p>CO-2: Consider how women's writing reflects and shapes societal attitudes towards gender, sexuality, and power</p> <p>CO-3: Explore the representation of women's experiences, perspectives, and voices in literature.</p> <p>CO-4: Analyze power relationships and dynamics in women's literature.</p> <p>CO-5: Recognize and appreciate the literary value and significance of seminal works by women.</p>

<b>GE-IV</b>	<b>Language and Linguistics</b>	<p>language.</p> <p>CO-2: Gain insight into the multiple facets of linguistic analysis.</p> <p>CO-3: Investigate the linguistic and social outcomes of language adaptation and diversification.</p> <p>CO-4: Examine how language is used in larger units like conversations, texts, and genres to create meaning and achieve social goals.</p> <p>CO-5: Develop linguistic creativity and innovation, highlighting the importance of cultivating original, imaginative, and effective language use.</p>
<b>SEC-II</b>	<b>Soft Skills</b>	<p>CO-1: Understand the core principles of Soft Skills to navigate complex social situations, achieve goals, and succeed in professional life.</p> <p>CO-2: Respond to unexpected events with agility, resilience, and clear communication.</p> <p>CO-3: Enhance communication and interpersonal skills to effectively interact with others, build strong relationships, and convey ideas.</p> <p>CO-4: Embrace continuous learning and self-improvement to establish as a reliable and trustworthy communicator.</p> <p>CO-5: Promote appreciation and inclusivity of diverse perspectives and backgrounds instilling a sense of responsibility and commitment to shared goals.</p>
<b>FIFTH SEMESTER</b>		
<b>CORE-XI</b>	<b>Modern Europe</b>	<p>avant-garde dramatic literature in Modern Europe.</p> <p>CO-2: Examine the influence of historical events, cultural movements, and intellectual currents on modern dramatic literature.</p> <p>CO-3: Highlight the transformation of the dramatic landscape that paved the way for future dramatic practitioners.</p> <p>CO-4: Explore how various movements and playwrights challenged conventional theatrical forms and themes, leading to innovation and experimentation.</p> <p>CO-5: Analyze non-linear narrative structures and fragmented storytelling in the dramatic works of Ibsen, Ionesco, and Brecht.</p>

<b>CORE-XII</b>	<b>Indian Classical Literature</b>	<p>CO-1: Develop a deeper appreciation for the richness and diversity of Indian literary heritage.</p> <p>CO-2: Understand the cultural, aesthetic, and literary values of Indian classical literature.</p> <p>CO-3: Examine the role of classical literature in shaping Indian identity and tradition.</p> <p>CO-4: Enrich critical thinking and analytical skills in understanding classical literature.</p> <p>CO-5: Analyze the foundational texts of Indian classical literature that shaped Indian thought, art, and culture for centuries</p>
<b>DSE-I</b>	<b>Literary Theor</b>	<p>CO-1: Understand the fundamental concepts and principles of literary theory.</p> <p>CO-2: Explore the historical and cultural contexts of literary movements and theories.</p> <p>CO-3: Cultivate a deeper understanding of the complexities of human experience through literature.</p> <p>CO-4: Investigate the role of power, identity, and ideology in shaping literary texts.</p> <p>CO-5: Engage with diverse perspectives and approaches in literary theory.</p>
<b>DSE-II</b>	<b>World Literature</b>	<p>CO-1: Explore the diversity of human experiences and cultures through literature.</p> <p>CO-2: Highlight the importance of literary works that reflect, shape, and facilitate global perspectives, cultural exchange, and cross-cultural understanding.</p> <p>CO-3: Develop a more inclusive literary appreciation by embracing the diverse voices and experiences of global cultures.</p> <p>CO-4: Enhance a nuanced understanding of the global human experience, emphasizing the importance of balancing appreciation for diversity with recognition of shared humanity.</p> <p>CO-5: Cultivate critical thinking skills in comparative literary analysis across languages and cultures</p>

**SIXTH SEMESTER**

<b>CORE-XII</b>	<b>Postcolonial Literature</b>	<p>CO-1: Develop a contextual understanding of colonialism, acknowledging its historical roots, cultural manifestations, and ongoing consequences.</p> <p>CO-2: Examine the intersections between literature, power, and identity in the context of colonialism, imperialism, and decolonization.</p> <p>CO-3: Investigate the role of literature in resisting, subverting, and challenging colonial power dynamics.</p> <p>CO-4: Cultivate empathy and understanding of diverse postcolonial experiences and perspectives.</p> <p>CO-5: Enrich critical thinking skills in evaluating the complexities of colonial and postcolonial experiences.</p>
<b>CORE-IV</b>	<b>Popular Literature</b>	<p>CO-1: Study the historical and cultural context of popular literature</p> <p>CO-2: Recognize the widespread influence and far-reaching consequences of popular literature on a global scale.</p> <p>CO-3: Analyze the representation of power dynamics and social hierarchies in popular literature.</p> <p>CO-4: Examine the representation of diversity, inclusivity, and social justice in popular literature.</p> <p>CO-5: Develop critical thinking skills in evaluating the literary merit and cultural value of popular literature.</p>
<b>DSE-III</b>	<b>Partition Literature</b>	<p>CO-1: Understand the profound historical significance and enduring impact of the Partition.</p> <p>CO-2: Investigate the role of Partition literature in shaping national and cultural narratives.</p> <p>CO-3: Cultivate empathy and understanding of the human experiences and emotions expressed in Partition literature.</p> <p>CO-4: Understand the role of Partition literature in shaping cultural memory and heritage.</p> <p>CO-5: Develop critical thinking skills in evaluating the complexities of Partition and its aftermath.</p>

<b>DSE-IV</b>	<b>Dissertation/Research Project</b>	CO-1: Conduct original research that contributes to the field of study. CO-2: Demonstrate the ability to communicate complex research findings effectively. CO-3: Develop and apply theoretical frameworks to literary analysis. CO-4: Contribute to the ongoing scholarly conversation about literary works and their significance. CO-5: Enrich and refine critical thinking, close reading, and analytical skills.
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**LIST of COs for the UG syllabus in English-2021-22**

**FIRST SEMESTER**

Course code	Name of the Course	Course Outcome
<b>CORE-I</b>	<b>British Poetry and Drama: 14th to 17th Centuries</b>	<p>poetry and drama.</p> <p>CO-2: Explain the Renaissance's influence on modern English poetry and drama.</p> <p>CO-3: Analyze and interpret themes and contexts of selected early modern texts.</p> <p>CO-4: Critique and compare the evolution of poetic forms and dramatic structures.</p> <p>CO-5: Evaluate the impact of early modern British poetry and drama on later literary traditions.</p>
<b>CORE-II</b>	<b>British Poetry and Drama: 17th and 18th Century</b>	<p>works from the Jacobean and 18th-century periods of British literature.</p> <p>CO-2: Elucidate the characteristics of acid satire, comedy of humours, and comedy of manners in Jacobean and 18th-century British poetry and drama.</p> <p>CO-3: Scrutinize the themes, literary devices, and social commentary present in representative texts from these periods.</p> <p>CO-4: Compare the stylistic and thematic differences between Jacobean satire and 18th-century satiric poetry.</p> <p>CO-5: Estimate the enduring influence of</p>
<b>GE-I</b>	<b>Academic Writing and Composition</b>	<p>academic writing process, enabling them to outline and plan their writing effectively.</p> <p>CO-2: Explain the principles of summarizing and paraphrasing, ensuring they can accurately rewrite content in their own words without altering the original meaning.</p> <p>CO-3: Apply critical thinking skills to analyze and synthesize information from various sources, constructing well-argued academic papers.</p> <p>CO-4: Differentiate between various citation styles and evaluate the credibility of sources, applying these techniques in their own academic writing.</p> <p>CO-5: Produce comprehensive book and media reviews, synthesizing their understanding of</p>

<p><b>CORE-III</b></p>	<p><b>British Prose: 18</b></p>	<p>influential works from the 18th century.  CO-2: Describe the characteristics of the essay as a literary form and the period's shift from reason to emotion.  CO-3: Explore the themes and rhetorical strategies used in 18th-century British essays.  CO-4: Compare the approaches of different essayists in addressing social, cultural, and philosophical issues.  CO-5: Assess the impact of 18th-century British prose on the development of modern writing in English from the past century.</p>
<p><b>CORE-IV</b></p>	<p><b>Indian Writing in</b></p>	<p>CO-2: Explain the dual influence of indigenous and foreign perspectives in Indian writing in English.  CO-3: Examine the themes and stylistic features of selected poems, novels, and plays from Indian literature in English.  CO-4: Compare the representation of postcolonial themes across different genres in Indian writing in English.  CO-5: Evaluate the contribution of Indian</p>
<p><b>GE-II</b></p>	<p><b>Gender and Human</b></p>	<p>CO-1: Gain an understanding of the historical and social contexts that contribute to inequality and oppression related to caste, race, and gender.  CO-2: Critically analyze how social structures perpetuate discrimination and marginalization based on caste, race, and gender.  CO-3: Evaluate the effectiveness of various human rights frameworks in addressing issues of inequality and oppression.  CO-4: Develop gender sensitivity and awareness, recognizing the importance of inclusivity and equality in societal development.  CO-5: Apply their understanding of gender and human rights to advocate for social justice and equality in diverse</p>
<p><b>AECC-II</b></p>	<p><b>MIL (Alternative English)</b></p>	<p>CO-1: Improve their ability to comprehend and analyze diverse prose content, forming a strong foundation for communication skills.  CO-2: Expand their vocabulary through targeted language exercises, enhancing their expressive capabilities.  CO-3: Develop a solid grasp of grammar, enabling them to use English more accurately and effectively.  CO-4: Engage with reading materials critically, improving their ability to interpret and respond to various texts.  CO-5: Apply their enhanced reading, vocabulary, and grammar skills to achieve greater fluency and confidence in English communication.</p>



		<b>THIRD SEMESTER</b>
<b>CORE-V</b>	<b>British Romantic</b>	<p>CO-1: Identify key writers and seminal works of the Romantic period.</p> <p>CO-2: Explicate the core ideas of Romanticism, such as return to nature, subjectivity, and personal freedom.</p> <p>CO-3: Probe how Romantic writers expressed their defiance of classicism-imposed restrictions on poetic form.</p> <p>CO-4: Compare the treatment of nature, emotion, and freedom in the works of different Romantic writers.</p> <p>CO-5: Determine the impact of Romanticism on the evolution of literary forms and its lasting influence on modern literature.</p>
<b>CORE-VI</b>	<b>British Literature: 19th Century</b>	<p>British fiction, cultural criticism, and Victorian poetry.</p> <p>CO-2: Explain the major themes and social issues addressed in 19th-century British literature.</p> <p>CO-3: Examine the narrative techniques and literary styles used in 19th-century British prose and poetry.</p> <p>CO-4: Differentiate the representation of cultural and social concerns in fiction, criticism, and poetry of the Victorian era.</p> <p>CO-5: Estimate the influence of 19th-century British literature on contemporary literary and cultural thought.</p>
<b>CORE-VII</b>	<b>British Literature: Early 20th Century</b>	<p>CO-1: Recognize key modernist writers and their contributions to early 20th-century British literature.</p> <p>CO-2: Describe the defining characteristics of modernism in poetry, novels, and literary criticism.</p> <p>CO-3: Examine the themes and techniques used by modernist writers to convey the complexities of early 20th-century life.</p> <p>CO-4: Contrast the approaches of different modernist authors in their exploration of fragmentation, disillusionment, and innovation in form.</p> <p>CO-5: Assess the impact of modernist literature on the evolution of literary thought and its influence on subsequent literary movements.</p>

<b>GE-III</b>	<b>Nation, Culture, India</b>	<p>CO-1: Gain a foundational understanding of the key concepts and values that shape Indian cultural identity as reflected in literature.</p> <p>CO-2: Analyze how Indian literature reflects and engages with the nation's cultural diversity and historical context.</p> <p>CO-3: Explore the intersections between literature, culture, and other disciplines to appreciate the broader implications of Indian cultural ethos.</p> <p>CO-4: Critically engage with literary texts to examine the portrayal of national and cultural themes in Indian literature.</p> <p>CO-5: Cultivate a culturally informed perspective that enhances their understanding of India's rich literary and</p>
<b>SEC-I</b>	<b>English Commu</b>	<p>CO-1: Develop effective verbal and non-verbal communication skills, enhancing their ability to convey ideas clearly and confidently.</p> <p>CO-2: Improve their writing abilities by learning to structure their thoughts coherently and express them in grammatically correct English.</p> <p>CO-3: Acquire a strong understanding of English grammar, enabling them to write and speak more accurately.</p> <p>CO-4: Learn to edit and revise their written work, refining their writing for clarity, coherence, and correctness.</p> <p>CO-5: Apply their communication, writing, and grammar skills in practical situations, preparing them for professional and academic success.</p>
		<b>FOURTH SEMESTER</b>
<b>CORE-VIII</b>	<b>merican Literatu</b>	<p>CO-1: Highlight key periods, movements, and authors that have shaped American literature into its rich and diverse form.</p> <p>CO-2: Identify prominent authors and their celebrated works that define American Literature.</p> <p>CO-3: Acknowledge and appreciate American texts' aesthetic value and literary merit, highlighting their beauty, significance, and impact.</p> <p>CO-4: Gain insight into the country's values, beliefs, and experiences through poetry.</p> <p>CO-5: Investigate how the pursuit of the American Dream and the devastation of World Wars influenced the national identity and consciousness.</p>

<b>CORE-IX</b>	<b>European Classical Literature</b>	<p>CO-1: Examine the influence of the Greco-Roman world in shaping the course of Western literary tradition.</p> <p>CO-2: Explore the foundational texts, authors, and ideas that shaped European literary history.</p> <p>CO-3: Investigate the central ideas and literary devices employed in ancient European texts.</p> <p>CO-4: Trace the trajectory and metamorphosis of literary genres like tragedy, comedy, and epic poetry.</p> <p>CO-5: Evaluate the lasting legacy of classical luminaries like Sophocles, Homer, and Aristotle on literary development.</p>
<b>CORE-X</b>	<b>Women's Writing</b>	<p>CO-1: Examine the development of women's literary traditions and contributions.</p> <p>CO-2: Consider how women's writing reflects and shapes societal attitudes towards gender, sexuality, and power</p> <p>CO-3: Explore the representation of women's experiences, perspectives, and voices in literature.</p> <p>CO-4: Analyze power relationships and dynamics in women's literature.</p> <p>CO-5: Recognize and appreciate the literary value and significance of seminal works by women.</p>
<b>GE-IV</b>	<b>Language and Linguistics</b>	<p>CO-1: Understand the complexity and nuance of language.</p> <p>CO-2: Gain insight into the multiple facets of linguistic analysis.</p> <p>CO-3: Investigate the linguistic and social outcomes of language adaptation and diversification.</p> <p>CO-4: Examine how language is used in larger units like conversations, texts, and genres to create meaning and achieve social goals.</p> <p>CO-5: Develop linguistic creativity and innovation, highlighting the importance of cultivating original, imaginative, and effective language use.</p>

<b>SEC-II</b>	<b>Soft Skills</b>	<p>CO-1: Understand the core principles of Soft Skills to navigate complex social situations, achieve goals, and succeed in professional life.</p> <p>CO-2: Respond to unexpected events with agility, resilience, and clear communication.</p> <p>CO-3: Enhance communication and interpersonal skills to effectively interact with others, build strong relationships, and convey ideas.</p> <p>CO-4: Embrace continuous learning and self-improvement to establish as a reliable and trustworthy communicator.</p> <p>CO-5: Promote appreciation and inclusivity of diverse perspectives and backgrounds instilling a sense of responsibility and commitment to shared goals.</p>
<b>FIFTH SEMESTER</b>		
<b>CORE-XI</b>	<b>Modern European</b>	<p>garde dramatic literature in Modern Europe.</p> <p>CO-2: Examine the influence of historical events, cultural movements, and intellectual currents on modern dramatic literature.</p> <p>CO-3: Highlight the transformation of the dramatic landscape that paved the way for future dramatic practitioners.</p> <p>CO-4: Explore how various movements and playwrights challenged conventional theatrical forms and themes, leading to innovation and experimentation.</p> <p>CO-5: Analyze non-linear narrative structures and fragmented storytelling in the dramatic works of Ibsen, Ionesco, and Brecht.</p>
<b>CORE-XII</b>	<b>Indian Classical Literature</b>	<p>CO-1: Develop a deeper appreciation for the richness and diversity of Indian literary heritage.</p> <p>CO-2: Understand the cultural, aesthetic, and literary values of Indian classical literature.</p> <p>CO-3: Examine the role of classical literature in shaping Indian identity and tradition.</p> <p>CO-4: Enrich critical thinking and analytical skills in understanding classical literature.</p> <p>CO-5: Analyze the foundational texts of Indian classical literature that shaped Indian thought, art, and culture for centuries</p>

<b>DSE-I</b>	<b>Literary Theory</b>	<p>CO-1: Understand the fundamental concepts and principles of literary theory.</p> <p>CO-2: Explore the historical and cultural contexts of literary movements and theories.</p> <p>CO-3: Cultivate a deeper understanding of the complexities of human experience through literature.</p> <p>CO-4: Investigate the role of power, identity, and ideology in shaping literary texts.</p> <p>CO-5: Engage with diverse perspectives and approaches in literary theory.</p>
<b>DSE-II</b>	<b>World Literature</b>	<p>CO-1: Explore the diversity of human experiences and cultures through literature.</p> <p>CO-2: Highlight the importance of literary works that reflect, shape, and facilitate global perspectives, cultural exchange, and cross-cultural understanding.</p> <p>CO-3: Develop a more inclusive literary appreciation by embracing the diverse voices and experiences of global cultures.</p> <p>CO-4: Enhance a nuanced understanding of the global human experience, emphasizing the importance of balancing appreciation for diversity with recognition of shared humanity.</p> <p>CO-5: Cultivate critical thinking skills in comparative</p>
<b>SIXTH SEMESTER</b>		
<b>CORE-XIII</b>	<b>Postcolonial Literature</b>	<p>CO-1: Develop a contextual understanding of colonialism, acknowledging its historical roots, cultural manifestations, and ongoing consequences.</p> <p>CO-2: Examine the intersections between literature, power, and identity in the context of colonialism, imperialism, and decolonization.</p> <p>CO-3: Investigate the role of literature in resisting, subverting, and challenging colonial power dynamics.</p> <p>CO-4: Cultivate empathy and understanding of diverse postcolonial experiences and perspectives.</p> <p>CO-5: Enrich critical thinking skills in evaluating the complexities of colonial and postcolonial experiences.</p>

<p><b>CORE-IV</b></p>	<p><b>Popular Literature</b></p>	<p>CO-1: Study the historical and cultural context of popular literature</p> <p>CO-2: Recognize the widespread influence and far-reaching consequences of popular literature on a global scale.</p> <p>CO-3: Analyze the representation of power dynamics and social hierarchies in popular literature.</p> <p>CO-4: Examine the representation of diversity, inclusivity, and social justice in popular literature.</p> <p>CO-5: Develop critical thinking skills in evaluating the</p>
<p><b>DSE-III</b></p>	<p><b>Partition Literature</b></p>	<p>CO-1: Understand the profound historical significance and enduring impact of the Partition.</p> <p>CO-2: Investigate the role of Partition literature in shaping national and cultural narratives.</p> <p>CO-3: Cultivate empathy and understanding of the human experiences and emotions expressed in Partition literature.</p> <p>CO-4: Understand the role of Partition literature in shaping cultural memory and heritage.</p> <p>CO-5: Develop critical thinking skills in evaluating the complexities of Partition and its aftermath.</p>
<p><b>DSE-IV</b></p>	<p><b>Dissertation/Research Project</b></p>	<p>CO-1: Conduct original research that contributes to the field of study.</p> <p>CO-2: Demonstrate the ability to communicate complex research findings effectively.</p> <p>CO-3: Develop and apply theoretical frameworks to literary analysis.</p> <p>CO-4: Contribute to the ongoing scholarly conversation about literary works and their significance.</p> <p>CO-5: Enrich and refine critical thinking, close reading, and analytical skills.</p>

**LIST of COs for the UG syllabus in English-2020-21**

**FIRST SEMESTER**

Course code	Name of the Course	Course Outcome
<b>CORE-I</b>	<b>British Poetry and Drama: 14th to 17th Centuries</b>	<p>historical milestones of 14th to 17th-century British poetry and drama.</p> <p>CO-2: Explain the Renaissance's influence on modern English poetry and drama.</p> <p>CO-3: Analyze and interpret themes and contexts of selected early modern texts.</p> <p>CO-4: Critique and compare the evolution of poetic forms and dramatic structures.</p> <p>CO-5: Evaluate the impact of early playwrights, and works from the Jacobean and 18th-century periods of British literature.</p>
<b>CORE-II</b>	<b>British Poetry and Drama: 17th and 18th Century</b>	<p>CO-2: Elucidate the characteristics of acid satire, comedy of humours, and comedy of manners in Jacobean and 18th-century British poetry and drama.</p> <p>CO-3: Scrutinize the themes, literary devices, and social commentary present in representative texts from these periods.</p> <p>CO-4: Compare the stylistic and thematic differences between Jacobean academic writing process, enabling them to outline and plan their writing effectively.</p>
<b>GE-I</b>	<b>Academic Writing and Composition</b>	<p>CO-2: Explain the principles of summarizing and paraphrasing, ensuring they can accurately rewrite content in their own words without altering the original meaning.</p> <p>CO-3: Apply critical thinking skills to analyze and synthesize information from various sources, constructing well-argued academic papers.</p> <p>CO-4: Differentiate between various citation styles and evaluate the credibility of sources, applying these techniques in their own academic</p>

<p><b>CORE-III</b></p>	<p><b>British Prose: 18th</b></p>	<p>influential works from the 18th century.  CO-2: Describe the characteristics of the essay as a literary form and the period's shift from reason to emotion.  CO-3: Explore the themes and rhetorical strategies used in 18th-century British essays.  CO-4: Compare the approaches of different essayists in addressing social, cultural, and philosophical issues.  CO-5: Assess the impact of 18th-</p>
<p><b>CORE-IV</b></p>	<p><b>Indian Writing in</b></p>	<p>Indian writing in English from the past century.  CO-2: Explain the dual influence of indigenous and foreign perspectives in Indian writing in English.  CO-3: Examine the themes and stylistic features of selected poems, novels, and plays from Indian literature in English.  CO-4: Compare the representation of postcolonial themes across different genres in Indian writing in English.</p>
<p><b>GE-II</b></p>	<p><b>Gender and Human</b></p>	<p>CO-1: Gain an understanding of the historical and social contexts that contribute to inequality and oppression related to caste, race, and gender.  CO-2: Critically analyze how social structures perpetuate discrimination and marginalization based on caste, race, and gender.  CO-3: Evaluate the effectiveness of various human rights frameworks in addressing issues of inequality and oppression.  CO-4: Develop gender sensitivity and awareness, recognizing the importance of inclusivity and equality in societal development.  CO-5: Apply their understanding of gender and human rights to advocate for social justice and</p>
<p><b>AECC-II</b></p>	<p><b>MIL (Alternative English)</b></p>	<p>analyze diverse prose content, forming a strong foundation for communication skills.  CO-2: Expand their vocabulary through targeted language exercises, enhancing their expressive capabilities.  CO-3: Develop a solid grasp of grammar, enabling them to use English more accurately and effectively.  CO-4: Engage with reading materials critically, improving their ability to interpret and respond to various texts.  CO-5: Apply their enhanced reading, vocabulary, and grammar skills to achieve greater fluency and</p>



		<b>THIRD SEMESTER</b>
<b>CORE-V</b>	<b>British Romantic</b>	<p>CO-1: Identify key writers and seminal works of the Romantic period.</p> <p>CO-2: Explicate the core ideas of Romanticism, such as return to nature, subjectivity, and personal freedom.</p> <p>CO-3: Probe how Romantic writers expressed their defiance of classicism-imposed restrictions on poetic form.</p> <p>CO-4: Compare the treatment of nature, emotion, and freedom in the works of different Romantic writers.</p> <p>CO-5: Determine the impact of Romanticism on</p>
<b>CORE-VI</b>	<b>British Literature: 19th Century</b>	<p>century British fiction, cultural criticism, and Victorian poetry.</p> <p>CO-2: Explain the major themes and social issues addressed in 19th-century British literature.</p> <p>CO-3: Examine the narrative techniques and literary styles used in 19th-century British prose and poetry.</p> <p>CO-4: Differentiate the representation of cultural and social concerns in fiction, criticism, and poetry of the Victorian era.</p> <p>CO-5: Estimate the influence of 19th-century British literature on contemporary literary and</p>
<b>CORE-VII</b>	<b>British Literature: Early 20th Century</b>	<p>CO-1: Recognize key modernist writers and their contributions to early 20th-century British literature.</p> <p>CO-2: Describe the defining characteristics of modernism in poetry, novels, and literary criticism.</p> <p>CO-3: Examine the themes and techniques used by modernist writers to convey the complexities of early 20th-century life.</p> <p>CO-4: Contrast the approaches of different modernist authors in their exploration of fragmentation, disillusionment, and innovation in form.</p> <p>CO-5: Assess the impact of modernist literature on the evolution of literary thought and its influence on subsequent literary movements.</p>

<b>GE-III</b>	<b>Nation, Culture, India</b>	<p>CO-1: Gain a foundational understanding of the key concepts and values that shape Indian cultural identity as reflected in literature.</p> <p>CO-2: Analyze how Indian literature reflects and engages with the nation's cultural diversity and historical context.</p> <p>CO-3: Explore the intersections between literature, culture, and other disciplines to appreciate the broader implications of Indian cultural ethos.</p> <p>CO-4: Critically engage with literary texts to examine the portrayal of national and cultural themes in Indian literature.</p> <p>CO-5: Cultivate a culturally informed perspective</p>
<b>SEC-I</b>	<b>English Communi</b>	<p>convey ideas clearly and confidently.</p> <p>CO-2: Improve their writing abilities by learning to structure their thoughts coherently and express them in grammatically correct English.</p> <p>CO-3: Acquire a strong understanding of English grammar, enabling them to write and speak more accurately.</p> <p>CO-4: Learn to edit and revise their written work, refining their writing for clarity, coherence, and correctness.</p> <p>CO-5: Apply their communication, writing, and grammar skills in practical situations, preparing them for professional and academic success.</p>
		<b>FOURTH SEMESTER</b>
<b>CORE-VIII</b>	<b>American Literatu</b>	<p>CO-1: Highlight key periods, movements, and authors that have shaped American literature into its rich and diverse form.</p> <p>CO-2: Identify prominent authors and their celebrated works that define American Literature.</p> <p>CO-3: Acknowledge and appreciate American texts' aesthetic value and literary merit, highlighting their beauty, significance, and impact.</p> <p>CO-4: Gain insight into the country's values, beliefs, and experiences through poetry.</p> <p>CO-5: Investigate how the pursuit of the American Dream and the devastation of World Wars influenced the national identity and consciousness.</p>

<b>CORE-IX</b>	<b>European Classical Literature</b>	<p>CO-1: Examine the influence of the Greco-Roman world in shaping the course of Western literary tradition.</p> <p>CO-2: Explore the foundational texts, authors, and ideas that shaped European literary history.</p> <p>CO-3: Investigate the central ideas and literary devices employed in ancient European texts.</p> <p>CO-4: Trace the trajectory and metamorphosis of literary genres like tragedy, comedy, and epic poetry.</p> <p>CO-5: Evaluate the lasting legacy of classical luminaries like Sophocles, Homer, and Aristotle on</p>
<b>CORE-X</b>	<b>Women's Writing</b>	<p>CO-1: Examine the development of women's literary traditions and contributions.</p> <p>CO-2: Consider how women's writing reflects and shapes societal attitudes towards gender, sexuality, and power</p> <p>CO-3: Explore the representation of women's experiences, perspectives, and voices in literature.</p> <p>CO-4: Analyze power relationships and dynamics in women's literature.</p> <p>CO-5: Recognize and appreciate the literary value and significance of seminal works by women.</p>
<b>GE-IV</b>	<b>Language and Linguistics</b>	<p>CO-1: Understand the complexity and nuance of language.</p> <p>CO-2: Gain insight into the multiple facets of linguistic analysis.</p> <p>CO-3: Investigate the linguistic and social outcomes of language adaptation and diversification.</p> <p>CO-4: Examine how language is used in larger units like conversations, texts, and genres to create meaning and achieve social goals.</p> <p>CO-5: Develop linguistic creativity and innovation, highlighting the importance of cultivating original, imaginative, and effective language use.</p>

<b>SEC-II</b>	<b>Soft Skills</b>	<p>CO-1: Understand the core principles of Soft Skills to navigate complex social situations, achieve goals, and succeed in professional life.</p> <p>CO-2: Respond to unexpected events with agility, resilience, and clear communication.</p> <p>CO-3: Enhance communication and interpersonal skills to effectively interact with others, build strong relationships, and convey ideas.</p> <p>CO-4: Embrace continuous learning and self-improvement to establish as a reliable and trustworthy communicator.</p> <p>CO-5: Promote appreciation and inclusivity of diverse perspectives and backgrounds instilling a sense of responsibility and commitment to shared goals.</p>
<b>FIFTH SEMESTER</b>		
<b>CORE-XI</b>	<b>Modern European</b>	<p>CO-1: Trace the development of groundbreaking and avant-garde dramatic literature in Modern Europe.</p> <p>CO-2: Examine the influence of historical events, cultural movements, and intellectual currents on modern dramatic literature.</p> <p>CO-3: Highlight the transformation of the dramatic landscape that paved the way for future dramatic practitioners.</p> <p>CO-4: Explore how various movements and playwrights challenged conventional theatrical forms and themes, leading to innovation and experimentation.</p> <p>CO-5: Analyze non-linear narrative structures and fragmented storytelling in the dramatic works of</p>
<b>CORE-XII</b>	<b>Indian Classical Literature</b>	<p>CO-1: Develop a deeper appreciation for the richness and diversity of Indian literary heritage.</p> <p>CO-2: Understand the cultural, aesthetic, and literary values of Indian classical literature.</p> <p>CO-3: Examine the role of classical literature in shaping Indian identity and tradition.</p> <p>CO-4: Enrich critical thinking and analytical skills in understanding classical literature.</p> <p>CO-5: Analyze the foundational texts of Indian classical literature that shaped Indian thought, art, and culture for centuries</p>

<b>DSE-I</b>	<b>Literary Theory</b>	<p>CO-1: Understand the fundamental concepts and principles of literary theory.</p> <p>CO-2: Explore the historical and cultural contexts of literary movements and theories.</p> <p>CO-3: Cultivate a deeper understanding of the complexities of human experience through literature.</p> <p>CO-4: Investigate the role of power, identity, and ideology in shaping literary texts.</p> <p>CO-5: Engage with diverse perspectives and approaches in literary theory.</p>
<b>DSE-II</b>	<b>World Literature</b>	<p>CO-1: Explore the diversity of human experiences and cultures through literature.</p> <p>CO-2: Highlight the importance of literary works that reflect, shape, and facilitate global perspectives, cultural exchange, and cross-cultural understanding.</p> <p>CO-3: Develop a more inclusive literary appreciation by embracing the diverse voices and experiences of global cultures.</p> <p>CO-4: Enhance a nuanced understanding of the global human experience, emphasizing the importance of balancing appreciation for diversity with recognition of shared humanity.</p>

**SIXTH SEMESTER**

<b>CORE-XIII</b>	<b>Postcolonial Literature</b>	<p>CO-1: Develop a contextual understanding of colonialism, acknowledging its historical roots, cultural manifestations, and ongoing consequences.</p> <p>CO-2: Examine the intersections between literature, power, and identity in the context of colonialism, imperialism, and decolonization.</p> <p>CO-3: Investigate the role of literature in resisting, subverting, and challenging colonial power dynamics.</p> <p>CO-4: Cultivate empathy and understanding of diverse postcolonial experiences and perspectives.</p> <p>CO-5: Enrich critical thinking skills in evaluating the complexities of colonial and postcolonial</p>
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<p><b>CORE-IV</b></p>	<p><b>Popular Literature</b></p>	<p>CO-1: Study the historical and cultural context of popular literature  CO-2: Recognize the widespread influence and far-reaching consequences of popular literature on a global scale.  CO-3: Analyze the representation of power dynamics and social hierarchies in popular literature.  CO-4: Examine the representation of diversity, inclusivity, and social justice in popular literature.</p>
<p><b>DSE-III</b></p>	<p><b>Partition Literature</b></p>	<p>CO-1: Understand the profound historical significance and enduring impact of the Partition.  CO-2: Investigate the role of Partition literature in shaping national and cultural narratives.  CO-3: Cultivate empathy and understanding of the human experiences and emotions expressed in Partition literature.  CO-4: Understand the role of Partition literature in shaping cultural memory and heritage.  CO-5: Develop critical thinking skills in evaluating the complexities of Partition and its aftermath.</p>
<p><b>DSE-IV</b></p>	<p><b>Dissertation/Research Project</b></p>	<p>CO-1: Conduct original research that contributes to the field of study.  CO-2: Demonstrate the ability to communicate complex research findings effectively.  CO-3: Develop and apply theoretical frameworks to literary analysis.  CO-4: Contribute to the ongoing scholarly conversation about literary works and their significance.  CO-5: Enrich and refine critical thinking, close reading, and analytical skills.</p>

**LIST of COs for the UG syllabus in Anthropology-2023-24**

<b>Course code</b>	<b>Name of the Course</b>	<b>Course Outcomes</b>
<b>Core Paper 1</b>	Introduction to Biological Anthropology	<p><b>CO-1:</b> To understand historical development of physical anthropology, recognizing key milestones and contributors of the field.</p> <p><b>CO-2:</b> To comprehend and analyze different theories of evolution and evaluate their impact on the understanding of human evolution.</p> <p><b>CO-3:</b> To describe general characteristics, distribution, and classification of non-human primates, and to explain about the importance of primate study.</p> <p><b>CO-4:</b> To Understand why the study of genetics and cytology is critical to biological Anthropology</p>
<b>Core Paper 2</b>	Introduction to Socio-cultural Anthropology	<p><b>CO-1:</b> Extend the vision beyond familiar social contexts and experiences and offers a productive counterweight to "culture bound" or ethnocentric ideas regarding human nature, values, and ways of life.</p> <p><b>CO-2:</b> Articulate broad scopes of anthropology in everyday life of human being and its cognateness with others social science disciplines.</p> <p><b>CO-3:</b> Demonstrate the knowledge on different concept and domains of social anthropology.</p> <p><b>CO-4:</b> Analyze the development of different theories in anthropology in brief.</p>
<b>Core</b>	Archaeological	<b>CO-1:</b> Basic understanding of Archaeological
<b>Core Paper 4</b>	Fundamentals of Human Origin & Evolution	<p><b>CO-1:</b> To understand the evolution of primates, focusing on Miocene fossil primates and three major groups of early hominins and to elaborate their distribution, features, and phylogenetic connections existed among them.</p> <p><b>CO-2:</b> To examine the origin of Homo sapiens through fossil evidence and to understand the distribution and features of modern humans, completing the narrative of human evolution.</p> <p><b>CO-3:</b> To Comprehend major theories of human evolution.</p> <p><b>CO-4:</b> To Gain insights into the hominization process, understanding the complexities of the</p>
<b>Core</b>	Tribes and	<b>CO-1:</b> Delve into the conceptual understanding of

Core Paper 7	Human Ecology	<p><b>CO-1:</b> Grasp key ecological concepts, including Eco sensitivity, adaptation, and ecosystem components.</p> <p><b>CO-2:</b> Develop skills in studying human ecology, focusing on adaptation to environmental stresses and applying ecological rules.</p> <p><b>CO-3:</b> Explore how culture serves as a tool for adaptation in pre-state societies, investigating diverse strategies.</p> <p><b>CO-4:</b> Analyze themes of state formation, including the Neolithic revolution and the impact of urbanization and industrialization.</p> <p><b>CO-5:</b> Gain practical skills in biocultural</p>
Core Paper 8	Biological Diversity in Human Populations	<p><b>CO-1:</b> To Comprehend and interpret the concept of biological variability, Genetic polymorphism by emphasizing traits determined through serological, biochemical, and DNA markers,</p> <p><b>CO-2:</b> To explain the concept of race by considering the UNESCO statement on race and the contribution of different authors in understanding ethnic elements in Indian populations.</p> <p><b>CO-3:</b> To understand the meaning and scope of demographic anthropology along different demographic processes and sources of data and to analyze the demographic profile of Indian populations.</p> <p><b>CO-4:</b> Examine the role of bio-cultural factors in influencing diseases and nutritional status within populations.</p>
Core Paper 8	Theories of Culture and Society	<p><b>CO-1:</b> To understand critically theories pertaining to Evolutionism and Diffusionism.</p> <p><b>CO-2:</b> To be familiarized with fieldwork tradition in anthropology.</p> <p><b>CO-3:</b> To analyse social integration and to investigate the functional and structural view point of culture.</p>



<b>Core Paper 9</b>	Human Growth and Development	<p><b>CO-1:</b> To develop a clear understanding of human growth, development, differentiation, and maturation.</p> <p><b>CO-2:</b> To analyse impact of bio-cultural factors on growth, including genetics, social, and ecological influences.</p> <p><b>CO-3:</b> To understand concept of nutrition and to learn practical methods for evaluation of nutritional status.</p> <p><b>CO-4:</b> To analyze models and techniques available for studying human physique and body</p>
<b>Core Paper 10</b>	Research Methods	<p><b>CO-1:</b> Relevance of field work tradition of anthropology is taught while following the tradition of its unique method of gathering qualitative data.</p> <p><b>CO-2:</b> Enables them to follow the universal pattern of Research design and its follow up.</p> <p><b>CO-3:</b> Developing skills to gather data in a scientific manner with necessary preventive steps</p>
<b>Core Paper 11</b>	Prehistoric Archaeology of India	<p><b>CO-1:</b> Provides education on human evolution in India along with cultural evolution.</p> <p><b>CO-2:</b> Scientific analysis of the stratigraphic evidence throughout the geography of Paleolithic culture.</p> <p><b>CO-3:</b> The evolution of human culture from paleolithic to Mesolithic to Neolithic periods.</p> <p><b>CO-4:</b> The detailed description on rock art with special reference to central India and Odisha.</p> <p><b>CO-5:</b> Thus a detailed view of Indian Prehistory</p>
<b>Core Paper 12</b>	Anthropology in Practice	<p><b>CO-1:</b> Understand academic and applied anthropology and its impact on Anthropology of development, public policy, and community well-being.</p> <p><b>CO-2:</b> To explore emerging trends in anthropology in different arena like tourism, demographical analysis, forensic analysis and visual media.</p> <p><b>CO-3:</b> Develop practical skills in fieldwork, data</p>
<b>Core Paper 13</b>	Forensic Anthropology	<p><b>CO-1:</b> To know about forensic Anthropology it's scope and application</p> <p><b>CO-2:</b> To understand human skeletal biology and to identify human and non-human skeleton</p> <p><b>CO-3:</b> To know the techniques of personal identification through the body description, analysing body fluids and human tooth structure</p> <p><b>CO-4:</b> To analyse human bones for the estimation</p>

<b>Core Paper 14</b>	Fieldwork and Dissertation	<p><b>CO-1:</b> Field work is the only course that provides the direct experience of ground realities of the subject/discipline.</p> <p><b>CO-2:</b> The guidance by the teachers and coordination between universe of research and students, are realized in the area of research.</p> <p><b>CO-3:</b> It helps the first-hand data collection and application of different methods of research.</p> <p><b>CO-4:</b> It enhances the presentation,</p>
<b>DSE-1 COMPU LSORY</b>	Anthropology of Religion, Politics and Economy	<p><b>CO-1:</b> Develops an understanding that religion is products of human culture and human nature, not as manifestations of anything transcendental, supernatural, or otherwise sui generis. Moreover, it enlarges the skills of analysis, interpretation, and comparison and gives a solid grounding in global cultures and social issues. <b>CO-2:</b> Manifest economics comparatively in all societies of the world, industrialized and non-industrialized, typology of forms of distribution: reciprocity, redistribution, and exchange, morally constrained give-and-return and movement of goods between previously socially related persons or groups.</p> <p><b>CO-3:</b> Fetch an understanding on political systems, power relations, political behavior within human</p>
<b>DSE-2 COMPU LSORY</b>	Tribal Cultures of India	<p><b>CO-1:</b> Grounded with the concept of tribe and their distribution in India.</p> <p><b>CO-2:</b> Making them to learn the linkage of tribe with other communities.</p> <p><b>CO-3:</b> Expertise on understanding the world view and barriers to tribal development.</p>
<b>DSE-3.1- OPTION AL</b>	Anthropology of India	<p><b>CO-1:</b> Manifest the historical root of anthropology in India, diversity of Indian population and contextualize the global issues and relevance.</p> <p><b>CO-2:</b> Well understanding the social, economic, and cultural aspects of rural life and how the market economy has brought changes in other ways like opening up consumer product markets in rural areas and service provision. Moreover, the pupils will deep on the influence of market economy and modernization on socio-economic; landholding patterns, agricultural patterns and biological variation. <b>CO-3:</b> It make a clear understanding on Development-induced displacement is a social problem affecting multiple levels of human organization. <b>CO-4:</b> These concepts of cultural complexity shed its</p>

<b>DSE-3.2-OPTIONAL</b>	Human Genetics	<p><b>CO-1:</b> Understand the origin and growth of human genetics.</p> <p><b>CO-2:</b> Explain the theoretical basis of the latest advances in molecular genomic technologies.</p> <p><b>CO-3:</b> Describe the genetic basis of simple, heterogeneous and complex traits.</p> <p><b>CO-4:</b> Interpret genetic and epigenetic</p>
<b>DSE-3.3-OPTIONAL</b>	Demographic Anthropology	<p><b>CO 1:</b> Understand different demographic phenomena in current and past populations using anthropological methods and theories.</p> <p><b>CO 2:</b> Explain basic concepts of demography and statistics.</p>
<b>DSE-4</b>	Museum and Museology	<p><b>CO-1:</b> Students are oriented to understand the concept of Museum along with basic guiding principles of Museology.</p> <p><b>CO-2:</b> Exposed on basic principles of museum management and administration</p> <p><b>CO-3:</b> Exposed on technical knowledge viz. collection, documentation, preservation, lighting,</p>
<b>GENERIC ELECTIVE E-1</b>	Introduction to Biological Anthropology	<p><b>CO-1:</b> To understand historical development of physical anthropology, recognizing key milestones and contributors of the field.</p> <p><b>CO-2:</b> To comprehend and analyze different theories of evolution and evaluate their impact on the understanding of human evolution.</p> <p><b>CO-3:</b> To describe general characteristics, distribution, and classification of non-human primates, and to explain about the importance of primate study.</p> <p><b>CO-4:</b> To Understand why the study of genetics</p>

**GENERIC ELECTIVE E-2** Introduction to Socio-cultural Anthropology

**CO-1:** Extend the vision beyond familiar social contexts and experiences and offers a productive counterweight to "culture bound" or ethnocentric ideas regarding human nature, values, and ways of life.

**CO-2:** Articulate broad scopes of anthropology in everyday life of human being and its cognateness with others social science disciplines.

**CO-3:** Demonstrate the knowledge on different concept and domains of social anthropology.

**CO-4:** Analyze the development of different theories in anthropology in brief.

<b>GENERIC ELECTIVE E-3</b>	Archaeological Anthropology	<p><b>CO-1:</b> Identify different domains of application of anthropological knowledge.</p> <p><b>CO-2:</b> Employ anthropological knowledge in solving human problems.                      <b>CO-3:</b> Select the appropriate methodologies and employ them in an applied policy setting.</p> <p><b>CO-4:</b> Examine different anthropological theories and methods in the field of community development and research.</p>
<b>GENERIC ELECTIVE E-4</b>	Anthropology of India	<p><b>CO-1:</b> Manifest the historical root of anthropology in India, diversity of Indian population and contextualize the global issues and relevance.</p> <p><b>CO-2:</b> Well understanding the social, economic, and cultural aspects of rural life and how the market economy has brought changes in other ways like opening up consumer product markets in rural areas and service provision. Moreover the pupils will deep on the influence of market economy and modernization on socio-economic; landholding patterns, agricultural patterns and biological variation.      <b>CO-3:</b> It makes a clear understanding on Development-induced displacement is a social problem affecting multiple levels of human organization.                      <b>CO-4:</b> These concepts of cultural complexity shed its</p>

# STATISTICS

## CORE COURSES

### CC-I: DESCRIPTIVE STATISTICS

**Course Objectives:** The learning objectives include:

1. Introduction of basic concept of statistics such as population, sample, presentation of data in tabular as well as in graphical manner.
2. Understanding the nature of data with the help of various statistical tools.
3. Introduction of correlation, regression and concept on fitting of curves.
4. To know the fundamental aspect of index numbers.

**Course Outcomes (CO):** After completion of this course, student will be able to understand

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1. The meaning of statistical population and sample.
2. Measures of location and dispersion.
3. Bivariate data, Significance of various coefficients of correlation.
4. Fitting of linear and nonlinear curve.
5. Construction of index numbers.

### CC-II: ALGEBRA

**Course Objectives:** The learning objectives include:

1. Introduction of fundamental concepts of algebra.
2. Enhancement to learn the basic ideas of abstract algebra and techniques with proof in pure mathematics and further, it can be used in many other courses.

**Course Outcomes (CO):** After completion of this course, student will

1. Use the basic concepts of vector and matrix algebra, including linear dependence / independence, basis and dimension of a subspace, rank and nullity, for analysis of matrices and systems of linear equations.
2. Evaluate determinants and use them in solution to the system of linear equations.
3. Use the characteristic polynomial to compute the characteristic roots and characteristic vectors of a square matrix and use them in Cayley Hamilton theorem.

### CC-III: PROBABILITY AND PROBABILITY DISTRIBUTIONS

**Course Objectives:** The learning objectives include:

1. Introduction of concept of probability.
2. The concept of random variables and its functions.

3. Introduction of probability distributions.

**Course Outcomes (CO):** After completion of this course, student will have the clear understanding of

1. The theory of probability and its applications.
2. Calculation of probabilities relevant to multivariate distributions, including marginal and conditional probabilities and the covariance of two random variables.
3. The mathematical expectation and calculation of generating functions.
4. Recognize common probability distributions for discrete and continuous variables.

#### **CC-IV: CALCULUS**

**Course Objectives:** The aim of this course is

1. To compute and analyze limits, derivatives and integral functions.
2. To recognize the appropriate tools of calculus to solve applied problems.
- 3.

**Course Outcomes (CO):** After completion of this course, student will -

1. Understand the type of variable and useful in the development of the function.
2. Verify the value of the limit of a function at a point using the definition of the limit.
3. Understand the consequences of the Intermediate value theorem for continuous function.
4. Find derivatives of composite functions and obtain expression for higher order derivatives of a function using the rule of differentiation. Solve integrals and evaluation of multiple integrals with numerical problems.
5. Know the solution of differential equations and find the solution of different partial differential equations of first order.

#### **CC-V: SAMPLING DISTRIBUTIONS**

**Course Objectives:** The learning objectives include:

1. Introduction of limit laws in probability and their applications in real life situations.
2. Understanding the concept of testing of hypothesis and their applications in various sampling distributions.

**Course outcomes (CO):** After completion of this course, student will

1. Understand the concept of convergence, common methods for evaluating an inequalities performance and test of significance. Understand the central limit theorem and large-sample approximations for common statistics.
2. Know the significance of testing of hypothesis using various sampling distributions and their applications in the various fields.
3. Formulate null and alternative hypotheses and apply small, large sample and non-parametric tests in real life problems.

#### **CC-VI: SURVEY SAMPLING & INDIAN OFFICIAL STATISTICS**

**Course Objectives:** The aim of this course is

1. To learn scientific aspects of sample survey.
2. To Learn variety of probability and non-probability sampling methods for selecting a sample from a population.
3. To know the present official statistical system in India.

**Course outcomes (CO):** After completion of this course, student will

1. Understand the basic principles underlying survey design and estimation.
2. Apply the different sampling methods such as simple random sampling, stratified sampling, systematic sampling and cluster sampling for designing and selecting a sample from a population.
3. Apply ratio, regression methods of estimation and cluster sampling to real-world issues.
4. Understand the concept of errors in survey sampling.
5. Determine the sample size and the effects of different types of sampling designs on confidence intervals.
6. Know the importance of various statistical offices in India.

### **CC-VII: MATHEMATICAL ANALYSIS**

**Course Objectives:** The aim of the course is to

1. Introduce the basic ideas of real analysis, such as sequences and series of real numbers, as well as the continuity, differentiability, and convergence of real valued functions.
2. Acquire knowledge of the fundamentals of numerical integration and analysis.

**Course Outcomes (CO):** After completion of this course, student will

1. Explain the basic characteristics of real numbers that constitute the basis for real analysis's formal development.
2. Understand the rigorous reasoning that develops the theory that forms the basis of actual analysis.
3. Comprehend the limits and how to apply them to differentiation, integration, series, and sequences.
4. Know the different interpolation formulae and numerical integration rules and their mathematical justifications for fundamental findings in practical analysis.
5. Apply rigorous mathematical analytical techniques and an understanding of abstract concepts to address real-world issues.

### **CC-VIII: STATISTICAL INFERENCE**

**Course Objectives:** The aim of the course is to

1. Determine appropriate point estimators for the parameters of a random variable's distribution and provide a precision measure for them.

2. Acquire computational abilities to use diverse statistical inferential methodologies.

**Course outcomes (CO):** After completion of this course, student will

1. Understand the notion of point estimation and the concept of MVUE, MVB estimators.
2. Obtain the sufficient statistic, minimal sufficient statistic, M.L.E, moment estimator of the parameter.
3. Formulate null and alternative hypotheses and apply small, large sample and non-parametric tests in real life problems.
4. Understand the SPRT and its fundamental aspects in practice.

### **CC-IX: LINEAR MODEL**

**Course Objectives:** The aim of the course is

1. To have a better comprehension of the limits of the linear and non-linear regression models.
2. To acquire the skills necessary to create regression models and apply them appropriately to the particular viewpoint data.

**Course Outcomes (CO):** After completion of this course, student will

1. Use a simple linear regression model with real-world examples.
2. Know theory of linear estimation and the use of least square methods.
3. Gain an understanding of normality, homoscedasticity, collinearity and multiple linear regression models with applications.
4. Analyse and validate the model and examine the residual diagnostic.

### **CC-X: STATISTICAL QUALITY CONTROL**

**Course Objectives:** The aim of the course is to

1. Acquire knowledge of statistical quality control methods utilised by many sectors, including control charts, acceptance sample plans, and so on.
2. Gain insight into advanced control charts, Voice of customers and the six-sigma concept.

**Course Outcomes (CO):** After completion of this course, student will

1. Apply the idea of control charts to the production process monitoring and gain a basic understanding of it.
2. Implement sampling plan and acceptance strategies during the production process.
3. Understand and use the concepts of six sigma, ISO 9000 series standards and TQM.

### **CC-XI: STOCHASTIC PROCESS & QUEUING THEORY**

**Course Objectives:** The aim of the course is to



1. Learn and understand the predictive approach of stochastic processes.
2. Develop the capability to analyze and apply certain fundamental stochastic processes to real life.

**Course outcomes (CO):** After completion of this course, student will

1. Acquire knowledge on probability distributions.
2. Understand the stochastic processes, Markov chains, Transition probability matrix and various types of states.
3. Explain Poisson process and apply it in real life situations.
4. Have knowledge on queuing models.

### **CC-XII: STATISTICAL COMPUTING USING C & R PROGRAMMING**

**Course Objectives:** The aim of the course is

1. To grasp the basics of C language and apply it for analysis.
2. To learn the statistical analysis using 'R' free and open source software.

**Course Outcomes (CO):** After completion of this course, student will

1. Understand the fundamental concepts of C programming language.
2. Acquire knowledge of various data types, operators, library functions, Input/Output operations.
3. Explain decision making, branching and looping structure.
4. Use of arrays in looping structure.
5. Know the user defined functions, recursion functions.
6. Get an idea of storage class of variables.
7. Understand basics of R environment and do descriptive statistical analysis in R.

### **CC-XIII: DESIGN OF EXPERIMENTS**

**Course Objectives:** The aim of the course is

1. To learn ANOVA and the basic principles in the design of experiments.
2. To learn different tests for comparing pairs of treatment means, factorial experiments, confounding and BIBD with solving real life examples.
3. To learn the applications of different designs in agriculture.

**Course Outcomes (CO):** After completion of this course, student will

1. Compare the pairs of treatment means using ANOVA.
2. Analyze the data using CRD, RBD and LSD.
3. Construct factorial experiments and apply confounding in real life problems.
4. Understand the analysis of BIBD and its applications in agriculture, business and industries.

## **CC -XIV: MULTIVARIATE ANALYSIS AND NON PARAMETRIC METHODS**

**Course Objectives:** The aim of the course is

1. Acquire and cultivate a scientific perspective for handling multidimensional datasets and applying it to research data analysis.
2. To comprehend how univariate approaches may be extended to multivariate frameworks and to gain proficiency in the use of dimension reduction strategies utilised in data analysis.
3. Acquire knowledge of various nonparametric tests.

**Course Outcomes (CO):** After completion of this course, student will

1. Understand the concept of bivariate normal distribution.
2. Recognise multivariate normal distributions and their practical uses.
3. Know the concept of nonparametric test and its uses.

## **DISCIPLINE SPECIFIC ELECTIVE (DSE)**

### **DSE-I: OPERATIONS RESEARCH**

**Course Objectives:** The aim of the course is

1. To learn the fundamental concepts of Operations Research.
2. To gain knowledge of sophisticated techniques in operations research courses that are applied in the systems approach to engineering and management, giving them the necessary instruments for the mathematical modelling of problems involving decision-making, with a focus on the roles of risk and uncertainty.

**Course Outcomes (CO):** After completion of this course, student will

1. Understand basics and formulation of linear programming problems and appreciate their limitations; solve linear programming problems using graphical method.
2. Apply simplex method to solve real life problems.
3. Solve artificial variable technique, duality theory, revised simplex method, sensitivity analysis, transportation and assignment problems.
4. Understand the concept of Game theory, inventory models with real life applications

### **DSE-II: TIME SERIES ANALYSIS**

**Course Objectives:** The aim of the course is

1. To learn and develop scientific view to understand the time series data and its analysis.
2. To learn trend analysis by different methods.

3. To acquire knowledge on stationary and non-stationary, and seasonal and non-seasonal time series models.

**Course Outcomes (CO):** After completion of this course, student will

1. Understand the concept of time series with its components and able to compute trend by different methods.
2. Eliminate trend and seasonality using different methods to convert the time series into stationary.
3. Know auto regressive, moving average process and their application to forecast time-series data empirically.
4. Understand the stationarity, auto correlation, correlogram moving average and their applications.

### **DSE-III: DEMOGRAPHY AND VITAL STATISTICS**

**Course Objectives:** The aim of the course is

1. To identify appropriate sources of data and to perform basic demographic analyses using various techniques across populations.
2. To learn the main theories used to understand population studies and societal change.

**Course Outcomes (CO):** After completion of this course, student will

1. Understand the interdisciplinary nature of demography, balancing equation, use of Whipple's, Myers and UN indices.
2. Understand the measures of mortality and fertility.
3. Describe the concept of life tables and measurement of population growth.

### **DSE-IV: PROJECT WORK**

**A student has to opt for any one of the following:**

- I. **PROJECT WORK**
- II. **ECONOMETRICS**

**Objective:** The aim of the course is to initiate students to write and present a statistical report, under the supervision of a faculty, on some area of social interest. The project work will provide hands on training to the students to deal with data emanating from some real-life situation and propel them to do well on some theory or relate it to some theoretical concepts. The project should be prepared basing on the own idea and interpretation of the student. It should not

be copied from anywhere. A student has to consult his / her supervisor for the preparation of the project.

While writing a project, a student has to present two seminars before the faculties / supervisor from the department.

#### **DSE-IV: ECONOMETRICS**

**Course Objectives:** The aim of the course is

1. To judge the validity of the economic theories.
2. To carry out evaluation of economic theories in numerical terms.
3. To extract useful information about important economic policy issues from the available data.

**Course Outcomes (CO):** After completion of this course, student will

1. Understand the fundamental concepts of econometrics.
2. Understand multicollinearity with its applications.
3. Know the GLS method of estimation and concept of autocorrelation.
4. Understand concept of heteroscedasticity.

#### **GENERIC ELECTIVE GE-I STATISTICAL METHODS**

**Course Objectives:** The learning objectives include:

1. Introduction of basic concept of statistics such as population, sample, presentation of data in tabular as well as in graphical manner.
2. Understanding the nature of data with the help of various statistical tools.
3. Introduction of correlation, regression, theory of attributes and their applications.

**Course Outcomes (CO):** After completion of this course, student will

1. Understand the scope of statistics and its multidisciplinary aspects.
2. Measure the data and present it through histogram and ogives.
3. Acquire the knowledge on measures of central tendency and their applications.
4. Correlate and regress the data by different methods.
5. Understand the measures of association of attributes.

#### **GE-II: INTRODUCTORY PROBABILITY**

**Course Objectives:** The aim of this course is

1. To understand the uncertain circumstances in logical way.

2. To describe in detail how the basic theory of statistical distribution is established, as well as what are considered to be Standard Distributions by Statistical Practice.

**Course Outcomes (CO):** After completion of this course, student will

1. Understand the essential aspects of probability and how it is used in society.
2. Be familiar with the most frequent discrete or continuous probability distributions and their application in real life.
3. Calculate the marginal and conditional distribution from the joint distribution.

### **GE-III: BASICS OF STATISTICAL INFERENCE**

**Course Objectives:** The aim of this course is

1. To learn the development of null and alternative hypotheses.
2. To learn types of errors, large and small sample tests and non-parametric tests.
1. To grasp the basic principles in the design of simple experiments.

**Course Outcomes (CO):** After completion of this course, student will:

1. Formulate null and alternative hypotheses and apply small, large sample and non-parametric tests in real life problems.
2. Compute probabilities of types of error.
3. Study the basic principles of design of experiments and compare the pairs of treatment means using ANOVA.

### **GE-IV: APPLIED STATISTICS**

**Course Objectives:** The aim of this course is

1. To learn and develop scientific view to understand the time series data and its analysis.
2. To know the fundamental aspects of index numbers with its application.
3. Acquire knowledge of statistical quality control methods utilised by many sectors, including control charts, acceptance sample plans, and so on.
4. To identify appropriate sources of data and to perform basic demographic analyses using various techniques across populations.

**Course Outcomes (CO):** After completion of this course, student will

1. Understand the concept of time series with its components and able to compute trend by different methods.
2. Get an idea about index numbers, its use in economics and business or other aspects.
3. Apply the idea of control charts to the production process monitoring and gain a basic understanding of it.
4. Describe the measures of mortality, fertility, population growth and uses of life table.

### **SEC-I STATISTICAL-DATA ANALYSIS USING SOFTWARE PACKAGES**

*This course will review and expand upon core topics in statistics and probability, particularly by initiating the beneficiaries of the course to at least one of the software packages viz., SPSS, STATA or Minitab for statistical computing.*

## **SEC-II: STATISTICAL TECHNIQUES FOR RESEARCH METHODS**

*Statistical Techniques provide scientific approaches to develop the domain of human knowledge largely through empirical studies. The course aims at enabling students understand basic concepts and aspects related to research, data collection, analyses and interpretation*

## **ST-101: MATHEMATICAL ANALYSIS AND LINEAR ALGEBRA**

**4 CREDITS**

**Course Objectives:** The learning objectives include:

1. Introduction to the fundamental concept of real analysis such as sequence, series of real numbers and their convergence, continuity, differentiability of real valued functions.
2. Enhancement to learn the basic ideas of abstract algebra and techniques with proof in pure mathematics and further, it can be used in many other courses.

**Course Outcomes (CO):** After completing this course, students will be able to develop a clear understanding of

1. Fundamental properties of the real numbers that lead to the formal development of real analysis.
2. Comprehension of rigorous argument developing the theory under pinning real analysis.
3. Limits and how they are used in sequences, series, differentiation and integration. Construct rigorous mathematical proofs of basic results in real analysis.
4. Abstract ideas and rigorous methods in mathematical analysis to solve practical problems.
5. The concept of metric space.
6. Using the basic concepts of vector and matrix algebra, including linear dependence / independence, basis and dimension of a subspace, rank and nullity, for analysis of matrices and systems of linear equations.
7. The characteristic polynomial to compute the eigen values and eigenvectors of a square matrix and use them to diagonalizable matrices when this is possible.

## **ST-102: STATISTICAL METHODS**

**4 CREDITS**

**Course Objectives:** The learning objectives include:

1. Introduction to Statistics.
2. Understanding the nature of data with the help of various statistical tools.
3. Understanding the concept of Probability and probability distributions.

**Course Outcomes (CO):** After completing this course, students will have clear understanding of-

1. The fundamental concepts of statistics
2. Measures of location and dispersion
3. Bivariate data, Significance of various coefficients of correlation
4. Fitting of linear and nonlinear curve
5. Introduction of variables and their pmf, pdf and cdf
6. Discrete and Continuous Probability distributions and its applications
7. Order statistics and their distributions and properties

**ST-103: PROBABILITY THEORY-I**

**4 CREDITS**

**Course Objectives:** The learning objectives include:

1. The introduction of set, series, sequence, limit, field, probability measures & Properties.
2. The concept of random variables (RV), functions of RVs, Joint pdf, pmf and cdf, conditional and marginal, use of Jacobian of transformation, moments, expectations, mgf, chf, and some inequalities.
3. Understanding of convergence, strong law and weak law of large numbers

**Course Outcomes (CO):** After completing this course, students will be able

to develop a clear understanding of:

1. The fundamental concepts of probability and their applications in day today life
2. Application of inequalities.
3. Limiting approach and different laws, Markov and Chebychev's inequality
4. Statement and applications of WLLN and SLLN.
5. Central limit theorem (CLT) for i.i.d. variates, and its applications

**ST-104: STATISTICAL INFERENCE-I**

**4 CREDITS**

**Course Objectives:** The learning objectives include:

1. Concept of point and interval estimation.
2. Concept of properties of estimators and their estimation.
3. Concept of large sample properties of estimators
4. Analysis and interpretation of the unbiasedness and MVUE and related theorems.



**Course Outcomes (CO):** After completing this course, students will be able

to develop the skills concerning:

1. Parameter, statistic, standard error, sampling distribution of a statistic etc.
2. Characteristics of a good estimator, different methods of estimation.
3. Use of inferential techniques in data analysis.

**ST- 105: STATISTICAL COMPUTING-I USING SPSS 4 CREDITS**

**Course Objectives:** To understand the basic concepts of SPSS:

1. Define a variety of statistical variables
2. Enter basic data into SPSS
3. Carry out a statistical analysis that can test hypotheses of small and large samples and fitting of distributions.

**Course Outcomes (CO):**

1. After completing the course students can able to construct frequency distribution and calculate different statistical measures like measures of central tendency, measures of dispersion skew and kurtosis, can present data in graphical form and interpret the data.
2. Student can Correlation and regression analysis and perform testing of hypothesis for small sample and large sample tests.
3. Students can fit Binomial, Poisson, Normal distribution and test the goodness of fit.

**ST- 201: PROBABILITY THEORY– II 4 CREDITS**

**Course Objectives:** The learning objectives of this paper deal with:

1. Introduction of non-central probability distributions.
2. Concept of convergence on a probability space in distributions and some inequalities.
3. Understanding the concept of characteristic function and their related theorems.
4. Concept of convergence, strong law and weak law of large numbers.

**Course Learning Outcomes:** After completing this course, students will have

clear understanding of-

1. The fundamental concepts of non-central chi-square, t and F distributions and their applications.
2. An idea about convergence in probability and distributions along with their relationship, characteristic functions and applications on the basis of

inequalities.

3. Limiting approach and different laws.

### **ST- 202: STATISTICAL INFERENCE-II**

**4 CREDITS**

**Course Objectives:** The learning objectives include:

1. Understanding of hypothesis testing and its applications. Concept of Likelihood ratio tests and its development of critical region and testing of hypothesis.
2. Concept of SPRT, OC and ASN functions and their usefulness for different probability distributions.
3. Techniques of non-parametric inferences and their uses in data analysis

**Course Outcomes (CO):** After completing this course, students will be able to develop the skills concerning:

1. The construction and development of MP tests, UMP tests under simple and composite hypothesis.
2. Construction of similar regions and unbiased tests. They will also acquire the skill of testing hypothesis relating to parameters of normal distribution using LR methods
3. Perform hypothesis testing and selection of sample applying the rules of SPRT
4. Differentiate between parametric and non-parametric tests, non-parametric alternatives of the parametric tests.
5. Analyse the data using non-parametric methods and valid statistical inference.

### **ST- 203: SURVEY SAMPLING METHODS**

**4 CREDITS**

**Course Objectives:** The learning objectives include:

1. This course introduces participants to what survey sampling is, why it is important, and how it is implemented.
2. Types of samples (probability versus non-probability) and estimation techniques

**Course Learning Outcomes:** After completing this course, students will have clear understanding of-

1. Participants will achieve an awareness of the critical issues in introductory survey sampling which can then be used to assess existing surveys or aid in creating new ones.
2. How to construct a 'sampling frame' Types of probability samples (e.g., simple random, systematic, stratified, multi-stage clustered, unequal probabilities of selection)

3. Concept on methods of estimation in sampling e.g., ratio, product, difference and regression.
4. What 'sampling error' is, the role of sampling error in confidence intervals.
5. How to determine sample size and the effects of different types of sample designs on confidence intervals

**ST-204: OPERATIONS RESEARCH**

**4 CREDITS**

**Course Objectives:** The learning objectives of this paper deal with:

1. Definition & scope of operations research in management of Scarce resources.
2. Importance of inventory management, determination of economic order quantity (EOQ) and models formulation
3. Concept of game and determination of optimal strategies.

**Course Learning Outcomes:** After completing this course, students will have clear understanding of:

1. Formulation of LPP and its optimum solution through simplex method, developing economic interpretation of duality
2. Formulation of the transport problem and optimize their cost by different methods.
3. Formulation of nonlinear programming problems and its optimum solution through Kuhn-Tucker, Wolfe's and Beale's algorithms.
4. Formulation, optimum solutions of general inventory models with shortages, models with probabilistic and random demands.
5. Network scheduling through CPM and PERT.
6. Solution of two-person zero sum game by simplex method, Simulation techniques and application of uncertainty through Fuzzy sets.

**ST- 205: STATISTICAL COMPUTING–II: C PROGRAMMING 4 CREDITS**

**Course Objectives:** The learning objectives of this paper deal with-

1. To understand computer programming and its roles in problem solving.
2. To develop programming skills using the fundamentals and basics of C language.
3. To enable effective usage of arrays, functions and pointers.

**Course Outcomes (CO):** After completing this course, students will

have clear understanding of-

1. The fundamental concepts of C programming language.
2. Various data types, operators, library functions, Input/Output operations.

3. Decision making and branching and looping.
4. Arrays.
5. User defined functions, recursion functions.
6. Storage class of Variables.

**ST- 206: (DSE) DEMOGRAPHY& VITAL STATISTICS**

**4 CREDITS**

**Course Objectives:**

The learning objectives include:

1. To collect valid Demographic data using different methods.
2. To learn basic measures of Mortality, Fertility and Population Growth.
3. To construct life tables.

**Course Outcomes (CO):** After completing this course, students will have

clear understanding of

1. Distinction between Vital Statistics and Demography.
2. Errors in Demographic data.
3. To check the completeness of registration data using Chandrasekaran-Deming formula.
4. Use of Myer's and UN indices in evaluating age data.
5. Use of Balancing Equations.
6. Population Composition and Dependency Ratio.
7. Sources of data collection on Vital Statistics and errors therein.
8. Measurement of Population.
9. Distinction between Rate and Ratio.
10. Basic measures of Mortality.
11. Concepts of Stable and Stationary Populations.
12. Concept of Life Tables, their construction and uses.
13. Basic measures of Fertility.
14. Measures of Population Growth.
15. Migration Models

**ST-301: MULTIVARIATE ANALYSIS**

**4 CREDITS**

**Course Objectives:** The learning objectives include:

1. To learn and develop scientific view to deal with multidimensional data sets and its uses in the analysis of research data.
2. To understand the extensions of univariate techniques to multivariate frameworks

and learn to apply dimension reduction techniques used in the data analysis.

**Course Outcomes (CO):** After completing this course, students will have clear understanding of

1. Understand multivariate normal distribution and their real life applications.
2. Understand Wishart distribution, Hotelling  $T^2$  and Mahalanobis  $D^2$  statistic.
3. Implement dimension reduction techniques using software on real life problems.
4. Demonstrate knowledge and understanding of the basic ideas behind discriminant and clustering analysis, factor analysis and principal component analysis techniques with applications.

**ST-302: DESIGN & ANALYSIS OF EXPERIMENTS 4 CREDITS**

**Course Objectives:** The learning objectives include:

1. To learn the basic principles of design of experiments like randomization, replication, general design models various designs and multiple comparison tests are studied.

**Course Outcomes (CO):** After completing this course, students will have clear understanding of

1. After completing this course, students will acquire the knowledge of field experiments in agriculture, medicine, marketing, finance and insurance fields.

**ST-303: STOCHASTIC PROCESSES 4 CREDITS**

**Course Objectives:** The learning objectives include:

1. To learn and to understand stochastic processes predictive approach.
2. To develop an ability to analyze and apply some basic stochastic process for solving real life situations.

**Course Outcomes (CO):** After completing this course, students will have clear understanding of

1. Understand the stochastic processes, Markov chains, Transition probability matrix and various types of states.
2. Explain Random walk, Gambler ruins problem and apply Poisson process in real life situations.



## **Open Elective (IDSE)**

**Course Objectives:** The learning objectives include:

1. Introduction to Statistics.
2. Understanding the nature of data with the help of various statistical tools.
3. Understanding the concept of Probability and probability distributions.

**Course Outcomes (CO):** After completing this course, students will have clear understanding of

1. The fundamental concepts of statistics
2. Measures of location and dispersion
3. Bivariate data, Significance of various coefficients of correlation
4. Fitting of linear and nonlinear curve
5. Introduction of variables and their pmf, pdf and cdf
6. Discrete and Continuous Probability distributions and its applications
7. Order statistics and their distributions and properties.

### **ST- 401: LINEAR MODELS AND REGRESSION ANALYSIS      4 CREDITS**

**Course Objectives:** The learning objectives include:

1. To develop a deeper understanding of the linear and non-linear regression model and its limitations.
2. To learn how to develop regression model and apply for the specific perspective data appropriate manner.

**Course Outcomes (CO):** After completing this course, students will

1. Apply simple linear regression model to real life examples.
2. Understand multiple linear regression models with applications and concept of Multicollinearity and autocorrelation.
3. Compute multiple and partial correlation and checking residual diagnostic to validate model.
4. Apply Logistic and Non-linear regression models and its implementation in real life situation.

### **ST-402:                      ECONOMETRICS                                      4 CREDITS**

**Course Objectives:** The aim of this course is:

1. To judge the validity of the economic theories
2. To carry out evaluation of economic theories in numerical terms.
3. To extract useful information about important economic policy issues from the available data.

**Course Outcomes (CO):** After completing this course, students will have clear understanding of

1. The fundamental concepts of econometrics.
2. Specification of the model.
3. Simple Linear Regression & Multiple Linear Regression with their uses.
4. Multicollinearity , Heteroscedasticity and their applications.

### **ST-403: TIME SERIES AND STATISTICAL QUALITY CONTROL**

**4 CREDITS**

**Course Objectives:** The learning objectives include:

1. The main purpose is to teach the time series modelling and the concept of forecasting and future planning.
2. To help students understand the concepts underlying statistical quality control and to develop their ability to apply those concepts to the design and management of quality control processes in industries.

**Course Outcomes (CO):** After completing this course,

1. Students will be acquainted with different time series models such as MA,AR, ARMA and ARIMA models.
2. They will learn of models for forecasting purpose. The emphasis will be on ensuring that the students gain both a broad perspective of quality control as well as the technical skills necessary to implement quality control in any industrial setting.

### **ST-404: OFFICIAL STATISTICS**

**4 CREDITS**

**Course Objectives:**

Basic concepts of Statistics, Role of statistics in Science, Society, and for National Development, Descriptive statistics. Scope of population census of India, System of collection of Agricultural Statistics.



**Course Outcomes (CO):** After successful completion of this course, students are expected to:

1. Acquire knowledge of statistics and its scope and importance in various areas such Agricultural and Social Science, Finance etc.
2. Know information about various Statistical Organizations in India and their functions for societal developments. Knowledge of various types of data, their organization and evaluation of summary measures such as measures of central tendency and dispersion, etc.
3. Insights into preliminary exploration of different types of data.

**ST- 405: PROJECT WORK AND SEMINAR PRESENTATION      4 CREDITS**

The supervisors are to be allotted to the students before the end of third semester examination and they have to prepare a seminar paper and also a project paper under his/her guidance.

# School of Zoology

## LIST of COs for the PG syllabus in Zoology-2023-24

### FIRST SEMESTER

Course Code	Name of the Course	
<b>ZOO 101</b>	Non Chordata	<p>CO1: Identify/ Recognise the beneficial and harmful groups of NonChordates.</p> <p>CO2: Explain/ Discuss the harmful effects of harmful groups and ecological &amp; economical benefits of beneficial groups</p> <p>CO3: Establish/ Show the interrelationships among the different groups of NonChordates and predict the pattern of evolution.</p> <p>CO4: Analyse/ Examine the development of special features in certain groups of NonChordates and the reason thereof.</p>
<b>ZOO 102</b>	Molecular Cell Biology	<p>organelles. Finding out the function of different cell organelles.</p> <p>CO2: understanding the cellular organization and the properties of different cell components involved in cell survival and propagation..</p> <p>CO3: To show how molecular organization is associated with respective function of the cell organelles. Further to see how the series of biophysical and biochemical reactions are helping the cell to survive and propagate</p> <p>CO4: Examining the molecular pathways to perform processes such as cell division, cell signaling and transportation of molecules in and across cell</p> <p>CO5: Declaration of the role of different biomolecules in structural organization and functional aspects of the cell</p>
<b>ZOO 103</b>	Environmental Biology	<p>(L-1) Identification of components of Biosphere, Ecosystems, Biotic interaction, Geographical regions, Wild Life, Sources of Pollution.</p> <p>(L-2) Discussion on energy flow, Soil Profile, Population Characteristics, Biomagnification and Bioremediation, Biodiversity Conservation.</p> <p>(L-3) To establish relation between productivity and energy flow, Light and Temperature on animal and plant nutrition, Various Biotic interactions, Population growth.</p> <p>4.(L-4) Analysis of Biogeochemical Cycles and their roles, Formation of Soil, Ecosystem Development, Factors affecting Population growth, Management of Solid Waste and other pollutants.</p> <p>5.(L-5 &amp; L-6) Develop the flow chart of Ecological Succession, Roadmap for Wild Life and Biodiversity Conservation, Preservation of Biosphere and Action Plan</p>

<b>ZOO 104</b>	Evolutionary Biology	<p>1.(L-1) Identifay/Recognise the basics of life, its origin and various theories related to origin of life, types of species and evidences of evolution.</p> <p>2.(L-2) Understand different theories and process of evolution.</p> <p>3.(L-3) Establish/Shows the interrelationship among different groups of animals through fossil records.</p> <p>4.(L-4) Analysis/Examine the characters develops by different groups of animals for their adaptability in various ecological conditions and analyze the evolution of certain higher groups of vertebrate like horse and man. Examine the causes of extension.</p> <p>5.(L-5 &amp; L-6) Evaluate of various modes of speciation, role of mass extinction in evolution and influence</p>
<b>ZOO 105</b>	PRACTICAL	<p>(i) To expose &amp; increase skills in performing scientific experiments</p> <p>(ii) To provide opportunities to develop responsibility in conducting practical experiments</p> <p>(iii) To facilitate &amp; synchronize the theoretical knowledge</p>
<b>SECOND SEMESTER</b>		
<b>ZOO 201</b>	Chordata	<p>2.(L-2) Discussion of the beneficial and harmful groups of Chordates and their ecological importance.</p> <p>3.(L-3) Establish /Show the inter relationships among the different groups of Chordates and predict the pattern of Evolution.</p> <p>4.(L-4) Analysis of the development of special features in certain groups of Chordates and the reason thereof.</p> <p>5.(L-5 &amp; L-6) Development of taxonomical hierarchy and construct the phylogenetic tree of Chordates.</p>

<b>ZOO 202</b>	Microbiology and Ethology	<p>1.(L-1) Identification of various types of viruses and viral infections, various types of bacteria and bacterial infection, classification of behavioral pattern, identification of various biological rhythms and different types of migration.</p> <p>2.(L-2) Differentiation of microbes, viruses and bacteria. Differentiation of orientation, social behaviour, reproductive behaviours with examples.</p> <p>3.(L-3) Methods of controlling viral, bacterial, protozoan and fungal infections. Methods of behavioural studies, applications of cultural techniques.</p> <p>4.(L-4) Analysis of the life cycle of bacteriophage, physiological basis of behaviour, regulatory mechanism of biological rhythms and behavioural patterns</p> <p>5.(L-5 &amp; L-6) Evaluation of the role of microbes in agriculture, industry and environment. Evaluation of the bacterial growth and prediction about the pattern of growth. Justification of the migratory behaviour fishes and birds. Establishment of the relationship between</p>
<b>ZOO 203</b>	Developmental Biology	<p>1.(L-1) Remembering about different types of gametes in different groups of animals, types of cleavage, types of gastrulation etc. in various groups of vertebrate.</p> <p>2.(L-2) Understanding the process of gamete formation in different groups of animals and understand the process of fertilization, cleavage, gestation, placenta in various groups of vertebrate.</p> <p>3.(L-3) Application of different new technic like invitro-fertilization, stem cell culture, in the development of different groups of vertebrate.</p> <p>4.(L-4) Analysis/Examine the basic mechanism of embryonic induction, neural induction and formation of extra embryonic membrane in different higher group of animals like birds and mammals and origin of eyes, heart, brain in various groups of vertebrate.</p> <p>5.(L-5 &amp; L-6) Evaluating the cause of ageing of human beings and formation of twins in human being, teratogenic process, regeneration process and metamorphic changes in some specific groups of animals</p>

<b>ZOO 204</b>	Cytogenetics	<p>1.(L-1) Learning the basic structure of DNA, gene and Mendelian principles.</p> <p>2.(L-2) Understanding the role of chromosomes in heredity. Study the pathway and processes of genetic propagation.</p> <p>3.(L-3) Determining the possible set of phenotypes from a given set of Genome. Identification of phenotypes based on Genetic markers.</p> <p>4.(L-4) Utilization of genetic data's to construct family tree and establishing genetic relationship.</p> <p>5.(L-5 &amp; L-6) Use of genetic tools to resolve civil and</p>
<b>ZOO 205</b>	Practical	<p>(i) to provide expertise in hand skill in dissection and slide preparation.</p> <p>(ii) to expose the students in order to correlate the theoretical knowledge with practical exposure.</p> <p>(iii) To apply their understanding in applied biology and biomedical practices</p>
<b>ZOO 206</b>	Applied Biology	<p>fish culture, prawn culture, pearl culture etc.</p> <p>2.(L-2) Understand the detailed process of different farming like poultry farming, sericulture, IMC culture etc.</p> <p>3.(L-3) Application of advanced scientific technology in farming sector for improving the productivity in various farming system.</p> <p>4.(L-4) Analyzing the productivity, marketing strategy for improving the livelihood status of farmers.</p> <p>5.(L-5 &amp; L-6) Qualitative and Quantitative evaluation of the role of different farming system for improving the livelihood status of farmers.</p>
<b>THIRD SEMESTER</b>		
<b>ZOO 301</b>	Physiology- Life sustaining system	<p>1.(L-1) Learning various organs, systems &amp; their associate glands in human being and also their importance for life sustaining.</p> <p>2.(L-2) Understand the detailed mechanism of various systems like digestive, circulatory, respiratory, and excretory systems and their functions for sustaining of life in human beings.</p> <p>3.(L-3) Application of digestion and absorption of different types of food and also the action of various systems occurs for sustaining the life smoothly in human.</p> <p>4.(L-4) Analyzing different disorders in various systems in human beings.</p> <p>5.(L-5 &amp; L-6) Qualitative and Quantitative evaluation of the rate of digestion, rate of respiration, rate of</p>

ZOO 302	PHYSIOLOGY – CONTROLLING & COORDINATING SYSTEM	<p>1.(L-1) Learning various organs, systems &amp; their associate glands in human being and also their coodinating action for smooth life process in various groups of animals.</p> <p>2.(L-2) Understand the detailed mechanism of various endocrine glands, their hormones and also their functions for coordinating action of the body.</p> <p>3.(L-3) Application of different enzymes and hormones and also the action of various systems occurs for sustaining the life smoothly in human being.</p> <p>4.(L-4) Analyzing different disorders in various systems &amp; different endocrine glands and also the analyzing the action due to hypo and hipper secretion of hormones and enzymes in human being.</p> <p>5.(L-5 &amp; L-6) Qualitative and Quantitative evaluation of the rate of hormone &amp; enzyme secretion for controlling</p>
ZOO 303	BIOMOLECULES & ENZYMOLGY	<p>1.(L-1) Identification of different groups of biomolecules.</p> <p>2.(L-2) Discussion on the different structural organization of different biomolecules.</p> <p>3.(L-3) Establish /show the inter relationships of different groups of biomolecules.</p> <p>4.(L-4) Qualitative and Quantitative test of biomolecules.</p> <p>5.(L-5 &amp; L-6) Involvement of biomolecules in different</p>
ZOO 304	BIOCHEMISTRY OF METABOLIC PROCESSES	<p>1.(L-1) Learning basic structure of biomolecules and their role in different metabolic processes.</p> <p>2.(L-2) Understanding the pathways followed by different biomolecules for synthesis, elimination or regeneration of essential things for cell/ body.</p> <p>3.(L-3) To see how regulation of metabolic cycle or metabolic product can make a difference in the survival of a living system.</p> <p>4.(L-4) To analyze the role of metabolites with respect to the physiological function performed by a living system.</p> <p>5.(L-5 &amp; L-6) Finding out the ways to manipulate Physiological aspects of the system taking metabolic</p>
ZOO 305	Practical	<p>(i) To acquire practical knowledge on various enzyme action and estimation process.</p> <p>(ii) To make quantitative and qualitative analysis for estimation of various biological samples.</p> <p>(iii) To apply the basic principles in applied biomedical</p>

ZOO 306	Practical	<p>1.(L-1)Identification of different groups of Chordates and Non-Chordates and the causative agents of various communicable and non communicable diseases.</p> <p>2.(L-2) Explain/Discuss the pattern of evolution and explain the position of Man.</p> <p>3.(L-3)Explain /Discuss how organisms function at the level of organ and organ system,</p> <p>4.(L-4) Analyse/Examine various groups of communicable and non-communicable diseases, their causative agents ,mode of transfer and their preventive measures.</p> <p>5.(L-5 &amp; L-6) Develop an idea about various beneficial</p>
<b>FOURTH SEMESTER</b>		
ZOO 401	MOLECULAR BIOLOGY AND IMMUNOLOGY	<p>1.(L-1) To Learn the structure of DNA, RNA and their types. Identification of components of Immune system.</p> <p>2.(L-2) Understanding the role of DNA in a system. To Study various molecular processes associated with genetic material. Further to understand the role and production of antibodies.</p> <p>3.(L-3) To perform in vitro genetic experiments in order to diagnose metabolic and genetic shortcomings and development therapeutics.</p> <p>4.(L-4) analyzing the mechanism of DNA propagation and modification. Understanding of the cell communication system.</p> <p>5.(L-5 &amp; L-6) Utilization of Molecular knowledge to develop tools and techniques for biochemical study,</p>
ZOO 402	BIOTECHNOLOGY	<p>1.(L - 1) To study of basic knowledge of gene, gene amplification, genetic engineering, vectors and methods of culture.</p> <p>2.(L-2) To understand the process of gene transfer along with the tools and techniques.</p> <p>3.(L-3) Manufacturing of bioproducts in large scale . To develop better quality breeds , drugs, crops and their applicability.</p> <p>4.(L-4) To analyse the behavioural aspects of gene with respect to its transfer to a host system and rate of success in production of transgenic animals.</p> <p>5.(L-5 &amp; L-6) Finding out suitable sources and methods to develop better biosources for products of high value</p>

ZOO 403	BIOPHYSICS, BIOPHYSICAL CHEMISTRY & INSTRUMENTATION	<p>1.(L-1) To know basic physical and chemical events in a living system and its manifestation. To know principles of Thermodynamics, concepts of energy and bonding.</p> <p>2.(L-2) To understand the role of biophysical and biochemical properties of biomolecules and their contribution towards the chemical foundation of physiology.</p> <p>3.(L-3) Analysis of biosamples. To know basic principles and mechanism of various instruments and technology.</p> <p>4.(L-4) Analysis of the application of thermodynamic principles on the biological system. Monitoring of microbial growth and assay.</p> <p>5.(L-5 &amp; L-6) Finding out the role of physical and chemical forces responsible for sustenance of life. Uses</p>
ZOO 404	Biostatistics	<p>(L-1) Types of sampling method and frequency distribution. Types of graphical representation data. Various measures central tendency and measures of dispersion. Types of correlation and regression.</p> <p>(L-2) Differentiation between normal, binomial and poisson distribution. Classification of ANOVA. Testing of hypothesis. Theorems of probability.</p> <p>(L-3) Interpretation and representation of data through graphs, charts, tables, etc. Testing of Hypothesis. Test of significance.</p> <p>(L-4) Analysis of data by various measures of dispersion. Variance test, ANOVA test, t test, <math>\chi^2</math> Test, F Test, standard error of mean, etc.</p> <p>(L-5 &amp; L-6) Predication of results/Outcomes through probability test. Finding out and drawing in of diagrams for coefficient of correlation and regression coefficient. Application and evaluation of various tests in both</p>
ZOO 405	PROJECT	<p>CO1: Apply the knowledge of Zoology in various field</p> <p>CO2: Apply different techniques</p>



**LIST of COs for the PG syllabus in Zoology-2022-23**

**FIRST SEMESTER**

Course code	Name of the Course	
<b>ZOO 101</b>	Non Chordata	CO1:Identify/ Recognise the beneficial and harmful groups of NonChordates. CO2: Explain/ Discuss the harmful effects of harmful groups and ecological & economical benefits of beneficial groups CO3: Establish/ Show the interrelationships among the different groups of NonChordates and predict the pattern of evolution. CO4: Analyse/ Examine the development of special features in certain groups of NonChordates and the reason thereof.
<b>ZOO 102</b>	Molecular Cell Biology	CO1: Study of the basic structure of cell and cell organelles. Finding out the function of different cell organelles. CO2: understanding the cellular organization and the properties of different cell components involved in cell survival and propagation.. CO3: To show how molecular organization is associated with respective function of the cell organelles. Further to see how the series of biophysical and biochemical reactions are helping the cell to survive and propagate CO4: Examining the molecular pathways to perform processes such as cell division, cell signaling and transportation of molecules in and across cell CO5: Declaration of the role of different biomolecules
<b>ZOO 103</b>	Environmen tal Biology	(L-1) Identification of components of Biosphere, Ecosystems, Biotic interaction, Geographical regions, Wild Life, Sources of Pollution. (L-2)Discussion on energy flow, Soil Profile, Population Characteristics, Biomagnification and Bioremediation, Biodiversity Conservation. (L-3) To establish relation between productivity and energy flow, Light and Temperature on animal and plant nutritions, Various Biotic interactions, Population growth. 4.(L-4)Analysis of Biogeochemical Cycles and their roles, Formation of Soil, Ecosystem Development, Factors affecting Population growth, Management of Solid Waste and other pollutants. 5.(L-5 & L-6) Develop the flow chart of Ecological Succession, Roadmap for Wild Life and Biodiversity

<b>ZOO 104</b>	Evolutionary Biology	<p>1.(L-1) Identifay/Recognise the basics of life, its origin and various theories related to origin of life, types of species and evidences of evolution.</p> <p>2.(L-2) Understand different theories and process of evolution.</p> <p>3.(L-3) Establish/Shows the interrelationship among different groups of animals through fossil records.</p> <p>4.(L-4) Analysis/Examine the characters develops by different groups of animals for their adaptability in various ecological conditions and analyze the evolution of certain higher groups of vertebrate like horse and man. Examine the causes of extension.</p> <p>5.(L-5 &amp; L-6) Evaluate of various modes of speciation, role of mass extinction in evolution and</p>
<b>ZOO 105</b>	PRACTICA L	<p>(i) To expose &amp; increase skills in performing scientific experiments</p> <p>(ii) To provide opportunities to develop responsibility in conducting practical experiments</p> <p>(iii) To facilitate &amp; synchronize the theoretical</p>
<b>SECOND SEMESTER</b>		
<b>ZOO 201</b>	Chordata	<p>1.(L-1) Identification of different groups of Chordates.</p> <p>2.(L-2) Discussion of the beneficial and harmful groups of Chordates and their ecological importance.</p> <p>3.(L-3) Establish /Show the inter relationships among the different groups of Chordates and predict the pattern of Evolution.</p> <p>4.(L-4) Analysis of the development of special features in certain groups of Chordates and the reason thereof.</p>

<b>ZOO 202</b>	Microbiology and Ethology	<p>1.(L-1) Identification of various types of viruses and viral infections, various types of bacteria and bacterial infection, classification of behavioral pattern, identification of various biological rhythms and different types of migration.</p> <p>2.(L-2) Differentiation of microbes, viruses and bacteria. Differentiation of orientation, social behaviour, reproductive behaviours with examples.</p> <p>3.(L-3) Methods of controlling viral, bacterial, protozoan and fungal infections. Methods of behavioural studies, applications of cultural techniques.</p> <p>4.(L-4) Analysis of the life cycle of bacteriophage, physiological basis of behaviour, regulatory mechanism of biological rhythms and behavioural patterns</p> <p>5.(L-5 &amp; L-6) Evaluation of the role of microbes in agriculture, industry and environment. Evaluation of the bacterial growth and prediction about the pattern</p>
<b>ZOO 203</b>	Developmental Biology	<p>1.(L-1) Remembering about different types of gametes in different groups of animals, types of cleavage, types of gastrulation etc. in various groups of vertebrate.</p> <p>2.(L-2) Understanding the process of gamete formation in different groups of animals and understand the process of fertilization, cleavage, gestation, placenta in various groups of vertebrate.</p> <p>3.(L-3) Application of different new technic like invitro-fertilization, stem cell culture, in the development of different groups of vertebrate.</p> <p>4.(L-4) Analysis/Examine the basic mechanism of embryonic induction, neural induction and formation of extra embryonic membrane in different higher group of animals like birds and mammals and origin of eyes, heart, brain in various groups of vertebrate.</p> <p>5.(L-5 &amp; L-6) Evaluating the cause of ageing of human beings and formation of twins in human being, teratogenic process, regeneration process and metamorphic changes in some specific groups of</p>

<b>ZOO 204</b>	Cytogenetics	<p>1.(L-1) Learning the basic structure of DNA, gene and Mendelian principles.</p> <p>2.(L-2) Understanding the role of chromosomes in heredity. Study the pathway and processes of genetic propagation.</p> <p>3.(L-3) Determining the possible set of phenotypes from a given set of Genome. Identification of phenotypes based on Genetic markers.</p> <p>4.(L-4) Utilization of genetic data's to construct family tree and establishing genetic relationship.</p> <p>5.(L-5 &amp; L-6) Use of genetic tools to resolve civil and</p>
<b>ZOO 205</b>	Practical	<p>(i) to provide expertise in hand skill in dissection and slide preparation.</p> <p>(ii) to expose the students in order to correlate the theoretical knowledge with practical exposure.</p> <p>(iii) To apply their understanding in applied biology and biomedical practices</p>
<b>ZOO 206</b>	Applied Biology	<p>(L-1) Learning of various types of farming technical. Like fish culture, prawn culture, pearl culture etc.</p> <p>2.(L-2) Understand the detailed process of different farming like poultry farming, sericulture, IMC culture etc.</p> <p>3.(L-3) Application of advanced scientific technology in farming sector for improving the productivity in various farming system.</p> <p>4.(L-4) Analyzing the productivity, marketing strategy for improving the livelihood status of farmers.</p> <p>5.(L-5 &amp; L-6) Qualitative and Quantitative evaluation</p>
<b>THIRD SEMESTER</b>		
<b>ZOO 301</b>	Physiology- Life sustaining system	<p>1.(L-1) Learning various organs, systems &amp; their associate glands in human being and also their importance for life sustaining.</p> <p>2.(L-2) Understand the detailed mechanism of various systems like digestive, circulatory, respiratory, and excretory systems and their functions for sustaining of life in human beings.</p> <p>3.(L-3) Application of digestion and absorption of different types of food and also the action of various systems occurs for sustaining the life smoothly in human.</p> <p>4.(L-4) Analyzing different disorders in various systems in human beings.</p> <p>5.(L-5 &amp; L-6) Qualitative and Quantitative evaluation</p>

ZOO 302	PHYSIOLOGY – CONTROLLING & COORDINATING SYSTEM	<p>1.(L-1) Learning various organs, systems &amp; their associate glands in human being and also their coodinating action for smooth life process in various groups of animals.</p> <p>2.(L-2) Understand the detailed mechanism of various endocrine glands, their hormones and also their functions for coordinating action of the body.</p> <p>3.(L-3) Application of different enzymes and hormones and also the action of various systems occurs for sustaining the life smoothly in human being.</p> <p>4.(L-4) Analyzing different disorders in various systems &amp; different endocrine glands and also the analyzing the action due to hypo and hipper secretion of hormones and enzymes in human being.</p> <p>5.(L-5 &amp; L-6) Qualitative and Quantitative evaluation of the rate of hormone &amp; enzyme secretion for</p>
ZOO 303	BIOMOLECULES & ENZYMOL OGY	<p>1.(L-1) Identification of different groups of biomolecules.</p> <p>2.(L-2) Discussion on the different structural organization of different biomolecules.</p> <p>3.(L-3) Establish /show the inter relationships of different groups of biomolecules.</p> <p>4.(L-4) Qualitative and Quantitative test of biomolecules.</p>
ZOO 304	BIOCHEMISTRY OF METABOLIC PROCESSES	<p>1.(L-1) Learning basic structure of biomolecules and their role in different metabolic processes.</p> <p>2.(L-2) Understanding the pathways followed by different biomolecules for synthesis, elimination or regeneration of essential things for cell/ body.</p> <p>3.(L-3) To see how regulation of metabolic cycle or metabolic product can make a difference in the survival of a living system.</p> <p>4.(L-4) To analyze the role of metabolites with respect to the physiological function performed by a living system.</p> <p>5.(L-5 &amp; L-6) Finding out the ways to manipulate Physiological aspects of the system taking metabolic</p>
ZOO 305	Practical	<p>(i) To acquire practical knowledge on various enzyme action and estimation process.</p> <p>(ii) To make quantitative and qualitative analysis for estimation of various biological samples.</p> <p>(iii) To apply the basic principles in applied biomedical</p>

ZOO 306	Practical	<p>1.(L-1) Identification of different groups of Chordates and Non-Chordates and the causative agents of various communicable and non communicable diseases.</p> <p>2.(L-2) Explain/Discuss the pattern of evolution and explain the position of Man.</p> <p>3.(L-3) Explain /Discuss how organisms function at the level of organ and organ system,</p> <p>4.(L-4) Analyse/Examine various groups of communicable and non-communicable diseases, their causative agents ,mode of transfer and their preventive measures.</p>
<b>FOURTH SEMESTER</b>		
ZOO 401	MOLECULAR BIOLOGY AND IMMUNOLOGY	<p>1.(L-1) To Learn the structure of DNA, RNA and their types. Identification of components of Immune system.</p> <p>2.(L-2) Understanding the role of DNA in a system. To Study various molecular processes associated with genetic material. Further to understand the role and production of antibodies.</p> <p>3.(L-3) To perform in vitro genetic experiments in order to diagnose metabolic and genetic shortcomings and development therapeutics.</p> <p>4.(L-4) analyzing the mechanism of DNA propagation and modification. Understanding of the cell communication system.</p> <p>5.(L-5 &amp; L-6) Utilization of Molecular knowledge to</p>
ZOO 402	BIOTECHNOLOGY	<p>1.(L - 1) To study of basic knowledge of gene, gene amplification, genetic engineering, vectors and methods of culture.</p> <p>2.(L-2) To understand the process of gene transfer along with the tools and techniques.</p> <p>3.(L-3) Manufacturing of bioproducts in large scale . To develop better quality breeds , drugs, crops and their applicability.</p> <p>4.(L-4) To analyse the behavioural aspects of gene with respect to its transfer to a host system and rate of success in production of transgenic animals.</p> <p>5.(L-5 &amp; L-6) Finding out suitable sources and methods to develop better biosources for products of</p>

ZOO 403	BIOPHYSICS, BIOPHYSICAL CHEMISTRY & INSTRUMENTATION	<p>1.(L-1) To know basic physical and chemical events in a living system and its manifestation. To know principles of Thermodynamics, concepts of energy and bonding.</p> <p>2.(L-2) To understand the role of biophysical and biochemical properties of biomolecules and their contribution towards the chemical foundation of physiology.</p> <p>3.(L-3) Analysis of biosamples. To know basic principles and mechanism of various instruments and technology.</p> <p>4.(L-4) Analysis of the application of thermodynamic principles on the biological system. Monitoring of microbial growth and assay.</p>
ZOO 404	Biostatistics	<p>(L-1) Types of sampling method and frequency distribution. Types of graphical representation data. Various measures central tendency and measures of dispersion. Types of correlation and regression.</p> <p>(L-2) Differentiation between normal, binomial and poisson distribution. Classification of ANOVA. Testing of hypothesis. Theorems of probability.</p> <p>(L-3) Interpretation and representation of data through graphs, charts, tables, etc. Testing of Hypothesis. Test of significance.</p> <p>(L-4) Analysis of data by various measures of dispersion. Variance test, ANOVA test, t test, <math>\chi^2</math> Test, F Test, standard error of mean, etc.</p> <p>(L-5 &amp; L-6) Predication of results/Outcomes through probability test. Finding out and drawing in of diagrams for coefficient of correlation and regression coefficient. Application and evaluation of various</p>
ZOO 405	PROJECT	<p>CO1: Apply the knowledge of Zoology in various field</p> <p>CO2: Apply different techniques</p>

**LIST of COs for the PG syllabus in Zoology-2021-22**

**FIRST SEMESTER**

Course Code	Name of the Course	
<b>ZOO 101</b>	Non Chordata	<p>CO1: Identify/ Recognise the beneficial and harmful groups of NonChordates.</p> <p>CO2: Explain/ Discuss the harmful effects of harmful groups and ecological &amp; economical benefits of beneficial groups</p> <p>CO3: Establish/ Show the interrelationships among the different groups of NonChordates and predict the pattern of evolution.</p> <p>CO4: Analyse/ Examine the development of special features in certain groups of NonChordates and the reason thereof.</p>
<b>ZOO 102</b>	Molecular Cell Biology	<p>organelles. Finding out the function of different cell organelles.</p> <p>CO2: understanding the cellular organization and the properties of different cell components involved in cell survival and propagation..</p> <p>CO3: To show how molecular organization is associated with respective function of the cell organelles. Further to see how the series of biophysical and biochemical reactions are helping the cell to survive and propagate</p> <p>CO4: Examining the molecular pathways to perform processes such as cell division, cell signaling and transportation of molecules in and across cell</p> <p>CO5: Declaration of the role of different biomolecules in structural organization and functional aspects of the cell</p>
<b>ZOO 103</b>	Environmental Biology	<p>(L-1) Identification of components of Biosphere, Ecosystems, Biotic interaction, Geographical regions, Wild Life, Sources of Pollution.</p> <p>(L-2) Discussion on energy flow, Soil Profile, Population Characteristics, Biomagnification and Bioremediation, Biodiversity Conservation.</p> <p>(L-3) To establish relation between productivity and energy flow, Light and Temperature on animal and plant nutrition, Various Biotic interactions, Population growth.</p> <p>4.(L-4) Analysis of Biogeochemical Cycles and their roles, Formation of Soil, Ecosystem Development, Factors affecting Population growth, Management of Solid Waste and other pollutants.</p> <p>5.(L-5 &amp; L-6) Develop the flow chart of Ecological Succession, Roadmap for Wild Life and Biodiversity</p>



<b>ZOO 104</b>	Evolutionary Biology	<p>1.(L-1) Identifay/Recognise the basics of life, its origin and various theories related to origin of life, types of species and evidences of evolution.</p> <p>2.(L-2) Understand different theories and process of evolution.</p> <p>3.(L-3) Establish/Shows the interrelationship among different groups of animals through fossil records.</p> <p>4.(L-4) Analysis/Examine the characters develops by different groups of animals for their adaptability in various ecological conditions and analyze the evolution of certain higher groups of vertebrate like horse and man. Examine the causes of extension.</p> <p>5.(L-5 &amp; L-6) Evaluate of various modes of speciation, role of mass extinction in evolution and influence</p>
<b>ZOO 105</b>	PRACTICA L	<p>(i) To expose &amp; increase skills in performing scientific experiments</p> <p>(ii) To provide opportunities to develop responsibility in conducting practical experiments</p> <p>(iii) To facilitate &amp; synchronize the theoretical</p>
<b>SECOND SEMESTER</b>		
<b>ZOO 201</b>	Chordata	<p>2.(L-2) Discussion of the beneficial and harmful groups of Chordates and their ecological importance.</p> <p>3.(L-3) Establish /Show the inter relationships among the different groups of Chordates and predict the pattern of Evolution.</p> <p>4.(L-4) Analysis of the development of special features in certain groups of Chordates and the reason thereof.</p> <p>5.(L-5 &amp; L-6) Development of taxonomical hierarchy and construct the phylogenetic tree of Chordates.</p>

<b>ZOO 202</b>	Microbiology and Ethology	<p>1.(L-1) Identification of various types of viruses and viral infections, various types of bacteria and bacterial infection, classification of behavioral pattern, identification of various biological rhythms and different types of migration.</p> <p>2.(L-2) Differentiation of microbes, viruses and bacteria. Differentiation of orientation, social behaviour, reproductive behaviours with examples.</p> <p>3.(L-3) Methods of controlling viral, bacterial, protozoan and fungal infections. Methods of behavioural studies, applications of cultural techniques.</p> <p>4.(L-4) Analysis of the life cycle of bacteriophage, physiological basis of behaviour, regulatory mechanism of biological rhythms and behavioural patterns</p> <p>5.(L-5 &amp; L-6) Evaluation of the role of microbes in agriculture, industry and environment. Evaluation of the bacterial growth and prediction about the pattern of growth. Justification of the migratory behaviour fishes and birds. Establishment of the relationship between</p>
<b>ZOO 203</b>	Developmental Biology	<p>1.(L-1) Remembering about different types of gametes in different groups of animals, types of cleavage, types of gastrulation etc. in various groups of vertebrate.</p> <p>2.(L-2) Understanding the process of gamete formation in different groups of animals and understand the process of fertilization, cleavage, gestation, placenta in various groups of vertebrate.</p> <p>3.(L-3) Application of different new technic like invitro-fertilization, stem cell culture, in the development of different groups of vertebrate.</p> <p>4.(L-4) Analysis/Examine the basic mechanism of embryonic induction, neural induction and formation of extra embryonic membrane in different higher group of animals like birds and mammals and origin of eyes, heart, brain in various groups of vertebrate.</p> <p>5.(L-5 &amp; L-6) Evaluating the cause of ageing of human beings and formation of twins in human being, teratogenic process, regeneration process and metamorphic changes in some specific groups of animals</p>

<b>ZOO 204</b>	Cytogenetics	<p>1.(L-1) Learning the basic structure of DNA, gene and Mendelian principles.</p> <p>2.(L-2) Understanding the role of chromosomes in heredity. Study the pathway and processes of genetic propagation.</p> <p>3.(L-3) Determining the possible set of phenotypes from a given set of Genome. Identification of phenotypes based on Genetic markers.</p> <p>4.(L-4) Utilization of genetic data's to construct family tree and establishing genetic relationship.</p> <p>5.(L-5 &amp; L-6) Use of genetic tools to resolve civil and</p>
<b>ZOO 205</b>	Practical	<p>(i) to provide expertise in hand skill in dissection and slide preparation.</p> <p>(ii) to expose the students in order to correlate the theoretical knowledge with practical exposure.</p> <p>(iii) To apply their understanding in applied biology and biomedical practices</p>
<b>ZOO 206</b>	Applied Biology	<p>fish culture, prawn culture, pearl culture etc.</p> <p>2.(L-2) Understand the detailed process of different farming like poultry farming, sericulture, IMC culture etc.</p> <p>3.(L-3) Application of advanced scientific technology in farming sector for improving the productivity in various farming system.</p> <p>4.(L-4) Analyzing the productivity, marketing strategy for improving the livelihood status of farmers.</p> <p>5.(L-5 &amp; L-6) Qualitative and Quantitative evaluation of the role of different farming system for improving the livelihood status of farmers.</p>
<b>THIRD SEMESTER</b>		
<b>ZOO 301</b>	Physiology- Life sustaining system	<p>1.(L-1) Learning various organs, systems &amp; their associate glands in human being and also their importance for life sustaining.</p> <p>2.(L-2) Understand the detailed mechanism of various systems like digestive, circulatory, respiratory, and excretory systems and their functions for sustaining of life in human beings.</p> <p>3.(L-3) Application of digestion and absorption of different types of food and also the action of various systems occurs for sustaining the life smoothly in human.</p> <p>4.(L-4) Analyzing different disorders in various systems in human beings.</p> <p>5.(L-5 &amp; L-6) Qualitative and Quantitative evaluation of the rate of digestion, rate of respiration, rate of</p>

ZOO 302	PHYSIOLOGY – CONTROL LING & COORDINATING SYSTEM	<p>1.(L-1) Learning various organs, systems &amp; their associate glands in human being and also their coodinating action for smooth life process in various groups of animals.</p> <p>2.(L-2) Understand the detailed mechanism of various endocrine glands, their hormones and also their functions for coordinating action of the body.</p> <p>3.(L-3) Application of different enzymes and hormones and also the action of various systems occurs for sustaining the life smoothly in human being.</p> <p>4.(L-4) Analyzing different disorders in various systems &amp; different endocrine glands and also the analyzing the action due to hypo and hipper secretion of hormones and enzymes in human being.</p> <p>5.(L-5 &amp; L-6) Qualitative and Quantitative evaluation of the rate of hormone &amp; enzyme secretion for controlling</p>
ZOO 303	BIOMOLECULES & ENZYMOL OGY	<p>1.(L-1) Identification of different groups of biomolecules.</p> <p>2.(L-2) Discussion on the different structural organization of different biomolecules.</p> <p>3.(L-3) Establish /show the inter relationships of different groups of biomolecules.</p> <p>4.(L-4) Qualitative and Quantitative test of biomolecules.</p>
ZOO 304	BIOCHEMISTRY OF METABOLIC PROCESSES	<p>1.(L-1) Learning basic structure of biomolecules and their role in different metabolic processes.</p> <p>2.(L-2) Understanding the pathways followed by different biomolecules for synthesis, elimination or regeneration of essential things for cell/ body.</p> <p>3.(L-3) To see how regulation of metabolic cycle or metabolic product can make a difference in the survival of a living system.</p> <p>4.(L-4) To analyze the role of metabolites with respect to the physiological function performed by a living system.</p> <p>5.(L-5 &amp; L-6) Finding out the ways to manipulate Physiological aspects of the system taking metabolic</p>
ZOO 305	Practical	<p>(i) To acquire practical knowledge on various enzyme action and estimation process.</p> <p>(ii) To make quantitative and qualitative analysis for estimation of various biological samples.</p> <p>(iii) To apply the basic principles in applied biomedical</p>

ZOO 306	Practical	<p>1.(L-1)Identification of different groups of Chordates and Non-Chordates and the causative agents of various communicable and non communicable diseases.</p> <p>2.(L-2) Explain/Discuss the pattern of evolution and explain the position of Man.</p> <p>3.(L-3)Explain /Discuss how organisms function at the level of organ and organ system,</p> <p>4.(L-4) Analyse/Examine various groups of communicable and non-communicable diseases, their causative agents ,mode of transfer and their preventive measures.</p> <p>5.(L-5 &amp; L-6) Develop an idea about various beneficial</p>
<b>FOURTH SEMESTER</b>		
ZOO 401	MOLECULAR BIOLOGY AND IMMUNOL OGY	<p>1.(L-1) To Learn the structure of DNA, RNA and their types. Identification of components of Immune system.</p> <p>2.(L-2) Understanding the role of DNA in a system. To Study various molecular processes associated with genetic material. Further to understand the role and production of antibodies.</p> <p>3.(L-3) To perform in vitro genetic experiments in order to diagnose metabolic and genetic shortcomings and development therapeutics.</p> <p>4.(L-4) analyzing the mechanism of DNA propagation and modification. Understanding of the cell communication system.</p> <p>5.(L-5 &amp; L-6) Utilization of Molecular knowledge to develop tools and techniques for biochemical study,</p>
ZOO 402	BIOTECHN OLOGY	<p>1.(L - 1) To study of basic knowledge of gene, gene amplification, genetic engineering, vectors and methods of culture.</p> <p>2.(L-2) To understand the process of gene transfer along with the tools and techniques.</p> <p>3.(L-3) Manufacturing of bioproducts in large scale . To develop better quality breeds , drugs, crops and their applicability.</p> <p>4.(L-4) To analyse the behavioural aspects of gene with respect to its transfer to a host system and rate of success in production of transgenic animals.</p> <p>5.(L-5 &amp; L-6) Finding out suitable sources and methods to develop better biosources for products of high value</p>

ZOO 403	BIOPHYSICS, BIOPHYSICAL CHEMISTRY & INSTRUMENTATION	<p>1.(L-1) To know basic physical and chemical events in a living system and its manifestation. To know principles of Thermodynamics, concepts of energy and bonding.</p> <p>2.(L-2) To understand the role of biophysical and biochemical properties of biomolecules and their contribution towards the chemical foundation of physiology.</p> <p>3.(L-3) Analysis of biosamples. To know basic principles and mechanism of various instruments and technology.</p> <p>4.(L-4) Analysis of the application of thermodynamic principles on the biological system. Monitoring of microbial growth and assay.</p> <p>5.(L-5 &amp; L-6) Finding out the role of physical and</p>
ZOO 404	Biostatistics	<p>(L-1) Types of sampling method and frequency distribution. Types of graphical representation data. Various measures central tendency and measures of dispersion. Types of correlation and regression.</p> <p>(L-2) Differentiation between normal, binomial and poisson distribution. Classification of ANOVA. Testing of hypothesis. Theorems of probability.</p> <p>(L-3) Interpretation and representation of data through graphs, charts, tables, etc. Testing of Hypothesis. Test of significance.</p> <p>(L-4) Analysis of data by various measures of dispersion. Variance test, ANOVA test, t test, <math>\chi^2</math> Test, F Test, standard error of mean, etc.</p> <p>(L-5 &amp; L-6) Predication of results/Outcomes through probability test. Finding out and drawing in of diagrams for coefficient of correlation and regression coefficient. Application and evaluation of various tests in both</p>
ZOO 405	PROJECT	<p>CO1: Apply the knowledge of Zoology in various field</p> <p>CO2: Apply different techniques</p>

**LIST of COs for the PG syllabus in Zoology-2020-21**

**FIRST SEMESTER**

Course	Name of the Course	
<b>ZOO 101</b>	Non Chordata	<p>CO1: Identify/ Recognise the beneficial and harmful groups of NonChordates.</p> <p>CO2: Explain/ Discuss the harmful effects of harmful groups and ecological &amp; economical benefits of beneficial groups</p> <p>CO3: Establish/ Show the interrelationships among the different groups of NonChordates and predict the pattern of evolution.</p> <p>CO4: Analyse/ Examine the development of special features in certain groups of NonChordates and the reason thereof.</p>
<b>ZOO 102</b>	Molecular Cell Biology	<p>CO1: Study of the basic structure of cell and cell organelles. Finding out the function of different cell organelles.</p> <p>CO2: understanding the cellular organization and the properties of different cell components involved in cell survival and propagation..</p> <p>CO3: To show how molecular organization is associated with respective function of the cell organelles. Further to see how the series of biophysical and biochemical reactions are helping the cell to survive and propagate</p> <p>CO4: Examining the molecular pathways to perform processes such as cell division, cell signaling and transportation of molecules in and across cell</p> <p>CO5: Declaration of the role of different biomolecules</p>
<b>ZOO 103</b>	Environmental Biology	<p>(L-1) Identification of components of Biosphere, Ecosystems, Biotic interaction, Geographical regions, Wild Life, Sources of Pollution.</p> <p>(L-2) Discussion on energy flow, Soil Profile, Population Characteristics, Biomagnification and Bioremediation, Biodiversity Conservation.</p> <p>(L-3) To establish relation between productivity and energy flow, Light and Temperature on animal and plant nutrition, Various Biotic interactions, Population growth.</p> <p>4.(L-4) Analysis of Biogeochemical Cycles and their roles, Formation of Soil, Ecosystem Development, Factors affecting Population growth, Management of Solid Waste and other pollutants.</p> <p>5.(L-5 &amp; L-6) Develop the flow chart of Ecological Succession, Roadmap for Wild Life and Biodiversity</p>

<b>ZOO 104</b>	Evolutionary Biology	<p>1.(L-1) Identifay/Recognise the basics of life, its origin and various theories related to origin of life, types of species and evidences of evolution.</p> <p>2.(L-2) Understand different theories and process of evolution.</p> <p>3.(L-3) Establish/Shows the interrelationship among different groups of animals through fossil records.</p> <p>4.(L-4) Analysis/Examine the characters develops by different groups of animals for their adaptability in various ecological conditions and analyze the evolution of certain higher groups of vertebrate like horse and man. Examine the causes of extension.</p> <p>5.(L-5 &amp; L-6) Evaluate of various modes of speciation, role of mass extinction in evolution and influence</p>
<b>ZOO 105</b>	PRACTICAL	<p>(i) To expose &amp; increase skills in performing scientific experiments</p> <p>(ii) To provide oppotunities to develop responsibility in conducting practical experiments</p> <p>(iii) To facilitate &amp; synchronize the theoretical</p>
<b>SECOND SEMESTER</b>		
<b>ZOO 201</b>	Chordata	<p>1.(L-1) Identification of different groups of Chordates.</p> <p>2.(L-2) Discussion of the beneficial and harmful groups of Chordates and their ecological impotence.</p> <p>3.(L-3) Establish /Show the inter relationships among the different groups of Chordates and predict the pattern of Evolution.</p> <p>4.(L-4) Analysis of the development of special features in certain groups of Chordates and the reason thereof.</p> <p>5.(L-5 &amp; L-6) Development of taxonomical hierarchy</p>



<b>ZOO 202</b>	Microbiology and Ethology	<p>1.(L-1) Identification of various types of viruses and viral infections, various types of bacteria and bacterial infection, classification of behavioral pattern, identification of various biological rhythms and different types of migration.</p> <p>2.(L-2) Differentiation of microbes, viruses and bacteria. Differentiation of orientation, social behaviour, reproductive behaviours with examples.</p> <p>3.(L-3) Methods of controlling viral, bacterial, protozoan and fungal infections. Methods of behavioural studies, applications of cultural techniques.</p> <p>4.(L-4) Analysis of the life cycle of bacteriophage, physiological basis of behaviour, regulatory mechanism of biological rhythms and behavioural patterns</p> <p>5.(L-5 &amp; L-6) Evaluation of the role of microbes in agriculture, industry and environment. Evaluation of the bacterial growth and prediction about the pattern</p>
<b>ZOO 203</b>	Developmental Biology	<p>1.(L-1) Remembering about different types of gametes in different groups of animals, types of cleavage, types of gastrulation etc. in various groups of vertebrate.</p> <p>2.(L-2) Understanding the process of gamete formation in different groups of animals and understand the process of fertilization, cleavage, gestation, placenta in various groups of vertebrate.</p> <p>3.(L-3) Application of different new technic like invitro-fertilization, stem cell culture, in the development of different groups of vertebrate.</p> <p>4.(L-4) Analysis/Examine the basic mechanism of embryonic induction, neural induction and formation of extra embryonic membrane in different higher group of animals like birds and mammals and origin of eyes, heart, brain in various groups of vertebrate.</p> <p>5.(L-5 &amp; L-6) Evaluating the cause of ageing of human beings and formation of twins in human being, teratogenic process, regeneration process and metamorphic changes in some specific groups of</p>

<b>ZOO 204</b>	Cytogenetics	<p>1.(L-1) Learning the basic structure of DNA, gene and Mendelian principles.</p> <p>2.(L-2) Understanding the role of chromosomes in heredity. Study the pathway and processes of genetic propagation.</p> <p>3.(L-3) Determining the possible set of phenotypes from a given set of Genome. Identification of phenotypes based on Genetic markers.</p> <p>4.(L-4) Utilization of genetic data's to construct family tree and establishing genetic relationship.</p> <p>5.(L-5 &amp; L-6) Use of genetic tools to resolve civil and</p>
<b>ZOO 205</b>	Practical	<p>(i) to provide expertise in hand skill in dissection and slide preparation.</p> <p>(ii) to expose the students in order to correlate the theoretical knowledge with practical exposure.</p> <p>(iii) To apply their understanding in applied biology and biomedical practices</p>
<b>ZOO 206</b>	Applied Biology	<p>(L-1) Learning of various types of farming technical. Like fish culture, prawn culture, pearl culture etc.</p> <p>2.(L-2) Understand the detailed process of different farming like poultry farming, sericulture, IMC culture etc.</p> <p>3.(L-3) Application of advanced scientific technology in farming sector for improving the productivity in various farming system.</p> <p>4.(L-4) Analyzing the productivity, marketing strategy for improving the livelihood status of farmers.</p> <p>5.(L-5 &amp; L-6) Qualitative and Quantitative evaluation of the role of different farming system for improving</p>
<b>THIRD SEMESTER</b>		
<b>ZOO 301</b>	Physiology- Life sustaining system	<p>1.(L-1) Learning various organs, systems &amp; their associate glands in human being and also their importance for life sustaining.</p> <p>2.(L-2) Understand the detailed mechanism of various systems like digestive, circulatory, respiratory, and excretory systems and their functions for sustaining of life in human beings.</p> <p>3.(L-3) Application of digestion and absorption of different types of food and also the action of various systems occurs for sustaining the life smoothly in human.</p> <p>4.(L-4) Analyzing different disorders in various systems in human beings.</p> <p>5.(L-5 &amp; L-6) Qualitative and Quantitative evaluation</p>

ZOO 302	PHYSIOLOGY – CONTROLLING & COORDINATING SYSTEM	<p>1.(L-1) Learning various organs, systems &amp; their associate glands in human being and also their coodinating action for smooth life process in various groups of animals.</p> <p>2.(L-2) Understand the detailed mechanism of various endocrine glands, their hormones and also their functions for coordinating action of the body.</p> <p>3.(L-3) Application of different enzymes and hormones and also the action of various systems occurs for sustaining the life smoothly in human being.</p> <p>4.(L-4) Analyzing different disorders in various systems &amp; different endocrine glands and also the analyzing the action due to hypo and hipper secretion of hormones and enzymes in human being.</p> <p>5.(L-5 &amp; L-6) Qualitative and Quantitative evaluation of the rate of hormone &amp; enzyme secretion for</p>
ZOO 303	BIOMOLECULES & ENZYMOLOGY	<p>1.(L-1) Identification of different groups of biomolecules.</p> <p>2.(L-2) Discussion on the different structural organization of different biomolecules.</p> <p>3.(L-3) Establish /show the inter relationships of different groups of biomolecules.</p> <p>4.(L-4) Qualitative and Quantitative test of biomolecules.</p>
ZOO 304	BIOCHEMISTRY OF METABOLIC PROCESSES	<p>1.(L-1) Learning basic structure of biomolecules and their role in different metabolic processes.</p> <p>2.(L-2) Understanding the pathways followed by different biomolecules for synthesis, elimination or regeneration of essential things for cell/ body.</p> <p>3.(L-3) To see how regulation of metabolic cycle or metabolic product can make a difference in the survival of a living system.</p> <p>4.(L-4) To analyze the role of metabolites with respect to the physiological function performed by a living system.</p> <p>5.(L-5 &amp; L-6) Finding out the ways to manipulate Physiological aspects of the system taking metabolic</p>
ZOO 305	Practical	<p>(i) To acquire practical knowledge on various enzyme action and estimation process.</p> <p>(ii) To make quantitative and qualitative analysis for estimation of various biological samples.</p> <p>(iii) To apply the basic principles in applied biomedical</p>

ZOO 306	Practical	<p>1.(L-1)Identification of different groups of Chordates and Non-Chordates and the causative agents of various communicable and non communicable diseases.</p> <p>2.(L-2) Explain/Discuss the pattern of evolution and explain the position of Man.</p> <p>3.(L-3)Explain /Discuss how organisms function at the level of organ and organ system,</p> <p>4.(L-4) Analyse/Examine various groups of communicable and non-communicable diseases, their causative agents ,mode of transfer and their preventive measures.</p>
<b>FOURTH SEMESTER</b>		
ZOO 401	MOLECULAR BIOLOGY AND IMMUNOLOGY	<p>1.(L-1) To Learn the structure of DNA, RNA and their types. Identification of components of Immune system.</p> <p>2.(L-2) Understanding the role of DNA in a system. To Study various molecular processes associated with genetic material. Further to understand the role and production of antibodies.</p> <p>3.(L-3) To perform in vitro genetic experiments in order to diagnose metabolic and genetic shortcomings and development therapeutics.</p> <p>4.(L-4) analyzing the mechanism of DNA propagation and modification. Understanding of the cell communication system.</p> <p>5.(L-5 &amp; L-6) Utilization of Molecular knowledge to</p>
ZOO 402	BIOTECHNOLOGY	<p>1.(L - 1) To study of basic knowledge of gene, gene amplification, genetic engineering, vectors and methods of culture.</p> <p>2.(L-2) To understand the process of gene transfer along with the tools and techniques.</p> <p>3.(L-3) Manufacturing of bioproducts in large scale . To develop better quality breeds , drugs, crops and their applicability.</p> <p>4.(L-4) To analyse the behavioural aspects of gene with respect to its transfer to a host system and rate of success in production of transgenic animals.</p> <p>5.(L-5 &amp; L-6) Finding out suitable sources and methods to develop better biosources for products of</p>

ZOO 403	BIOPHYSICS, BIOPHYSICAL CHEMISTRY & INSTRUMENTATION	<p>1.(L-1) To know basic physical and chemical events in a living system and its manifestation. To know principles of Thermodynamics, concepts of energy and bonding.</p> <p>2.(L-2) To understand the role of biophysical and biochemical properties of biomolecules and their contribution towards the chemical foundation of physiology.</p> <p>3.(L-3) Analysis of biosamples. To know basic principles and mechanism of various instruments and technology.</p> <p>4.(L-4) Analysis of the application of thermodynamic principles on the biological system. Monitoring of microbial growth and assay.</p>
ZOO 404	Biostatistics	<p>(L-1) Types of sampling method and frequency distribution. Types of graphical representation data. Various measures central tendency and measures of dispersion. Types of correlation and regression.</p> <p>(L-2) Differentiation between normal, binomial and poisson distribution. Classification of ANOVA. Testing of hypothesis. Theorems of probability.</p> <p>(L-3) Interpretation and representation of data through graphs, charts, tables, etc. Testing of Hypothesis. Test of significance.</p> <p>(L-4) Analysis of data by various measures of dispersion. Variance test, ANOVA test, t test, <math>\chi^2</math> Test, F Test, standard error of mean, etc.</p> <p>(L-5 &amp; L-6) Predication of results/Outcomes through probability test. Finding out and drawing in of diagrams for coefficient of correlation and regression coefficient. Application and evaluation of various tests</p>
ZOO 405	PROJECT	<p>CO1: Apply the knowledge of Zoology in various field</p> <p>CO2: Apply different techniques</p>

## LIST of COs for the PG syllabus in Sociology 2023-24

### First Semester

Course Code	Name of Course	List of CO
Paper No 101	Introduction to Sociology	<p>CO2: To identify the convergence and divergence of Sociology with other social science disciplines in terms of the subject matter, nature scope of the discipline and its approach.</p> <p>CO3: To generate ideas about the social processes and social institutions man encounters as a member of society.</p> <p>CO4: To explore the importance of the societal processes and the cultural aspects of everyday life.</p>
		<p>contributions in Sociology and their contemporary relevance.</p> <p>CO2: To develop an understanding about the methodological shift in the discipline over the years.</p> <p>CO3: To locate the theoretical and methodological relevance of social phenomena.</p>
Paper No. 102	Classical Sociological Tradition	<p>philosophical roots of nature, forms of knowledge and process of knowledge production and theory building.</p> <p>CO2: To learn various steps in formulation of research design, writing synopsis, research proposal, and process of carry out research.</p> <p>CO3: To apply various techniques and methods of qualitative and quantitative research.</p> <p>CO4: Through the competing theoretical perspectives and</p>
		<p>composition of Indian Society like villages, towns, tribes, dalits, women and population related issues.</p> <p>CO2: To learn about the changing institutions, the processes, the agents and the interventions that bring about change in the Indian society.</p> <p>CO3: To comprehend the contributions of the Indian Social Thinkers and understanding their perspectives.</p>
Paper No. 103	Methods of Social Research	
Paper No. 104	Indian Society	

Paper No. 105	Sociology of Kinship	<p>CO1: To familiarize with different approaches to the study of kinship, family and marriage as the key institutions of society.</p> <p>CO2: To understand how structural principles are used by societies to organize groups and categories and attach cultural meanings so that the societal objectives of social integration, social reproduction and social continuity are maintained.</p> <p>CO3: To guide students to understand the coexistence of multiple perspectives in the study of family,</p>
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**Second Semester**

Paper No.201	Social Stratification	<p>CO1: To comprehend students develop understanding on various concept of social stratification</p> <p>CO2: To understand the form, nature and process of structuring social stratification and inequalities in India in particular and world in general.</p> <p>CO3: To develop an understanding of various theories and approaches of social stratification and inequalities.</p> <p>CO4: To understand the gender dimension of social</p>
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Paper No.202	Quantitative Research Techniques in Sociology	<p>CO1: To learn the various tools and techniques of quantitative research and its application</p> <p>CO2: To demonstrate the learning of various types of sampling strategy and minimizing sampling error, preparation of questionnaire, interview schedule for data collection, coding, de-coding and tabulation of quantitative data.</p> <p>CO3: To apply various measurement and scaling techniques such as sociometry, reliability, validity, Thorston, Likert and Bogardus Scale etc</p> <p>CO4: To utilize various statistical measures techniques such as Mean, Median, Mode, Standard deviation,</p>
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Paper No. 203	Science, Technology and Society	<p>CO1: To understand the issues relating to science, technology and society in India both in the Historical and Globalization contexts.</p> <p>CO2: To analyze science and technology from sociological perspectives in which science and technology are treated as social phenomena.</p> <p>CO3: To critically examine the production, dissemination, and utilization of science and technology in contemporary society.</p> <p>CO4: To begin to see links between sociological analyses of science and technology and broader</p>
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Paper No.204	Social Change in India	CO1: To enable the students to develop and generate new ideas on the pattern of changes taking place in the society in which we live. CO2: To evaluate and examine the new trends brought by various development strategies.
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Paper No.205	Modern Sociological Theory	CO1: To enable the students to comprehend the theoretical approaches and their origin and relevance in sociology. CO2: To know the typology and diversity of the perspectives as positivism, functionalism, conflict and structuralism. CO3: To help the students to understand the basic nature of sociological theories.
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Paper No. DSE. 206A A.	Sociology of Religion	CO1: To guide the students to use the sociological imagination in the study of religion and spirituality. CO2: To acquaint students to alternative approaches on Religion. CO3: To comprehend cross-cultural differences in religions across the world.
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Paper No. DSE. 206B	Sociology of Environment	CO1: To develop knowledge, skills, values, and a strong concern for the environment. CO2: To motivate them to actively participate in environmental improvement and protection. CO3: To develop understanding on natural resource base,
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Paper No. DSE.206 C	Sociology of Education	CO1: To enable students to develop a holistic understanding of education as an institution. CO2: To identify various educational pedagogies around the world. CO3: To understand various educational policies and their
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Paper No. DSE. 206D	Sociology of Health	CO1: To gain knowledge on the sociology of health and medicine. CO2: To develop an insight on socio-cultural dimensions in the construction of illness and medical knowledge. CO3: To gain understanding on health sector reforms of Government of India.
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**THIRD SEMESTER**



Paper No.301	Sociology of Development	<p>CO1: To help the learners understand the significance of social development.</p> <p>CO2: To develop their ability to critically engage with contemporary transformations.</p> <p>CO3: To facilitate the students for theoretical and</p>
Paper No.302	Advanced Sociological Theories	<p>behavior through the theoretical approach of Interactionism, Phenomenology and Ethnomethodology.</p> <p>CO2: To develop sound knowledge how critical theory explains social realities and social problems and critically reflect on it.</p> <p>CO3: To explain various stand point of post-modern theories on social reality and its criticism to exiting sociological approaches.</p> <p>CO4: To utilize the theoretical structure in the context of social reality.</p>
Paper No.303	Social Demography	<p>CO1: To acknowledge the scope and importance of social demography.</p> <p>CO2: To get acquainted with a perennial problem of the Indian society that is population growth and the measures introduced to control it.</p> <p>CO3: To assess the role of various agencies in population control.</p> <p>CO4: To develop specific idea on Indian population</p>
Paper No.304	Political Sociology	<p>CO1: To learn the conceptual framework of social movement.</p> <p>CO2: To comprehend the theoretical approaches to social movement.</p> <p>CO3: To identify various diverse social movements and understanding their course of action.</p> <p>CO4: The students will come to a position to situate new social movements in the development</p>
Paper No.305	Gender and Society	<p>CO1: To develop a gendered reading of both classics and contemporary texts in sociology and anthropology.</p> <p>CO2: To develop specific and substantive concern in gender studies</p> <p>CO3: To acquaint students with older and current debates and new areas of research in the field.</p> <p>CO4: To develop an understanding of contemporary status of women along with the</p>

IDSE Paper No. 306 A	Sociology of Development	CO1: To help the learners understand the significance of social development. CO2: To develop their ability to critically engage with contemporary transformations.
IDSE Paper No. 306 B	Gender and Society	CO1: To develop a gendered reading of both classics and contemporary texts in sociology and anthropology. CO2: To develop specific and substantive concern in gender studies CO3: To acquaint students with older and current debates and new areas of research in the field. CO4: To develop an understanding of contemporary status of women along with the
IDSE Paper No. 306 C	Social Change in India	CO1: To enable the students to develop and generate new ideas on the pattern of changes taking place in the society in which we live. CO2: To evaluate and examine the new trends brought by various development strategies.

**FOURTH SEMESTER**

Paper No.401	Perspectives in Indian Sociology	CO1: To learn about various conceptual and methodological issues of Indian sociology. CO2: To learn about present status and criticism of Indian sociology and locate it in global sociological context. CO3: To develop critical understanding on the various theoretical approaches in Indian sociology.
Paper No.402	Urban Sociology	CO1: To understand the growth and development of cities and critically reflect on the problems associated with urban places and cities. CO2: To apply various urban sociological theories to understand and critical explain the modern urban problems and seeks for solution. CO3: To use their knowledge to resolve various urban problems such as urban crimes, slum, women problems and work with various state and development agencies to fight for the existing urban problems. CO4: To equip students with knowledge of urban planning.

Paper No. 403	Agrarian Social Structure and Change in India	CO1: To develop an empathy for and ability to engage agrarian communities as living societies and understand grasp they condition as human condition. CO2: An appreciation of agrarian world and familiarity with the trajectory of theoretical conversation on agrarian issues and their social, political and policy implications. CO3: To demonstrate an understating of emerging as well
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Paper No.404	Social Capital	CO1: The students will be in a position to learn the conceptual framework of social capital. CO2.The course will enable the students to comprehend the theoretical approaches to social capital. CO3. The students will come to know the typology and diversity of the concept. CO4.The students will come to a position to situate social
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Paper No.405	Fieldwork, Dissertation and Viva	CO1: To provide a basic exposure to the student to the fields and to acquaint him/her with the research process. CO2.To equip them with the capacity to browse secondary literature from right sources and with a process of reviewing relevant literature CO3.To promote in them an ability to capture the right type of data and put them into documentation format.
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Session-2019-2020			
Name of the Department: SANSKRIT			
Programme: PG			
Semest	Course Code	Course Title	Course Outcome
I	SAN-101	Vaidikasāhityam - 1 (Veda, Upaniṣad & Rg-veda-	CO-1 Students will be able to comprehend why ancient Indians venerated the natural Gods and goddesses. CO-2 Students can distinguish accents, Vedic meters, and figures of speech. CO-3 Students will be able to identify the various
	SAN-102	Samśkrta-vyākaraṇam - 1 (SiddhāntaKaumudī & Lahu-SiddhāntaKaumudī)	CO-1 Students will Understand and apply the major technical terms of Astadhyayee. CO-2 Students will Understand and apply the Paribhasa sutras of Astadhyayee while the derivation of words. CO-3 Students will Understand and apply the Samasa sutras of Astadhyayee while the derivation of Samastapadas.
	SAN-103	Samśkrta-rūpakam (Karnabharam, Ratnāvalī & Uttararāmcaram)	CO-1 Students will understand the structural patterns of Sanskrit dramatic compositions. CO-2 Students will mention and interpret the depiction of nature in various human forms and emotions in two of the Rupakas. CO-3 Students will analyse the origin and development of Sanskrit plays and develop their dramatic standard of Sanskrit Literature .
	SAN-104	Bhāratīya-darśanam – 1 (Sāmkhyakārikā & Vedāntasārah)	CO-1 This course are to help students to apply the theory of darshana with regards to inter-disciplinary studies. CO-2 Students will understand the differences of various Astikadarshana. CO-3 Students will understand the term Moksha by
	SAN-105	Samśkrta-sāhitya syetihāsaḥ	CO-1 Students will understand and analyse the Sanskrit Mahakavyas. CO-2 Students will understand and analyse the Sanskrit Rupakas.
	SAN-201	Bhāratīya-darśanam - 2 (Tarkasamgrahaḥ & Arthasamgrahaḥ)	CO-1 Students will be able to define the area of Indian philosophy. CO-2 Students can impart knowledge about the scientific aspects of the material world. It may involve exploring the intersection of philosophy and science, discussing the nature of reality, and understanding the material aspects of existence from both philosophical and scientific perspectives. CO-3 Students will be able to comprehend the material
	SAN-202	Samśkrta-vyākaraṇam – 2 (Mahābhāṣyam, SiddhāntaKaumudī &	CO-1 Students will understand and analyse the Paspasahnika of Mahabhasya. CO-2 Students will understand the of Krutyaprakarana of Siddhantakaumudi. CO-3 Students will mention and interpret and

II	SAN-203	Alaṅkāraśāstram - 1 (Natyasastram, Sāhityadarpanaḥ & Kāvya prakāśaḥ)	CO-1 Students will get basic understanding of some fundamental terminologies of the Natya and Kavya. CO-2 Students will understand the definition, purpose and reason of Kavya. CO-3 Students will discuss and analyse the definition and divisions of Varna and pada as well as Sabdashakti. CO-4 Students will form a deep knowledge of poetic
	SAN-204	Dharmaśāstram Arthaśāstrañca (Manusmṛtiḥ, Yjñavalkya smṛtiḥ & Arthaśāstram)	CO-1 The main learning outcomes of this course are to enable students to understand the application of the Shastras in the current scenario. CO-2 The course will be enabling students in finding the solutions for various societal problems. CO-3 Students will be able to develop a true vision of
	SAN-205	Gadyasāhityam-1 (Dasakumaracharitam & Harshacharitam)	CO-1 The course aims at making the learners acquainted with the highest forms of prosewritings with its poetic beauty along with social and cultural relevance. CO-2 Students will know about the Prose (Gadya Kavya) of Sanskrit and be able to write in Sanskrit
	SAN-206(A)	Gītikāvyaṃ Prakaraṇaṅca (Meghadūtam & Mṛcchakatīkam)	CO-1 After completion of the course students will be able to understand the various aspects of social life as well as dramatic standard of Sanskrit literature. CO-2 Students will understand the structural patterns of Sanskrit dramatic compositions and also origin and development of Sanskrit plays. CO-3 After completion of Sudrakas Mṛcchakatīkam, students will be exposed to the various aspects of socio-political life and poetic standard of Sanskrit Drama.
	SAN-206(B)	Natakasāhityam (Venisamharam & Mudraraksham)	CO-1 After completion of the course students will be exposed to the various aspects of social life as well as dramatic standard of Sanskrit literature. CO-2 Students will understand the structural patterns of Sanskrit dramatic compositions. CO-3 Students will understand the structural patterns of
	SAN-206(C)	Bhāratīyadarśanam (Yogadarśanam & Pratyavijnā-darsanam)	CO-1 After studying this course students will get the basics idea of Yoga philosophy and will be able to analyze the impact of yoga and darshana on human life. CO-2 After completion of this course they will be able to develop a vision on the theory of Pramana, prameya and their utilization in everyday life, CO-3 After studying this course students will understand the essence of Darshanasāstra to carryout the research. CO-4 After completion of this course students will be able to
	SAN-301	Vaidikasāhityam - 2 (Niruktam, Atharvavedaḥ & R̥gvedaprātīśākhyaṃ)	CO-1 Students will be engaged in a comparative analysis of Vedic words and their counterparts in classical Sanskrit. Vedic Sanskrit and classical Sanskrit exhibit differences in grammar, vocabulary, and usage, so this comparison may involve understanding the nuances and evolution of language across these two periods. CO-2 Students will be able to explain the origin and development of Vedic words through etymology. Etymology involves tracing the historical development

III	SAN-302	Samskrutakavya sahityam (Naisadhiyachar itam and Kadambari)	CO-2 The course aims at making the learners acquainted with the highest forms of prosewritings with its poetic beauty along with social and cultural relevance. CO-2 This paper is intended for making the students acquainted with a great Mahakavya that is Naisadhiyacaritam. CO-3 Students will get the knowledge through this text
	SAN-303	Samskruta- vyakaranam (Paniniyasiksha and Sidhanta- kaumudi)	CO-1 Students will understand and interpret the Paniniyashiksha. CO-2 Students will analyse and apply the Paniniyashiksha. CO-3 Students will understand and interpret the
	SAN-304	Bhashavijnanam	CO-1 This course will be students to have comparative knowledge in history of language and linguistics. CO-2 Students will be having detail knowledge on the Indo-European and Indo-Aryan language family. CO-3 Students will be gathering knowledge about the process of linguistics and methodology of the language.
	SAN-305	Vaidika- sahityasyetihasa	CO-1 Students will understand the Four Vedass i.e Rugveda, Yajurveda, Samaveda and Atharvaveda. CO-2 Students will interpret the Vedic Texts, Brahmana texts, Aranyaka texts and Upanishad texts. CO-3 Students will analyse the Vedic Sanskrit Texts
	SAN-306(A)	Nitiśatakam and Meghadutam	CO-1 This course is to help the students to apply the theory of Nitisastras with regards to day-to-day activities. CO-2 This course aims to get an idea on Sadachara and guidelines to follow the life. CO-3 Students will have the ability to explain
	SAN-306(B)	Self Management in the Gita	CO-1 This course are to help the students to have interdisciplinary studies in Sanskrit literature. CO-2 This course are to help the students to learn managerial skill from philosophical texts such as Bhagavadgita. CO-3 Students will understand the philosophical
	SAN-306(C)	Indian Philosophy and Literature	CO-1 This course are to help students to apply the theory of darshana with regards to inter-disciplinary studies. CO-2 This course will help students to the differences of various darshanas. CO-3 Students will have an understanding the socio-cultural approach by the Puranas Mahabharata and
IV	SAN-401	Prācīnabhāratas ya Abhilekhaḥ Sanskṛtīśca	CO-1 The students will learn the script & understand the religious and social importance of the inscriptions to understand & interpret original inscriptional records. CO-2 This course will help students to learn the ideasancient Indian culture and civilization of India. CO-3 Students will explore the knowledge of the Indian
	SAN-402	Sadalankarasam pradayah Sabdashaktischa	CO 1 Students will understand and criticall analyse the definition, divisions of Rasa as well as the lifehistory and works of Major Rasavadi Alankarikas. CO 2 Students will understand and criticall analyse the definition, divisions of Dhvani as well as the lifehistory and works of Major Dhvanivadi Alankarikas. CO 3 Students will understand and criticall analyse the definition, divisions of Alankara, Riti, Vakrokti & Auchitya as well as the lifehistory and works of Major

SAN-403	Samskruta- vyakaranam (Laghu- Sidhanta- kaumudi)	CO1 Students will understand the sutras of Bhwadiprakarana of Laghusiddhantakaumudi . CO2 Students will interpret the sutras of Bhwadiprakarana of Laghusiddhantakaumudi. CO3 Students will critically think and analyse and derive the verbs (kriyapadas) by the help of the sutras
SAN-404	Samskruts- nibandhah, Bhava- samprasaranam Adhunika- samskrutasahity	CO1 Students will understand the process of Essay Writing. CO2 Students will be able to discuss, compare, interpret and critical think through Bhavasamprasaranam. CO3 Students will gain knowledge about the Modern
SAN-405	Dissertation	

**Session-2020-2021****Name of the Department: SANSKRIT****Programme: PG**

Semester	Course Code	Course Title	Course Outcome
I	SAN-101	Vaidikasāhitya m- 1 (Veda, Upaniṣad & Rg-veda-	CO-1 Students will be able to comprehend why ancient Indians venerated the natural Gods and goddesses. CO-2 Students can distinguish accents, Vedic meters, and figures of speech.
	SAN-102	Saṁskṛta- vyākaraṇam - 1 (SiddhāntaKau- mudī & Lahu- SiddhāntaKau- mudī)	CO1 Students will Understand and apply the major technical terms of Astadhyayee. CO2 Students will Understand and apply the Paribhasa sutras of Astadhyayee while the derivation of words. CO3 Students will Understand and apply the Samasa sutras of Astadhyayee while the derivation of
	SAN-103	Saṁskṛta- rūpakam (Karnabharam, Ratnāvalī & Uttararāmcari- am)	CO1 Students will understand the structural patterns of Sanskrit dramatic compositions. CO2 Students will mention and interpret the depiction of nature in various human forms and emotions in two of Rupakas. CO3 Students will analyse the origin and development of Sanskrit plays and develop their dramatic standard of Sanskrit Literature.
	SAN-104	Bhāratīya- darśanam – 1 (Sāṁkhyakārik- ā & Vedāntasārah)	CO-1 This course are to help students to apply the theory of darshana with regards to inter-disciplinary studies. CO-2 Students will understand the differences of various Astikadarshana. CO-3 Students will understand the term Moksha by
	SAN-105	Saṁskṛtasāhitya	CO1 Students will understand and analyse the Sanskrit Mahakavyas. CO2 Students will understand and analyse the Sanskrit Rupakas. CO3 Students will understand and analyse the
	SAN-201	Bhāratīya- darśanam - 2 (Tarksaṁgraha- ḥ & Arthasaṁgraha- ḥ)	CO1 Students will be able to define the area of Indian philosophy. CO2 Students can impart knowledge about the scientific aspects of the material world. It may involve exploring the intersection of philosophy and science, discussing the nature of reality, and understanding the material aspects of existence from both philosophical and scientific perspectives. CO3 Students will be able to comprehend the material
	SAN-202	Saṁskṛta- vyākaraṇam – 2 (Mahābhāṣyam , SiddhāntaKau-	CO1 Students will understand and analyse the Paspasahnika of Mahabhasya. CO2 Students will understand the of Krutyaprakarana of Siddhantakaumudi. CO3 Students will mention and interpret and critically think the sutras of Krutvaprakarana of



II

SAN-203	SAN-203 Alaṅkāraśāstra m- 1 (Natyasastram, Sāhityadarpan aḥ &	CO1 Students will get basic understanding of some fundamental terminologies of the Natya and Kavya. CO2 students will understand the definition, purpose and reason of Kavya. CO3 Students will discuss and analyse the definition and divisions of Varna and pada as well as Sabdashakti. CO4 Students will form a deep knowledge of poetic
SAN-204	Dharmaśāstra m Arthaśāstrañca (Manusmṛtiḥ, Yjñavalkyaśmṛ utiḥ & Arthaśāstram)	CO-1 The main learning outcomes of this course are to enable students to understand the application of the Shastras in the current scenario. CO-2 The course will be enabling students in finding the solutions for various societal problems. CO-3 Students will be able to develop a true vision of Dharma and Artha as Purusartha. CO-4 This course will help students to analyse the
SAN-205	Gadyasāhitya m-1 (Dasakumarac haritam & Arthashastram)	CO1 The course aims at making the learners acquainted with the highest forms of prosewritings with its poetic beauty along with social and cultural relevance. CO2 Students will know about the Prose (Gadya Kavya) of Sanskrit and be able to write in Sanskrit language.
SAN-206(A)	Gītikāvya m Prakarāṇa (Meghadūtam & Mṛcchakaṭika m)	CO1 After completion of the course students will be able to understand the various aspects of social life as well as dramatic standard of Sanskrit literature. CO2 Students will understand the structural patterns of Sanskrit dramatic compositions and also origin and development of Sanskrit plays. CO3 After completion of Sudrakas Mruchhakatikam, students will be exposed to the various aspects of socio-political life and poetic standard of Sanskrit Rupakas along with moral, ethical values etc
SAN-206(B)	Natakasāhitya m (Venisamhara m &	CO1 After completion of the course students will be exposed to the various aspects of social life as well as dramatic standard of Sanskrit literature. CO2 Students will understand the structural patterns of Sanskrit dramatic compositions.
SAN-206(C)	Bhāratīyadarśa nam (Yogadarśana m & Pratyavijna- darsanam)	CO1 After studying this course students will get the basics idea of Yoga philosophy and will be able to analyze the impact of yoga and darshana on human life. CO2 After completion of this course they will able to develop a vision on the theory of Pramana, prameya and their utilization in everyday life, CO3 After studing this course students will understand the essence of Darshanasastra to carryout

## III

SAN-301	Vaidikasāhityam – 2 (Niruktam, Atharvavedah & R̥gvedaprātisā khyam)	CO1 Students will be engaged in a comparative analysis of Vedic words and their counterparts in classical Sanskrit. Vedic Sanskrit and classical Sanskrit exhibit differences in grammar, vocabulary, and usage, so this comparison may involve understanding the nuances and evolution of language across these two periods. CO2 Students will be able to explain the origin and development of Vedic words through etymology. Etymology involves tracing the historical development of words, understanding their roots, and
SAN-302	Samskrutakavyasahityam (Naisadhiyach aritam and Kadambari)	CO1 The course aims at making the learners acquainted with the highest forms of prosewritings with its poetic beauty along with social and cultural relevance. CO2 This paper is intended for making the students acquainted with a great Mahakavya that is Naisadhiyacaritam. CO3 Students will get the knowledge through this text
SAN-303	Samskrutavyakaranam (Paniniyasiksha and Sidhanta-kaumudi)	CO1 Students will understand and interpret the Paniniyashiksha. CO2 Students will analyse and apply the Paniniyashiksha. CO3 Students will understand and interpret the sutras of Stripratva Prakarana of Siddhantakaumudi.
SAN-304	Bhashavijnanam	CO-1 This course will be students to have comparative knowledge in history of language and linguistics. CO-2 Students will be having detail knowledge on the Indo-European and Indo-Aryan language family. CO-3 Students will be gathering knowledge about the process of linguistics and methodology of the language.
SAN-305	Vaidika-sahityasyetihasa	CO1 Students will understand the Four Vedass i.e Rugveda, Yajurveda, Samaveda and Atharvaveda. CO2 Students will interpret the Vedic Texts, Brahmana texts, Aranyaka texts and Upanishad texts. CO3 Students will analyse the Vedic Sanskrit Texts. CO4 Students will understand, compare, critically think and apply the Vedic Sanskrit Texts.
SAN-306(A)	Nītisatakam and Meghadutam	CO-1 This course is to help the students to apply the theory of Nitisastras with regards to day-to-day activities. CO-2 This course aims to get an idea on Sadachara and guidelines to follow the life. CO-3 Students will have the ability to explain

	SAN-306(B)	Self Management in the Gita	CO-1 This course are to help the students to have inter-disciplinary studies in Sanskrit literature. CO-2 This course are to help the students to learn managerial skill from philosophical texts such as Bhagavadgita.  CO-3 Students will understand the philosophical analogy while using it in real life issues. CO-4 The course will enable students to develop managerial skill through the lesson from Bhagavat
	SAN-306(C)	Indian Philosophy and Literature	CO-1 This course are to help students to apply the theory of darshana with regards to inter-disciplinary studies. CO-2 This course will help students to the differences of various darshanas. CO-3 Students will have an understanding the socio-
IV	SAN-401	Prācīnabhārata sya Abhilekhaḥ Sanskr̥tīśca	CO-1 The students will learn the script & understand the religious and social importance of the inscriptions to understand & interpret original inscripational records. CO-2 This course will help students to learn the ideas ancient Indian culture and civilization of India. CO-3 Students will explore the knowledge of the
	SAN-402	Sadalankarasa mpradayah Sabdashaktisc ha	CO1 Students will understand and criticall analyse the definition, divisions of Rasa as well as the lifehistory and works of Major Rasavadi Alankarikas. CO2 Students will understand and criticall analyse the definition, divisions of Dhvani as well as the lifehistory and works of Major Dhvanivadi Alankarikas. CO3 Students will understand and criticall analyse the definition, divisions of Alankara Riti Vakrokti &
	SAN-403	Samskruta-vyakaranam (Laghu-Sidhanta-kaumudi)	CO1 Students will understand the sutras of Bhwadiprakarana of Laghusiddhantakaumudi . CO2 Students will interprete the sutras of Bhwadiprakarana of Laghusiddhantakaumudi. CO3 Students will critically think and analyse and derive the verbs (kriyapadas) by the help of the sutras of Bhwadiprakarana of Laghusiddhantakaumudi. CO4 Students will apply the derivation of verbs (
	SAN-404	Samskruts-nibandhah, Bhava-samprasarana m Adhunika-samskrutasahit	CO1 Students will understand the process of Essay Writing. CO2 Students will be able to discuss, compare, interprete and criticall think through Bhavasamprasaranam. CO3 Students will gain knowledge about the Modern
	SAN-405	Dissertation	

**Session-2020-2021****Name of the Department: SANSKRIT****Programme: PG**

Semester	Course Code	Course Title	Course Outcome
I	SAN-101	Vaidikasāhityam-1 (Veda, Upaniṣad & Rg-veda-bhāshyabhumika)	CO-1 Students will be able to comprehend why ancient Indians venerated the natural Gods and goddesses. CO-2 Students can distinguish accents, Vedic meters, and figures of speech. CO-3 Students will be able to identify the various commentary
	SAN-102	Saṁskṛta-vyākaraṇam - 1 (SiddhāntaKaumudī & Lahu-SiddhāntaKaumudī)	CO1 Students will Understand and apply the major technical terms of Astadhyayee. CO2 Students will Understand and apply the Paribhasa sutras of Astadhyayee while the derivation of words. CO3 Students will Understand and apply the Samasa sutras of Astadhyayee while the derivation of Samastapadas. CO4 Students will Understand and apply the Samasa sutras of
	SAN-103	Saṁskṛta-rūpakam (Karnabharam, Ratnāvalī & Uttararāmcaritam)	CO1 Students will understand the structural patterns of Sanskrit dramatic compositions. CO2 Students will mention and interpret the depiction of nature in various human forms and emotions in two of Rupakas. CO3 Students will analyse the origin and development of Sanskrit plays and develop their dramatic standard of Sanskrit Literature.
	SAN-104	Bhāratīya-darśanam – 1 (Sāṁkhyakārikā & Vedāntasārah)	CO-1 This course are to help students to apply the theory of darshana with regards to inter-disciplinary studies. CO-2 Students will understand the differences of various Astikadarshana. CO-3 Students will understand the term Moksha by reading these texts.
	SAN-105	Saṁskṛtasāhityayo	CO1 Students will understand and analyse the Sanskrit Mahakavyas. CO2 Students will understand and analyse the Sanskrit Rupakas. CO3 Students will understand and analyse the Sanskrit Prose
	SAN-201	Bhāratīya-darśanam - 2 (Tarkasamgrahaḥ & Arthasamgrahaḥ)	CO1 Students will be able to define the area of Indian philosophy. CO2 Students can impart knowledge about the scientific aspects of the material world. It may involve exploring the intersection of philosophy and science, discussing the nature of reality, and understanding the material aspects of existence from both philosophical and scientific perspectives. CO3 Students will be able to comprehend the material world's science
	SAN-202	Saṁskṛta-vyākaraṇam – 2 (Mahābhāṣyam, SiddhāntaKaumudī & Pāribhasikasabda)	CO1 Students will understand and analyse the Paspasahnika of Mahabhasya. CO2 Students will understand the of Krutyaprakarana of Siddhantakaumudi. CO3 Students will mention and interpret and critically think the sutras of Krutvaprakarana of Siddhantakaumudi.

II

SAN-203	SAN-203 Alaṅkāraśāstram-1 (Natyasastram, Sāhityadarpaṇaḥ & Kāvya prakāśaḥ)	CO1 Students will get basic understanding of some fundamental terminologies of the Natya and Kavya. CO2 students will understand the definition, purpose and reason of Kavya. CO3 Students will discuss and analyse the definition and divisions of Varna and pada as well as Sabdashakti. CO4 Students will form a deep knowledge of poetic faults, <del>poetic-excellences, and Figures of speech as pronounced by</del>
SAN-204	Dharmaśāstram Arthaśāstraṅca (Manusmṛtiḥ, Yjñavalkya-smṛtiḥ & Arthaśāstram)	CO-1 The main learning outcomes of this course are to enable students to understand the application of the Shastras in the current scenario. CO-2 The course will be enabling students in finding the solutions for various societal problems. CO-3 Students will be able to develop a true vision of Dharma and Artha as Purusartha. <del>CO-4 This course will help students to analyse the political</del>
SAN-205	Gadyasāhityam-1 (Dasakumarachari- tam & Arthashastram)	CO1 The course aims at making the learners acquainted with the highest forms of prose writings with its poetic beauty along with social and cultural relevance. CO2 Students will know about the Prose (Gadya Kavya) of Sanskrit and be able to write in Sanskrit language. CO3 Students would be able to know the origin and <del>development of Sanskrit Prose literature.</del>
SAN-206(A)	Gītikāvyaṃ Prakaraṇaṅca (Meghadūtam & Mṛcchakaṭīkam)	CO1 After completion of the course students will be able to understand the various aspects of social life as well as dramatic standard of Sanskrit literature. CO2 Students will understand the structural patterns of Sanskrit dramatic compositions and also origin and development of Sanskrit plays. CO3 After completion of Sudrakas Mṛcchakatīkam, students will be exposed to the various aspects of socio-political life and poetic standard of Sanskrit Rupakas along with moral, <del>ethical values etc.</del>
SAN-206(B)	Natakasāhityam (Venisamharam & Mudraraksham)	CO1 After completion of the course students will be exposed to the various aspects of social life as well as dramatic standard of Sanskrit literature. CO2 Students will understand the structural patterns of <del>Sanskrit dramatic compositions.</del>
SAN-206(C)	Bhāratīyadarśana- m (Yogadarśanam & Pratyavijña- darsanam)	CO1 After studying this course students will get the basics idea of Yoga philosophy and will be able to analyze the impact of yoga and darshana on human life. CO2 After completion of this course they will be able to develop a vision on the theory of Pramana, prameya and their utilization in everyday life, CO3 After studying this course students will understand the essence of Darshanasastra to carry out the research. <del>CO4 After completion of this course students will be able to apply</del>

## III

SAN-301	Vaidikasāhityam – 2 (Niruktam, Atharvavedaḥ & Ṛgvedaprāṭisākhya)	CO1 Students will be engaged in a comparative analysis of Vedic words and their counterparts in classical Sanskrit. Vedic Sanskrit and classical Sanskrit exhibit differences in grammar, vocabulary, and usage, so this comparison may involve understanding the nuances and evolution of language across these two periods. CO2 Students will be able to explain the origin and development of Vedic words through etymology. Etymology involves tracing the historical development of words, understanding their roots, and how meanings have evolved over time.
SAN-302	Samskrutakavyasahityam (Naisadhiyacharitam and Kadambari)	CO1 The course aims at making the learners acquainted with the highest forms of prosewritings with its poetic beauty along with social and cultural relevance. CO2 This paper is intended for making the students acquainted with a great Mahakavya that is Naisadhiyacaritam. CO3 Students will get the knowledge through this text in the light of poetic analysis. CO4 They will also get the knowledge about origin and
SAN-303	Samskrutavyakaranam (Paniniyasiksha and Sidhantakaumudi)	CO1 Students will understand and interpret the Paniniyashiksha. CO2 Students will analyse and apply the Paniniyashiksha. CO3 Students will understand and interpret the sutras of Stripratya Prakarana of Siddhantakaumudi. CO4 Students will analyse and apply the Stripratvanta words
SAN-304	Bhashavijnanam	CO-1 This course will be students to have comparative knowledge in history of language and linguistics. CO-2 Students will be having detail knowledge on the Indo-European and Indo-Aryan language family. CO-3 Students will be gathering knowledge about the process of linguistics and methodology of the language. CO-4 The course will impart ideas on the various research works going on in the field of linguistics.
SAN-305	Vaidika-sahityasyetihasa	CO1 Students will understand the Four Vedass i.e Rugveda, Yajurveda, Samaveda and Atharvaveda. CO2 Students will interpret the Vedic Texts, Brahmana texts, Aranyaka texts and Upanishad texts. CO3 Students will analyse the Vedic Sanskrit Texts. CO4 Students will understand, compare, critically think and apply the Vedic Sanskrit Texts.
SAN-306(A)	Nitiśatakam and Meghadutam	CO-1 This course is to help the students to apply the theory of Nitiśastras with regards to day-to-day activities. CO-2 This course aims to get an idea on Sadachara and guidelines to follow the life. CO-3 Students will have the ability to explain geographical figure found in this text.

	SAN-306(B)	Self Management in the Gita	CO-1 This course are to help the students to have inter-disciplinary studies in Sanskrit literature. CO-2 This course are to help the students to learn managerial skill from philosophical texts such as Bhagavadgita. CO-3 Students will understand the philosophical analogy while using it in real life issues. CO-4 The course will enable students to develop managerial skill through the lesson from Bhagavat Gita.
	SAN-306(C)	Indian Philosophy and Literature	CO-1 This course are to help students to apply the theory of darshana with regards to inter-disciplinary studies. CO-2 This course will help students to the differences of various darshanas. CO-3 Students will have an understanding the socio-cultural approach by the Puranas, Mahabharata and Ramayana.
IV	SAN-401	Prācīnabhāratasya Abhilekhaḥ Sanskr̥tīśca	CO-1 The students will learn the script & understand the religious and social importance of the inscriptions to understand & interpret original inscriptional records. CO-2 This course will help students to learn the ideas ancient Indian culture and civilization of India. CO-3 Students will explore the knowledge of the Indian cultural heritage.
	SAN-402	Sadalankarasampradayah Sabdashaktischa	CO1 Students will understand and critically analyse the definition, divisions of Rasa as well as the life history and works of Major Rasavadi Alankarikas. CO2 Students will understand and critically analyse the definition, divisions of Dhvani as well as the life history and works of Major Dhvanivadi Alankarikas. CO3 Students will understand and critically analyse the definition, divisions of Alankara, Riti, Vakrokti & Auchitya as well as the life history and works of Major Alankaravadi
	SAN-403	Sanskṛta-vyakaranam (Laghu-Sidhanta-kaumudi)	CO1 Students will understand the sutras of Bhwadiprakarana of Laghusiddhanta-kaumudi . CO2 Students will interpret the sutras of Bhwadiprakarana of Laghusiddhanta-kaumudi. CO3 Students will critically think and analyse and derive the verbs (kriyapadas) by the help of the sutras of Bhwadiprakarana of Laghusiddhanta-kaumudi. CO4 Students will apply the derivation of verbs (
	SAN-404	Sanskṛta-nibandhaḥ, Bhava-samprasaranam Adhunikā-sanskṛtasahitvan	CO1 Students will understand the process of Essay Writing. CO2 Students will be able to discuss, compare, interpret and critically think through Bhavasamprasaranam. CO3 Students will gain knowledge about the Modern Sanskrit Works and Writers. CO4 Students will improve their innovative creative power by
	SAN-405	Dissertation	

**Session-2022-2023****Name of the Department: SANSKRIT****Programme: PG**

Semester	Course Code	Course Title	Course Outcome
I	SAN-101	Vaidikasāhityam - 1 (Veda, Upaniṣad & Śunaḥṣepākhyānam)	CO-1 Students will be able to comprehend why ancient Indians venerated the natural Gods and goddesses. CO-2 Students can distinguish accents, Vedic meters, and figures of speech. CO-3 Students will be able to define Upanishad, Samhita, Brahmana, and Aranyaka.
	SAN-102	Samśkrta-vyākaraṇam - 1 (SiddhāntaKaumudī)	CO-1 Understand the definition of Sandhi and Vowel Sandhi Sutras of Siddhantakaumudi. CO-2 Interpret the Consonant Sandhi Sutras and Compare with Vowel Sandhi Sutras. CO-3 Analyse the Sandhi Sutras perfectly. CO-4 Apply the Sandhi Words like सुध्युपास्यः, मध्वरिः, नायकः, पावकः, सच्चित्, वागीशः, विष्णुस्ताता, भास्करः etc. while writing and speaking Sanskrit.
	SAN-103	Samśkrta-rūpakam (Ratnāvalī & Uttararāmcaritam)	CO-1 Students will understand the structural patterns of Sanskrit dramatic compositions. CO-2 Students will mention and interpret the depiction of nature in various human forms and emotions in two of the dramas. CO-3 Students will analyse the origin and development of Sanskrit plays and develop their dramatic standard of Sanskrit Literature. CO-4 Students will apply the values and ethics of Dramas of their day do day life as well as their surroundings.
	SAN-104	Bhāratīya-darśanam – 1 (Sāmkhyakārikā & Vedāntasārah)	CO-1 This course are to help students to apply the theory of darshana with regards to inter-disciplinary studies. CO-2 Students will understand the differences of various Astikadarshana. CO-3 Students will understand the term Moksha by reading these texts.
	SAN-105	Samśkrta-sāhityas	CO-1 Students will understand the Four Vedass i.e Rugveda, Yajurveda, Samaveda and Atharvaveda. CO-2 Students will interpret the Brahmana texts, Aranyaka texts and Upanishad texts. CO-3 Students will analyse the Sanskrit Mahakavyas such as Kumarasambhavam, Raghuvamsham, Kiratarjuniyam etc and Sanskrit Dramas like Abhijnanashakuntalam, Swapnavasavaduttam, Mruchhakatikam, Uttararamacharitam etc CO-4 Students will understand, compare, critically analyse the Vedic Sanskrit Texts and Classical Sanskrit Texts and apply the Indian Knowledge Systems



II	SAN-201	Bhāratīya-darśanam - 2 (Tarksamgrahaḥ & Arthasamgrahaḥ)	CO-1 By the end of the course the students will be able to learn various forms of Vedic wisdom, the mantras in details with different commentaries on Rigveda, Yajur Veda and Atharva Veda. CO-2 They can able to the proper procedures, mantras, and symbolic meanings associated with various rites performed by priests. CO-3 They will be able to explore metaphysical questions concerning the ultimate nature of existence (Brahman) and the relationship between the individual soul and the cosmic consciousness. <del>CO-4 By analysing the roots, forms, and meanings of words, Nirukta</del>
	SAN-202	Samskṛta-vyākaraṇam – 2 (Laghusiddhānta Kaumudī, Mahābhāṣyam & Pāṇinīyasikṣā)	CO-1 Students will understand the of Krutyaprakarana of Siddhantakaumudī. CO-2 Students will mention and interpret and critically think the sutras of Krutyaprakarana of Siddhantakaumudī. CO-3 Students will understand and analyse the Paspasahnika of Mahabhasya. <del>CO-4 Students will understand and apply the Paninivashiksha.</del>
	SAN-203	SAN-203 Alaṅkāraśāstram - 1 (Dhvanyālokaḥ, Sāhityadarpaṇaḥ & Kāvya prakāśaḥ)	CO-1 After the completion of the course a learner will be enriched with the sufficient tools for poetic appreciation. CO-2 After studying this course students will be able to escalate and will enjoy the poetic beauty. CO-3 Students will acquire an in-depth knowledge of the theories of Rasa and Dhvani. CO-4 Students will form a deep knowledge of poetic faults, poetic-excellences, and Figures of speech as propounded by Mammata.
	SAN-204	Dharmaśāstram Arthaśāstraṅca (Manusmṛtiḥ, & Arthaśāstram)	CO-1 The main learning outcomes of this course are to enable students to understand the application of the Shastras in the current scenario. CO-2 The course will be enabling students in finding the solutions for various societal problems. CO-3 Students will be able to develop a true vision of Dharma and Artha as Purusartha. <del>CO-4 This course will help students to analyse the political process</del>
	SAN-205	Samskṛtakāvyaśāhityam-1 (Naiṣadhīyacaritam & Kādambarī)	CO-2 The course aims at making the learners acquainted with the highest forms of prose writings with its poetic beauty along with social and cultural relevance. CO-2 This paper is intended for making the students acquainted with a great Mahakavya that is Naisadhiyacaritam. CO-3 Students will get the knowledge through this text in the light of poetic analysis. CO-4 They will also get the knowledge about origin and <del>development of different types of Mahakavya and Gadvakavya</del>
	SAN-206(A)	Gītikāvyaṃ Prakaraṇaṅca (Meghadūtam & Mṛcchakatika)	CO-1 After completion of the course students will be able to understand the various aspects of social life as well as dramatic standard of Sanskrit literature. CO-2 Students will understand the structural patterns of Sanskrit dramatic compositions and also origin and development of Sanskrit plays. CO-3 After completion of Sudraka's Mṛcchakatika, students will be exposed to the various aspects of socio-political life and poetic standard of Sanskrit Rupakas along with moral, ethical, values etc. CO-4 Students will be able to see the depiction of nature in various <del>human forms and emotions through Sudraka's Mṛcchakatika</del>

	AN-206(B)	Gadyasāhityam (Daśakumāracaritam & Harṣacaritam)	CO-1 The course aims at making the learners acquainted with the highest forms of prosewritings with its poetic beauty along with social and cultural relevance. CO-2 Students will know about the Prose (Gadya Kavya) of Sanskrit and be able to write in Sanskrit language. CO-3 Students would be able to know the origin and development of Sanskrit Prose literature.
	AN-206(C)	Bhāratīyadarśanam (Yogadarśanam & Sarvadarśanasamgrahaḥ)	CO-1 After studying this course students will get the basics idea of Yoga philosophy and will be able to analyze the impact of yoga and darshana on human life. CO-2 After completion of this course they will able to develop a vision on the theory of Pramana, prameya and their utilization in everyday life, CO-3 After studing this course students will understand the essence of Darshanasastra to carryout the research. CO-4 After completion of this course,students will able to apply the theory of Baudhadarshana with regards to inter-disciplinary studies
	SAN-301	Vaidikasāhityam – 2 (Yajurvedaḥ, Atharvavedaḥ Niruktam & Rṅprātisākhyaḥ)	CO-1 Students will be engaged in a comparative analysis of Vedic words and their counterparts in classical Sanskrit. Vedic Sanskrit and classical Sanskrit exhibit differences in grammar, vocabulary, and usage, so this comparison may involve understanding the nuances and evolution of language across these two periods. CO-2 Students will be able to explain the origin and development of Vedic words through etymology. Etymology involves tracing the historical development of words, understanding their roots, and how meanings have evolved over time. CO-3 Students will be able to delve into the Rigveda, one of the oldest sacred texts in Hinduism, to analyze and understand the systematic wisdom it presents. <del>CO-4 The various Rigveda commentaries are knowledgeable about</del>
	SAN-302	Bhāṣāvijñānam	CO-1 This course will be students to have comparative knowledge in history of language and linguistics. CO-2 Students will be having detail knowledge on the Indo-European and Indo-Aryan language family. CO-3 Students will be gathering knowledge about the process of linguistics and methodology of the language. CO-4 The course will impart ideas on the various research works going on in the field of linguistics
	SAN-303	Research Methodology	CO1 Students will understand the Definition, Scope, Types and Methodology of Research. CO2 Students will understand and interpret how to select topic for Research, how to prepare Synopsis of Thesis, how to prepare Thesis. Also students will know the qualities of Researcher, the Art of Translation and the Art of Transliteration. CO3 Students will learn about the Collecting, Analysing, Interpreting the data and will be able to prepare their Dissertation or Thesis. Also students will know the definition, types, protection and preservation of Manucripts. <del>CO4 After studying Unit-IV of Paper-303 students will know how</del>
	AN-304(A)	Vaidikasāhityam – 3 Rṅveda-bhāṣyabhūmikā & Niruktam	CO-1 Students will be able to identify the various commentary styles. CO-2 Students will be able to compare ayanawith other commentators CO-3 Students will be able to identify the location, meaning, and rules of the Vedic Deities. CO-4 Students will able to identify the types of mantras.

SAN-304	(Nātakasāhityam)	CO-1 After completion of the course students will be exposed to the various aspects of social life as well as dramatic standard of Sanskrit literature. CO-2 Students will understand the structural patterns of Sanskrit dramatic compositions. CO-3 Students will understand the structural patterns of Sanskrit dramatic compositions. CO-4 Students will know the origin and development of Sanskrit
SAN-304(C	Saṁskṛta- vyākaraṇam -3 (SiddhāntaKaum udī & Saṁskṛta- vyākaraṇa- śāstrasye- tiḥāsah)	CO1 Students will understand the sutras of Matvarthiya Prakarana of Siddhantakaumudi. CO2 Students will interpret, analyse and apply Matvarthiyapratyayantapadas while writing and speaking Sanskrit. CO3 After reading the History of Sanskrit Grammar, the students will know, discuss and interpret the Sanskrit Grammars like Paninis Astadhyayi, Katyayanas Varttika and Patanjalis Mahabhasya, and previous Sanskrit Grammarians of Panini such as Apisali, Gargya, Galaba, etc. CO4 After reading the History of Sanskrit Grammar, the students will be able to know about the Philosophical Sanskrit Grammars like Mahabhasya, Vakyapadiya etc. and Prakriya Texts of Sanskrit Grammar such as Siddhantakaumudi, Prakriyakaumudi etc.
SAN-305(A	Vaidikasāhityam - 4 (Śatpathabrāhm aṇam, Aitareya- ranyakm, Taittirīyārṇyaka. & Bṛhaddevatā)	CO-1 Students will be able to understand the benefits of sacrifice such as spiritual growth, purification of mind and soul and fulfillment of desire. CO-2 Students will be able to comprehend the meaning of all Vedic ceremonies. CO-3 Students will be able to understand the benefits of practicing PanchaMahayajna are often seen as both spiritual and worldly. Here are some of the commonly associated results: CO-4 Students will be able to evaluate the historical religious beliefs, identify the Rishi, Devata and Chhanda as well as the many
SAN-305(C	Alaṅkārasāstram - 2 (Sāhityadarpaṇ ā & Nātyasāstram)	CO-1 After studying these course students will be familiar with the masterpiece of these two forms of literature. CO-2 They will be able to understand various qualities of literary criticism. CO-3 Students will get basic understanding of some fundamental terminologies of the Natya and Kavya. CO-4 Students will have depth knowledge of the theories of Rasa
SAN-305(C	Saṁskṛta- vyākaraṇam - 4 (SiddhāntaKaum udī & Vākyapadiyam)	CO1 To understand the Bhwadiprakaranam of Vaiyakaranasiddhantakaumudi as well as the derivation of verbs (kriyapadas). CO2 To apply verbs (kriyapadas) of Sanskrit Language while writing and speaking. CO3 Students will know the importance of study of Paniniya Grammar through Brahmakanda of Vakyapadiyam. CO4 Students will critically think and analyse the philosophical
SAN-306(A	Nītiśatakam and Chanakyanitidar panah	CO-1 This course is to help the students to apply the theory of Nītiśastras with regards to day-to-day activities. CO-2 This course aims to get an idea on Sadachara and guidelines to follow the life. CO-3 Students will understand the morality behind the society to run by reading the advises of these texts. CO-4 The course will enable students develop skill for policy

		CO-1 This course are to help the students to have inter-disciplinary studies in Sanskrit literature. CO-2 This course are to help the students to learn managerial skill from philosophical texts such as Bhagavadgita. CO-3 Students will understand the philosophical analogy while using it in real life issues. CO-4 The course will enable students to develop managerial skill through the lesson from Bhagavat Gita.
		CO-1 This course are to help students to apply the theory of darshana with regards to inter-disciplinary studies. CO-2 This course will help students to the differences of various darshanas. CO-3 Students will have an understanding the socio-cultural approach by the Puranas, Mahabharata and Ramayana. CO-4 The course will have a detail analytical study in darshana and
		CO-1 The students will learn the script & understand the religious and social importance of the inscriptions to understand & interpret original inscriptional records. CO-2 This course will help students to learn the ideas ancient Indian culture and civilization of India. CO-3 Students will explore the knowledge of the Indian cultural heritage. CO-4 After studying this course, the students will gather knowledge
		CO-1 This course is to help the students to apply the theory of sastras with regards to inter-disciplinary studies. CO-2 This course is to help the students to to get a perception about the co-relation of Purana and Dharmasastra. CO-3 Students will have a vision on Purusarthas by reading these texts. CO-4 The course will develop an analytical study in social systems
		CO-1 Students will be able to learn various forms of Vedic wisdom CO-2 Students will be able to learn the mantras in details with different commentaries on Rigveda, Yajur Veda and Atharva Veda. CO-3 Students will be able to understand ethical and social responsibilities of the teacher and the students. CO-4 Students will be able to understand the exploration of ethical principles embedded in Vedic teachings.
		CO-1 By the end of this course students will be able to learn the importance of Karma in Buddhacaritam through analytical and critical study. CO-2 They will also get the knowledge about origin and development of different types of Mahakavya and Campukavya. CO-3 Students will justify the Nalacampu in the light of Sanskrit poetics and this will help the students to know how does the champukavya reflect people's perspective. CO-4 After completion of this course students can explain the difference between Mahakavya and Campukavya

IV

SAN-403	Saṁskṛta- vyākaraṇam -5 (Kāśikā & Vaiyākaraṇabhū ṣaṅsārah)	CO1 After reading the Kasika, the students will be able to understand the technique of Paniniya Vyakarana. CO2 After reading the Kasika, the students will be able to analyse and critical think the technique of Paniniya Vyakarana. CO3 After reading the Vaikaranabhushanasara, the students will be able to understand and analyse the Philosophical sides of Sanskrit Grammar. the twofold objectives of Grammar i.e structural knowledge as well as philosophy behind the Structure. CO4 After reading the Vaikaranabhushanasara, the students will be able to interpret and analytic think the Philosophical sides of
SAN-404	Vaidikasāhityam -5 (R̥gprātiśākhya & SiddhāntaKaum udī)	CO-1 Students will be able Understanding the Pratishakya texts, which are auxiliary texts associated with each Veda that provide rules for pronunciation and recitation. CO-2 Students will be to explore the phonetics of Vedic Sanskrit, including the sounds and pronunciation peculiarities. CO-3 Students will be able study of the formation of words in Vedic Sanskrit, including root words, prefixes, and suffixes. CO-4 Students will be able understand how words are derived and modified based on grammatical rules.
SAN-404	Alaṅkāraśāstram - 2 (Kāvya prakāśah, Vakroktijivitam & Dasarūpakam)	CO-1 After studying these course students will be successful in applying this knowledge for analytical criticism in the light of suggestive meanings of Kavya. CO-2 Students will get the knowledge of plot, actor and Rasa of dramaturgical criticism. CO-3 After studying these course students will be familiar with the masterpiece of these two forms of literature. CO-4 After completion of this course students will able to explain
SAN-404	Saṁskṛta- vyākaraṇam 4(SiddhāntaKaum udī, Laghu- SiddhāntaKaum udī & Paramalaghuma njuṣā)	CO1 After studying the Ajanta-Subantapadas of Siddhantakaumudi, the students will be able to understand these Ajanta-Subanta words while speaking and writing Sanskrit. CO2 After studying the Ajanta-Subantapadas of Siddhantakaumudi, the students will be able to apply these Ajanta-Subanta words while speaking and writing Sanskrit. CO3 Students will be able to understand and analytic think the Sphotoswarupa of Paramalaghumanjusha. CO4 Students will be able to understand, interpret and analytic think the Shabdashakti of Paramalaghumanjusha.
SAN-405	Dissertation	CO1 Students will understand the process of preparation of Dissertation. CO2 Students will interpret the collecting data while they write Dissertation. CO3 Students will analyse again and again of topic while preparation of the Dissertation and give final touch of Dissertation through proof correction and orderly presentation etc. carefully & patiently.

**Session-2023-2024****Name of the Department: SANSKRIT****Programme: UG**

Semester	Course Code	Course Title	Course Outcome
I	CC- 1	MORAL TEACHINGS AND BASICS OF SANSKRIT	CO1 Students will able to analyze the cultural and political matters described in Yaksaprasnah. CO2 The Hitopadesa will enhance the student's reasoning capacity by illustrating stories described in the text. CO3 The students will acquire the knowledge about the concept of presence of mind from Yaksha and Yudhistir's conversation. CO4 Through the study of historic moral stories, students will have the opportunity to cultivate their
	CC-2	DRAMA-I & HISTORY OF SANSKRIT LITERATURE	CO1 This course is to help students to understand the Sanskrit dramatic literature. CO2 Students will understand the differences of various words with grammatical rules.
	GE - 1	KHANDAKAVYA & DARSANAKAVYA	CO1 Students who study this little poetry, Meghaduttam, will be able to appreciate the love between a married couple. CO2 Students would understand how agonising it is for two lovers to be apart. CO3 By studying the history of Sanskrit literature.
II	CC - 3	DRAMA - II & DRAMATURGY	CO1 This course is to help students to understand the Sanskrit drama and dramaturgy. CO2 Students will be able to translate the Pali/Prakrit language to Sanskrit. CO3 Students will analyse and understand the plot
	CC- 4	AN INTRODUCTION TO THE TECHNIQUE OF PANINIAN GRAMMAR &	CO1 Students will understand the vocabulary relevant to Sanskrit Grammar and Arrangement of Paninian Grammar. CO2 Students will understand and use the major technical terms of Astadhyayee. CO3 Students will analyse the major technical terms of
	GE - 2	MORAL TEACHINGS AND BASICS OF SANSKRIT	CO1 student will experience personal growth in terms of moral values and manners as a result of the course. CO2 The study of Hitopadesa, a collection of fables and moral stories, will enhance students' reasoning abilities. The narratives and lessons within Hitopadesa are expected to stimulate critical thinking. CO3 Students will gain insights into applying a presence of mind, quick thinking, and astuteness through the analysis of stories presented in the course. The narratives may provide practical scenarios
	AECC - 2	(MIL SANSKRIT)	CO1 Students can get a better understanding of the Sanskrit literary tradition and the Sanskrit poetic tradition described in the history of Sanskrit literature. CO2 Students can know about what qualities an ideal ruler should have, what an ideal ruler should do. CO3 Students can learn about worshipping and obeying parents, teachers, etc. Students can learn the virtues of

III	CC-5	POETRY & HISTORY OF SANSKRIT LITERATURE-II	CO1 After completion of this course the students will understand the origin and development of Kavya and Nataka. CO2 By studying the history of Sanskrit Literature, students will gain knowledge about the social characteristics and intellectual progress of earlier times. CO3 By studying the Meghaduttam, students will have the ability to explain geographical feature found in this
	CC-6	META - RULES OF PANINIAN GRAMMAR, POETICS & FIGURES OF SPEECH	CO1 Students will be able to apply bidhisutras (presumably rules or principles of grammar), along with knowledge of samjna (terms or concepts) and paribhasa-sutras (rules for interpretation), through a method called "prakriyakrama." Prakriyakrama could refer to a systematic approach or methodology in the study of Sanskrit. CO2 students will be able to proficient in the structural form of Sanskrit words, allowing them to derive the meaning of any words in the Sanskrit language. This likely involves understanding the root forms, prefixes
	CC-7	CASES AND CASE ENDINGS IN PANINIAN GRAMMAR & TRANSLATION	CO1 Students will understand, interpret and apply the Nominative Case & Accusative Case. CO2 Students will understand, interpret and apply the Instrumental case. CO3 Students will understand, interpret and apply the Dative case.
	GE - 3	TECHNICAL LITERATURE IN SANSKRIT (JYOTISA & VASTU)	CO1 The outcome of this course are to help students understand the science of Vastu and celestial happenings. CO2 The course will enable students to have basic ideas of Jyotisha sastra for understanding the impact of nakshatra on human life. CO3 Students will be able to develop a basic idea to build a house based on the understanding of
	CC-8	UPANISAD, RAMAYANA & BHAGAVADGITA	CO1 Students will be able to develop the ability to discern the true purpose or goal of human life based on the teachings of Lord Sri Krishna in the Bhagavad Gita. CO2 Students will be capable of evaluating and understanding how the study of Upanishads within the context of Indian philosophy contributes to attaining lasting peace and explores the absolute truth of the universe's creation. CO3 Students will become familiar with the concept of absolute truth as imparted by the Vedic seers, emphasizing the transformative aspect of this knowledge in dispelling the darkness of ignorance
	CC - 9	CASE AND CASE ENDING OF PANINIAN GRAMMAR, TRANSLATION -	CO1 Students will understand, interpret and apply the Ablative Case. CO2 Students will understand, interpret and apply the Genitive Case and Locative case. CO3 Students will be able to apply the perfect Sanskrit Sentences while speaking and writing in Sanskrit.

IV	CC-10	ORNATE PROSE IN CLASSICAL SASNKRIT	CO1 After studying this course, the students will improve their character through the popular works Dasakumarcharitam and Sukanasopadesa. They will understand important Sanskrit prose romances and tales. CO2 By studying this course Students will able to explain the origins and evolution of Sanskrit prose writing. CO3 After completion of this course, Knowledge of <del>several inscriptions found in India that can assist</del>
	GE - 4	ETHICAL LITERATURE IN SANSKRIT	CO1 This course is to help the students to apply the theory of Nitisastras with regards to day-to-day activities. CO2 This course aims to get an idea on Sadachara and guidelines to follow the life. CO3 <del>Students will understand the morality behind the</del>
	SEC - 2 (B)	COMUNICATI VE SANSKRIT	CO 1 Students will understand the defination of Karaka and Vibhakti as will as the technique voice change in sanskrit lanuage. CO 2 Students will understand and apply the sankhavachakapadas, puranavachakapadasand adjective words. CO 3 <del>Students will understand and apply the</del>
V	CC- 11	ORNATE POETRY IN SANSKRIT	CO1 They will also get the knowledge about origin and development of different types of Mahakavya and Gadyakavya. CO2 Students will be able to explain how to stay happy and gain pleasure through self-respect. CO3 This course will assist students to get the knowledge that how to treat a guest and respect to each other.
	CC-12	VEDA, VEDIC GRAMMAR & HISTORY OF VEDIC LITERATURE	CO1 Students will develop the ability to assess Vedic history and recognize the foundational role of the Vedas in the development of all other literary traditions. It emphasizes the significance of Vedas as the root source. CO2 Students will gain the capability to understand the themes present in Vedic literature and appreciate their influence on later literary works, including plays, poetry, and stories. CO3 <del>Students will recognize the foundational role of the Vedas in the growth and development of Sanskrit</del>
	DSE-1	SOCIO-POLITICAL THOUGHT IN ANCIENT INDIA	CO1 The main learning outcomes of this course are to enable students to understand the application of the dharmasastras in the current scenario. CO2 The course will be enabling students in finding the solutions for various societal problems. CO3 Students will be able to develop a true vision of Dharma and Artha as Purusartha.



	DSE-2	ETHICAL LITERATURE IN SANSKRIT	CO1 The important learning outcome of this course are to enable students to understand the application of the Nitisastra in day-to-day activities. CO2 The course will be enabling students in understanding for social living. CO3 Students will be able to develop a true vision of <u>managing life with social coordination.</u>
VI	CC- 13	AYURVEDA & VRKSAYURVEDA	CO1 Students will acquire the ability to present well-founded evidence and arguments demonstrating that Ayurveda holds the historical distinction of being the first traditional medical science globally. CO2 Students will develop the ability to articulate and discuss various factors contributing to the continued popularity of Ayurveda in contemporary, technologically advanced societies. CO3 Students will develop the capacity to succinctly analyze and summarize the content of the two designated books, providing valuable insights into the educational landscape of ancient India during the <u>Vedic period.</u>
	CC-14	TECHNICAL LITERATURE IN SANSKRIT (JYOTISA &VASTU)	CO1 The outcome of this course is to help students understand the science of Vastu and celestial happenings. CO2 The course will enable students to have basic ideas of Jyotisha sastra for understanding the impact of nakshatra on human life. CO3 Students will be able to develop a basic idea to <u>build a house based on the understanding of</u>
	DSE-3	TRANSLATION , EDITING AND WRITING SKILL	CO1 Students will understand the Sanskrit Language Perfectly. CO2 Students will interpret and analyse the Sanskrit Paragraph through <u>precises writing.</u>
	DSE-4	PREPARATION AND PRESENTATION OF PROJEC	CO1 Students will understand the process of preparing a Project. CO2 Students will gain experiences by preparing Project Work.

Session-2023-2024			
Name of the Department: Psychology			
Programme: PG			
Semester	Course Code	Course Title	Course Outcome
I	PSY-101	GENERAL PSYCHOLOGY I	CO1: Understand basic concept of sensation and perception, and its importance in perceptual process of perception. (Level-2) CO2: Explain various procedures of learning process also understanding of cognitive approaches in learning with related issues in everyday life. (Level 3) CO3: Execute various models of memory and able to compare Short Term Memory and Long-term Memory as well as other functions of Memory (Level 4) CO4: Analyze various stages in creative thinking, and use of algorithms and heuristics to solve problems in everyday life. (Level 4)
	PSY-102	BASIC PHYSIOLOGICAL PSYCHOLOGY	CO1: Describe neuroanatomy including the structure of a neuron, the properties of synapses, the central and peripheral nervous systems, and the structure of the brain. (Level-1) CO2: Understand the biological bases of human behaviour, its nature and scope. (Level-2) CO3: Explain the structures of human brain, their functions and impact on human behaviour. (Level-2) CO4: Apply scientific techniques for biological psychology and developing an awareness of ethical issues accompanying them. (Level- 3) CO5: Analyze the relationship between the mind and the body and, in doing so, will consider the purpose of consciousness. (Level-4)
	PSY-103	SOCIAL PSYCHOLOGY	CO1: Recall the major theoretical perspectives in social psychology in different social settings. (Level -1) CO2: Understand the techniques of forming and changing attitude. (Level -2) CO3: Apply the knowledge to respond to an emergency situation. (Level-3)
	PSY-104	INDUSTRIAL AND ORGANISATIONAL PSYCHOLOGY	CO1: Remember the basic concepts of organizational behaviour. (Level-1) CO2: understand the complexities associated with management of individual behaviour in the organization. (Level-2) CO3: Interpret the complexities associated with management of the group behaviour in an organization. (Level-3) CO4: Analyse thoroughly the organizational system. (Level-4)
	PSY-105	PRACTICAL	CO1: Understand the ways of conducting psychological experiments. (Level -2) CO2: Apply scientific methods for the solution of psychological problems. (Level -3) CO3: Use the knowledge of various psychological experiments and tests in social situations. (Level- 3)
II	PSY-201	GENERAL PSYCHOLOGY II	CO1: Explain various psychological process with major theories involved in this field (Level-2) CO2: Apply various theories of personality to study human behaviour. (Level-4) CO3: Analyse the important process of memory related to human being. (Level-4) CO4: Evaluate and analyse theories of emotion and how we express and recognize.
	PSY-202	STATISTICS	CO1: Understand the meaning and difference between regression and correlation. (Level -2) CO2: Use various techniques of data analysis. (Level -3) CO3: Apply different parametric and non-parametric measures while interpreting data.
	PSY-203	LIFE SPAN HUMAN DEVELOPMENT	CO1: Define the stages and theories of development. (Level-1) CO2: Classify various types of development occurring throughout the childhood. (Level-2) CO3: Interpret various types of development and relationship with peers and family during adolescence. (Level-3)
	PSY-204	HEALTH PSYCHOLOGY	CO1: Understand the biological, behavioural, cognitive and social determinants of health, and risk factors for health-compromising behaviours and strategies for their modification, across the lifespan.(Level-2) CO2: Summarize the theory and research of the field of Health Psychology by reviewing and discussing the fundamental and more recent contributions to the science.(Level-2) CO3: Evaluate research in health psychology and use this knowledge to explain mind-body interaction to health-care consumers and professionals.(Level-5) CO4: Critique and Synthesize research on the factors involved in causing,
	PSY-205	PRACTICAL	CO1: Analyze the level of intelligence among the individuals. (Level-4) CO2: Implement the learning style and decision-making style of participants. (Level-3) CO3: Examine the home environment of a pre-school child by interviewing the parents. (Level-4) CO4: Experiment and value how to handle the conflicts. (Level-5)
	PSY-206 (OF HAPPINESS)	PSYCHOLOGY OF HAPPINESS	CO1: Understand the difference between weaknesses and strengths, and how positive psychology emphasises the latter in contrast to traditional psychology's emphasis on the former. (Level-2) CO2: Use a variety of techniques designed to enhance happiness. (Level-3) CO3: Analyse your own strengths, and understand how you might go about exercising these in order to achieve lasting happiness. (Level-4)
	PSY-206 (CHILD PSYCHOLOGY)	CHILD PSYCHOLOGY	CO1: Explain how theories are used to understand child behavior and Development (Level2) CO2: Classify major theories of child development such as those of Piaget. (Level-2) CO3: Apply development theory to the analysis of child observations, surveys, and/or interviews using investigative research methodologies. (Level-3)

	SY-206 (ABNORMAL PSYCHOLOGY)	CO1: Define abnormality and the causal factors of abnormal behaviour. (Level-1) CO2: Classify the psychological disorders and the practice of psychiatric diagnosis. (Level-2) CO3: demonstrate knowledge of the classification system for psychosomatic disorders and be able to evaluate its impact. (Level-3)
	SY-206 (ENVIRONMENTAL PSYCHOLOGY)	CO1: Know the scope of studying social psychology and the methods to gather data in the social context to explain them. (Level-2) CO2: Understand the significance of social cognition, attitudes, stereotypes and prejudices in explaining human behaviour in social contexts. (level-3)
	SY-206 (SPORTS PSYCHOLOGY)	CO1: Apply psychological techniques and strategies to enhance performance in sports. (Level 3) CO2: Evaluate research in sport psychology and psychological factors related to performance and participation in sport and exercise settings. (Level-5) CO3: Implement motivational inhibitors and techniques that influence performance and participation in sports. (Level-3) CO4: Analyze the importance of effective team leadership and various functions of Dynamic team spirit. (Level 4)
	SY-206 (PSYCHOPATHOLOGY)	CO1: Understand the interactional relationships between environment and behavior. CO2: Understand the problems occurring to ecology and environment at the present time.
III	PSY-301 (RESEARCH METHODOLOGY)	CO1: Understand the basic orientation and methods of qualitative and quantitative research. (Level-2) CO2: Formulate good hypothesis and selected problems. (Level -4) CO3: Compare different types of research in psychology. (Level-4) CO4: Evaluate various types of psychological tools. (Level-5)
	PSY-302 (POSITIVE PSYCHOLOGY)	CO1: Understand about Western and Eastern prospective on positive psychology. (Level-2) CO2: Apply the various models and correlates of emotional intelligence and its importance in everyday life. (Level-3) CO3: Evaluate the importance of self-efficacy and benefits of optimism in various domains. (Level-5)
	PSY-303 (PSYCHOLOGY OF CRIME AND VIOLENCE)	CO1: Apply their knowledge to prevent aggression. (Level -3) CO2: Compare the two terms like crime and juvenile delinquency. (Level -4) CO3: Judge the role of school in juvenile delinquency. (Level-5) CO4: Plan for the prevention of crime and delinquency through early childhood education, moral education and value education. (Level-6)
	PSY-304 (COGNITIVE PSYCHOLOGY)	CO1: Understand the advanced theoretical, empirical and applied knowledge of basic mental processes, from a cognitive perspective. (Level-2) CO2: Use the various quantitative methods in Cognitive Psychology. (Level-3) CO3: Apply relevant theoretical and empirical research literature in a practical context, and use their research competence to update themselves academically. (Level-3) CO4: Analyze and critically reflect on central experimental findings, and on core cognitive processes in areas such as memory, consciousness, reasoning and the extent to which human thought can be considered rational, judgement and decision-making
	PSY-305 (PRACTICAL)	CO1: Understand the ways of conducting psychological experiments. (Level -2) CO2: Apply scientific methods for the solution of psychological problems. (Level -3) CO3: Use the knowledge of various psychological experiments and tests in social situations. (Level- 3) CO4: Analyze the psychological tests while undertaking research work. (Level 4)
	SY-306 (FUNDAMENTALS OF PSYCHOLOGY)	CO1: Understand various approaches, fields, and subfields of psychology along with their major concepts and important figures. (Level-2) CO2: Apply the primary research methods employed in the study of psychology. (Level-3) CO3: Analyse the role of experience & learning process to study human behavior.
	SY-306 (EDUCATIONAL PSYCHOLOGY)	CO1: Implement and direct the learning, growth and conduct. (Level -3) CO2: Execute a body of facts and principles to solve the problems of teaching and learning. (Level -3) CO3: Analyze students' behavior to facilitate adjustment and growth of personality.
	SY-306 (SOCIAL PSYCHOLOGY)	CO1 Know the scope of studying social psychology and the methods to gather data in the social context to explain them. (Level-3) CO2 Understand the significance of social cognition, attitudes, stereotypes, and prejudices in explaining human behavior in the social contexts. (Level-4)
	SY-306 (CHILD PSYCHOLOGY)	CO1: Explain how theories are used to understand child behavior and Development (Level2) CO2: Classify major theories of child development such as those of Piaget. (Level-2) CO3: Apply development theory to the analysis of child observations, surveys, and/or interviews using investigative research methodologies. (Level-3) CO4: Analyze the interdependence of the cognitive, psychosocial and physical
	SY-306 (PROCESSES OF HUMAN EMPOWERMENT)	CO1 Know the structural components and functional dynamics of both intelligence and personality. (Level-2) CO2 Understand the significance of emotion and motivation in behavior management. (Level-3) CO3: Understand the significance of emotion and motivation in behavior management.

	PSY-306	PSYCHOMETRICS	CO :1 State the characteristics of psychological tests and list the steps in construction of a test. CO :2 Illustrate steps to construct Intelligence Test and Personality Inventory. CO :3 Initiate a Plan to construct intelligence and personality tests. CO :4 Compute the Item analysis for selection items in an inventory/questionnaire
IV	PSY-401	COUNSELLING PSYCHOLOGY	CO1: Understand the factors which contribute to positive outcomes in counselling and psychotherapy based on contemporary research. (Level-2) CO2: Use a wide range of therapeutic interventions appropriate to the core model. (Level-3) CO3: Apply the techniques and skills in practical fields relevant to counselling and psychotherapy. (Level-3) CO4: Analyse therapeutic relationships founded on the qualities of empathy,
	PSY-402	GERIATRIC PSYCHOLOGY	CO1: State the key terms used in the field of aging. (Level-1) CO2: Identify the needs and challenges facing current generation of older adults. (Level-2) CO3: Interpret the behavioural, and biological aspects of aging. (Level-3) CO4: Analyse the ways aging affects areas such as family relations, personality etc. (Level-4)
	PSY-403	INTERNSHIP/	
	PSY-404	CLINICAL ASSESSMENT AND THERAPY	CO1: Understand the basic facts about psychological assessment. (Level-2) CO2: Apply the principles of Behavior Therapy, Cognitive Behavior Therapy and Family Therapy in clinical setting. (Level- 3) CO3: Analyze and compare the key techniques of above therapies. (Level- 4) CO4: Evaluate these approaches. (Level- 5)
	PSY-405	PROJECT	

**List of COs of PG Syllabus of School of Political Science**

Course Code	Course Title	Course Outcome
PSC.101	Concepts in Political Theory	CO1 -This course provides students with theoretical understanding.
		CO2 - This course provides ideas related to principles of modern society framework and how they are addressed.
		CO3 - This course analyzes political ideas and their relationship to modern society.
		CO4 - Students will be able to apply these political ideas in the present context.
PSC.102	Comparative Politics	CO 1- This course provides students with Comparative Politics and critical thinking related to its approaches.
		CO 2 - This course provides ideas related to State theory and debate over the nature of the state.
		CO3 - This course analyzes the Constitution and Constitutionalism.
		CO 4 - This course analyzes the party and electoral systems of different countries.
PSC.103	International Relations: Concepts and Theories	CO1 -This course provides students with theoretical understanding and critical thinking related to great debates and foreign policy of India.
		O2-This course provides ideas related to the principles of NAM and how to maintain BOP, also knowing the importance of national interest.

		<p>CO3 -This course builds an analytical perspective among students through various theories and approaches of international relation.</p> <p>CO4 -Students will be able to apply these political theories in the present context.</p>
PSC.104	Western Political Thought I	<p>CO1-This course provides students with a critical understanding of different approaches and evaluate their mind through interdisciplinary correlation.</p> <p>CO2 -This course provides ideas related to various methods and strategy given by Plato and Aristotle.</p> <p>CO3-This course enlightened the students about medieval periods structure of government and different types law related to state affairs.</p> <p>CO4 - This portion develop a critical thinking among students about the human nature and sate of nature which leads to make a sphere of influence.</p>
PSC.105	Indian Political System: Institutions	<p>CO1 -This course provides students with a critical understanding of evolution of Indian constitution.</p> <p>CO2 -This course provides ideas related to Indian political systems and institutional provision.</p> <p>CO3 -This course analyzes the issues related to elections and identity politics.</p> <p>CO4 - This portion deals with how to cope up with diversity and learn to maintain equilibrium between center and state.</p>

PSC.201	DEBATES IN CONTEMPORARY POLITICAL THEORY	CO1 -Understand the basic political concepts like democracy.
		CO2 -Analyze the concepts related to multiculturalism, recognition, and tolerance.
		CO3 -Analyze the concepts related to nationalism.
		CO4 -Evaluate how these values and concepts enrich the discourses of political life, sharpening their analytical skills in the process.
PSC.202	WESTERN POLITICAL THOUGHT II	CO1 -Understand the contribution of J. Bentham and J. S. Mill
		CO2 -Understand the contribution of Rousseau and Hegel
		CO3 -Understand the contribution of Karl Marx and the relevance of Marxism.
		CO4 - Understand the contribution of Mary Wollstonecraft, John Rawls, and Michael Foucault
PSC.203	Public Administration	CO1 -Understand public administration's basic principles, types, and forms focusing on public administration and private administration
		CO2 -Analyze the paradigm shift from government to the governance of new public Management.
		CO3 -Understand the role of Civil Services in Developing Society.
		CO4 -Analyze the Institutional mechanisms and administrative control and understand the administrative reforms in the Indian context.

PSC.204	GLOBAL POLITICS: THEORIES, ISSUES AND CHALLENGES	CO1 -To have clear theoretical understanding related to Global politics.
		CO2 -To gain capacity to critically examine contemporary changing dimension of polarization.
		CO3 -To have clear understanding of different dimensions of national security. NPT, CTBT, START and terrorism.
		CO4 -To have clear understanding of the role of economy in Global Politics.
PSC.205	INDIAN POLITICAL SYSTEM: PROCESSES	CO1 -To familiarise themselves with various approaches to understanding Indian State
		CO2 -To understand the existing diversities among Indian States and the need for addressing important issues of development and governance in contemporary Indian Politics.
		CO3 -To examine the development practices prevalent in the country since Independence and develop a critical perspective on the issues of globalization, development and how the former significantly affects the process of development and disparity in a particular region.
		CO4 -To make the students understand how democracy has been institutionalized at the grassroots level and its impact on public policies.
PSC.206 B	SOCIAL AND POLITICAL MOVEMENTS IN INDIA	CO1 -To understand the interplay between theoretical perspectives and methodological approaches to social and political movements in India.



		<p>CO2 -To analyze various contentious socio-economic issues leading to protests.</p> <p>CO3 -To compare and analyze protest movements in pre- and post-independence periods.</p> <p>CO4 -To understand the role of the state in movements for change and to evaluate the impact of globalization on different social and political movements.</p>
PSC.301	STATE AND POLITICS IN ODISHA	<p>CO 1 -This course provides students with a critical understanding of the evolution of the party system in Odisha. It also provides knowledge related to political values which are existing in Odisha.</p> <p>CO2 - This course provides ideas related to caste, class, party system, administration, and bureaucratic system.</p> <p>CO3 - This course analyzes about democratic decentralization.</p> <p>CO4 -Student will get the knowledge of marginalized groups and about their development process.</p>
PSC.302	Political Sociology	<p>CO 1 -This course provides students with a critical understanding of the unequal distribution of power and position in society.</p> <p>CO2 - This course provides ideas related to culture and socialization towards politics.</p>

		<p>CO3 - This course analyzes various models of power and also discusses about elitist theories to inform the students of different classes in society.</p> <p>CO4 - This portion encourages the students to give their participate in various fields of the political process and also draws a line of modernization, and development in the mind of students.</p>
PSC.303	PUBLIC ADMINISTRATION IN INDIA	<p>CO 1 -This course analyzes various administrative cultures and organizational forms of Indian administration.</p> <p>CO2 - This course critically defines the nature and clearly describes the training, recruitment, and classification process of civil service in India.</p> <p>CO3 - This course provides some mechanism which is to redress the issues of corruption and to make the government accountable and transparent.</p> <p>CO4 - This portion deals with the civic engagement of popular participation and the role of civil society for better administration.</p>
PSC.304	INDIAN POLITICAL THOUGHT	<p>CO 1 -This chapter describes the evolution of Indian political tradition and critically analyzes different schools of tradition and theories.</p> <p>CO2 - This chapter introduced the concept of statecraft which is the origin of the formal structure of a state system.</p> <p>CO3 - This course shows the evolution of modern Indian political thought and the emergence of liberalistic, nationalistic ideas.</p> <p>CO 4 - This portion develops the radical shift of Indian political tradition including with social reformistic</p>

		approach.
PSC.305	Research Methodology	CO 1 -Understand and discuss the role and importance of research in the social sciences.
		CO2 - Understand and discuss the issues and concepts salient to the research process.
		CO3 - Analyze the complex issues inherent in selecting a research problem, selecting an appropriate research design, and implementing a research project.
		CO4 - Analyze and discuss the concepts and procedures of sampling, data collection, analysis, and reporting.
PSC.306 A	Indian Constitution	CO 1 -This course provides students with a critical understanding of evolution and describe the ideological and philosophical basis of Indian constitution.
		CO2 - This chapter analyses the structure and function of Indian parliament system.
		CO3 - This course defines the role of executive, judiciary, and state legislature for safeguarding individual rights.
		CO4 - This portion deals with how to cope up with diversity and to learn maintain equilibrium between center and state.
PSC.401	Public Policy Process in India	CO 1 -Understand the Public Policy, dimension and significance
		CO2 - Analyze public policy process and role of different entities
		CO3 - Understand policy implementation and its techniques
		CO4 - Understand policy implementation and its techniques

PSC.402	Gender Studies	CO 1 -Understand the structural and institutional basis of patriarchy as well as establish that gender identity and gender injustice cannot be understood in isolation, but only concerning caste, class, and religious community identities.
		CO2 - Explain that gender itself is not a synonym for 'women'. It enables rather, an understanding that the identities of 'men' and 'women' are constructed historically and culturally.
		CO3 - Examine the relationship between women and education.
		CO4 - To apply their knowledge of women and gender studies by analyzing current social and political situations from those perspectives.
PSC.403	INDIA'S FOREIGN POLICY	CO 1 -Understand the evolution and basic determinants of Indian Foreign Policy.
		CO2 - Understand the changing dynamics and role of Actors in Foreign Policy Making.
		CO3 - Analyze India's sub-regional and regional diplomacy.
		CO4 - To evaluate India's status with that of great powers.
PSC.404	INDIAN POLITICAL THOUGHT-II	CO 1 -Understand the impact of socio-economic development on political thought.
		CO2 - Understand the difference between thought and ideology.
		CO3 - Analyzes ideas of political thinkers on state and individual relationships.
		CO4 - Apply views of modern thinkers in the present context.

**LIST of COs for the PG syllabus in Physics-2023-24**

**FIRST SEMESTER**

Course code	Name of the Course	
<b>PHY 101</b>	Mathematical Methods in Physics	<p>CO1: Understand the use of Residue theorem for evaluation of complex contour and definite integrals.</p> <p>CO2: Use various tensors with their operation mechanism in theoretical Physics.</p> <p>CO3: Apply group theory to solve some mathematical problems of interest in physics.</p> <p>CO4: Analyze the mathematical formulation of various special functions in theoretical Physics.</p>
<b>PHY 102</b>	Classical Mechanics	<p>CO1: Classify the motion of rigid bodies based on frames of reference and the conservation laws by Lagrangian mechanics.</p> <p>CO2: Formulate problems of system of particles using Hamiltonian, canonical transformation and Poisson's bracket.</p> <p>CO3: Interpret the equations of motion for mechanical systems for planar and spatial cases using Hamilton-Jacobi formalism.</p> <p>CO4: Apply the theory of small oscillations in various vibratory systems.</p> <p>CO5: Analyze the motion of rigid bodies based on frames of references.</p>
<b>PHY 103</b>	Quantum Mechanics-I	<p>CO1: Identify orthogonal and normalized basis vectors by applying the concept of bra-ket vectors of Hilbert space.</p> <p>CO2: Apply quantum mechanical operators with their corresponding eigen value and proper interpretation of unitary transformation associated with quantum mechanics.</p> <p>CO3: Design time evolution of quantum state with its conservation properties.</p> <p>CO3: Use operator formalism of Quantum Mechanics to solve one dimensional harmonic oscillator problem.</p> <p>CO4: Predict the orbital, spin as well total angular momentum operator and C.G. coefficients for a composite angular system.</p> <p>CO5: Determine the eigen value and eigen function for Hydrogen atom in a spherically symmetric potential and for a free particle.</p>
<b>PHY 104</b>	Electronics	<p>their frequency response through network theory.</p> <p>CO2: Apply various modes of OP-AMP for mathematical operations.</p> <p>CO3: Design various types of oscillators and multivibrators in electronic applications.</p> <p>CO4: Design the sequential logic circuits for various complex logic and switching devices with validation.</p>

<b>PHY 105</b>	Electronics Lab	<p>CO1: Evaluate various parameters associated with semiconductor diodes (Si, Ge, Zener, LED) and transistor amplifiers.</p> <p>CO2: Apply the fundamentals of logic gates and its use in implementing basic Boolean operations.</p> <p>CO3: Evaluate various parameters (resistivity, mobility) of a semiconducting material.</p> <p>CO4: Use of oscillator circuits in electronic instruments.</p> <p>CO5: Apply OP-AMP in solving mathematical operations.</p>
<b>SECOND SEMESTER</b>		
<b>PHY 201</b>	Classical Electrodynamics	<p>CO1: Design of Maxwell's equation and their applications in electromagnetic potentials and Gauge transformations.</p> <p>CO2: Explain the various modes of propagation of plane electromagnetic wave in different media.</p> <p>CO3: Analyze the electromagnetic fields and radiation of a localized oscillating source (antenna).</p> <p>CO4: Apply the theory of scattering to various electromagnetic operations.</p>
<b>PHY 202</b>	Quantum Mechanics-II	<p>CO1: Understand non-exact solutions for stationary states through time independent non-degenerate perturbation theory.</p> <p>CO2: Interpret the non-exact problems pertaining to Stark effect and Zeeman Effect by the knowledge of time independent degenerate perturbation theory.</p> <p>CO3: Determine Eigen value of non exact solutions by applying Variational and WKB- approximation method.</p> <p>CO4: Apply the concept of lasing action for LASER and MASER by time dependent perturbation theory.</p> <p>CO5: Evaluate scattering cross-section for a scattering system by using partial wave analysis of elastic and inelastic scattering.</p>
<b>PHY 203</b>	Solid State Physics	<p>CO1: Understand various aspects of materials related to crystallography and lattice vibrations.</p> <p>CO2: Interpret phonon vibrations in various lattice and their effects in heat capacity of solid.</p> <p>CO3: Analyze the behavior of semiconductor under different conditions in fundamental research.</p> <p>CO4: Explain the dielectric and magnetic behaviour of novel materials and their applications.</p>

<b>PHY 204</b>	Applied Optics	CO1: Understand basic principle of optical properties of solids. CO2: Apply the basic concepts of Fourier and holography in various optical devices CO3: Interpret the idea of LASER Spectroscopy for detection of trace level in hazardous gases. CO4: Apply the multi photon microscopy for various applications.
<b>PHY 205</b>	Computational Physics Lab	CO1: Design stable algorithms for solving numerical problems using various computer programs. CO2: Apply numerical techniques to solve linear equations. CO3: Apply techniques to solve systems of equations using typical matrix methods. CO4: Compute numerical differentiation and integration using interpolation.
<b>PHY 206</b>	Open Elective (DSE) (Atomic and Molecular Spectroscopy)	CO1: Analyze energy splitting and allowed transitions of atomic spectra under various conditions. CO2: Explain the molecular formation and their stability. CO3: Determine internuclear separation, atomic mass, moment of inertia from fundamental aspects of rotational and vibrational spectroscopy. CO4: Demonstrate the origin of molecular electronic states and their intensities distribution. CO5: Determine symmetry element of molecules and their allowed modes of vibrations of in rotational and vibrational spectroscopy.
<b>THIRD SEMESTER</b>		
<b>PHY 301</b>	Nuclear Physics	stability. CO2: Understand nuclear structure and theory associated with nuclear scattering. CO3: Interpret the nuclear models associated with nuclear structure and stability. CO4: Explain process nuclear reactions associated with alpha decay and beta decay.
<b>PHY 302</b>	Particle Physics	CO1: Understand the quantum mechanical properties of elementary particles based on strong and weak interactions. CO2: Explain various parameters associated with elementary particles. CO3: Interpret the properties of elementary particles with respect to symmetry. CO4: Explain relativistic kinematics and Unitary symmetry associated with elementary particles.

PHY 303	Special Paper-I (Advanced Condensed Matter Physics)	<p>CO1: Understand the concept of lattice vibration and energy bands in solid states.</p> <p>CO2: Interpret the characteristics of Fermi surfaces for electron approximation theory.</p> <p>CO3: Analyze the dielectric constant of semiconductor through electron interaction theory.</p> <p>CO4: Compare various types of electronic and lattice defects.</p> <p>CO5: Apply magneto-resistance property for various sensing applications.</p>
PHY 304	Statistical Mech	<p>thermodynamics as logical consequences of the postulates of statistical mechanics.</p> <p>CO2: Interpret the concept of types of ensembles and calculation of general probability statements for variety of situation of physical interest.</p> <p>CO3: Analyze the problems involving gases at low temperature or high densities and problems encountered in connection with the indistinguishable particles.</p> <p>CO4: Apply Fermi-Dirac and Bose-Einstein statistics to different physical systems.</p> <p>CO5: Apply different model for phase transitions through statistical techniques to simulate the structure of a physical substance.</p>
PHY 305	Lab:Optics and Modern Physics Lab	<p>CO1: Understand the fundamental concepts of interference, diffraction and polarization of light.</p> <p>CO2: Apply the basic knowledge of Modern Physics to determine resistivity, Band gap and Hall coefficient of a semiconductor.</p> <p>CO3: Determine the key electric and magnetic properties of materials.</p>
PHY 306	Open Elective (IDSE)(Nano Science and Nano Technology)	<p>CO1: Explain the properties of nanomaterials</p> <p>CO2: Classify nanomaterials with respect to their different dimensions.</p> <p>CO3: Apply various methods for synthesis of nanomaterials.</p> <p>CO4: Apply nanomaterials in various applications.</p>
<b>FOURTH SEMESTER</b>		
PHY 401	Energy Harvesting and Storage Materials	<p>CO1: Understand the theory of semiconducting materials in various energy harvesting devices.</p> <p>CO2: Understand the principle and efficacy of solar cell.</p> <p>CO3: Apply fuel cell for hydrogen production and storage.</p> <p>CO4: Use batteries and super capacitors for different energy storage applications.</p>



PHY 402	Advanced Quantum Mechanics	<p>CO1: Understand the concept of Klein-Gordon equation and its drawbacks.</p> <p>CO2: Interpret the properties of Four vector Dirac gamma matrices as obtained from Dirac equation and its positive and negative energy states.</p> <p>CO3: Interpret the properties of a Dirac particle through its covariant Lorentz transformation.</p> <p>CO4: Analyze the various quantum fields associated with a Dirac particle and its charge conjugate as well as time reversal states</p>
PHY 403	Special Paper-II (Advanced Condensed Matter Physics)	<p>CO1: Explain the quantization process associated with lattice vibration.</p> <p>CO2: Understand various electron-electron interaction theory.</p> <p>CO3: Interpret the theory of superconductivity for various types of superconductors.</p> <p>CO4: Analyze the quantum mechanical aspect associated with superconducting materials.</p>
PHY 404	Experimental Techniques in Physics	<p>CO1: Understand the various synthesis techniques of materials.</p> <p>CO2: Learn the X-Ray and spectroscopic characterization of materials.</p> <p>CO3: Identify various materials through microscopic, thermal and mechanical characterization techniques.</p> <p>CO4: Apply the laws of Physics to elucidate various experiments in high energy Physics.</p>
PHY 405	PROJECT	<p>CO1: Apply the knowledge of Physics for predicting various physical phenomena.</p> <p>CO2: Design tailor made materials for device applications.</p>

**LIST of COs for the PG syllabus in Physics-2022-23**

**FIRST SEMESTER**

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<b>PHY 104</b>	Electronics	<p>CO1: Understand the working of basic cascaded amplifiers with their frequency response through network theory.</p> <p>CO2: Apply various modes of OP-AMP for mathematical operations.</p> <p>CO3: Design various types of oscillators and multivibrators in electronic applications.</p> <p>CO4: Design the sequential logic circuits for various complex logic and switching devices with validation.</p>

<b>PHY 105</b>	Electronics Lab	<p>CO1: Evaluate various parameters associated with semiconductor diodes (Si, Ge, Zener, LED) and transistor amplifiers.</p> <p>CO2: Apply the fundamentals of logic gates and its use in implementing basic Boolean operations.</p> <p>CO3: Evaluate various parameters (resistivity, mobility) of a semiconducting material.</p> <p>CO4: Use of oscillator circuits in electronic instruments.</p> <p>CO5: Apply OP-AMP in solving mathematical operations.</p>
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<b>THIRD SEMESTER</b>		
<b>PHY 301</b>	Nuclear Physics	CO1: Understand the basic nuclear properties and nuclear stability. CO2: Understand nuclear structure and theory associated with nuclear scattering. CO3: Interpret the nuclear models associated with nuclear structure and stability. CO4: Explain process nuclear reactions associated with alpha decay and beta decay.
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PHY 304	Statistical Mec	<p>CO1: Understand the concept of statistical physics and thermodynamics as logical consequences of the postulates of statistical mechanics.</p> <p>CO2: Interpret the concept of types of ensembles and calculation of general probability statements for variety of situation of physical interest.</p> <p>CO3: Analyze the problems involving gases at low temperature or high densities and problems encountered in connection with the indistinguishable particles.</p> <p>CO4: Apply Fermi-Dirac and Bose-Einstein statistics to different physical systems.</p> <p>CO5: Apply different model for phase transitions through statistical techniques to simulate the structure of a physical substance.</p>
PHY 305	Lab:Optics and Modern Physics Lab	<p>CO1: Understand the fundamental concepts of interference, diffraction and polarization of light.</p> <p>CO2: Apply the basic knowledge of Modern Physics to determine resistivity, Band gap and Hall coefficient of a semiconductor.</p> <p>CO3: Determine the key electric and magnetic properties of materials.</p>
PHY 306	Open Elective (IDSE)(Nano Science and Nano Technology)	<p>CO1: Explain the properties of nanomaterials</p> <p>CO2: Classify nanomaterials with respect to their different dimensions.</p> <p>CO3: Apply various methods for synthesis of nanomaterials.</p> <p>CO4: Apply nanomaterials in various applications.</p>
<b>FOURTH SEMESTER</b>		
PHY 401	Energy Harvesting and Storage Materials	<p>CO1: Understand the theory of semiconducting materials in various energy harvesting devices.</p> <p>CO2: Understand the principle and efficacy of solar cell.</p> <p>CO3: Apply fuel cell for hydrogen production and storage.</p> <p>CO4: Use batteries and super capacitors for different energy storage applications.</p>
PHY 402	Advanced Quantum Mechanics	<p>CO1: Understand the concept of Klein-Gordon equation and its drawbacks.</p> <p>CO2: Interpret the properties of Four vector Dirac gamma matrices as obtained from Dirac equation and its positive and negative energy states.</p> <p>CO3: Interpret the properties of a Dirac particle through its covariant Lorentz transformation.</p> <p>CO4: Analyze the various quantum fields associated with a Dirac particle and its charge conjugate as well as time reversal states</p>

PHY 403	Special Paper-II (Advanced Condensed Matter Physics)	CO1: Explain the quantization process associated with lattice vibration. CO2: Understand various electron-electron interaction theory. CO3: Interpret the theory of superconductivity for various types of superconductors. CO4: Analyze the quantum mechanical aspect associated with superconducting materials.
PHY 404	Experimental Techniques in Physics	CO1: Understand the various synthesis techniques of materials. CO2: Learn the X-Ray and spectroscopic characterization of materials. CO3: Identify various materials through microscopic, thermal and mechanical characterization techniques. CO4: Apply the laws of Physics to elucidate various experiments in high energy Physics.
PHY 405	PROJECT	CO1: Apply the knowledge of Physics for predicting various physical phenomena. CO2: Design tailor made materials for device applications.

**LIST of COs for the PG syllabus in Physics-2021-22**

**FIRST SEMESTER**

Course code	Name of the Course	
<b>PHY 101</b>	Mathematical Methods in Physics	<p>CO1: Understand the use of Residue theorem for evaluation of complex contour and definite integrals.</p> <p>CO2: Use various tensors with their operation mechanism in theoretical Physics.</p> <p>CO3: Apply group theory to solve some mathematical problems of interest in physics.</p> <p>CO4: Analyze the mathematical formulation of various special functions in theoretical Physics.</p>
<b>PHY 102</b>	Classical Mechanics	<p>CO1: Classify the motion of rigid bodies based on frames of reference and the conservation laws by Lagrangian mechanics.</p> <p>CO2: Formulate problems of system of particles using Hamiltonian, canonical transformation and Poisson's bracket.</p> <p>CO3: Interpret the equations of motion for mechanical systems for planar and spatial cases using Hamilton-Jacobi formalism.</p> <p>CO4: Apply the theory of small oscillations in various vibratory systems.</p> <p>CO5: Analyze the motion of rigid bodies based on frames of references.</p>
<b>PHY 103</b>	Quantum Mechanics-I	<p>CO1: Identify orthogonal and normalized basis vectors by applying the concept of bra-ket vectors of Hilbert space.</p> <p>CO2: Apply quantum mechanical operators with their corresponding eigen value and proper interpretation of unitary transformation associated with quantum mechanics.</p> <p>CO3: Design time evolution of quantum state with its conservation properties.</p> <p>CO3: Use operator formalism of Quantum Mechanics to solve one dimensional harmonic oscillator problem.</p> <p>CO4: Predict the orbital, spin as well total angular momentum operator and C.G. coefficients for a composite angular system.</p> <p>CO5: Determine the eigen value and eigen function for Hydrogen atom in a spherically symmetric potential and for a free particle.</p>
<b>PHY 104</b>	Electronics	<p>their frequency response through network theory.</p> <p>CO2: Apply various modes of OP-AMP for mathematical operations.</p> <p>CO3: Design various types of oscillators and multivibrators in electronic applications.</p> <p>CO4: Design the sequential logic circuits for various complex logic and switching devices with validation.</p>

<b>PHY 105</b>	Electronics Lab	<p>CO1: Evaluate various parameters associated with semiconductor diodes (Si, Ge, Zener, LED) and transistor amplifiers.</p> <p>CO2: Apply the fundamentals of logic gates and its use in implementing basic Boolean operations.</p> <p>CO3: Evaluate various parameters (resistivity, mobility) of a semiconducting material.</p> <p>CO4: Use of oscillator circuits in electronic instruments.</p> <p>CO5: Apply OP-AMP in solving mathematical operations.</p>
<b>SECOND SEMESTER</b>		
<b>PHY 201</b>	Classical Electrodynamics	<p>CO1: Design of Maxwell's equation and their applications in electromagnetic potentials and Gauge transformations.</p> <p>CO2: Explain the various modes of propagation of plane electromagnetic wave in different media.</p> <p>CO3: Analyze the electromagnetic fields and radiation of a localized oscillating source (antenna).</p> <p>CO4: Apply the theory of scattering to various electromagnetic operations.</p>
<b>PHY 202</b>	Quantum Mechanics-II	<p>CO1: Understand non-exact solutions for stationary states through time independent non-degenerate perturbation theory.</p> <p>CO2: Interpret the non-exact problems pertaining to Stark effect and Zeeman Effect by the knowledge of time independent degenerate perturbation theory.</p> <p>CO3: Determine Eigen value of non exact solutions by applying Variational and WKB- approximation method.</p> <p>CO4: Apply the concept of lasing action for LASER and MASER by time dependent perturbation theory.</p> <p>CO5: Evaluate scattering cross-section for a scattering system by using partial wave analysis of elastic and inelastic scattering.</p>
<b>PHY 203</b>	Solid State Physics	<p>CO1: Understand various aspects of materials related to crystallography and lattice vibrations.</p> <p>CO2: Interpret phonon vibrations in various lattice and their effects in heat capacity of solid.</p> <p>CO3: Analyze the behavior of semiconductor under different conditions in fundamental research.</p> <p>CO4: Explain the dielectric and magnetic behaviour of novel materials and their applications.</p>
<b>PHY 204</b>	Applied Optics	<p>CO1: Understand basic principle of optical properties of solids.</p> <p>CO2: Apply the basic concepts of Fourier and holography in various optical devices</p> <p>CO3: Interpret the idea of LASER Spectroscopy for detection of trace level in hazardous gases.</p> <p>CO4: Apply the multi photon microscopy for various applications.</p>



<b>PHY 205</b>	Computational Physics Lab	CO1: Design stable algorithms for solving numerical problems using various computer programs. CO2: Apply numerical techniques to solve linear equations. CO3: Apply techniques to solve systems of equations using typical matrix methods. CO4: Compute numerical differentiation and integration using interpolation.
<b>PHY 206</b>	Open Elective (DSE) (Atomic and Molecular Spectroscopy)	CO1: Analyze energy splitting and allowed transitions of atomic spectra under various conditions. CO2: Explain the molecular formation and their stability. CO3: Determine internuclear separation, atomic mass, moment of inertia from fundamental aspects of rotational and vibrational spectroscopy. CO4: Demonstrate the origin of molecular electronic states and their intensities distribution. CO5: Determine symmetry element of molecules and their allowed modes of vibrations of in rotational and vibrational spectroscopy.
<b>THIRD SEMESTER</b>		
<b>PHY 301</b>	Nuclear Physics	stability. CO2: Understand nuclear structure and theory associated with nuclear scattering. CO3: Interpret the nuclear models associated with nuclear structure and stability. CO4: Explain process nuclear reactions associated with alpha decay and beta decay.
<b>PHY 302</b>	Particle Physics	CO1: Understand the quantum mechanical properties of elementary particles based on strong and weak interactions. CO2: Explain various parameters associated with elementary particles. CO3: Interpret the properties of elementary particles with respect to symmetry. CO4: Explain relativistic kinematics and Unitary symmetry associated with elementary particles.
<b>PHY 303</b>	Special Paper-I (Advanced Condensed Matter Physics)	CO1: Understand the concept of lattice vibration and energy bands in solid states. CO2: Interpret the characteristics of Fermi surfaces for electron approximation theory. CO3: Analyze the dielectric constant of semiconductor through electron interaction theory. CO4: Compare various types of electronic and lattice defects. CO5: Apply magneto-resistance property for various sensing applications.

PHY 304	Statistical Mechan	<p>thermodynamics as logical consequences of the postulates of statistical mechanics.</p> <p>CO2: Interpret the concept of types of ensembles and calculation of general probability statements for variety of situation of physical interest.</p> <p>CO3: Analyze the problems involving gases at low temperature or high densities and problems encountered in connection with the indistinguishable particles.</p> <p>CO4: Apply Fermi-Dirac and Bose-Einstein statistics to different physical systems.</p> <p>CO5: Apply different model for phase transitions through statistical techniques to simulate the structure of a physical substance.</p>
PHY 305	Lab:Optics and Modern Physics Lab	<p>CO1: Understand the fundamental concepts of interference, diffraction and polarization of light.</p> <p>CO2: Apply the basic knowledge of Modern Physics to determine resistivity, Band gap and Hall coefficient of a semiconductor.</p> <p>CO3: Determine the key electric and magnetic properties of materials.</p>
PHY 306	Open Elective (IDSE)(Nano Science and Nano Technology)	<p>CO1: Explain the properties of nanomaterials</p> <p>CO2: Classify nanomaterials with respect to their different dimensions.</p> <p>CO3: Apply various methods for synthesis of nanomaterials.</p> <p>CO4: Apply nanomaterials in various applications.</p>
<b>FOURTH SEMESTER</b>		
PHY 401	Energy Harvesting and Storage Materials	<p>CO1: Understand the theory of semiconducting materials in various energy harvesting devices.</p> <p>CO2: Understand the principle and efficacy of solar cell.</p> <p>CO3: Apply fuel cell for hydrogen production and storage.</p> <p>CO4: Use batteries and super capacitors for different energy storage applications.</p>
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**LIST of COs for the PG syllabus in Physics-2020-21**

**FIRST SEMESTER**

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<b>PHY 101</b>	Mathematical Methods in Physics	<p>CO1: Understand the use of Residue theorem for evaluation of complex contour and definite integrals.</p> <p>CO2: Use various tensors with their operation mechanism in theoretical Physics.</p> <p>CO3: Apply group theory to solve some mathematical problems of interest in physics.</p> <p>CO4: Analyze the mathematical formulation of various special functions in theoretical Physics.</p>
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<b>PHY 104</b>	Statistical Mechanics	<p>CO1: Understand the concept of statistical physics and thermodynamics as logical consequences of the postulates of statistical mechanics.</p> <p>CO2: Interpret the concept of types of ensembles and calculation of general probability statements for variety of situation of physical interest.</p> <p>CO3: Analyze the problems involving gases at low temperature or high densities and problems encountered in connection with the indistinguishable particles.</p> <p>CO4: Apply Fermi-Dirac and Bose-Einstein statistics to different physical systems.</p> <p>CO5: Apply different model for phase transitions through statistical techniques to simulate the structure of a physical substance.</p>
<b>PHY 105</b>	Computational Methods in Physics Lab	<p>CO1: Develop stable algorithms and skills for solving numerical problems in various areas of Physics.</p> <p>CO2: Apply numerical techniques for solving linear equations, differential equation and integration.</p> <p>CO3: Apply numerical techniques fitting the curve, interpolation and related problems.</p>
<b>SECOND SEMESTER</b>		
<b>PHY 201</b>	Classical Electrodynamics	<p>CO1: Design of Maxwell's equation and their applications in electromagnetic potentials and Gauge transformations.</p> <p>CO2: Explain the various modes of propagation of plane electromagnetic wave in different media.</p> <p>CO3: Analyze the electromagnetic fields and radiation of a localized oscillating source (antenna).</p> <p>CO4: Apply the theory of scattering to various electromagnetic operations.</p>
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PHY 302	Basic Electronics	<p>their frequency response through network theory.</p> <p>CO2: Apply various modes of OP-AMP for mathematical operations.</p> <p>CO3: Design various types of oscillators and multivibrators in electronic applications.</p> <p>CO4: Design the sequential logic circuits for various complex logic and switching devices with validation.</p>
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PHY 304	Physics of Metamaterials	<p>CO1: Understand the basic concept of Metamaterials.</p> <p>CO2: Interpret the properties of Metamaterials with negative material parameters.</p> <p>CO3: Apply the theory of Metamaterials in Plasmonics.</p> <p>CO4: Design perfect lens and super lens using metamaterials.</p>
PHY 305	Lab:-Electronics and Solid state Physics	<p>CO1: Understand the basic concept of Metamaterials.</p> <p>CO2: Interpret the properties of Metamaterials with negative material parameters.</p> <p>CO3: Apply the theory of Metamaterials in Plasmonics.</p> <p>CO4: Design perfect lens and super lens using metamaterials.</p>
PHY 306	Open Elective (IDSE)(Nano Science and Nano Technology)	<p>CO1: Explain the properties of nanomaterials</p> <p>CO2: Classify nanomaterials with respect to their different dimensions.</p> <p>CO3: Apply various methods for synthesis of nanomaterials.</p> <p>CO4: Apply nanomaterials in various applications.</p>
<b>FOURTH SEMESTER</b>		

PHY 401	Basic Nuclear Physics	<p>stability.</p> <p>CO2: Understand nuclear structure and theory associated with nuclear scattering.</p> <p>CO3: Interpret the nuclear models associated with nuclear structure and stability.</p> <p>CO4: Differentiate the process of nuclear reactions associated with alpha decay and beta decay.</p>
PHY 402	Particle Physics	<p>CO1: Understand the fundamental forces in nature</p> <p>CO2: Classify the types of elementary particles and understand their nature of interaction</p> <p>CO3: Interpret various conservation laws associated with the symmetry of elementary particles.</p> <p>CO4: Apply quark model to understand symmetry in strongly interacting particles that led to the realization of SU(2), SU(3) and higher groups.</p>
PHY 403	Special Paper:II (Advanced Condensed Matter Physics)	<p>CO1: Explain the quantization process associated with lattice vibration.</p> <p>CO2: Understand various electron-electron interaction theory.</p> <p>CO3: Interpret the theory of superconductivity for various types of superconductors.</p> <p>CO4: Analyze the quantum mechanical aspect associated with superconducting materials.</p>
PHY 404	Energy Harvesting and Storage Materials	<p>CO1: Determine the efficiency of a solar cell based on its output and dimensioning.</p> <p>CO2: Apply fuel cell for hydrogen production and storage.</p> <p>CO3: Use batteries and super capacitors for different energy storage applications.</p> <p>CO4: Apply various synthesis and characterization techniques for energy harvesting and storage materials.</p>
PHY 405	Energy Harvesting and Storage Materials	<p>CO1: Apply the knowledge of Physics for predicting various physical phenomena.</p> <p>CO2: Design tailor made materials for device applications.</p>



**Semester I**  
**INDIANEPISTEMOLOGY**  
**CourseCode:101**

**CourseObjectives**

1. To explain in depth the underlying nature and structure of knowledge and intricacies of its sources as advocated by the different Indian schools of thought.
2. To introduce the different debates among the scholars of different schools of Indian philosophy about the validity of these sources.
3. To discuss the different theories of Knowledge as advocated by different schools of Indian Philosophy with an additional exposition of certain concepts like Sruti, Jnata and Triputi-Sambhuti.
4. To acquaint the students about different theories of errors as explained by the scholars of different schools of Indian Philosophy.

**INDIANEPISTEMOLOGY**  
**Coursecode: 101**

**CourseOutcomes**

1. Ability to understand various sources of knowledge in IndianPhilosophy
2. EnhancementoftheIndiantraditionalknowledgesystems
3. Cultivationofthecapacityofthestudentstoidentifyrightcognitionsfromw rong ones
4. Enhancingtheintellectualcapacityofthestudentsinthefieldofepistemology

# INDIAN METAPHYSICS

## Course Code:102

### Course Objectives

1. To Examine the details of various theories of reality as propounded by different schools with a special focus on some Vedantic concepts like Rta, Yajna, Jagrata, Susupti, Turiya etc.
2. To acquaint the students about different theories of causation as developed by different Schools of thought
3. To critically discuss different theories concerning the existence and nonexistence of God as discussed by different scholars of Indian thought
4. To explicate the students about the subtleties and differences among the scholars of different Schools on various issues related to Indian metaphysics.

# INDIANMETAPHYSICS

## Coursecode:102

### CourseOutcomes

1. StudentsaremadeawareofvariousconceptsconcerningIndiantheoriesofreality.
2. Enhancement of the critical understanding of different allied concepts related Indianmetaphysics
3. EnablethestudentstorealizedifferentmetaphysicalpathsoutlinedbydifferenttraditionalIndianphilosophers.
4. Helpsthestudents'reasoningcapacitytounfoldandinterpretifferentconceptsinthefieldofIndianmetaphysics.

# INDIAN ETHICS

## Course Code: 103

### Course Objectives

1. To explain different ethical concepts of Indian Thought and their implications on our day-to-day life.
2. To discuss different theories of ethics as advocated by different schools
3. To acquaint the students about the law of Karma and some allied concepts Sreyas, Preyas, Niti etc.
4. To critically engage student to various contemporary practical ethical issues of traditional and modern thinkers

# INDIAN ETHICS

## Course Code: 103

### Course Outcomes

1. Students are expected to have learned the value of moral duties and responsibilities as being discussed in the traditional Indian Philosophy.
2. Enhancement of the capacity of the student to adduce moral reasoning.
3. Enable the student to realize the importance of the Indian concept of 'liberation' as it has been deliberated by different schools of thought.
4. Students are expected to have learned to understand the value of human moral life and would be in a position to apply it in different situations.

# LINGUISTIC AND CONCEPTUAL ANALYSIS

## Course Code: 104

### Course Objectives

1. To engage students to learn the basic concepts of language analysis
2. To critically evaluate different theories of meaning
3. To address certain fundamentals of propositional distinctions from a logical perspective
4. To explicate different theories of truth
5. To expose the student to various debates concerning the nature and sources of knowledge

# LINGUISTICANDCONCEPTUALANALYSIS

## CourseCode:104

### CourseOutcomes

1. Tobecapableofunderstandingthesemanticaspectoflanguageuse.
2. Studentsareexpectedtohavelearnedvarioustheoriesofmeaning.
3. Enhancesthecapacitytoanalyzetheepistemicformsofjudgments.
4. Studentsareabletounderstandthenotionoftruthinrelationtoknowledgeclaims.



# PHILOSOPHY OF KANT

## Course Code: 105

### Course Objectives

1. To introduce the student to the modern approach to epistemology from a Kantian perspective
2. To address the Kantian notion of judgements
3. To critically evaluate the process of understanding through categories
4. To discuss the moral theory and its postulates

# PHILOSOPHY OF KANT

## Course Code: 105

### Course Outcomes

1. Students are acquainted with various ideas of Kant's philosophy concerning metaphysics, epistemology and ethics.
2. Students are expected to have learned the idea of Copernicus revolution and its impact on Kant's epistemology which is considered to be a path-breaking paradigm in Western Philosophy.
3. Enhance the capacity to master over various categories of understanding and the transcendental deduction of their form.
4. Help the students' understanding of the concept of duty from a categorical perspective.

Semester:II  
**SYMBOLICLOGIC**  
**CourseCode:201**

CourseObjectives

1. To introduce the student to the basic concepts of symbolic logic
2. To explain different decision procedures of arguments
3. To provide detailed exposition of the quantification of language
4. To explicate the application of set theory for validating arguments

# SYMBOLIC LOGIC

## Course Code: 201

### Course Outcomes

1. Enable the student to decode the notion of truth and falsity with the help of contingent, contradictory and tautological propositions.
2. Help the student understand the notion of validity, invalidity and soundness of arguments
3. Students are able to work out the various methods of deduction and quantification theory.
4. Students are in a position to understand the importance of set theory and its application to determine the validity of different arguments.

# **WESTERNEPISTEMOLOGY**

## **CourseCode:202**

### CourseObjectives

1. To introduce the student to various approaches to epistemology
2. To critically engage students with different components of knowledge
3. To evaluate different issues and problems concerning various theories of knowledge
4. To expose the contemporary developments in the field of epistemology

# WESTERNEPISTEMOLOGY

## CourseCode:202

### CourseOutcomes

1. The courses shall enable students to have depth knowledge about epistemology.
2. Students are expected to get acquainted with critical thinking pertaining to the major components of knowledge such as justification, belief and truth.
3. Enhancement of the capacity to understand the nature and role of skepticism in knowledge claims.
4. Development of the ability to comprehend the idea of traditional knowledge claim in the field of natural science and social science.

# **WESTERN METAPHYSICS**

## **Course Code: 203**

### Course Objectives

1. To introduce students to various traditional metaphysical theories from Western perspectives
2. To critically analyze different problems concerning metaphysics from modern perspectives
3. To expose students to analyze various metaphysical concepts
4. To explicate the recent debates in the field of metaphysics

# **WESTERN METAPHYSICS**

## **Course Code: 203**

### Course Outcomes

1. Enable to grasp various concepts of Western metaphysics.
2. Expose the student to the depth of metaphysical thinking of Plato, Aristotle and Modern Philosophy.
3. Enhance the understanding of students to various metaphysical schools of thought such as Realism, Representationalism and idealism.
4. Students are also expected to have learned the contemporary debates of metaphysics concerning personal identity, Mind-Body dualism and Consciousness.



# **WESTERN ETHICS**

## **Course Code: 204**

### Course Objectives

1. To introduce various theories of Western ethical studies
2. To engage students with different meta-ethical theories
3. To critically examine the problems of moral epistemology
4. To explicate the psychological issues concerning morality

# **WESTERN ETHICS**

## **Course Code: 204**

### Course Outcomes

1. Students are expected to have learned various Western ethical theories.
2. Enable the student to develop moral reasoning and to get engaged in ethical deliberations.
3. Provides an understanding of epistemic and psychological issues concerning morality.
4. One is equipped with moral sensitivity and moral understanding required to comprehend and resolve various ethical dilemmas.

# POSTKANTIANPHILOSOPHY

## CourseCode:205

### CourseObjectives

1. To introduce the Hegelian method as the foundation of continental tradition
2. To evaluate the metaphysical thinking of Bradley
3. To critically analyse the existential issues about human life
4. To make students understand the critique of modern philosophy

# POSTKANTIAN PHILOSOPHY

## Course Code: 205

### Course Outcomes

1. Enable the student to reflect on continental philosophical traditions along with British Idealism of Bradley.
2. Expose the student to Hegel and dialectic and his idealism.
3. Provide an understanding of human existential problems discussed through Heidegger and Sartre.
4. Students are aware of the alternative debate to modernism by introducing Foucault and Derrida.

# PHILOSOPHY OF RELIGION

## Course Code: 206(A) DSE

### Course Objectives

1. To introduce students to understand the distinction between religion and philosophical reflection of religion
2. To critically address the arguments for the existence of God
3. To evaluate the arguments for the nonexistence of God and different other ideas that are incompatible with the notion of God
4. To examine various philosophical issues concerning religious language

# PHILOSOPHY OF RELIGION

## Course Code: 206(A) DSE

### Course Outcomes

1. Students are expected to have learned the Medieval philosophy of religion and its modern interpretations.
2. Enable the student to develop debates about existence and non-existence of God.
3. Help the student to understand the essential concepts of philosophy of religions such as reason, faith, belief and revelation etc.
4. Students are able to grasp the problems of religious language from an analytic perspective.

# **APPLIED ETHICS**

## **Course Code: 206(B) DSE**

### Course Objectives

1. To understand the practical aspects of ethics in reference to modern technology
2. To critically engage students about the ethical issues evident in medical practices
3. To develop an understanding of moral consciousness in business practices
4. To analyze the modern day mainstream and social media from an ethical point of view.

# APPLIED ETHICS

## Course Code: 206 (B) DSE

### Course Outcomes

1. Students are expected to have learned better ways of understanding and addressing day-to-day moral issues in personal and professional life.
2. Widen the perspectives of students toward the intricacies of moral decision making.
3. Students are able to establish coherence in the intellectual, behavioral and material aspects of the practical and professional life.
4. Help the students to be equipped with moral reasoning that can be applied to different professional life.



# Argument Analysis

## Course Code: 206 (C) DSE

### Course Objectives

1. To address students to get acquainted with various logical reasonings and process of argumentation
2. To analyse the well formed formulae and distinguish between sound and unsound arguments
3. To critically evaluate the problems of argumentation
4. To develop and evaluate the issue of moral reasoning

# Argument Analysis Course eCode:206(C)DSE

## Course Outcomes

1. Students are expected to learn the art of reasoning and critical thinking.
2. Students are able to know and develop valid and sound arguments and their analysis.
3. Acquaintance with the details of various argument forms.
4. Students are able to develop and interpret moral reasoning.

Semester:III  
**CONTEMPORARY INDIAN PHILOSOPHY**  
**Course Code:301**

Course Objectives

1. To address the transition of traditional Indian philosophical reflection to the contemporary Indian philosophy through concepts of Reality, Man, religion and society.
2. To critically engage students with various philosophical ideas of Vivekananda and Aurobindo
3. To evaluate the issue of nationalism and humanism in Tagore's philosophy
4. To engage students about certain ideas concerning truth, nonviolence, swaraj etc. in Gandhian philosophy

# CONTEMPORARY INDIAN PHILOSOPHY

## Course Code: 301

### Course Outcomes

1. Engagement of the students with the recent debates of Indian philosophy developed by various contemporary Indian thinkers.
2. Enable the students to grasp the concepts of Humanism and education discussed by recent thinkers.
3. Students are expected to learn the coherence between traditional and modern Indian Philosophy.
4. Students are aware of social stigmas like caste and class and developed their thought process.

# PRINCIPAL RELIGIONS

## Course Code: 302

### Course Objectives

1. To address student's to understand the philosophical background of various world religions
2. To engage student's to reflect on various concepts of man, God, soul etc. as they are discussed in Hinduism and Sikhism
3. To critically analyse and compare the religions of Buddhism and Jainism
4. To enhance the understanding of the basic tenets of Islam and Sufism

# **PRINCIPALRELIGIONS**

## **CourseCode:302**

### CourseOutcomes

1. Studentsareabletodevelopacomparativephilosophicalunderstandingofreligionamongstudents.
2. Widentheperspectivesofvariousreligionsfromacriticalpointofview.
3. Studentsareexpectedtohavegraspedthecentralideasofvariousinstitutionalizedreligions.
4. Engagementofthestudentsswithsomeofrecentdebatesaboutcomparativereligion.

# **ANALYTIC PHILOSOPHY**

## **Course Code: 303**

### Course Objectives

1. To introduce the linguistic turn and analysis as a method in philosophy
2. To engage students with the idea of linguistic description and its problems in philosophy
3. To critically evaluate the rejection of traditional metaphysical thinking
4. To enhance the understanding of various theories of meaning

# **ANALYTIC PHILOSOPHY**

## **Course Code: 303**

### Course Outcomes

1. Expose the student to the linguistic turn and the analytic method in philosophy.
2. Enhancement of the cognitive capacity of students by introducing the comprehension of the logico-linguistic philosophy.
3. Enable students to grasp various developments of analytic tradition.
4. Students are expected to have learned the importance of language analysis in philosophy.



# PHILOSOPHICAL ANALYSIS: INDIAN PERSPECTIVES

Course Code: 304

## Course Objectives

1. To introduce students to a very recent Indian trend of the application of philosophical analysis to the traditional problems of Indian philosophy
2. To delve into a conceptual analysis done by Prof. Rajendra Prasad in understanding the relation between the concepts of God and morality
3. To critically evaluate Prof. J.N. Mohanty's philosophical reflections on experience
4. To analyze the development of philosophy analysis in the light of the views of Prof. Daya Krishna and Prof. N.K. Devraj

# **PHILOSOPHICAL ANALYSIS: INDIAN PERSPECTIVES**

## **Course Code: 304**

### Course Outcomes

1. Students are made to understand some of the recent philosophers of India who have contributed to meta-Philosophy.
2. Students are aware of the art of analysis that is being inspired by analytic tradition.
3. Understanding the value of philosophical writing.
4. Enable the student to capitulate on various philosophical works.

# PRACTICAL ETHICS

## Course Code: 305

### Course Objectives

1. To understand the practical aspects of ethics with reference to the reflections of Peter Singer
2. To critically engage students about the ethical issues concerning animal rights
3. To develop an understanding of moral consciousness toward ecological crisis
4. To enhance the moral thinking involved in jurisprudence and the analysis of the relation between morality and law

# **PRACTICAL ETHICS**

## **Course Code: 305**

### Course Outcomes

1. Learning better ways of understanding and addressing day-to-day moral issues in personal and professional life.
2. Widen the perspectives of students towards the intricacies of moral decision making.
3. Enable the students to establish coherence in the intellectual, behavioral and material aspects of the practical and professional life.
4. Equip the students with moral reasoning that can be applied to environment, nature and animal life.

# **PRACTICAL ETHICS**

## **Course Code: 306 (A) IDSE**

### Course Objectives

1. To understand the practical aspects of ethics with reference to the reflections of Peter Singer
2. To critically engage students about the ethical issues concerning animal rights
3. To develop an understanding of moral consciousness toward ecological crisis
4. To enhance the moral thinking involved in jurisprudence and the relation between morality and law

# **PRACTICAL ETHICS**

## **Course Code: 306(A) IDSE**

### Course Outcomes

1. Learning better ways of understanding and addressing day-to-day moral issues in personal and professional life.
2. Widen the perspectives of students towards the intricacies of moral decision making.
3. Enable the students to establish coherence in the intellectual, behavioral and material aspects of the practical and professional life.
4. Equip the students with moral reasoning that can be applied to environment, nature and animal life.

# INDIAN ETHICS

## Course Code: 306(B) IDSE

### Course Objectives

1. To explain different ethical concepts of Indian thought and their implications on our day-to-day life.
2. To discuss different theories of morality as advocated by different schools of Indian thought.
3. To acquaint the students about the law of Karma and some allied concepts like Sreyas, Preyas, Niti etc.
4. To critically engage students to various contemporary practical ethical issues advocated by traditional and modern thinkers.

# INDIAN ETHICS

## Course Code: 306(B) IDSE

### Course Outcomes

1. Students are expected to have learned the value of moral duties and responsibilities as being discussed in the traditional Indian Philosophy.
2. Develop the capacity of moral reasoning.
3. Enable the student to realize the importance of the Indian concept of 'liberation' as it has been deliberated by different schools of thought.
4. Students are expected to have learned to understand the value of human moral life and would be in a position to apply it in different situations.



# PRINCIPAL RELIGIONS

## Course Code: 306(C) IDSE

### Course Objectives

1. To address student's to understand the philosophical background of various world religions
2. To engage student's to reflect on various concepts of man, God, soul etc. in the framework of Hinduism and Sikhism
3. To critically analyse and compare the religions of Buddhism and Jainism
4. To enhance the understanding of the basic tenets of Islam and Sufism

# **PRINCIPAL RELIGIONS**

## **Course Code: 306(C) IDSE**

### Course Outcomes

1. Students are able to develop a comparative philosophical understanding of different institutionalized religions.
2. Widen the perspectives of various religions from a critical point of view.
3. Students are expected to have grasped the central ideas of various world religions.
4. Engagement of the students with some of the recent debates about comparative religion.

SemesterIV  
**SOCIALPHILOSOPHY**  
**CourseCode:401**

**CourseObjectives**

1. To introduce students various philosophical ideas and principles of state and society
2. To critically engage with the idea of secularism as a principle of state
3. To address and evaluate various social and political revolutions as in form of socialism, Marxism, feminism and humanism etc.
4. To ensure a critical approach to understand the problems with these philosophical ideas

# **SOCIALPHILOSOPHY**

## **CourseCode:401**

### CourseOutcomes

1. Studentsareexpectedtohavelearnedsomeofthefundamentalideasaboutpoliticalsociety.
2. Enablestudentstocomprehendontherelationbetweenstateandreligion.
3. Helpsthestudentsgraspandcriticallyelucidateondifferentrelegationsofsocietysuchaseconomicandgender issues.
4. Facilitatethehumanisticthinkingofvariousphilosophersandtheirphilosophicalunderpinnings.

# POLITICAL SYSTEMS AND VALUES

Course Code: 402

## Course Objectives

1. To make students understand and evaluate the philosophical significance of traditional Indian political systems
2. To critically analyze the idea of social contract theory which seem to be the foundation of modern day democracy
3. To engage students to evaluate the idea of justice from both traditional and modern perspectives
4. To introduce to the debates of certain philosophical ideals such as individualism, communitarianism and liberalism

# **POLITICALSYSTEMSANDVALUES**

## **CourseCode:402**

### **CourseOutcomes**

1. Enable student to learn the political ideals of Indian traditional thinking.
2. Students are expected to have learned about various concepts concerning justice provided by ancient and modern thinkers.
3. Students are expected to comprehend the necessity of state through social contact theory
4. Students are aware of the issues like gender discrimination, patriarchy, sexual division of labor and also realizes the importance of community in individuals life.

# **CLASSICS OF PHILOSOPHY**

**Aristotle's Nichomachean Ethics**

**Course Code: 403**

## **Course Objectives**

1. To initiate the students to certain classic of philosophical writings both from Indian and Western traditions
2. To critically evaluate and identify the value and method of classical writing
3. To engage students with the reading the original text of Aristotle and Upanishadic writings
4. To understand and compare both the classic of East and West

# CLASSICS OF PHILOSOPHY

## Course Code: 403

### Course Outcomes

1. Enable students to understand certain classics of philosophical writing in Western traditions.
2. Help the students identify the value and method of classical writing.
3. Students are expected to have learned the nature of ideal friendship in Aristotle's Ethics.
4. Students are able to distinguish between pleasure and happiness.



# MAJOR TRENDS IN ODISHAN PHILOSOPHY

## Course Code: 404

### Course Objectives

1. To introduce the novelties and philosophical trends prevalent in Odisha
2. To reflect on the metaphysical and moral ideas embedded in Mahimaphilosophy
3. To critically analyze certain unique tribal forms of life from a philosophical perspective
4. To address the philosophical ramifications of Jagannathancult

# MAJOR TRENDS IN ODISHAN PHILOSOPHY

## Course Code: 404

### Course Outcomes

1. Enable students to deepen their knowledge in Cultural heritage and Traditional Systems of Odisha.
2. Students are aware of some other cultures and traditions apart from their own.
3. Development of the knowledge of the cultural, economic and political aspects of certain thinkers of Odisha.
4. Students are able to appreciate and critically contemplate on Odishan Philosophy.

# **DISSERTATIONANDVIVA**

## **PaperCode:405**

The aim of this paper is to encourage the students to write a dissertation on different fields of philosophy. It will help the student to understand how the research paper has to be written and what are the methods are used to write a qualitative paper. It will also give a broader outlook to the student for enhancing their skill on references and their usage in research articles and dissertation.

**Mathematics**

## Academic Session-2019-20

Papers	Title	CO's
<b>Semester-I</b>		
Paper-101	Algebra	<p><b>CO 1:</b> define ring, ideal, quotients ring, field, polynomial rings, extension field</p> <p><b>CO 2:</b> explain the fundamental concepts of algebra such as ideal, ring, polynomial ring and their role in modern mathematics and applied contexts</p> <p><b>CO 3:</b> describe the structure of field of quotients of an</p> <p><b>CO 4:</b> explain the notion of extension of a field</p> <p><b>CO 5:</b> use Galois theory to analyze the solvability of</p>
Paper-102	Partial Differential Equations	<p><b>CO 1:</b> Use knowledge of partial differential equations (PDEs), modelling, the general structure of solutions, and analytic and numerical methods for</p> <p><b>CO 2:</b> Formulate physical problems as PDEs using</p> <p><b>CO 3:</b> Understand analogies between mathematical descriptions of different (wave) phenomena in physics and engineering.</p> <p><b>CO 4:</b> Classify PDEs, apply analytical methods, and physically interpret the solutions.</p> <p><b>CO 5:</b> Solve practical PDE problems with finite difference methods, implemented in code, and analyse the consistency, stability and convergence properties of such numerical methods.</p>
Paper-103	Graph Theory	<p><b>CO 1:</b> Defines a graph, bipartite graph, Eulerian graph, Hamiltonian graph</p> <p><b>CO 2:</b> Identify edges, vertices, subgraphs, matching, covers in graphs and construct examples and to distinguish examples from non-examples;</p> <p><b>CO 3:</b> Solve problems using basis graph theory, involving vertices and edge, connectivity, planarity, crossing numbers and edge coloring</p> <p><b>CO 4:</b> interpret theoretical knowledge and independent mathematical thinking in creative investigation of questions in graph theory</p> <p><b>CO 5:</b> explain basic results about coloring vertices, 4 color problem, planar graph notion, dual Graphs</p>
Paper-104	Programming	<p><b>CO 1:</b> define and manage data structures based on problem subject domain and work with textual information, character and strings, arrays of</p> <p><b>CO 2:</b> explain the concepts of object thinking within the framework of functional model</p> <p><b>CO 3:</b> describe defensive programming concepts</p>

Paper - 105:	Practical - Pr	<p><b>CO 4:</b> asses to handle possible errors during program.</p> <p><b>CO1:</b> write any programme of above type and apply to solve practical problem.</p> <p><b>CO2:</b> create similar type programming for other type of</p> <p><b>CO3:</b> apply the techniques and methods to analyses others</p> <p><b>CO4:</b> analyze the problems minutely and create their own algorithms to solve many mathematical problem</p>
<b>Semester-II</b>		
Paper- 201	Real Analysis	<p><b>CO1:</b> Demonstrate understanding of the basic concepts underlying the definition of the general Lebesgue measure in real line and properties.</p> <p><b>CO2:</b> Demonstrate understanding of the statements of the main results on integration on Real line and an ability to apply these in examples.</p> <p><b>CO3:</b> Apply the theory of the concept of differentiation to solve a variety of problems at an Appropriate level of difficulty.</p> <p><b>CO4:</b> Demonstrate skills in communicating mathematics orally and in writing of abstract measure</p>
Paper--202	Topology	<p><b>CO1:</b> Understand basic problems in the Topology of <math>\mathbb{R}</math>, Topology of Metric Spaces and Hausdorff spaces.</p> <p><b>CO2:</b> Apply the concepts of metric spaces and topological spaces, and their role in mathematics. Demonstrate familiarity with a range of examples of these structures.</p> <p><b>CO3:</b> Understand separability, completeness, connectedness, compactness.</p> <p><b>CO4:</b> Express regularity and normality separation axioms and use them to prove various properties.</p>
Paper-203	Graph Theor	<p><b>CO 1:</b> Defines a graph, bipartite graph, Eulerian graph, Hamitonian graph</p> <p><b>CO 2:</b> Identify edges, vertices, subgraphs, matching, covers in graphs and construct examples and to distinguish examples from non-examples;</p> <p><b>CO 3:</b> Solve problems using basis graph theory, involving vertices and edge, connectivity, planarity, crossing numbers and edge coloring</p> <p><b>CO 4:</b> interpret theoretical knowledge and independent mathematical thinking in creative investigation of questions in graph theory</p> <p><b>CO 5:</b> explain basic results about coloring vertices, 4 color problem, planar graph notion, dual</p>

		Graphs
Paper-204	Working with C++-I	<p><b>CO1:</b> Understanding about object-oriented programming.</p> <p><b>CO2:</b> Gain knowledge about the capability to store information together in an object.</p> <p><b>CO3:</b> Understand the capability of a class to rely upon another</p> <p><b>CO4:</b> Learn how to store one object inside another object and use of one method can be used in variety of different ways.</p> <p><b>CO5:</b> Understanding the process of exposing the essential data to the outside of the world and hiding the low-level data.</p>
Paper-205	Practical-Programming in C++-I	<p><b>CO1:</b> write any programme of above type and apply to solve practical problem.</p> <p><b>CO2:</b> create similar type programming for other type of</p> <p><b>CO3:</b> apply the techniques and methods to analyse</p> <p><b>CO4:</b> analyze the problems minutely and create their own algorithms to solve many mathematical problem</p>
Paper-206A	DSE Paper (Any One) Mathematical Methods	<p><b>CO1:</b> the methods to solve differential equations using Laplace transform</p> <p><b>CO2:</b> understand Fourier series expansion of a functions and apply to solve many practical problems</p> <p><b>CO3:</b> gain the Fourier transform and apply transform technique to solve problems</p> <p><b>CO4:</b> gain knowledge a new method to solve differential equation using Euler's equation</p>
Paper-206B	Differential Geometry	<p><b>CO 1:</b> defines surfaces, their properties, parametrization of surfaces and tangent spaces of surfaces</p> <p><b>CO 2:</b> lists topological aspects of surfaces</p> <p><b>CO 3;</b> recognize the basis of notions of the local theory of space curves and the local theory of surfaces</p> <p><b>CO 4:</b> explain concepts of curvature and Serret-Frenet frame for space curves and the notion of torsion of a space curve</p> <p><b>CO 5:</b> explain the normal curvature and second fundamental form</p> <p><b>CO 6:</b> defines geodesic-equation of geodesic, geodesic on sphere, geodesic as distance minimizing curves</p>

Paper-206C	Advanced Calculus	<p><b>CO1:</b> extend their ability of differentiation of functions in Euclidean space <math>R^n</math></p> <p><b>CO2:</b> develop their mind transformation and their properties in general space.</p> <p><b>CO3:</b> analyze the implicit and multiple integrals in</p> <p><b>CO4:</b> get and think the physical interpretation of solid figures in n-dimensional space.</p>
<b>Semester-III</b>		
Paper-301	Operation Research-I	<p><b>CO1:</b> Solving LPP and its formulation</p> <p><b>CO2:</b> Solution of LPP by graphical method and simplex iterations using slack and surplus variables</p> <p><b>CO3:</b> Solution of Transportation problem and its optimal solution by Modi method</p> <p><b>CO4:</b> Assignment problem has solved using Hungarian</p> <p><b>CO5:</b> Study of revised simplex iteration</p>
Paper-302	Functional Analysis-I	<p><b>CO1:</b> To learn to recognize the fundamental properties of normed spaces and of the transformations between them.</p> <p><b>CO2:</b> Understand the notions of dot product and Hilbert space and apply the spectral theorem to the resolution of integral equations.</p> <p><b>CO3:</b> Correlate Functional Analysis to problems arising in Partial Differential Equations, Measure Theory and other branches of</p> <p><b>CO4-</b> Students will be able to relate different abstract space with their different structures</p>
Paper-303	Complex Analysis	<p><b>CO 1;</b> work with functions (polynomials, reciprocals, exponential, trigonometric, hyperbolic) of single complex variable and describe mappings in the complex plane</p> <p><b>CO 2:</b> work with multi-valued functions (logarithmic, complex power) and determine branches of these functions</p> <p><b>CO 3:</b> evaluate a contour integral using parameterization, fundamental theorem of calculus and Cauchy's integral formula, find the Taylor series of a function and determine its circle or annulus of convergence</p> <p><b>CO 4:</b> compute the residue of a function and use the residue theory to evaluate a contour integral</p>



		<p><b>CO 5:</b> recognize and apply the Liouville's theorem, the mean-value property of a function and the maximum modulus principle, Rouches theorem, Argument principle, fundamental theorem of algebra</p>
Paper-304	Programing in C++-II	<p><b>CO1:</b> Understand about constructors which are special type of functions. Learn how to write code in a way that it is independent of any particular</p> <p><b>CO2:</b> Learn to derive a new class from the existing class.</p> <p><b>CO3:</b> Learn about one of the key features of class inheritance is that a pointer to a derived class is type-compatible with a pointer to its base class.</p> <p><b>CO4:</b> Create and process data in files using file I/O</p>
Paper-305	Practical Programing in C++-II	<p><b>CO1:</b> write any programme of above type and apply to solve practical problem.</p> <p><b>CO2:</b> create similar type programming for other type of</p> <p><b>CO3:</b> apply the techniques and methods to analyze others</p> <p><b>CO4:</b> analyze the problems minutely and create their own algorithms to solve many mathematical problem</p>
Paper-306A	<b>IDSE Paper (Any One)</b> Operation Res	<p><b>CO 1:</b> Solving LPP and its formulation</p> <p><b>CO 2:</b> Solution of LPP by graphical method and simplex iterations using slack and surplus variables</p> <p><b>CO 3:</b> Solution of Transportation problem and its optimal solution by Modi method</p> <p><b>CO 4:</b> Assignment problem has solved using Hungarian</p> <p><b>CO-5:</b> Study of revised simplex iteration</p>
Paper-306B	Elements of Number Theory	<p><b>CO1:</b> get knowledge of divisibility in integers and existence and properties of primes in integers</p> <p><b>CO2:</b> understand and analyze the congruence and apply in number theoretic system.</p> <p><b>CO3:</b> analyze and think of many number theory functions in number theory</p> <p><b>CO4:</b> apply the concept of congruence and their properties for some standard formulas and apply the formulas in practical problems.</p>
Paper-306C	of Computer Programmi	<p><b>CO 1:</b> explain the algorithm and draw flowcharts for solving Mathematical and Engineering problems</p>

		<p><b>CO 2:</b> design and develop computer programs, analyzes and interprets the concepts of pointers, declaration, initialization, operations on pointers and</p> <p><b>CO 3:</b> define data types and use them in simple data processing applications also he/she must be able to use the concepts of array of structures</p> <p><b>CO 4:</b> develop confidence for self-education and ability to life-long learning needed for computer language</p>
	<b>Semester-IV</b>	
Paper-401	Operation Research-II	<p><b>CO 1:</b> Solving Integer LPP by branching and cutting plane method.</p> <p><b>CO 2:</b> Discrete DPP and Solution of LPP dynamic</p> <p><b>CO 3:</b> Study of nonlinear programming problem with Kuhn-Tucker conditions</p> <p><b>CO 4:</b> Solution of quadratic programming problem with and without Kuhn-Tucker conditions</p>
Paper-402	Functional Analysis-II	<p><b>CO1:</b> To learn to recognize the fundamental properties of normed spaces and of the transformations between them.</p> <p><b>CO2:</b> Understand the notions of dot product and Hilbert space and apply the spectral theorem to the resolution of integral equations.</p> <p><b>CO3:</b> Correlate Functional Analysis to problems arising in Partial Differential Equations, Measure Theory and other branches of</p> <p><b>CO4-</b> Students will be able to relate different abstract space with their different structures</p>
Paper-403	Operator Theory	<p><b>CO1:</b> Understand the Banach Algebra, and properties of homomorphism on a Banach algebra, Basic properties of Spectra.</p> <p><b>CO2:</b> Learn Commutative Banach Algebra and mapping on the</p> <p><b>CO3:</b> Analyze the Properties of bounded linear operators on Hilbert spaces.</p> <p><b>CO4:</b> Understand the spectrum and characterize the eigenvalues of normal, positive, Unitary operators.</p>
Paper-404	Number Theory	<p><b>CO1:</b> understand different types of arithmetic functions with applications</p> <p><b>CO2:</b> apply congruence to solve many problems for different arithmetic functions</p> <p><b>CO3:</b> analyze periodic arithmetic functions and Gauss sums</p> <p><b>CO4:</b> evaluate many numbers theoretic problems using</p>

Paper-405	Project	<p><b>CO1-</b> engage in the study or research of a topic that is beyond the regular math department offerings in both rigor and content</p> <p><b>CO2-</b> produce a document (paper or honors thesis) that exhibits both the background and the conclusions reached as a result such study or research.</p> <p><b>CO3-</b> can develop the skill of presentation</p> <p><b>CO4-</b> can compile existing work and learn to prepare report using Latex.</p>
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## Academic Session-2020-21

Papers Title CO's

### Semester-I

Paper-101	Algebra	<p><b>CO 1:</b> define ring, ideal, quotients ring, field, polynomial rings, extension field</p> <p><b>CO 2:</b> explain the fundamental concepts of algebra such as ideal, ring, polynomial ring and their role in modern mathematics and</p> <p><b>CO 3:</b> describe the structure of field of quotients of an integral domain</p> <p><b>CO 4:</b> explain the notion of extension of a</p> <p><b>CO 5:</b> use Galois theory to analyze the solvability of polynomial</p>
Paper-102	Ordinary Differential Equations	<p><b>CO 1:</b> Understand the concept of fundamental matrix and formulation of system of Differential equation of physical problems.</p> <p><b>CO 2:</b> Solving system of differential equations by Eigen value and vectors.</p> <p><b>CO 3:</b> Study the existence and uniqueness of solutions for system of equations.</p> <p><b>CO 4:</b> Learn to solve oscillation of second order equations.</p> <p><b>CO 5:</b> Provides the Concept of Sturm comparison theorem and Hille wiener</p> <p><b>CO 6:</b> Solutions for Boundary value problems are developed using Green's function</p>
Paper-103	Real Analysis	<p><b>CO1:</b> Demonstrate understanding of the basic concepts underlying the definition of the general Lebesgue measure in real line and properties.</p> <p><b>CO2:</b> Demonstrate understanding of the statements of the main results on integration on Real line and an ability to apply these in</p> <p><b>CO3:</b> Apply the theory of the concept of differentiation to solve a variety of problems at an Appropriate level of difficulty.</p>

		<p><b>CO4:</b> Demonstrate skills in communicating mathematics orally and in writing of abstract measure Graphs</p> <p><b>CO 1:</b> define and manage data structures based on problem subject domain and work information, character and strings, arrays of complex objects</p> <p><b>CO 2:</b> explain the concepts of object thinking within the framework of functional model</p> <p><b>CO 3:</b> describe defensive programming</p> <p><b>CO 4:</b> asses to handle possible errors during program.</p>
Paper-104	Programming in C	
Paper - 10	Practical - Programming in C	<p><b>CO1:</b> write any programme of above type and apply to solve practical problem.</p> <p><b>CO2:</b> create similar type programming for other type of problems</p> <p><b>CO3:</b> apply the techniques and methods to analyses others problems</p> <p><b>CO4:</b> analyze the problems minutely and create their own algorithms to solve many mathematical problem</p>
<b>Semester-II</b>		
Paper- 20:	Graph Theory	<p><b>CO 1:</b> Defines a graph, bipartite graph, Eulerian graph, Hamitonian graph</p> <p><b>CO 2:</b> Identify edges, vertices, subgraphs, matching, covers in graphs and construct and to distinguish examples from non-examples;</p> <p><b>CO 3:</b> Solve problems using basis graph theory, involving vertices and edge, planarity, crossing numbers and edge coloring</p> <p><b>CO 4:</b> interpret theoretical knowledge and independent mathematical thinking in creative investigation of questions in graph</p> <p><b>CO 5:</b> explain basic results about coloring vertices, 4 color problem, planar graph notion,</p>
Paper--20:	Topology	<p><b>CO1:</b> Understand basic problems in the Topology of R, Topology of Metric Spaces and Hausdorff</p>

spaces.

**CO2:** Apply the concepts of metric spaces and topological spaces, and their role in mathematics.

Demonstrate familiarity with a range of examples of these structures.

**CO3:** Understand separability, completeness, connectedness, compactness.

**CO4:** Express regularity and normality separation axioms and use them to prove various properties.

Paper-203 Numerical Analysis

**CO 1:** Concept of error analysis in data handling.

**CO 2:** Study of numerical methods to solve algebraic, transcendental equations and system of equations

**CO 3:** Use of difference operators and different numerical methods to interpolate and extrapolate the given set of data.

**CO 4 :** Numerical evaluation of differentiations and integrations.

**CO 5:** Know the concept of solving numerically the initial and boundary value

**CO 6:** Solve ODE numerically by single step and multi-step method.

Paper-204 Programming with C++-I

**CO1:** Understanding about object-oriented programming.

**CO2:** Gain knowledge about the capability to store information together in an object.

**CO3:** Understand the capability of a class to rely upon another class.

**CO4:** Learn how to store one object inside another object and use of one method can be used variety of different ways.

**CO5:** Understanding the process of exposing the essential data to the outside of the world and hiding the low-level data.

Paper-205 Practical-Programming in C++-I

**CO1:** write any programme of above type and apply to solve practical problem.

	<p><b>DSE Paper (Any One)</b> Mathematical</p>	<p><b>CO2:</b> create similar type programming for other type of problems  <b>CO3:</b> apply the techniques and methods to analyse others problems  <b>CO4:</b> analyze the problems minutely and create their own algorithms to solve many mathematical problem</p>
Paper-206	Methods	<p><b>CO1:</b> the methods to solve differential equations using Laplace transform  <b>CO2:</b> understand Fourier series expansion of a functions and apply to solve many practical problems  <b>CO3:</b> gain the Fourier transform and apply transform technique to solve problems  <b>CO4:</b> gain knowledge a new method to solve differential equation using Euler's equation</p>
Paper-206	Differential Geometry	<p><b>CO 1:</b> defines surfaces, their properties, parametrization of surfaces and tangent spaces of surfaces  <b>CO 2:</b> lists topological aspects of surfaces  <b>CO 3;</b> recognize the basis of notions of the local theory of space curves and the theory of surfaces  <b>CO 4:</b> explain concepts of curvature and Sernet-Frenet frame for space curves and notion of torsion of a space curve  <b>CO 5:</b> explain the normal curvature and second fundamental form  <b>CO 6:</b> defines geodesic-equation of geodesic, geodesic on sphere, geodesic as distance minimizing curves</p>
Paper-206	Advanced Calculus	<p><b>CO1:</b> extend their ability of differentiation of functions in Euclidean space <math>R^n</math>  <b>CO2:</b> develop their mind transformation and their properties in general space.  <b>CO3:</b> analyze the implicit and multiple integrals in generalized form</p>

### Semester-III

Operation

Paper-301 Research-I

**CO4:** get and think the physical interpretation of solid figures in n-dimensional space.

**CO 1:** Solving LPP and its formulation

**CO 2:** Solution of LPP by graphical method and simplex iterations using slack and surplus variables

**CO 3:** Solution of Transportation problem and its optimal solution by Modi method

**CO 4:** Assignment problem has solved using Hungarian method

**CO5:** Study of revised simplex iteration

Paper-302 Functional Analysis

**CO1:** To learn to recognize the fundamental properties of normed spaces and of the transformations between them.

**CO2:** Understand the notions of dot product and Hilbert space and apply the spectral theorem to the resolution of integral equations.

**CO3:** Correlate Functional Analysis to problems arising in Partial Differential Equations, Measure Theory and other

**CO4-** Students will be able to relate different abstract space with their different structures

Paper-303 Complex Analysis

**CO 1;** work with functions (polynomials, reciprocals, exponential, trigonometric.

hyperbolic) of single complex variable and describe mappings in the complex plane

**CO 2:** work with multi-valued functions (logarithmic, complex power) and determine branches of these functions

**CO 3:** evaluate a contour integral using parameterization, fundamental theorem of and Cauchy's integral formula, find the Taylor series of a function and determine its circle or annulus of convergence

**CO 4:** compute the residue of a function and use the residue theory to evaluate a contour integral



Paper-304	Programing in C++--II	<p><b>CO 5:</b> recognize and apply the Lioville's theorem, the mean-value property of a and the maximum modulus principle, Rouches theorem, Argument principle, fundamental theorem of algebra</p> <p><b>CO1:</b> Understand about constructors which are special type of functions. Learn how to in a way that it is independent of any particular type.</p> <p><b>CO2:</b> Learn to derive a new class from the existing class.</p> <p><b>CO3:</b> Learn about one of the key features of class inheritance is that a pointer to a derived type-compatible with a pointer to its base class.</p> <p><b>CO4:</b> Create and process data in files using file I/O functions</p>
Paper-305	Practical Programming in C++-II	<p><b>CO1:</b> write any programme of above type and apply to solve practical problem.</p> <p><b>CO2:</b> create similar type programming for other type of problems</p> <p><b>CO3:</b> apply the techniques and methods to analyze others problems</p> <p><b>CO4:</b> analyze the problems minutely and create their own algorithms to solve many mathematical problem</p>
Paper-306	<p><b>IDSE Paper (Any One)</b></p> <p>Operation Research</p>	<p><b>CO 1:</b> Solving LPP and its formulation</p> <p><b>CO 2:</b> Solution of LPP by graphical method and simplex iterations using slack and surplus variables</p> <p><b>CO 3:</b> Solution of Transportation problem and its optimal solution by Modi method</p> <p><b>CO 4:</b> Assignment problem has solved using Hungarian method</p> <p><b>CO-5:</b> Study of revised simplex iteration</p>
Paper-306	Elements of Number Theory	<p><b>CO1:</b> get knowledge of divisibility in integers and existence and properties of primes in integers</p>

	<p>Elements of Computer Programming</p> <p>Paper-306</p>	<p><b>CO2:</b> understand and analyze the congruence and apply in number theoretic system.</p> <p><b>CO3:</b> analyze and think of many number theory functions in number theory</p> <p><b>CO4:</b> apply the concept of congruence and their properties for some standard formulas and apply the formulas in practical problems.</p> <p><b>CO 1:</b> explain the algorithm and draw flowcharts for solving Mathematical and Engineering problems</p> <p><b>CO 2:</b> design and develop computer programs, analyzes and interprets the declaration, initialization, operations on pointers and their usage</p> <p><b>CO 3:</b> define data types and use them in simple data processing applications also able to use the concepts of array of structures</p> <p><b>CO 4:</b> develop confidence for self -education and ability to life- long learning needed for computer language</p>
	<p><b>Semester-IV</b></p> <p>Operation Research-II</p> <p>Paper-401</p>	<p><b>CO 1:</b> Solving Integer LPP by branching and cutting plane method.</p> <p><b>CO 2:</b> Discrete DPP and Solution of LPP dynamic programming.</p> <p><b>CO 3:</b> Study of nonlinear programming problem with Kuhn-Tucker conditions</p> <p><b>CO 4:</b> Solution of quadratic programming problem with and without Kuhn-Tucker</p>
	<p>Partial Differential Equations</p> <p>Paper-402</p>	<p><b>CO 1:</b> Use knowledge of partial differential equations (PDEs), modelling, the general structure of solutions, and analytic and numerical methods for solutions.</p> <p><b>CO 2:</b> Formulate physical problems as PDEs using conservation laws.</p> <p><b>CO 3:</b> Understand analogies between mathematical descriptions of different (wave) phenomena in physics and engineering.</p> <p><b>CO 4:</b> Classify PDEs, apply analytical methods, and physically interpret the</p>

Paper-403	Operator Theory	<p><b>CO 5:</b> Solve practical PDE problems with finite difference methods, implemented in</p> <p><b>CO1:</b> Understand the Banach Algebra, and properties of homomorphism on a Banach algebra, Basic properties of Spectra.</p> <p><b>CO2:</b> Learn Commutative Banach Algebra and mapping on the Space.</p> <p><b>CO3:</b> Analyze the Properties of bounded linear operators on Hilbert spaces.</p> <p><b>CO4:</b> Understand the spectrum and characterize the eigenvalues of normal, positive, Unitary operators.</p>
Paper-404	Number Theory	<p><b>CO1:</b> understand different types of arithmetic functions with applications</p> <p><b>CO2:</b> apply congruence to solve many problems for different arithmetic functions</p> <p><b>CO3:</b> analyze periodic arithmetic functions and Gauss sums</p> <p><b>CO4:</b> evaluate many numbers theoretic problems using reciprocity law</p>
Paper-405	Project	<p><b>CO1-</b> engage in the study or research of a topic that is beyond the regular math department offerings in both rigor and content</p> <p><b>CO2-</b> produce a document (paper or honors thesis) that exhibits both the background and the conclusions reached as a result such study or research.</p> <p><b>CO3-</b> can develop the skill of presentation</p> <p><b>CO4-</b> can compile existing work and learn to prepare report using Latex.</p>

## Academic Session-2021-22

Papers	Title	CO's
<b>Semester-I</b>		
101	Algebra	<p><b>CO 1:</b> define ring, ideal, quotients ring, field,</p> <p><b>CO 2:</b> explain the fundamental concepts of algebra such as ideal, ring, polynomial ring and their role in modern mathematics and applied contexts</p> <p><b>CO 3:</b> describe the structure of field of quotients of an integral domain</p> <p><b>CO 4:</b> explain the notion of extension of a field</p> <p><b>CO 5:</b> use Galois theory to analyze the solvability of</p>
Paper-102	Ordinary Differential Equations	<p><b>CO 1:</b> Understand the concept of fundamental matrix and formulation of system of Differential equation of physical problems.</p> <p><b>CO 2:</b> Solving system of differential equations by Eigen value and vectors.</p> <p><b>CO 3:</b> Study the existence and uniqueness of solutions for system of equations.</p> <p><b>CO 4:</b> Learn to solve oscillation of second order</p> <p><b>CO 5:</b> Provides the Concept of Sturm comparison theorem and Hille wiener oscillations.</p> <p><b>CO 6:</b> Solutions for Boundary value problems are developed using Green's function</p>
Paper-103	Real Analysis	<p><b>CO1:</b> Demonstrate understanding of the basic concepts underlying the definition of the general Lebesgue measure in real line and</p> <p><b>CO2:</b> Demonstrate understanding of the statements of the main results on integration on Real line and an ability to apply these in examples.</p> <p><b>CO3:</b> Apply the theory of the concept of differentiation to solve a variety of problems at an</p> <p><b>CO4:</b> Demonstrate skills in communicating mathematics orally and in writing of abstract measure Graphs</p>

Paper-104	Programming in C	<p><b>CO 1:</b> define and manage data structures based on problem subject domain and work with textual information, character and strings, arrays of complex objects</p> <p><b>CO 2:</b> explain the concepts of object thinking within the framework of functional model</p> <p><b>CO 3:</b> describe defensive programming concepts</p> <p><b>CO 4:</b> asses to handle possible errors during program.</p>
Paper - 105	Practical - Programming	<p><b>CO1:</b> write any programme of above type and apply to solve practical problem.</p> <p><b>CO2:</b> create similar type programming for other type of problems</p> <p><b>CO3:</b> apply the techniques and methods to analyses others problems</p> <p><b>CO4:</b> analyze the problems minutely and create their own algorithms to solve many mathematical problem</p>
	<b>  </b>	
Paper-201	Complex Analysis	<p><b>CO 1;</b> work with functions (polynomials, reciprocals, exponential, trigonometric. hyperbolic) of single complex variable and describe mappings in the complex plane</p> <p><b>CO 2:</b> work with multi-valued functions (logarithmic, complex power) and determine branches of these functions</p> <p><b>CO 3:</b> evaluate a contour integral using parameterization, fundamental theorem of calculus and Cauchy's integral formula, find the Taylor series of a function and determine its circle or annulus of convergence</p> <p><b>CO 4:</b> compute the residue of a function and use the residue theory to evaluate a contour</p>
Paper--202	Topology	<p><b>CO1:</b> Understand basic problems in the Topology of R, Topology of Metric Spaces and Hausdorff spaces.</p> <p><b>CO2:</b> Apply the concepts of metric spaces and topological spaces, and their role in mathematics. Demonstrate familiarity with a range of examples of these structures.</p> <p><b>CO3:</b> Understand separability, completeness, connectedness, compactness.</p> <p><b>CO4:</b> Express regularity and normality separation axioms and use them to prove various</p>

		properties.
Paper-203	Numerical Analysis	<p><b>CO 1:</b> Concept of error analysis in data handling.</p> <p><b>CO 2:</b> Study of numerical methods to solve algebraic, transcendental equations and system of</p> <p><b>CO 3:</b> Use of difference operators and different numerical methods to interpolate and extrapolate the</p> <p><b>CO 4 :</b> Numerical evaluation of differentiations and</p> <p><b>CO 5:</b> Know the concept of solving numerically the initial and boundary value problems of ODEs.</p> <p><b>CO 6:</b> Solve ODE numerically by single step and multi-step method.</p>
Paper-204	Programming with C++-I	<p><b>CO1:</b> Understanding about object-oriented programming.</p> <p><b>CO2:</b> Gain knowledge about the capability to store information together in an object.</p> <p><b>CO3:</b> Understand the capability of a class to rely upon another class.</p> <p><b>CO4:</b> Learn how to store one object inside another object and use of one method can be used in variety of different ways.</p> <p><b>CO5:</b> Understanding the process of exposing the essential data to the outside of the world and hiding the low-level data.</p>
Paper-205	Programming in C++-I	<p><b>CO1:</b> write any programme of above type and apply to solve practical problem.</p> <p><b>CO2:</b> create similar type programming for other type of problems</p> <p><b>CO3:</b> apply the techniques and methods to analyse others problems</p> <p><b>CO4:</b> analyze the problems minutely and create their own algorithms to solve many mathematical problem</p>
	<b>DSE Paper</b>	
Paper-206A	Mathematical Methods	<p><b>CO1:</b> the methods to solve differential equations using Laplace transform</p> <p><b>CO2:</b> understand Fourier series expansion of a functions and apply to solve many practical problems</p>

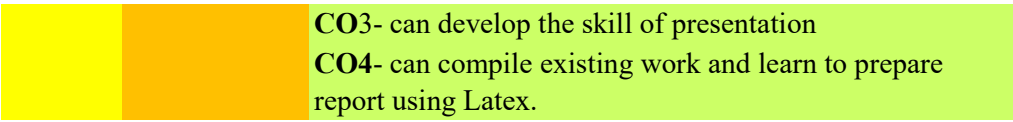
		<p><b>CO3:</b> gain the Fourier transform and apply transform technique to solve problems</p> <p><b>CO4:</b> gain knowledge a new method to solve differential equation using Euler's equation</p>
Paper-206B	Graph Theory	<p><b>CO 1:</b> Defines a graph, bipartite graph, Eulerian graph, Hamiltonian graph</p> <p><b>CO 2:</b> Identify edges, vertices, subgraphs, matching, covers in graphs and construct examples and to distinguish examples from non-</p> <p><b>CO 3:</b> Solve problems using basis graph theory, involving vertices and edge, connectivity, planarity, crossing numbers and edge coloring</p> <p><b>CO 4:</b> interpret theoretical knowledge and independent mathematical thinking in creative investigation of questions in graph theory</p> <p><b>CO 5:</b> explain basic results about coloring vertices, 4 color problem, planar graph notion, dual Graphs minimizing curves</p>
Paper-206C	Advanced Calculus	<p><b>CO1:</b> extend their ability of differentiation of functions in Euclidean space <math>R^n</math></p> <p><b>CO2:</b> develop their mind transformation and their properties in general space.</p> <p><b>CO3:</b> analyze the implicit and multiple integrals in generalized form</p> <p><b>CO4:</b> get and think the physical interpretation of solid figures in n-dimensional space.</p>
Paper-301	<p>III</p> <p>Fourier Analysis</p>	<p><b>CO 1:</b> Understand the Fourier Series expansion.</p> <p><b>CO 2:</b> Learn the convergence of Fourier Series.</p> <p><b>CO 3:</b> Study on Fourier Transform and its</p> <p><b>CO4-</b> Students can study different mode of convergence and uniform convergence of Fourier series</p>
Paper-302	Functional Analysis	<p><b>CO1:</b> To learn to recognize the fundamental properties of normed spaces and of the transformations between them.</p>

		<p><b>CO2:</b> Understand the notions of dot product and Hilbert space and apply the spectral theorem to the resolution of integral equations.</p> <p><b>CO3:</b> Correlate Functional Analysis to problems arising in Partial Differential Equations, Measure Theory and other branches of Mathematics.</p> <p><b>CO4-</b> Students will be able to relate different abstract space with their different structures</p>
Paper-303	Differential Geometry	<p><b>CO 1:</b> defines surfaces, their properties, parametrization of surfaces and tangent spaces of surfaces</p> <p><b>CO 2:</b> lists topological aspects of surfaces</p> <p><b>CO 3;</b> recognize the basis of notions of the local theory of space curves and the local theory of surfaces</p> <p><b>CO 4:</b> explain concepts of curvature and Serret-Frenet frame for space curves and the notion of torsion of a space curve</p> <p><b>CO 5:</b> explain the normal curvature and second fundamental form</p> <p><b>CO 6:</b> defines geodesic-equation of geodesic, geodesic on sphere, geodesic as distance minimizing curves</p>
Paper-304	Programing in C++-II	<p><b>CO1:</b> Understand about constructors which are special type of functions. Learn how to write code in a way that it is independent of any particular</p> <p><b>CO2:</b> Learn to derive a new class from the existing</p> <p><b>CO3:</b> Learn about one of the key features of class inheritance is that a pointer to a derived class is type-compatible with a pointer to its base class.</p> <p><b>CO4:</b> Create and process data in files using file I/O</p>
Paper-305	Practical - Programming in C++-II	<p><b>CO1:</b> write any programme of above type and apply to solve practical problem.</p> <p><b>CO2:</b> create similar type programming for other type of problems</p>



		<p><b>CO3:</b> apply the techniques and methods to analyze others problems</p> <p><b>CO4:</b> analyze the problems minutely and create their own algorithms to solve many mathematical problem</p>
Paper-306A	<p><b>IDSE Paper (Any One)</b></p> <p>Operation Research</p>	<p><b>CO 1:</b> Solving LPP and its formulation</p> <p><b>CO 2:</b> Solution of LPP by graphical method and simplex iterations using slack and surplus variables</p> <p><b>CO 3:</b> Solution of Transportation problem and its optimal solution by Modi method</p> <p><b>CO 4:</b> Assignment problem has solved using</p> <p><b>CO-5:</b> Study of revised simplex iteration</p>
Paper-306B	Elements of Number	<p><b>CO1:</b> get knowledge of divisibility in integers and existence and properties of primes in integers</p> <p><b>CO2:</b> understand and analyze the congruence and apply in number theoretic system.</p> <p><b>CO3:</b> analyze and think of many number theory functions in number theory</p> <p><b>CO4:</b> apply the concept of congruence and their properties for some standard formulas and apply the formulas in practical problems.</p>
Paper-306C	Elements of Computer Programming	<p><b>CO 1:</b> explain the algorithm and draw flowcharts for solving Mathematical and Engineering problems</p> <p><b>CO 2:</b> design and develop computer programs, analyzes and interprets the concepts of pointers, declaration, initialization, operations on pointers and</p> <p><b>CO 3:</b> define data types and use them in simple data processing applications also he/she must able to use the concepts of array of structures</p> <p><b>CO 4:</b> develop confidence for self -education and ability to life- long learning needed for computer language</p>
Paper-401	<p><b>IV</b></p> <p>Operation Research</p>	<p><b>CO 1:</b> Solving Integer LPP by branching and cutting plane method.</p>

		<p><b>CO 2:</b> Discrete DPP and Solution of LPP dynamic programming.</p> <p><b>CO 3:</b> Study of nonlinear programming problem with Kuhn-Tucker conditions</p> <p><b>CO 4:</b> Solution of quadratic programming problem with and without Kuhn-Tucker conditions</p>
Paper-402	Differential Equations	<p><b>CO 1:</b> Use knowledge of partial differential equations (PDEs), modelling, the general structure of solutions, and analytic and numerical methods for solutions.</p> <p><b>CO 2:</b> Formulate physical problems as PDEs using conservation laws.</p> <p><b>CO 3:</b> Understand analogies between mathematical descriptions of different (wave) phenomena in physics and engineering.</p> <p><b>CO 4:</b> Classify PDEs, apply analytical methods, and physically interpret the solutions.</p> <p><b>CO 5:</b> Solve practical PDE problems with finite difference methods, implemented in code, and</p>
Paper-403	Operator Theory	<p><b>CO1:</b> Understand the Banach Algebra, and properties of homomorphism on a Banach algebra, Basic properties of Spectra.</p> <p><b>CO2:</b> Learn Commutative Banach Algebra and mapping on the Space.</p> <p><b>CO3:</b> Analyze the Properties of bounded linear operators on Hilbert spaces.</p> <p><b>CO4:</b> Understand the spectrum and characterize the eigenvalues of normal, positive, Unitary operators.</p>
Paper-404	Analytic Number	<p><b>CO1:</b> understand different types of arithmetic functions with applications</p> <p><b>CO2:</b> apply congruence to solve many problems for different arithmetic functions</p> <p><b>CO3:</b> analyze periodic arithmetic functions and Gauss</p> <p><b>CO4:</b> evaluate many numbers theoretic problems using reciprocity law</p>
Paper-405	Project	<p><b>CO1-</b> engage in the study or research of a topic that is beyond the regular math department offerings in both rigor and content</p> <p><b>CO2-</b> produce a document (paper or honors thesis) that exhibits both the background and the conclusions reached as a result such study or</p>



CO3- can develop the skill of presentation

CO4- can compile existing work and learn to prepare report using Latex.

## Academic Session-2022-23

Papers	Title	CO's
Paper-101	Algebra	<p><b>CO 1:</b> define ring, ideal, quotients ring, field, polynomial rings, extension field</p> <p><b>CO 2:</b> explain the fundamental concepts of algebra such as ideal, ring, polynomial ring and their role in modern mathematics and applied</p> <p><b>CO 3:</b> describe the structure of field of quotients of an integral domain</p> <p><b>CO 4:</b> explain the notion of extension of a field</p> <p><b>CO 5:</b> use Galois theory to analyze the</p>
Paper-102	Differenti	<p><b>CO 1:</b> Understand the concept of fundamental</p> <p><b>CO 2:</b> Solving system of differential equations by Eigen value and vectors.</p> <p><b>CO 3:</b> Study the existence and uniqueness of solutions for system of equations.</p> <p><b>CO 4:</b> Learn to solve oscillation of second order</p> <p><b>CO 5:</b> Provides the Concept of Sturm comparison theorem and Hille wiener</p> <p><b>CO 6:</b> Solutions for Boundary value problems are developed using Green's function</p>
Paper-103	Real Analysis	<p><b>CO1:</b> Demonstrate understanding of the basic concepts underlying the definition of the general Lebesgue measure in real line and</p> <p><b>CO2:</b> Demonstrate understanding of the statements of the main results on integration on Real line and an ability to apply these in</p> <p><b>CO3:</b> Apply the theory of the concept of differentiation to solve a variety of problems at</p> <p><b>CO4:</b> Demonstrate skills in communicating mathematics orally and in writing of abstract measure Graphs</p>
Paper-104	Programmi ng in C	<p><b>CO 1:</b> define and manage data structures based on problem subject domain and work with information, character and strings, arrays of complex objects</p>

Paper - 105:	Practical - Programmi	<p><b>CO 2:</b> explain the concepts of object thinking within the framework of functional model</p> <p><b>CO 3:</b> describe defensive programming concepts</p> <p><b>CO 4:</b> asses to handle possible errors during</p> <p><b>CO1:</b> write any programme of above type and apply to solve practical problem.</p> <p><b>CO2:</b> create similar type programming for other</p> <p><b>CO3:</b> apply the techniques and methods to analyses others problems</p> <p><b>CO4:</b> analyze the problems minutely and create their own algorithms to solve many mathematical problem</p>
Paper- 201	<p><b>r-II</b></p> <p>Complex Analysis</p>	<p><b>CO 1;</b> work with functions (polynomials, reciprocals, exponential, trigonometric. hyperbolic) of single complex variable and describe mappings in the complex plane</p> <p><b>CO 2:</b> work with multi-valued functions (logarithmic, complex power) and determine branches of these functions</p> <p><b>CO 3:</b> evaluate a contour integral using parameterization, fundamental theorem of and Cauchy's integral formula, find the Taylor series of a function and determine its circle or annulus of convergence</p> <p><b>CO 4:</b> compute the residue of a function and use the residue theory to evaluate a contour</p>
Paper--202	Topology	<p><b>CO1:</b> Understand basic problems in the Topology of <math>\mathbb{R}</math>, Topology of Metric Spaces and Hausdorff spaces.</p> <p><b>CO2:</b> Apply the concepts of metric spaces and topological spaces, and their role in mathematics. Demonstrate familiarity with a range of examples of these structures.</p> <p><b>CO3:</b> Understand separability, completeness, connectedness, compactness.</p> <p><b>CO4:</b> Express regularity and normality separation axioms and use them to prove various properties.</p>
Paper-203	Numerical Analysis	<p><b>CO 1:</b> Concept of error analysis in data handling.</p>

		<p><b>CO 2:</b> Study of numerical methods to solve algebraic, transcendental equations and system</p> <p><b>CO 3:</b> Use of difference operators and different numerical methods to interpolate and extrapolate</p> <p><b>CO 4 :</b> Numerical evaluation of differentiations</p> <p><b>CO 5:</b> Know the concept of solving numerically the initial and boundary value problems of</p> <p><b>CO 6:</b> Solve ODE numerically by single step and multi-step method.</p>
Paper-204	Programming with	<p><b>CO1:</b> Understanding about object-oriented programming.</p> <p><b>CO2:</b> Gain knowledge about the capability to store information together in an object.</p> <p><b>CO3:</b> Understand the capability of a class to rely upon another class.</p> <p><b>CO4:</b> Learn how to store one object inside another object and use of one method can be used in variety of different ways.</p> <p><b>CO5:</b> Understanding the process of exposing the essential data to the outside of the world and hiding the low-level data.</p>
Paper-205	Practical-Programming in C++-I	<p><b>CO1:</b> write any programme of above type and apply to solve practical problem.</p> <p><b>CO2:</b> create similar type programming for other type of problems</p> <p><b>CO3:</b> apply the techniques and methods to analyse others problems</p> <p><b>CO4:</b> analyze the problems minutely and create their own algorithms to solve many mathematical problem</p>
Paper-206A	<b>DSE Paper (Any One)</b> Mathematical	<p><b>CO1:</b> the methods to solve differential equations using Laplace transform</p> <p><b>CO2:</b> understand Fourier series expansion of a functions and apply to solve many practical problems</p> <p><b>CO3:</b> gain the Fourier transform and apply transform technique to solve problems</p>

Paper-206B	Graph Theory	<p><b>CO4:</b> gain knowledge a new method to solve differential equation using Euler's equation</p> <p><b>CO 1:</b> Defines a graph, bipartite graph, Eulerian graph, Hamitonian graph</p> <p><b>CO 2:</b> Identify edges, vertices, subgraphs, matching, covers in graphs and construct and to distinguish examples from non-</p> <p><b>CO 3:</b> Solve problems using basis graph theory, involving vertices and edge, connectivity, planarity, crossing numbers and edge</p> <p><b>CO 4:</b> interpret theoretical knowledge and independent mathematical thinking in creative investigation of questions in graph theory</p> <p><b>CO 5:</b> explain basic results about coloring vertices, 4 color problem, planar graph notion, Graphs minimizing curves</p>
Paper-206C	Advanced Calculus	<p><b>CO1:</b> extend their ability of differentiation of functions in Euclidean space <math>R^n</math></p> <p><b>CO2:</b> develop their mind transformation and their properties in general space.</p> <p><b>CO3:</b> analyze the implicit and multiple integrals in generalized form</p> <p><b>CO4:</b> get and think the physical interpretation of solid figures in n-dimensional space.</p>
Paper-301	r-III Analysis	<p><b>CO 1:</b> Understand the Fourier Series expansion.</p> <p><b>CO 2:</b> Learn the convergence of Fourier Series.</p> <p><b>CO 3:</b> Study on Fourier Transform and its</p> <p><b>CO4-</b> Students can study different mode of convergence and uniform convergence of Fourier series</p>
Paper-302	Functional Analysis	<p><b>CO1:</b> To learn to recognize the fundamental properties of normed spaces and of the transformations between them.</p> <p><b>CO2:</b> Understand the notions of dot product and Hilbert space and apply the spectral theorem to the resolution of integral equations.</p>

		<p><b>CO3:</b> Correlate Functional Analysis to problems arising in Partial Differential Equations, Measure Theory and other branches of</p> <p><b>CO4-</b> Students will be able to relate different abstract space with their different structures</p>
Paper-303	Differential Geometry	<p><b>CO 1:</b> defines surfaces, their properties, parametrization of surfaces and tangent of surfaces</p> <p><b>CO 2:</b> lists topological aspects of surfaces</p> <p><b>CO 3;</b> recognize the basis of notions of the local theory of space curves and the local theory of surfaces</p> <p><b>CO 4:</b> explain concepts of curvature and Sernet-Frenet frame for space curves and the notion of torsion of a space curve</p> <p><b>CO 5:</b> explain the normal curvature and second fundamental form</p> <p><b>CO 6:</b> defines geodesic-equation of geodesic, geodesic on sphere, geodesic as minimizing curves</p>
Paper-304	Programing in C++-II	<p><b>CO1:</b> Understand about constructors which are special type of functions. Learn how to write in a way that it is independent of any</p> <p><b>CO2:</b> Learn to derive a new class from the</p> <p><b>CO3:</b> Learn about one of the key features of class inheritance is that a pointer to a derived type-compatible with a pointer to its base</p> <p><b>CO4:</b> Create and process data in files using file</p>
Paper-305	Practical - Programming in C++-II	<p><b>CO1:</b> write any programme of above type and apply to solve practical problem.</p> <p><b>CO2:</b> create similar type programming for other</p> <p><b>CO3:</b> apply the techniques and methods to analyze others problems</p> <p><b>CO4:</b> analyze the problems minutely and create their own algorithms to solve many mathematical problem</p>



Paper-306A	<b>IDSE</b> <b>Paper</b> Operation Research	<p><b>CO 1:</b> Solving LPP and its formulation</p> <p><b>CO 2:</b> Solution of LPP by graphical method and simplex iterations using slack and surplus variables</p> <p><b>CO 3:</b> Solution of Transportation problem and its optimal solution by Modi method</p> <p><b>CO 4:</b> Assignment problem has solved using</p> <p><b>CO-5:</b> Study of revised simplex iteration</p>
Paper-306B	Elements of Number	<p><b>CO1:</b> get knowledge of divisibility in integers and existence and properties of primes in integers</p> <p><b>CO2:</b> understand and analyze the congruence and apply in number theoretic system.</p> <p><b>CO3:</b> analyze and think of many number theory functions in number theory</p> <p><b>CO4:</b> apply the concept of congruence and their properties for some standard formulas and apply the formulas in practical problems.</p>
Paper-306C	Elements of Computer	<p><b>CO 1:</b> explain the algorithm and draw flowcharts for solving Mathematical and Engineering problems</p> <p><b>CO 2:</b> design and develop computer programs, analyzes and interprets the concepts of pointers, declaration, initialization, operations on pointers</p> <p><b>CO 3:</b> define data types and use them in simple data processing applications also he/she must able to use the concepts of array of structures</p> <p><b>CO 4:</b> develop confidence for self -education and ability to life- long learning needed for computer language</p>
Paper-401	<b>r-IV</b> Operation Research	<p><b>CO 1:</b> Solving Integer LPP by branching and cutting plane method.</p> <p><b>CO 2:</b> Discrete DPP and Solution of LPP dynamic programming.</p> <p><b>CO 3:</b> Study of nonlinear programming problem with Kuhn-Tucker conditions</p> <p><b>CO 4:</b> Solution of quadratic programming problem with and without Kuhn-Tucker</p>

Paper-402	Partial Differential Equations	<p><b>CO 1:</b> Use knowledge of partial differential equations (PDEs), modelling, the general structure of solutions, and analytic and numerical methods for solutions.</p> <p><b>CO 2:</b> Formulate physical problems as PDEs using conservation laws.</p> <p><b>CO 3:</b> Understand analogies between mathematical descriptions of different (wave) in physics and engineering.</p> <p><b>CO 4:</b> Classify PDEs, apply analytical methods, and physically interpret the solutions.</p> <p><b>CO 5:</b> Solve practical PDE problems with finite difference methods, implemented in code, and</p>
Paper-403	Operator Theory	<p><b>CO1:</b> Understand the Banach Algebra, and properties of homomorphism on a Banach algebra, Basic properties of Spectra.</p> <p><b>CO2:</b> Learn Commutative Banach Algebra and mapping on the Space.</p> <p><b>CO3:</b> Analyze the Properties of bounded linear operators on Hilbert spaces.</p> <p><b>CO4:</b> Understand the spectrum and characterize the eigenvalues of normal, positive, Unitary operators.</p>
Paper-404	Analytic Number	<p><b>CO1:</b> understand different types of arithmetic functions with applications</p> <p><b>CO2:</b> apply congruence to solve many problems for different arithmetic functions</p> <p><b>CO3:</b> analyze periodic arithmetic functions and</p> <p><b>CO4:</b> evaluate many numbers theoretic problems using reciprocity law</p>
Paper-405	Project	<p><b>CO1-</b> engage in the study or research of a topic that is beyond the regular math department offerings in both rigor and content</p> <p><b>CO2-</b> produce a document (paper or honors thesis) that exhibits both the background and the conclusions reached as a result such study or</p> <p><b>CO3-</b> can develop the skill of presentation</p> <p><b>CO4-</b> can compile existing work and learn to prepare report using Latex.</p>

## Academic Session-2023-24

Papers

Title

CO's

Semester-I

Paper-101	Algebra	<p><b>CO 1:</b> define ring, ideal, quotients ring, field, polynomial rings, extension field</p> <p><b>CO 2:</b> explain the fundamental concepts of algebra such as ideal, ring, polynomial ring and their role in modern mathematics and applied</p> <p><b>CO 3:</b> describe the structure of field of quotients of an integral domain</p> <p><b>CO 4:</b> explain the notion of extension of a field</p> <p><b>CO 5:</b> use Galois theory to analyze the solvability of polynomial</p>
Paper-102	Ordinary Dif	<p><b>CO 1:</b> Understand the concept of fundamental matrix and formulation of system of Differential equation of physical problems.</p> <p><b>CO 2:</b> Solving system of differential equations by Eigen value and vectors.</p> <p><b>CO 3:</b> Study the existence and uniqueness of solutions for system of equations.</p> <p><b>CO 4:</b> Learn to solve oscillation of second order equations.</p> <p><b>CO 5:</b> Provides the Concept of Sturm comparison theorem and Hille wiener</p> <p><b>CO 6:</b> Solutions for Boundary value problems are developed using Green's function</p>
Paper-103	Real Analysis	<p><b>CO1:</b> Demonstrate understanding of the basic concepts underlying the definition of the general Lebesgue measure in real line and properties.</p> <p><b>CO2:</b> Demonstrate understanding of the statements of the main results on integration on Real line and an ability to apply these in</p> <p><b>CO3:</b> Apply the theory of the concept of differentiation to solve a variety of problems at an Appropriate level of difficulty.</p> <p><b>CO4:</b> Demonstrate skills in communicating mathematics orally and in writing of abstract measure Graphs</p>

Paper-104	Programming	<p><b>CO 1:</b> define and manage data structures based on problem subject domain and work with information, character and strings, arrays of complex objects</p> <p><b>CO 2:</b> explain the concepts of object thinking within the framework of functional model</p> <p><b>CO 3:</b> describe defensive programming concepts</p> <p><b>CO 4:</b> asses to handle possible errors during program.</p>
Paper - 105:	Practical - Pro	<p><b>CO1:</b> write any programme of above type and apply to solve practical problem.</p> <p><b>CO2:</b> create similar type programming for other type of problems</p> <p><b>CO3:</b> apply the techniques and methods to analyses others problems</p> <p><b>CO4:</b> analyze the problems minutely and create their own algorithms to solve many mathematical problem</p>
<b>Semester-II</b>		
Paper- 201	Complex Ana	<p><b>CO 1;</b> work with functions (polynomials, reciprocals, exponential, trigonometric. hyperbolic) of single complex variable and describe mappings in the complex plane</p> <p><b>CO 2:</b> work with multi-valued functions (logarithmic, complex power) and determine branches of these functions</p> <p><b>CO 3:</b> evaluate a contour integral using parameterization, fundamental theorem of and Cauchy's integral formula, find the Taylor series of a function and determine its circle or annulus of convergence</p> <p><b>CO 4:</b> compute the residue of a function and use the residue theory to evaluate a contour</p>
Paper--202	Topology	<p><b>CO1:</b> Understand basic problems in the Topology of <math>\mathbb{R}</math>, Topology of Metric Spaces and Hausdorff spaces.</p> <p><b>CO2:</b> Apply the concepts of metric spaces and topological spaces, and their role in mathematics. Demonstrate familiarity with a range of examples of these structures.</p>

Paper-203	Numerical Ar	<p><b>CO3:</b> Understand separability, completeness, connectedness, compactness.</p> <p><b>CO4:</b> Express regularity and normality separation axioms and use them to prove various properties.</p> <p><b>CO 1:</b> Concept of error analysis in data handling.</p> <p><b>CO 2:</b> Study of numerical methods to solve algebraic, transcendental equations and system of equations</p> <p><b>CO 3:</b> Use of difference operators and different numerical methods to interpolate and extrapolate the given set of data.</p> <p><b>CO 4 :</b> Numerical evaluation of differentiations and integrations.</p> <p><b>CO 5:</b> Know the concept of solving numerically the initial and boundary value problems of</p> <p><b>CO 6:</b> Solve ODE numerically by single step and multi-step method.</p>
Paper-204	Programming	<p><b>CO1:</b> Understanding about object-oriented programming.</p> <p><b>CO2:</b> Gain knowledge about the capability to store information together in an object.</p> <p><b>CO3:</b> Understand the capability of a class to rely upon another class.</p> <p><b>CO4:</b> Learn how to store one object inside another object and use of one method can be used in variety of different ways.</p> <p><b>CO5:</b> Understanding the process of exposing the essential data to the outside of the world and hiding the low-level data.</p>
Paper-205	Practical- Pro	<p><b>CO1:</b> write any programme of above type and apply to solve practical problem.</p> <p><b>CO2:</b> create similar type programming for other type of problems</p> <p><b>CO3:</b> apply the techniques and methods to analyse others problems</p> <p><b>CO4:</b> analyze the problems minutely and create their own algorithms to solve many mathematical problem</p>

<b>DSE Paper (Any One)</b>	
Paper-206A	<p><b>Mathematica</b></p> <p><b>CO1:</b> the methods to solve differential equations using Laplace transform</p> <p><b>CO2:</b> understand Fourier series expansion of a functions and apply to solve many practical problems</p> <p><b>CO3:</b> gain the Fourier transform and apply transform technique to solve problems</p> <p><b>CO4:</b> gain knowledge a new method to solve differential equation using Euler's equation</p>
Paper-206B	<p><b>Graph Theory</b></p> <p><b>CO 1:</b> Defines a graph, bipartite graph, Eulerian graph, Hamitonian graph</p> <p><b>CO 2:</b> Identify edges, vertices, subgraphs, matching, covers in graphs and construct and to distinguish examples from non-examples;</p> <p><b>CO 3:</b> Solve problems using basis graph theory, involving vertices and edge, connectivity, planarity, crossing numbers and edge</p> <p><b>CO 4:</b> interpret theoretical knowledge and independent mathematical thinking in creative investigation of questions in graph theory</p> <p><b>CO 5:</b> explain basic results about coloring vertices, 4 color problem, planar graph notion, Graphs minimizing curves</p>
Paper-206C	<p><b>Advanced Cal</b></p> <p><b>CO1:</b> extend their ability of differentiation of functions in Euclidean space <math>R^n</math></p> <p><b>CO2:</b> develop their mind transformation and their properties in general space.</p> <p><b>CO3:</b> analyze the implicit and multiple integrals in generalized form</p> <p><b>CO4:</b> get and think the physical interpretation of solid figures in n-dimensional space.</p>
<b>Semester-III</b>	
Paper-301	<p><b>Fourier Analy</b></p> <p><b>CO 1:</b> Understand the Fourier Series expansion.</p> <p><b>CO 2:</b> Learn the convergence of Fourier Series.</p> <p><b>CO 3:</b> Study on Fourier Transform and its application.</p> <p><b>CO4-</b> Students can study different mode of convergence and uniform convergence of Fourier</p>

		<p>series</p>
Paper-302	Functional Ar	<p><b>CO1:</b> To learn to recognize the fundamental properties of normed spaces and of the transformations between them.</p> <p><b>CO2:</b> Understand the notions of dot product and Hilbert space and apply the spectral theorem to the resolution of integral equations.</p> <p><b>CO3:</b> Correlate Functional Analysis to problems arising in Partial Differential Equations, Measure Theory and other branches of</p> <p><b>CO4-</b> Students will be able to relate different abstract space with their different structures</p>
Paper-303	Differential G	<p><b>CO 1:</b> defines surfaces, their properties, parametrization of surfaces and tangent of surfaces</p> <p><b>CO 2:</b> lists topological aspects of surfaces</p> <p><b>CO 3;</b> recognize the basis of notions of the local theory of space curves and the local theory of surfaces</p> <p><b>CO 4:</b> explain concepts of curvature and Sernet-Frenet frame for space curves and the notion of torsion of a space curve</p> <p><b>CO 5:</b> explain the normal curvature and second fundamental form</p> <p><b>CO 6:</b> defines geodesic-equation of geodesic, geodesic on sphere, geodesic as minimizing curves</p>
Paper-304	Programjing i	<p><b>CO1:</b> Understand about constructors which are special type of functions. Learn how to write in a way that it is independent of any particular type.</p> <p><b>CO2:</b> Learn to derive a new class from the existing class.</p> <p><b>CO3:</b> Learn about one of the key features of class inheritance is that a pointer to a derived type-compatible with a pointer to its base</p>

Paper-305	Practical -Pro	<p><b>CO4:</b> Create and process data in files using file I/O functions</p> <p><b>CO1:</b> write any programme of above type and apply to solve practical problem.</p> <p><b>CO2:</b> create similar type programming for other type of problems</p> <p><b>CO3:</b> apply the techniques and methods to analyze others problems</p> <p><b>CO4:</b> analyze the problems minutely and create their own algorithms to solve many mathematical problem</p>
Paper-306A	<p><b>IDSE Paper (Any One)</b> Operation Re</p>	<p><b>CO 1:</b> Solving LPP and its formulation</p> <p><b>CO 2:</b> Solution of LPP by graphical method and simplex iterations using slack and surplus variables</p> <p><b>CO 3:</b> Solution of Transportation problem and its optimal solution by Modi method</p> <p><b>CO 4:</b> Assignment problem has solved using Hungarian method</p> <p><b>CO-5:</b> Study of revised simplex iteration</p>
Paper-306B	Elements of N	<p><b>CO1:</b> get knowledge of divisibility in integers and existence and properties of primes in integers</p> <p><b>CO2:</b> understand and analyze the congruence and apply in number theoretic system.</p> <p><b>CO3:</b> analyze and think of many number theory functions in number theory</p> <p><b>CO4:</b> apply the concept of congruence and their properties for some standard formulas and apply the formulas in practical problems.</p>
Paper-306C	Elements of C	<p><b>CO 1:</b> explain the algorithm and draw flowcharts for solving Mathematical and problems</p> <p><b>CO 2:</b> design and develop computer programs, analyzes and interprets the concepts of pointers, declaration, initialization, operations on pointers and their usage</p> <p><b>CO 3:</b> define data types and use them in simple data processing applications also he/she must able to use the concepts of array of structures</p>



		<p><b>CO 4:</b> develop confidence for self -education and ability to life- long learning needed for computer language</p>
Paper-401	<p><b>Semester-IV</b> Operation Re</p>	<p><b>CO 1:</b> Solving Integer LPP by branching and cutting plane method.  <b>CO 2:</b> Discrete DPP and Solution of LPP dynamic programming.  <b>CO 3:</b> Study of nonlinear programming problem with Kuhn-Tucker conditions  <b>CO 4:</b> Solution of quadratic programming problem with and without Kuhn-Tucker</p>
Paper-402	Partial Differ	<p><b>CO 1:</b> Use knowledge of partial differential equations (PDEs), modelling, the general of solutions, and analytic and numerical methods for solutions.  <b>CO 2:</b> Formulate physical problems as PDEs using conservation laws.  <b>CO 3:</b> Understand analogies between mathematical descriptions of different (wave) in physics and engineering.  <b>CO 4:</b> Classify PDEs, apply analytical methods, and physically interpret the solutions.  <b>CO 5:</b> Solve practical PDE problems with finite difference methods, implemented in code, and</p>
Paper-403	Operator The	<p><b>CO1:</b> Understand the Banach Algebra, and properties of homomorphism on a Banach algebra, Basic properties of Spectra.  <b>CO2:</b> Learn Commutative Banach Algebra and mapping on the Space.  <b>CO3:</b> Analyze the Properties of bounded linear operators on Hilbert spaces.  <b>CO4:</b> Understand the spectrum and characterize the eigenvalues of normal, positive, Unitary operators.</p>
Paper-404	Analytic Num	<p><b>CO1:</b> understand different types of arithmetic functions with applications  <b>CO2:</b> apply congruence to solve many problems for different arithmetic functions  <b>CO3:</b> analyze periodic arithmetic functions and Gauss sums</p>

Paper-405	Project	<p><b>CO4:</b> evaluate many numbers theoretic problems using reciprocity law</p> <p><b>CO1-</b> engage in the study or research of a topic that is beyond the regular math department offerings in both rigor and content</p> <p><b>CO2-</b> produce a document (paper or honors thesis) that exhibits both the background and the conclusions reached as a result such study or research.</p> <p><b>CO3-</b> can develop the skill of presentation</p> <p><b>CO4-</b> can compile existing work and learn to prepare report using Latex.</p>
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# **PG IN HISTORY**

## **PROGRAMME OBJECTIVES (POS)**

**PO-1:** Disciplinary Knowledge: Acquaint with the deeper and multi- disciplinary knowledge, aware about recent innovations in the academic field

**PO-2:** Critical Thinking: Able to critically analyze, synthesis and evaluate the theories, their development and application context.

**PO-3:** To develop problem solving innovative thinking with robust communication and academic writing skills

**PO-4:** Research Aptitude: Scientific and research thought and abilities not only to carry out independent research but also disseminate

**PO-5:** Individual and Team work: Acquire the competency to work responsibly as an individual or as a member or leader of the group in multi-disciplinary environments

**PO-6:** Life-Long Learning: Aptitude to apply knowledge and skills that are necessary for participating in learning activities throughout life.

**PO-7:** Ethics: Capability to identify and apply ethical issues related to one's work, avoid unethical behaviour such as fabrication of data, committing plagiarism and unbiased truthful actions in all aspects of work.

**PO-8:** Investigation of Problems: Ability of critical thinking, analytical reasoning and research based knowledge including design of experiments, analysis and interpretation of data to provide conclusions.

## **PROGRAMME SPECIFIC OUTCOMES**

1. Through completion of a combination of courses, students become familiar with the political processes and structures, society and culture, political ideas and institutions, historical thought and historiography, economy and society in India and world.

2. Students will be able to understand the background of the religions, customs, institutions and administration etc. and construct original historical arguments based on primary or secondary source material. They will be able ability to identify and describe the contours and stakes of conversations among historians within the defined historiographical fields.

3. By analyzing relationship between the past and the present students will understand the social, political, religious and economic conditions of the people. She/he will be capable of leading and participate in discussion/debates and develop interests in the study of history and activities relating to history.

4. Students can participate in archaeological excavations, visits places of historical interests, archeological sites, museums and archives, read historical maps, charts and write articles on historical topics.

5. The programme will help to impart moral and environmental education along with building critical ability through competing interpretations and multiple narratives of the past, offer multi-causal explanations of major historical developments based on contextualized analysis of interrelated political, social, economic, cultural and intellectual processes.

## PAPER- 101

### MAJOR DEVELOPMENTS IN ANCIENT INDIA

Course Outcome	CO Statement
CO1	To understand the Human Evolution-Hominid origins & early human dispersals; lithic technology and tool typology of Palaeolithic, Mesolithic and Neolithic period. Archaeological evidence from Mesolithic and Neolithic sites of India, including the evidence of emergence of art and religion
CO2	It could give better idea of Origin and geographical Scope of Harappan civilization, major features of Mature Phase and Post Harappan late regional culture: Copper Hoard and Chalcolithic culture of Malwa, Deccan and Rajasthan and Gangetic Plain, Vedic Age and the Megalithic Culture
CO3	To know Mahajanpada, Magadhan Supermacy, urbanism: its archaeological and literary correlates, Asoka's Dhamma, Mauryan administration, economy, Changing Societies in early historical period, changes in economy, trade, integration with wider Silk trade
CO4	It could give better idea to students about Literature, Astronomy, art and iconography of Classical age, Cultural expansion, temples, Forms of Siva, Sakti, Visnu, emergence of Kshetra and Kshetramahatmya (pilgrimage), Transition to Early Medieval: Land grants: agrahara, Brahmadeya, proliferation of jatis,

## PAPER-102

### INDIAN CIVILISATION (ANCIENT PERIOD)

Level in Bloom's taxonomy	Descriptions	Competencies	Course Specific Outcomes
K1: (information) recall, recognize, name	Know the three types of temple architecture, temple style in India	Basic Knowledge for competitive Examination	Remember, recall, retrieve, the name, place, temples, important personage
K2: Understand	Understand the technical specificities and differences between various temple styles as well various elements in the process of evolution	Technical knowledge	Understand, analyse, differentiate
K.3: Apply	Use drawing, sketches to illustrate these differences and identify various classic temples in their regions	Team Building Competencies	Construct, measure and draw plan
K.4, 5: Analyse and Evaluate	Analyse the symbolic, technical and other context of Indian Art	Critical Thinking	Probing questions, establishing linkages beyond the apparent and common sense

K6: New Ideas	Was Indian architecture an cosmological; was the symbolic elements more important in Indian art in contrast to technical aspect; understand the historiography of Indian art and architecture from the standpoint of western scholarship which emphasized and evaluated Indian art from western perspective of proportion, symmetry	Critical Aptitude Competencies	Critical reading, aesthetic appreciation, evaluate and revise creative products
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**PAPER-103:  
ARCHAEOLOGICAL THEORY AND METHODS**

Course Outcome	CO Statement
CO1	Familiarize the aim, scope, and evolution of Archaeology, Understand the history of World and Indian Archaeology, Identify the relationship between archaeology and other disciplines
CO2	Understand the data retrieval techniques in archaeology i.e. various methods of explorations, handling of archaeological artifacts during documentation of Exploration finding.
CO3	To know the various methods of Methods & Principles of Excavation, handling of archaeological artifacts during and after excavation, conservation of retrieved objects.
CO4	Evaluate the dating methods in Archaeology, Relative and absolute dating, Structural and Chemical Conservation in Indian archaeology

**Paper-104  
MODERN WORLD (1500-1848)**

Course Outcome	CO Statement
CO1	To understand the Renaissance, Reformation Movement in Germany and England, Parliamentary institution in England.
CO2	To examine about the French Revolution and its aftermath.
CO3	To Illustrate about the Era of Napoleon, his foreign policy, Congress of Vienna-concert of Europe.
CO4	To learn about Metternich System, Movements for Democracy in 1830 and 1848, American War of Independence. To enable the students to know about the happenings around the world.

**PAPER-105  
MODERN WORLD II (19<sup>TH</sup>& EARLY 20<sup>TH</sup> CENTURY)**

Course Outcome	CO Statement
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CO1	In this Unit students will understand the origin, meaning, forms, techniques and circumstances leading to Imperialism which begun by the end of 15th century following the discovery of the new world by the European navigators. Further the relation between the scientific inventions and the ideological revolutions in the form of Renaissance, Reformation and Enlightenment and the strengthening of the imperialism and the rise of nationalism will be established in this unit.
CO2	To understand the development of national consciousness in Europe and the formation of independent nation states of Germany and Italy. Further it will focus on the impact of creation of new nation states over European politics and the resultant disturbances in Balance of Power.
CO3	To understand how the disturbances in Balance of Power led to the outbreak of the First World War, the peace attempts and the Reparation Plans such as Dawes plan, Young Plan etc.
CO4	This unit will focus on the security plans of France following the first world war and the establishment of the League of Nations and its achievements. Further it will make the students understand about one of the economic crisis in the form of The Great Depression of 1929 and how it affected the world.

**PAPER-201**  
**UNDERSTANDING EARLY MEDIEVAL INDIA**

**Course outcome:** Students will learn and analyze about the transition from historic centuries to the early medieval. They'll be able to delineate changes in the realm of polity and culture; puranic religion; the growth of vernacular languages and newer forms of art and architecture.

**PAPER-202**  
**STATE FORMATION IN ME**

<b>Course Outcome</b>	<b>CO Statement</b>
CO1	This unit will discuss the Emergence of the concept of State in the Islamic Societies, Political Idea of Al-mavardi, Nizamul Mulk Tusi and Indian Political System with special reference to Indian Feudalism. The other section of this unit will highlighted the Indo-Persian historiographical tradition by various scholars about Delhi Sultanate and the process of state formation in medieval period.
CO2	This unit covered two important sections which is based on process of conquest and expansion of Delhi Sultanate from Ghoriid to consolidation of Sulatan rule in all over India. This unit also highlighted on the development institutionalized formation such as theory of Kingship, Nobility, various method of administrative process and decentralization of power among courtly members.

CO3	To demonstrate the economic life, introduce of various agrarian policy, agrarian economy, revenue administration, growth of urban centers, and various activities of trade and commerce.
CO4	This unit will sketch the social process such as education system, religious system. This unit also highlighted the concept of Sufi and Bhakti, and their relationship with state and society. Last section of this unit also mostly highlighted the Indo-Islamic architecture.

### PAPER 203

#### MUGHUL INDIA (1526-1707)

Course Outcome	CO Statement
CO1	This unit will cover two sections; it's critically analyzing the establishment and consolidation of Mughul empire, along with discussion the theory of Kingship.
CO2	This unit will cover the expansion and military achievement of Mughul rulers.
CO3	This unit will cover the achievements of Mughul in North-Western frontiers and Deccan region, rise and resistances of Maratha and Mughul administration in throughout India.
CO4	This unit elaborates the Indo-Islamic art, architecture, growth of cities, towns, urban life and urbanization. Second section will deals on the Mughal miniature, painting, and regional paginating tradition special references to <i>Phari</i> and development of science and technology in this period.

### PAPER-204

#### MODERN WORLD (20TH CENTURY)

Course Outcome	CO Statement
CO1	To understand the rise of totalitarian politics in Italy and Germany, the causes and consequences of World War II and the attempt to establish peace, harmony and mutual understanding among nations through the establishment of United nations Organization.
CO2	To understand the ideological battle that captured the world since the rise of communism. In this students will learn about the division of the world into two ideological hemispheres such as the capitalist world

	and the communist world and its repercussions in the form of cold war from 1945 to 1990 with its effects on international politics.
CO3	To know about the two communist countries such as China and Soviet Russia and the points of differences in the nature of communism practised in these countries. Later students will learn about the Sino-Soviet rift. Further this unit will also brought Africa into focus and the colonial rivalry among European nations over Africa.

**PAPER – 205: ODISHA: THE MAKING OF A REGION (EARLY BEGINNING TO THE GAJAPATIS)**

<b>Course Outcome</b>	<b>CO Statement</b>
CO1	Understand the multidisciplinary nature of archaeological advances in archaeology of Odisha
CO2	Appreciate the nature of early state in Peninsular Odisha
CO3	Develop critical understanding of the intertwined processes in early medieval Odisha
CO4	Understand the temporal and sacral juxtaposition in the cult of Jagannath

**PAPER 206 C (IDSE STUDENTS)**

**WOMEN IN INDIAN HISTORY**

<b>Course Outcome</b>	<b>CO Statement</b>
CO1	To Examine the position of women in historical time frame, their education condition, religious affiliation and its activities.
CO2	To Interpret the role of Women in household work and professions, their political and cultural life, in ancient, medieval and modern India.
CO3	It will Illustrate the meaning and definition of Feminism, and other branches of feminism.
CO4	It will highlight the context of Women and law, Property Rights and Personal Law, their participation in reform movement, and post-independence activities.

**PAPER -301**

**ODISHA: MAKING OF A REGION (1568-1948)**

**Course Outcome**

On successful completion of the course the students will be able to appreciate the following:

**CO1:-**To Analyse the political condition during Mughal and Maratha rule in Odisha.

**CO2:-**To Illustrate about the British occupation of Odisha, British Administration and Resistance Movements.

**CO3:-** To evaluate the Famine of 1866, Growth of Odia Nationalism for separate province and role of Madhusudan Das, Gopabandhu Das and KrushnachandraGajapati.



**CO4:-**To know about Freedom Movements of Odisha, role of Women in the freedom movements and merger of princely states with Odisha province with this it's expected that students would get the information on movements, agitations, struggles for Odisha province as well as India.

### **Paper-302: CULTURAL HISTORY OF ODISHA**

<b>Course Outcome</b>	<b>CO Statement</b>
CO1	To familiarize students with the cultural history of Odisha. To familiar students with the various religious art and architecture.
CO2	To make students understand the temple architecture and various cults in Odisha. To know emergence of autochthonous deities.
CO3	To enable students understand different levels of trade, exchange mechanism, forms of transactions, maritime relations.
CO4	To familiarize students of contribution of Islam to Odishan culture and tribal culture of western Odisha. evolution of Oriya script and language and growth of Odia literature

### **PAPER -303**

#### **COLONIAL STATE-EXPANSION, ORGANIZATION AND STRUCTURE (1757- 1947)**

**Course Outcomes**

On successful completion of the course the students will be able to

**CO1:-**understand the way British created a political India

**CO2:-**Understand the structure, institution and ideology of the Raj

**CO3:-**Critically appreciate the kind of colonial education introduced by the British and their effect on nation building

**CO4:-**To critically analyse sources on the 1857 revolt

### **PAPER -304: COLONIAL ECONOMY**

**Course Outcomes**

On successful completion of the course the students will be able to

**CO1:-**understand the theoretical underpinning in historical writing

**CO2:- appreciate the unending dialogue between past and present**

**CO3:-**Critically appreciate how theoretical perspectives changed historical writing in different times

## Paper 305: National Responses to Colonial Rule

### COURSE OUTCOME:

1. At the end of the course students will be able to appreciate different type of nationalism.
2. Understand the nature and role of Gandhi in national movement.
3. To be understand the issues behind extremist movement and revolutionary terrorism.
4. Critically appreciate the ideas of alternative politics, transfer of power, partition and aftermath.
- 5.

### PAPER 306 A (IDSE STUDENTS)

#### WOMEN IN INDIAN HISTORY

Course Outcome	CO Statement
CO1	To Examine the position of women in historical time frame, their education condition, religious affiliation and its activities.
CO2	To Interpret the role of Women in household work and professions, their political and cultural life, in ancient, medieval and modern India.
CO3	It will Illustrate the meaning and definition of Feminism, and other branches of feminism.
CO4	It will highlight the context of Women and law, Property Rights and Personal Law, their participation in reform movement, and post-independence activities.

### PAPER 306 B (IDSE STUDENTS)

#### Law and Society in Colonial India

#### Course Learning Outcomes

After completion of this course successfully, the students will be able to

1. To distil the central story of the rise of modern Westernjuristic principles, and connect it to the larger colonial contexts that rule, influence andconnect the contemporary world of today, confidently using conceptual tools like“equality”, “progress and development”, “representational /parliamentarian democracy”,“liberty and freedom”.
2. The students are able to make connections to important modern structures ofgovernance, and state apparatus, knowledge systems as they developed in the west andwere subsequently imported to non-Western societies via colonialism.
3. They will understand that there is no one history, but interconnected histories with the rise of a dominant region, there is a projection of a single dominant historicalnarrative – the rise of modern West as the Western intellectuals wove it through the centuries in the realms of law and governance.

4. They will innovatively apply the above analytical categories to the histories of non-Western societies as they passed through the colonial phase.

**Paper – 401**

**INDIAN HISTORIOGRAPHY**

**Course Outcomes**

1. The paper makes students appreciate different way past is interpreted by different historians. The vital difference between notion of past and history will be appreciated by students
2. Students will develop critical aptitude the way historical constructions are made
3. Students will appreciate that there are different constructions of the past, one contesting the other and therefore rather than one history, there are histories

**Paper - 402**

**CONCEPT OF HISTORIOGRAPHY & RESEARCH METHODOLOGY**

**Course Outcomes**

1. After the end of the course students will be able to appreciate the linkage between past and present and appreciate Croce's statement that All history is contemporary history.
2. Students will be able to understand that History is an unending dialogue between the present and the past. This is a view held by E.H. Carr.
3. Students will understand that there are different constructions of the past, one contesting the other and therefore rather than one history, there are histories.
4. The course develops critical approach in students, the role of argument in historical constructions, the constant dialogue between present and the past
5. Students will appreciate that history is not rote learning but a master discipline.

**Paper 403**

**SOCIO CULTURAL HISTORY OF MODERN INDIA**

**Course Outcomes**

CLO- Students will be able to appreciate that the subjects of history are not fixed objects of past but dynamic and produced as a result of changing historiography

CLO-2 The students will be able to confidently use conceptual tools like "modernity", "progress and development", "Social equality", "modern education and Women's empowerment", print culture and modern redefinitions of private, personal and public spheres.

CLO-3The students are able to make connections to important modern structures of education, literacy, and knowledge systems as they developed in the west and were subsequently imported to non-Western societies via colonialism.

CLO 4 They will innovatively apply the above analytical categories to the histories of non-Western societies as they passed through the colonial phase.

**Paper 404**  
**Epigraphy and Numismatic**

<b>Course Outcome</b>	<b>CO Statement</b>
CO1	To understand the Epigraphy as a source of Indian history, development of scripts in various region
CO2	To understand about the historical Importance of major inscriptions of India to reconstruct our past.
CO3	To understand the numismatic as a source of Indian history and the technique/methods of manufacturing coins and study of metallurgy.
CO4	To learn about important coins of India from earliest times to medieval India.

**405: Dissertation (100 marks/4 credits)**

# GEOGRAPHY PG

Course Code	Course Title	Course Outcome (CO)	Course Outcome (CO) - Details
101	Advanced Geomorphology	CO-01	Analyze complex geomorphic processes and landforms at an advanced level, including their formation, evolution, and interrelationships. Evaluate and apply advanced quantitative methods wherever required.
		CO-02	Critically assess the role of tectonics, climate, and human activities in shaping landscapes over various spatial and temporal scales.
		CO-03	Synthesize interdisciplinary knowledge to understand the holistic functioning of geomorphic systems and communicate effectively the outcomes.
		CO-04	Apply principles of geomorphology to address real-world problems related to environmental management, land use planning, hazard mitigation, and natural resource conservation.
102	Geographical Thought	CO-01	Analyze and evaluate the historical development of geographical thought from ancient to contemporary perspectives.
		CO-02	Examine the contributions of prominent geographers and thinkers to the evolution of geographical thought and Synthesize and compare diverse geographical perspectives
		CO-03	Identify and critically assess key theoretical frameworks and paradigms in geography.
		CO-04	Apply geographical theories and concepts to analyse and interpret real-world phenomena, and Engage in critical reflection on the social, political, and cultural contexts that shape geographical knowledge production and dissemination and communicate effectively.
103	Population Geography	CO-01	Explore the nature, scope and evolution of population geography and the patterns, processes, and factors influencing the distribution, composition, and change of human populations over time and space.
		CO-02	Investigate the temporal trend and spatial distribution of population at various scales, from global to local, and examine the reasons behind them such exploring the complex relation between population and environment.
		CO-03	Learn demographic skills to analyse population data, including various related measures.
		CO-04	Critique the role of government policies, both historical and contemporary, in shaping population dynamics, and evaluate their effectiveness in addressing demographic challenges
104	Geography of India	CO-01	Gain comprehensive understanding of the physical geographical features of India including physiography and climate.
		CO-02	Evaluate human geographical features of India including demographic characteristics, population distribution, rural and urbanization trends, and socio-cultural diversity of India.
		CO-03	Investigate the economic activities, resource base, industries, agriculture, trade networks, and development challenges in different regions of India.
		CO-04	Discuss the role spatial planning, urban growth, infrastructure development, and regional disparities in India.
105	Cartographic Techniques	CO-01	Understand the fundamental principles of Cartography and Map Design and Layout to create aesthetically pleasing and effective maps.
		CO-02	Expert in managing geographic data and cartographic process to create different types of maps using different geographic data using various techniques.
		CO-03	Enhance Visualisation as well as Spatial Thinking skills to visualize and analyse spatial relationships and patterns using maps and spatial data.
		CO-04	Develop the ability to effectively communicate through maps and interpret maps critically.
201	Climatology	CO-01	List the composition and structure of atmosphere; describe insolation and heat budget; explain the greenhouse effect, relate insolation and heat budget of an area.
		CO-02	Tell reasons of spatial variation in temperature on earth surface, explain the reason of thermal inversion, apply the concept of thermal inversion for solving air pollution; apply the concept of insolation to temperature variations and analyze its impact on atmospheric variables like pressure and wind at different spatial scale.
		CO-03	Relate heat and water content through atmospheric process of evaporation, condensation, cloud formation; apply the concept of saturation and dew point in humidity, compare the different types of humidity, classify and distinguish rain causing clouds and precipitation and rainfall.
		CO-04	Outline the different types of airmass; understand and compare the development and effect of extreme weather condition like cyclone, front; Appraise the use of different climate classification system
202	Economic Geography	CO-01	Gain comprehensive understanding of the fundamentals of Economic and Resource Geography and debate surrounding it.
		CO-02	Investigate Spatial patterns of Economic development by examining the factors affecting and concepts of economic development as well as assessing theories for growth and localisation.
		CO-03	Evaluate different resource geography models and appraise, relate, compare, and differentiate them particularly the models related to natural resources
		CO-04	Appraise and Interpret different resources in terms of their conservation and management and summarise their challenges and sustainability
203	Statistical Methods in Geography	CO-01	Show proficiency in describing and interpreting geographical data and apply basic statistical skills to sort data and Compare different statistical methods and select the apt tool based on the nature of data and purpose of study.
		CO-02	Explain basic descriptive statistics to calculate and apply measures of location and measures of dispersion -- grouped and ungrouped data in geographical problems.
		CO-03	Compute and interpret the results of Bivariate and Multivariate Regression and Correlation Analysis, for forecasting; Examine Test of Hypothesis for a population parameter; Demonstrate the practice of statistical thinking by taking a real-life problem; evaluate whether the procedure can be safely applied, explain the implications of statistical outcomes on the geographical study at-hand
		CO-04	Demonstrate ability to write reports of the results of statistical analyses (both descriptive and inferential) of geographic questions/problems/issues; Develop statistical software skills to solve geographical issues.

Course Code	Course Title	Course Outcome (CO)	Course Outcome (CO) - Details
204	Fundamentals of GIS & Remote Sensing	CO-01	To learn the basic concepts of remote sensing, understand the fundamental concepts of satellites, platforms, resolution, sensors and its processes
		CO-02	To learn the concept of visual image interpretation and digital image processing
		CO-03	To understand the application of remote sensing and GIS in natural resource management
		CO-04	Explore a range of spatial analysis techniques and tools available in GIS and Remote sensing integrated in GIS to solve real-world spatial problems and support decision-making processes.
205	Remote Sensing & GIS Applications	CO-01	Overall understanding of potential of Remote Sensing, GIS and GPS
		CO-02	Understanding of image interpretation and digital image processing
		CO-03	Exploring Remote Sensing applications in various domains of Natural Resource Management
		CO-04	Applying GIS analysis workflow and integrated applications in various domains of Natural Resource Management
206 A	Geography of Tourism	CO-01	Define, describe and relate the basics characteristics and trends of tourism covering India and world
		CO-02	Review, classify and distinguish classification and characteristics of tourism
		CO-03	Relate and Analyze spatial variation in tourism
		CO-04	Evaluate opportunities, impact and management of tourism
206 B	Geography of Odisha	CO-01	Review the basic knowledge about Odisha Geography such as Physiography, Climate, Soil, Vegetation, Drainage System, Natural Hazards, Coastal Erosion
		CO-02	Explore the types of crops and its production, agricultural problems of Odisha
		CO-03	Evaluate the study of demography, Transportation and Tourism of Odisha
		CO-04	Discuss spatial planning principles, land use policies, infrastructure development, and urban growth management strategies in Odisha
206 C	Political Geography	CO-01	Recognize and state basic concepts of Political Geography
		CO-02	Understand, discuss and describe fundamental concepts involved in Political Geography
		CO-03	Review, understand, discuss and analyse global strategies and implications
		CO-04	Review, understand, discuss and describe political geography of India
301	Oceanography	CO-01	Review, interpret and describe different perspectives of relief features of ocean basins.
		CO-02	Review, interpret, discuss, relate and critic different fundamental concepts of ocean temperature and salinity and its processes
		CO-03	Identify the concept of understanding in oceanographic studies developed in Unit 2, 3 and 4
		CO-04	Review, interpret, discuss, relate and critic different fundamental concepts and perspectives of Oceanography as well as Oceanic environment
302	Social and Cultural Geography	CO-01	Recognise, define and describe the evolution and relevance of Social Geography
		CO-02	Identify, summarise and compute elements of Social Geography, particularly for India
		CO-03	Recognise, define and describe the evolution and relevance of Cultural Geography
		CO-04	Identify, summarise and compute elements of Cultural Geography with particular emphasis on India
303	Settlement Geography	CO-01	Examine basic concepts of Settlement Geography and Explore the historical development of settlements from ancient to modern times
		CO-02	Understand, discuss and describe fundamentals of Rural and Urban Settlement
		CO-03	Examining contemporary challenges and issues facing human settlements
		CO-04	Encouraging students to critically analyse and evaluate settlement patterns and processes, policies and to develop solutions to real-world settlement-related problems.
304	Remote Sensing and Image Processing	CO-01	Understand the various satellite image format and preparation of colour composite; Analyze and interpret remotely sensed satellite images to understand topographical and cultural variations on the Earth's surface.
		CO-02	Understand, select and perform the required image pre-processing and processing techniques to improve the visual quality of satellite imagery; compare the different image processing techniques for their suitability for visual extraction of desired information from satellite image
		CO-03	Understand multi-dimensional feature space of satellite imagery; compare the various classification methods for their suitability for feature extraction; evaluate the accuracy of image classification; perform necessary post editing and estimate classification statistics for a given satellite imagery based geographical study
		CO-04	Demonstrate the ability to explain the spatial aspect of geographical issue and deliver a solution to the same using a remote sensing approach.
305	Field survey Methods	CO-01	Understand basics of field work and identify field techniques to be used.
		CO-02	Compare, differentiate and evaluate the data to be collect from field and their method of collection.
		CO-03	Demonstrate proficiency in field-based techniques for geomorphic mapping, data collection, and analysis, incorporating GPS/GIS technologies.
		CO-04	Assess and synthesize the information collected during field work and summarise the outcome leading to design and develop field reports
306 A	Introduction to Geography	CO-01	Recognize and state basic concepts of Geography
		CO-02	Understand, discuss and describe fundamental concepts of Geography
		CO-03	Understand, discuss and describe fundamental concepts associated with climate
		CO-04	Analyses the environmental challenges and disasters occurring on the global
306 B	Human Geography	CO-01	Recognize and state basic concepts of Human Geography
		CO-02	Review, understand and summarise population dynamics
		CO-03	Review and analyse demographic characteristics

Course Code	Course Title	Course Outcome (CO)	Course Outcome (CO) - Details
		CO-04	Examine social composites
306 C	Economic Geography	CO-01	Explore and critique nature, scope and concept of Economic Geography
		CO-02	Gain foundational understanding of Economic Geography, including its key concepts, theories, methods of analysis, activities and regions
		CO-03	Interpret, compare and examine different factors of economic activities and relate them with location and development of the economic activities, particularly in India.
		CO-04	Assess the regional disparity of economic development particularly in case of India keeping the history of Indian economic development in context.
401	Regional Development & Planning	CO-01	Recognise, define and describe the basic elements of Regional development and planning
		CO-02	Outline, distinguish and relate theories, models and indicators of Regional Planning
		CO-03	Examine planning regions with particular emphasis on India
		CO-04	Examine, compare and explain different concepts and contemporary issues with particular emphasis on India
402	Environmental Geography	CO-01	Tell the components of environment with their geographical aspect; interpret the historical geographical perspective on man-environment interaction, choose and compare the different geographical approach for complex environmental problems.
		CO-02	Classify the source of major environmental pollutions, identify their effect; compare different pollution control measurements and decide the right way to control the pollution in a geographical set up.
		CO-03	Recognize the role of global warming for climate change; show how these global environmental phenomena pose threat to sustainability; outline the actionable measurement that can be taken at local to global scale to combat the problem of climate change and global warming; Explain the cause and effect of natural hazards and its interlinkage with global environmental problem; Prepare an action plan for reducing the effect of natural disaster in different geographical set up.
		CO-04	Outline the various global initiatives towards making earth a sustainable planet by measurable actions of member nations; outline the various national laws for safeguards natural environment; Formulate the scope and procedures for assessing the environmental effect of any developmental project across its life cycle
403	Disaster Management	CO-01	Recognize, discuss and distinguish basic elements and types of disasters
		CO-02	Understand, discuss and discover cycle of disaster management
		CO-03	Review and appraise measures for Rehabilitation, Reconstruction and Recovery
		CO-04	Assess the role of information technology in disaster management
404	Urbanisation and Migration	CO-01	Gain comprehensive understanding of the processes and patterns of urbanization, including its historical evolution, causes, and consequences as well as patterns at national and global scale.
		CO-02	Acquire broad understanding of the migrants their national and international patterns, cause and consequences along with various theories associated with it
		CO-03	Explore the structure, organization and growth of urban systems in terms of associated contexts, types, concepts and theories.
		CO-04	Evaluate the problems and prospects of urbanization and migration and discuss their various policy dynamics
405	Project work report and VIVA VOCE	CO-01	Design a research project for any topic of choice
		CO-02	Manage data and perform analyses under designed research
		CO-03	Write report on the outcome and explain the limitations and future prospect of the research carried out and Summarise and represent the research outcomes to audiences (OBE level to be achieved – Create).
		CO-04	Communicate effectively about advanced Geographic concepts and research findings through written reports, oral presentations, and visual media.

# School of Chemistry

Name of The Department: <b>CHEMISTRY</b>			
Programme:UG			
	Course Code	Course Title	Course Outcome
Semester- I	CC-I	INORGANIC CHEMISTRY-I	CO-1: Students will be able to apply the fundamental principles of measurement, matter, atomic theory, chemical periodicity, chemical bonding, general chemical reactivity and solution chemistry to subsequent courses in science CO-2:Students will be able to understand the discovery of electron, proton and neutron and their characteristics CO-3:Students will be able to understand the nature electromagnetic radiation and quantum theory CO-4:Students will be able to understand the periodic law and significance of atomic no and electronic configuration as the basic for periodic classification CO-5:Students will be able to classify elements into s, p, d and f blocks and learn their main characteristics.
	CC-II	PHYSICAL CHEMISTRY-I	CO1. Students will be able to apply the fundamental principles of measurement, matter, atomic theory, chemical periodicity, chemical bonding, general chemical reactivity and solution chemistry to subsequent courses in science. CO2. Students will be able to apply gas laws in various real-life situations. CO3. Students will be able to explain the behavior of real and ideal gas. CO4. Students will be able to differentiate between gaseous state and vapour . CO5. Students will be able to explain the kinetic theory of gases.
	GE-I	Section A: Inorganic Chemistry-I	CO1. Students will perform calculations with Fajan's rules, Born equation, Slater's rules. CO2. Students will understand the organization of atoms and molecules. CO3. Students will predict the shapes and geometries of molecules. CO4. Students will synthesize different organic compounds with functional group attachment and analysis. CO5. Students will able to study the preparation and properties of different organic compounds.
Semester- II	CC-III	ORGANIC CHEMISTRY-I	CO1. Students are expected to apply their knowledge to solve problems related to electronic displacements, stereochemistry and organic reactions. CO2. Students will be able to synthesize simple organic molecules using the studied reactions. CO3. Students will be able to identify various functional groups through the studied experiments.



			<p>CO4. Students will be able to understand the bonding involved in carbon and hetero atoms.</p> <p>CO5. Students will be able to aromatic nature of organic compounds.</p>
	CC-IV	PHYSICAL CHEMISTRY-II	<p>CO1. Students will gain an understanding of the application of mathematical tools to calculate thermodynamics.</p> <p>CO2. Students will gain an understanding of the relationship between microscopic properties of molecules with macroscopic thermodynamic observables.</p> <p>CO3. Students will gain an understanding of the use of simple models for predictive understanding of physical phenomena associated to chemical thermodynamics.</p> <p>CO4. Students will gain an understanding of the limitations and uses of models for the solution of applied problems involving chemical thermodynamic.</p> <p>CO5. Students learn depth concepts about thermodynamic systems.</p>
	GE-II	CHEMICAL ENERGETICS, EQUILIBRIA & FUNCTIONAL ORGANIC CHEMISTRY	<p>CO1. Students will be able to perform calculations with ideal and real gases; predict chemical equilibrium and spontaneity of reactions by using thermodynamic principles.</p> <p>CO2. Students will be able to apply the concepts of colloids and gels.</p> <p>CO3. Students will be able to learn depth knowledge about solid &amp; liquid states.</p> <p>CO4. Students will be able to synthesize alkyl halides, aryl halides, alcohols, phenols etc.</p> <p>CO5. Students will be able to study basic concepts of organic chemistry of compounds containing carboxylic acid, ether, esters etc.</p>
	CC-V	INORGANIC CHEMISTRY-II	<p>CO1. Students will be able to gain an idea about general principles of metallurgy, acid-base concepts.</p> <p>CO2. Students will be able to gain a thorough knowledge about the s and p Block Elements.</p> <p>CO3. Students will be able to predict structure of noble gas compounds and their reactivity.</p> <p>CO4. Students will be able to gain a firm idea about silicones and siloxanes, Borazines, silicates and phosphazenes.</p> <p>CO5. Students will be able to apply concepts of acids and bases.</p>
Semester- III	CC-VI	ORGANIC CHEMISTRY-II	<p>CO1. Students will be able to understand the reaction mechanism of an organic transformations.</p> <p>CO2. Students will be able to understand the role of solvent, and other parameters upon reaction mechanism.</p> <p>CO3. Students will get an idea of functional group inter conversion and synthesis</p>

			<p>of small molecules using the studied reactions.</p> <p>CO4. Students will gain knowledge about reducing agents and function.</p> <p>CO5. Students will get firm idea on the reactivity of carbonyl compounds and acid derivatives.</p>
	CC-VII	PHYSICAL CHEMISTRY-III	<p>CO1. Students will gain an idea about micelles, CST, Nernst distribution law and azeotropic systems.</p> <p>CO2. Students will gain a thorough knowledge of chemical kinetics including Arrhenius equation, collision theory, rate expression of chemical reactions.</p> <p>CO3. Students will gain a firm idea about catalysis, mechanisms of catalysis, enzyme catalysed reactions.</p> <p>CO4. Students will learn about surface chemistry, various types of adsorption isotherms, chemisorption and physisorption.</p> <p>CO5. Students will gain knowledge on phase equilibrium in binary and three component systems.</p>
	GE-III	CHEMISTRY OF S- AND P-BLOCK ELEMENTS, STATES OF MATTER & CHEMICAL KINETICS	<p>CO1. Students will gain an idea about general principles of metallurgy, acid-base concepts.</p> <p>CO2. Students will gain a thorough knowledge about the s and p Block Elements.</p> <p>CO3. Students will be able to design experiment to measure the rate of a reaction.</p> <p>CO4. Students will be able to measure viscosity and surface tension of a liquid.</p> <p>CO5. Students will be able to study the concept of solid state chemistry.</p>
	CC-VIII	INORGANIC CHEMISTRY-III	<p>CO1. Students will gain a thorough knowledge of d-block elements, their properties and uses.</p> <p>CO2. Students will gain a firm idea about lanthanides and actinides, their extraction, properties and uses.</p> <p>CO3. Students will learn about the importance of metal ions in biological systems, their functions and toxicological effects.</p> <p>CO4. Students will know the basic principles of bioinorganic chemistry.</p> <p>CO5. Students will understand the application of molecular spectroscopy to different molecules.</p>
Semester- IV	CC-IX	ORGANIC CHEMISTRY-III	<p>CO1. Students will understand the distinction between different classes of amines and their chemical nature.</p> <p>CO2. Students will be able to synthesize small rings by using certain reaction.</p> <p>CO3. Students will get an overall idea of functional group inter conversion of nitrogen containing molecules.</p> <p>CO4. Students will learn the structure determination and medicinal importance of certain alkaloids like nicotine, quinine, morphine etc.</p> <p>CO5. Students will get an idea of natural sources of alkaloids and terpenes and their chemical properties.</p>

	CC-X	PHYSICAL CHEMISTRY-IV	<p>CO1. Students will gain an idea about conductance and conductivity, derivation of various laws of conductance.</p> <p>CO2. Students will gain a thorough knowledge of ionic velocities, hydrolysis of salts.</p> <p>CO3. Students Will gain a firm idea about Faraday's Laws of electrolysis, applications in metallurgy.</p> <p>CO4. Students Will describe various types of electrodes, and the electrical properties of atoms and molecules.</p> <p>CO5. Students Will describe fundamentals of electrochemistry.</p>
	SEC-II		
	GE-IV	ORGANOMETALLICS, BIOINORGANIC CHEMISTRY, POLY NUCLEAR HYDROCARBONS AND UV, IR SPECTROSCOPY	<p>CO1. Students will gain an idea about s and p-block elements, their properties and uses.</p> <p>CO2. Students will gain a thorough knowledge of noble gases and their uses.</p> <p>CO3. Students will be able to study surface tension of liquids.</p> <p>CO4. Students will be able to study chemistry of s and p block elements, noble gases and inorganic polymers.</p> <p>CO5. Students will be able to introduce general principles of metallurgy.</p>
	CC-XI	ORGANIC CHEMISTRY-IV	<p>CO1. Students will elucidate the structure and molecular mass of small organic molecules using UV, IR, NMR, MS.</p> <p>CO2. Students will be able to calculate the absorption maxima of conjugated molecules using Woodward rule.</p> <p>CO3. Students will be able to gain firm idea of functional groups present in a molecule from IR spectroscopic data.</p> <p>CO4. Students will be able to determine the absolute configuration, structure, and constitution, ring size of different mono and disaccharides.</p> <p>CO5. Students will be able to gain firm idea of biomolecules.</p>
	CC-XII	PHYSICAL CHEMISTRY-V	<p>CO1. Students will gain an idea about fundamentals of quantum chemistry including Schrodinger equation and rigid rotator system.</p> <p>CO2. Students will gain a thorough knowledge of quantum mechanical treatment of various molecules.</p> <p>CO3. Students will gain a firm idea about rotational spectroscopy and vibrational spectroscopy.</p> <p>CO4. Students will learn about photochemistry including photoluminescence and chemiluminescence.</p> <p>CO5. Students will learn molecular spectroscopy.</p>
Semester- V	DSE-I	POLYMER CHEMISTRY	CO1. Students will gain an idea about polymeric systems, their classifications, the

			<p>naming and their properties.</p> <p>CO2. Students will gain a thorough knowledge of various synthetic methods for polymers.</p> <p>CO3. Students will gain a firm idea about glass transition, crystallinity and morphology of polymers.</p> <p>CO4. Students will learn about the preparation, properties and commercial uses of polymers such as PVA, PVC, Teflon etc.</p> <p>CO5. Students will learn to use the polymers.</p>
	DSE-II	GREEN CHEMISTRY	<p>CO1. Students will get an insight into green solvents, safer reagents, and methods to design green methods.</p> <p>CO2. Students will understand the advantages of green chemistry over traditional synthesis.</p> <p>CO3. Students will be able to use and apply natural feedstock and sustainable energy source like solar energy, microwave, ultrasound, mechanochemical energy etc.</p> <p>CO4. Students will be able to design green method by replacing the hazardous, toxic, heavy metal based reagents and organic solvents with environment friendly reagents and green solvents.</p> <p>CO5. Students will get an idea of renewable natural feedstock of chemicals and sustainable energy sources.</p>
	CC-XIII	INORGANIC CHEMISTRY-IV	<p>CO1. Students will be able to understand various bonding in organometallic compounds.</p> <p>CO2. Students will be able to understand the preparation and application of ferrocene and other compounds.</p> <p>CO3. Students will be able to study the theoretical principles in mechanisms of organometallic compounds.</p> <p>CO4. Students will be able to study thermodynamic &amp; kinetic aspects and reaction mechanism of metal complexes.</p> <p>CO5. Students will understand the theoretical principles in qualitative analysis.</p>
Semester- VI	CC-XIV	ORGANIC CHEMISTRY-V	<p>CO1. Students will be able to understand the biological role and significance of important biomolecules.</p> <p>CO2. Students will gain an insight into classification and molecular features of drug and drug like molecules.</p> <p>CO3. Students will be able to know about the synthesis and application of natural and synthetic dyes.</p> <p>CO4. Students will gain idea about structural and chemical significance of lipids,</p>

			nucleic acid and dyes and their application. CO5. Students will study the therapeutic use of antipyretics, analgesics, antimalarials and synthesis of certain drug molecules.
	DSE-III	INDUSTRIAL CHEMICALS AND ENVIRONMENT	CO1. Students will be able to understand various industrial processes in handling industrial gases and chemicals. CO2. Students will gain sound knowledge about ecosystem and pollution. CO3. Students will gain an insight into various energy sources and its management and biocatalytic systems. CO4. Students will gain sound knowledge about water pollution and water purification. CO5. Students will gain sound knowledge about biocatalysis.
	DSE-IV	INORGANIC MATERIALS OF INDUSTRIAL IMPORTANCE	CO1. Students will be able to understand various industrial processes towards manufacture of different types of glasses, ceramics cements, fertilizers, batteries. CO2. Students will be able to develop complementary skills in designing small industrial setups. CO3. Students will get to know about the use of fertilizers and ceramics. CO4. Students will get an idea on surface coating and alloys. CO5. Students will study about chemical explosives.

Name of The Department: <b>CHEMISTRY</b>			
Programme: <b>PG</b>			
	Course Code	Course Title	Course Outcome
Semester- I	101	INORGANIC CHEMISTRY- I	[CHE101.1]. Recall basic properties of main group elements and understand various synthetic methods of important main group compounds. [CHE101.2]. Recognize important applications of main group elements. [CHE101.3]. Interpret magnetic properties of transition metal complexes. [CHE101.4]. Examine their electronic spectra. [CHE101.5]. Describe the basic properties of d-block and f-block elements.
	102	ORGANIC CHEMISTRY- I	[CHE 102.1]. Understand the mechanism, types of reactions and the factors affecting reactions . [CHE 102.2]. Learn about the aliphatic nucleophilic Substitution reaction and corresponding name reactions . [CHE 102.3]. Learn about the aromatic nucleophilic Substitution reaction and corresponding name reactions. [CHE 102.4]. Apply concepts associated with these general reaction types to product prediction. [CHE 102.5]. Apply the concept of free radical reaction in predicting the product of the reaction.
	103	PHYSICAL CHEMISTRY- I	[CHE404.1]. pinpoint the historical aspects of development of quantum mechanics [CHE404.2]. understand and explain the differences between classical and quantum mechanics. [CHE404.3]. understand the idea of wave function and the uncertainty relations [CHE404.4]. solve Schrodinger equation for simple potentials. [CHE404.5]. spot, identify and relate the eigenvalue problems for energy, momentum, angular momentum and central potentials explain the idea of spin.
	104	ORGANIC SPECTROSCOPY	[CHE304.1]. Apply NMR, IR, MS, UV-Vis spectroscopic techniques in solving structure of organic molecules and in determination of their stereochemistry. [CHE304.2]. Interpret the above spectroscopic data of unknown compounds. [CHE304.3]. Use these spectroscopic techniques in their research. [CHE304.4]. Enhance employability as a spectro-chemist.
	105	INORGANIC PRACTICAL	
Semester- II	201	INORGANIC CHEMISTRY -II	[CHE 201.1]. Apply the concepts of symmetry and group theory in solving chemical structural problems. [CHE 201.2]. Apply knowledge of group theory in spectroscopy. [CHE 201.3]. Explain the different theories of bonding involving metal complexes. [CHE 201.4]. Analyze modes of bonding in metal-metal multiple bonds and polysions. [CHE 201.5]. Design and use new metal complex in environment friendly method.
	202	ORGANIC	[CHE 202.1]. Understand the Conjugation, Cross conjugation, Hyperconjugation and

		CHEMISTRY- II	Discuss the aromaticity. [CHE 202.2]. Learn about the stereochemistry, stereoselectivity and stereospecificity [CHE 202.3]. Addition to carbon–carbon multiple bonds. [CHE 202.4]. Learn about Elimination reactions and Discuss the nucleophilic substitution reactions. [CHE 202.5]. Apply the concept of mechanism of molecular rearrangement reaction in predicting the product of the reaction.
	203	PHYSICAL CHEMISTRY- II	[CHE303.1]. Discuss the electrical double layer and metal/electrolyte interface. [CHE303.2]. Learn about kinetic equivalence terms and theories of reaction rates. [CHE303.3]. Discuss the Elementary gas phase reactions and Fast reaction kinetics. [CHE303.4]. Understand the Chain reactions, Acid Base Catalysis.
	204	BIOINORGANIC AND SUPRAMOLECULAR CHEMISTRY	[CHE204.1]. Biomolecules: types, structure, functions in cellular life and importance in context with day to day life. [CHE204.2]. Learn about fundamentals of supramolecular chemistry. [CHE204.3]. Understand the concept of coenzymes & cofactors, kinetics, mode of action, classification and role in different biological processes. [CHE204.4]. Enhance employability as a material chemist.
	205	ORGANIC PRACTICAL	
	206 (A)		
	206 (B)		
	206 (C)		
Semester- III	301	INORGANIC CHEMISTRY -III	[CHE301.1]. Identify the principles, structure and reactivity of selected coordination complexes . [CHE301.2]. Interpret their electronic spectra and magnetic properties. [CHE301.3]. Utilize the principles of transition metal coordination complexes in understanding functions of biological systems. [CHE301.4]. Apply different electron counting rules to predict the shape/geometry of low and high nuclearity metal carbonyl clusters
	302	ORGANIC CHEMISTRY -III	[CHE302.1]. Comprehend the structure-reactivity pattern of reactive intermediates involved in organic reactions. [CHE302.2]. Comprehend the orbital interactions and orbital symmetry correlations of various pericyclic reactions. [CHE302.3]. Write the mechanism of organic reactions involving reactive intermediates and concerted processes.

			[ CHE302.4]. Apply these reactions in organic synthesis.
	303	MOLECULAR SPECTROSCOPY	[CHE203.1]. Understand the concepts of spectroscopy . [CHE203.2]. Understand Microwave Spectroscopy and their applications for chemical analysis. [CHE203.3]. Understand Infrared-Vibration-rotation Spectroscopy and their applications for chemical analysis. [CHE203.4]. Apply Raman Spectroscopy for chemical analysis. [CHE203.5]. Apply the concept of Electronic spectroscopy of different elements and simple molecules, and for organic compounds analysis, medical diagnostics.
	304	MATERIAL CHEMISTRY	[CHE104.1]. Interpret the future-oriented field of material chemistry for global importance. [CHE104.2]. Understand the process of polymerization and Implement the concept of polymer science in various fields. [CHE104.3]. Differentiate various nanomaterials, carbon-based materials and their industrial importance. [CHE104.4]. Prepare advance materials by applying the concept of Organized Assemblies and micellar chemistry.
	305	PHYSICAL PRACTICAL	
	306 (A)		
	306 (B)		
	306 (C)		
Semester- IV	401	INORGANIC CHEMISTRY- IV	[CHE401.1]. Learn about the interdisciplinary character of organometallic chemistry among the conventional branches of chemistry as well as the industrial aspects of organometallic chemistry . [CHE401.2]. Understand the chemical processes involved in the various renowned industrial conversions (e.g Olefin polymerization, Hydrogenation, etc.) carried out in presence of organometallic complexes. [CHE401.3]. Apply knowledge of metal-ligand bond interaction in explaining reactions of metal complexes. [CHE401.4]. Apply the concept of Electronic spectroscopy for inorganic compounds analysis.
	402	ORGANIC CHEMISTRY- IV	[CHE402.1]. Learn about Biomolecules: types, structure, functions in cellular life and importance in context with day to day life. [CHE402.2]. Appreciate the photochemical phenomena by light and be able to design and practically carry out simple photochemical reactions. [CHE402.3]. Apply photochemistry concepts, plan and program molecules for



			photochemical application of specific interest. [CHE402.4]. Understand the concept of coenzymes & cofactors, kinetics, mode of action, classification and role in different biological processes.
	403	PHYSICAL CHEMISTRY- III	[CHE403.1]. Defines phase, equilibrium, component, degree of freedom and phase rule concepts. Applies these concepts to the field of Materials Science and Engineering [CHE403.2]. Predict the course of an organic photochemical reaction and identify the product with the type of functional group present on the molecule. [CHE403.3]. Apply photochemistry concepts, plan and program molecules for photochemical application of specific interest. [ CHE403.4]. Learn surface active agents, micelles, micro-emulsions, reverse micelle, lipids, liposome and Appreciate micellization process.
	404	PHYSICAL CHEMISTRY -IV	[CHE103.1]. Learn about binary solutions and partial molar properties. [CHE103.2]. Calculate change in thermodynamic properties, equilibrium constants, partial molar quantities, chemical potential. Identify factors affecting equilibrium constant. [CHE103.3]. Acquire the skill to apply thermodynamic concepts in non-equilibrium thermodynamics. [CHE103.4]. Solve problems based on Debye-Huckel limiting law. Calculate excess thermodynamic properties. [CHE103.5]. Discuss the statistical thermodynamics.
	405	PROJECT AND SEMINAR	

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S.N	PAPER AND PAPER CODE	CO
<b>SEMESTER-1</b>		
1	<b>101-ALGAE AND MICROBIOLOGY</b>	<ul style="list-style-type: none"> <li>• To understand the phycology with special reference to Indian work.</li> <li>• Algae in diversified habitats (Terrestrial, fresh water, marine)</li> <li>• Criteria used in classification of algae, Role of algae in human welfare</li> <li>• General account of thallus organization, reproduction and life history of algae.</li> <li>• Study of important groups of algae Cyanophyta , Chlorophyta, Xanthophyta , Bacillariophyta, Phaeophyta &amp; Rhodophyta</li> <li>• Establish an understanding the basic techniques (concept of aseptic work, cultivation, identification) in microbiology</li> <li>• Describe different aspects of microbial nutrition and growth</li> <li>• Describe microbial interaction and their significance in environment, agriculture, food pharmaceuticals.</li> </ul>
2	<b>102- FUNGI PLANT PATHOLOGY AND IMMUNOLOGY</b>	<ul style="list-style-type: none"> <li>• To recapitulate the previous knowledge of immunology and to establish thorough understanding</li> <li>• of various structure &amp; function at cellular and molecular level.</li> <li>• To provide a thorough understanding of the various immunology concepts in study of cell</li> <li>• biology and to study the different tools and techniques used to study the immunology at</li> <li>• molecular level.</li> <li>• To provide students with a deep insight about the immunological reactions with emphasis on</li> <li>• the effector mechanisms, rationale behind the immunological interactions leading to successful</li> <li>• reactions.</li> <li>• To acquire in-depth knowledge of the molecular events involved in immunological processes</li> <li>• and their regulation.</li> <li>• To provide wider and global perspective of techniques involved as well as the genetic basis of</li> <li>• the immunological diseases and their cure, with an ability to discriminate, evaluate, analyse and</li> </ul>

		<ul style="list-style-type: none"> <li>• synthesise existing and new knowledge, and integration of the same for enhancement of knowledge.</li> <li>• Describe nonspecific body defenses and the immune responses and apply this understanding to</li> <li>• the infectious disease process as well as the prevention and control of infectious diseases</li> </ul>
3	103-ARCHEGONIATE	<ul style="list-style-type: none"> <li>• The student will be able to appreciate the uniqueness of different groups and the way they are classified. 2. To get a comparative knowledge of plants and their life cycle.</li> <li>• To understand the interrelationships between plants.</li> <li>• To enable the student to identify the different plant groups by morphological and anatomical studies.</li> <li>• To get a comparative account of plants in its life cycle, morphology, anatomy, and reproduction with an evolutionary link</li> </ul>
4	104-TRADITIONAL AND MODERN TAXONOMY	<ul style="list-style-type: none"> <li>• To understand the various kinds of plants on the surface of earth with their names, affinities, geographical distribution, habit characteristics and their economic importance.</li> <li>• To understand the diversities of plant kingdom and their relation to evolution of plants. A systematic reconstruction of plant kingdom can be made only after the complete knowledge of the individual plants.</li> <li>• To understand the various aspects of plant nomenclature and classification.</li> <li>• To understand the classical and modern trends of Angiosperm taxonomy</li> <li>• To understand the salient features of angiosperm families</li> </ul>
<b>SEMESTER -2</b>		
1	201- BIOCHEMISTRY-1	<ul style="list-style-type: none"> <li>• To study about the structure and biological functions of macromolecules such as proteins, polysaccharides, lipids,</li> <li>• To understand the structure synthesis and function of secondary metabolites, and natural products.</li> </ul>
2	202- BIOCHEMISTRY-2	<ul style="list-style-type: none"> <li>• To understand the various biochemical pathways of plants</li> <li>• To create a knowledge on different biochemical pathways, physiology and developmental aspects of plants</li> </ul>
3	203-Cytology	<ul style="list-style-type: none"> <li>• Recapitulate the previous knowledge of cell biology and to establish thorough understanding of various cell structure and function at molecular level.</li> <li>• Provide a thorough understanding of the various molecular biology concepts in study of cell biology and to study the different tools and techniques used to study the biology of cell at 12 molecular level.</li> <li>• Provide students with a deep insight about the motility of the cell with emphasis on the molecular motors, cell adhesions, molecular biology involved in the movement process involved in movement of Cilia and Flagella.</li> </ul>

		<ul style="list-style-type: none"> <li>• To have a concrete knowledge about cell to cell communication in animals as well as plants and to study about the basis of the interaction as well as the genes involved in it.</li> <li>• Acquire in-depth knowledge of the molecular events involved in cell division which includes mitosis, meiosis, cell cycle and its regulation.</li> <li>• To provide wider and global perspective of cell cycle regulation and cancer, with an ability to discriminate, evaluate, analyse and synthesise existing and new knowledge, and integration of the same for enhancement of knowledge.</li> </ul>
4	<b>204-DEVELOPMENTAL PLANT BIOLOGY</b>	<ul style="list-style-type: none"> <li>• The course would deal with concepts of plant structure, growth and development, sexual reproduction, formation of male and female gametophytes, pollination, double fertilization, and embryo development.</li> <li>• In development botany, the students will learn about basic process of plant development, factors affecting development, growth and development of plant embryo and seed.</li> <li>• The students will also learn about developmental process of vegetative shoot to flowering shoot, male and female gametophyte and organ development, various aspects of embryo development including polyembryony.</li> <li>• In this credit the students will learn about physiological and molecular aspect of plant development, various genes involved in leaf, stem, root, flower, embryo development, role of organ culture, anther, pollen and protoplast culture and its role in understanding plant development.</li> </ul>
5	<b>206(B)-ADVANCED GENETICS</b>	<ul style="list-style-type: none"> <li>• To Understand the Genetic constituents of bacteria with special emphasis on inheritance and mutations</li> <li>• To understand the mechanism of genetic transfers in microbes</li> <li>• To understand different techniques used to study the microbial genetics and utilizing the microbial phenomenon in different biotechnological applications</li> </ul>
<b>SEMESTER -3</b>		
1	<b>301-PLANT PHYSIOLOGY - 1</b>	<ul style="list-style-type: none"> <li>• The course would deal with the study of plant physiology especially the water transport, absorption, mineral nutrition, photosynthesis, respiration and phytohormones.</li> <li>• To understand about photosynthesis and detailed mechanism involved in the CO<sub>2</sub> fixation by plants</li> <li>• To learn about techniques used in genetic modification for increased plant biomass</li> <li>• To impart knowledge about the structure and functionality of chloroplast protein and their encoding genes as well as plant hormones</li> <li>• To develop novel protein using various recent approaches and increase crop production under adverse</li> </ul>

		condition
2	<b>302-PLANT PHYSIOLOGY-2</b>	<ul style="list-style-type: none"> <li>To understand about photosynthesis and detailed mechanism involved in the CO<sub>2</sub> fixation by plants</li> <li>To learn about techniques used in genetic modification for increased plant biomass</li> <li>To impart knowledge about the structure and functionality of chloroplast protein and their encoding genes as well as plant hormones</li> <li>To develop novel protein using various recent approaches and increase crop production under adverse condition</li> </ul>
3	<b>303- PLANT ECOLOGY AND ECOSYSTEM</b>	<ul style="list-style-type: none"> <li>The programme aims to train students with the objective of teaching-learning and research to promote the idea of sustainability.</li> <li>This objective shall be achieved through developing a foundation on ecological, social, economic, legal and ethical dimensions of the environmental studies on a robust interdisciplinary foundation.</li> </ul>
4	<b>304-GENETICS</b>	<ul style="list-style-type: none"> <li>1.Understand Mendelian and Non mendelian Genetics</li> <li>2.Students will learn the basic principles of inheritance at the molecular, cellular and organism level</li> <li>3. student will understand casual relationship between molecule/cell level phenomenon Modern genetics and organism level pattern of heredity ( Classical Genetics)</li> <li>4. Will learn and understand the fundamentals of molecular genetics like Genome organisation, Genetic control of development, Population genetics, Mutation and Human genetics.</li> </ul>
5	<b>306-ORIGIN OF LIFE</b>	<ul style="list-style-type: none"> <li>Describe the theory of natural selection.</li> <li>Explain how new species arise.</li> <li>Construct a phylogenetic tree.</li> <li>Explain the mechanisms which underlie evolution at the molecular level.</li> </ul>
<b>SEMESTER-4</b>		
1	<b>401-PLANTS IN HUMAN WELFARE AND BIODIVERSITY ASSESSMENT</b>	<ul style="list-style-type: none"> <li>The course is designed to provide the knowledge about economic importance of various plants.</li> <li>To understand the threats of air, soil and water pollution</li> <li>To understand the various threats of biodiversity and the strategies for conservation</li> </ul>
2	<b>402-EVOLUTION AND PLANT BREEDING</b>	<ul style="list-style-type: none"> <li>Describe the theory of natural selection.</li> <li>Explain how new species arise.</li> <li>Construct a phylogenetic tree.</li> <li>Explain the mechanisms which underlie evolution at the molecular level</li> <li>To impart theoretical knowledge and practical skills</li> </ul>

		<p>about plant breeding objectives, modes of reproduction and genetic consequences, breeding methods for crop improvement.</p> <ul style="list-style-type: none"> <li>• 6. To apprise about various abiotic and biotic stresses influencing crop yield, mechanisms and genetics of resistance and methods to breed stress resistant varieties</li> </ul>
3	<b>403-PLANT MOLECULAR BIOLOGY AND PLANT BIOTECHNOLOGY</b>	<ul style="list-style-type: none"> <li>• To understand the significance of advances in Molecular Biology and Biotechnology</li> <li>• To impart theoretical and practical knowledge and skills that underpins the various branches of Biotechnology</li> <li>• To enable the students to have a thorough understanding and knowledge of different branches of Biotechnology</li> <li>• To make the students to develop the ability to think analytically and solve problems.</li> <li>• An in-depth study on Structure and organization of D.N.A., Replication Process, Transcription process, Translation process and Mutagenesis.</li> <li>• To expose the students on the understanding of various techniques of gene mapping and sequencing for molecular studies.</li> <li>• To understand the significance of biotechnology Molecular Biology in human health-care</li> </ul>
4	<b>404-EVOLUTION AND PLANT BREEDING</b>	<ul style="list-style-type: none"> <li>• To utilize the knowledge on relevance, basic concepts and theories of statistics as can be applied to life sciences</li> <li>• Describe the roles biostatistics serves in the discipline of public health.</li> <li>• Describe basic concepts of probability, random variation and commonly used statistical probability distributions.</li> <li>• Describe preferred methodological alternatives to commonly used statistical methods when assumptions are not met.</li> <li>• Distinguish among the different measurement scales and the implications for selection of statistical methods to be used based on these distinctions.</li> <li>• Apply descriptive techniques commonly used to summarize public health data.</li> <li>• Apply common statistical methods for inference.</li> <li>• Apply descriptive and inferential methodologies according to the type of study design for answering a particular research question.</li> <li>• Apply basic informatics techniques with vital statistics and public health records in the description of public health characteristics and in public health research and evaluation.</li> <li>• Interpret results of statistical analyses found in public health studies.</li> <li>• Develop written and oral presentations based on</li> </ul>

		<p>statistical analyses for both public health professionals and educated lay audiences.</p> <ul style="list-style-type: none"><li>• Capability to build statistical model over real health data.</li><li>• Estimate and compare efficiency of models.</li><li>• Perform univariate data analysis for continuous and categorical variables.</li></ul>



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S.N	PAPER AND PAPER CODE	CO
<b>SEMESTER-1</b>		
1	<b>101</b>	<b>Cell &amp; Molecular Biology</b>
		<p>CO1: Students will be given general introduction to the cell and cell division</p> <p>CO2: Students will be taught about cell organelles and cell signaling</p> <p>CO3: Students will be given an idea about prokaryotic and eukaryotic replication and transcription</p> <p>CO4: Students will comprehend about gene splicing and translation</p>
	<b>102</b>	<b>Microbiology</b>
		<ol style="list-style-type: none"> <li>1. recognize and compare the structure and function of microbes.</li> <li>2. check microbial contamination in environmental samples.</li> <li>3. demonstrate aseptic microbiological techniques in the laboratory.</li> <li>4. control microbial contamination and take safety measures.</li> <li>5. apply norms of biosafety practices in various set ups.</li> </ol>
	<b>103</b>	<b>Biochemistry</b>
		<p>CO 1- Explain the structure-function relationships of biomolecules and to understand the properties of enzymes and their kinetics and their role as biocatalysts involved in biochemical transformations.</p> <p>CO 2 – To learn about oligosaccharides and to correlate how different signals perceived by the organisms are converted into biochemical information which drives different functions of living systems.</p> <p>CO 3 – To understand the structure of DNA and RNA and their types.</p> <p>CO 4 - Comprehend various metabolic pathways through which the biomolecules transform form one form</p>
	<b>104</b>	<b>Bioinstrumentation</b>
		<p>CO1: Apply basic principles of different analytical techniques and able to use microscopy, spectroscopy and centrifugation.</p> <p>CO2: Apprehend the functioning, maintenance and safety aspects of the apparatus used in a Biotechnology lab.</p> <p>CO3: Assimilate the principles and applications of electrophoresis, blotting, chromatography and spectroscopy in research and related experiments.</p> <p>CO4: Understand the strengths, limitations and creative use of techniques for solving industrial and research problems.</p>



## SEMESTER-2

<b>201</b>	<b>Plant and Animal tissue culture</b>	<p>1. Familiarize with organization of PTC Lab., aseptic manipulations and learn techniques of culturing tissues, single cells, protoplast and anther culture, hairy root culture and germplasm conservation</p> <p>2. Undertake large scale in vitro propagation of plants and plan commercial production through micropropagation</p>
<b>202</b>	<b>Genetics</b>	<p>CO1- To know the basic idea of DNA, RNA, genetic mapping through different experiment.</p> <p>CO2-Familiarization with concepts of Mendelian and non-Mendelian genetics, including: genetic diseases, human pedigrees, x-linked inheritance, Mitochondrial inheritance, genomic imprinting, behavioral traits etc.</p> <p>CO3-Understand Theoretical knowledge of various topics of classical and modern genetics including: useful bacterial phenotypes, mutations, mutagenesis, transformation, conjugation and transduction.</p> <p>CO4-Study of molecular genetics and cellular genetics, mutation. Population genetics, migration etc.</p>
<b>203</b>	<b>Biostatistics</b>	<p>CO 1: Explain the importance of data collection and its role in determining scope of inference</p> <p>CO 2: Demonstrate an understanding of the central concepts of modern statistical theory and their probabilistic foundation</p> <p>CO 3: Explain the use, and interpret results of, the principal methods of statistical inference and design</p> <p>CO 4: Explain the results of statistical analyses accurately and effectively</p> <p>CO 5: Demonstrate the use of mathematical and statistical theory underlying the application of biostatistical methods for the management and statistical analysis of research data</p>
<b>204</b>	<b>Cancer biology</b>	<p>CO1: The students will learn about cancer and process of carcinogenesis</p> <p>CO2: The students will come to know about the types of carcinogenic mechanisms</p> <p>CO3: The students will comprehend the knowledge of stem cell and stem cell technology</p> <p>CO4: The students will know about tumor immunology and limitations of cancer therapies</p>
<b>206 A</b>	<b>Animal Physiology</b>	<p>CO1: Understand the Physiology of Digestion &amp; Respiration.</p> <p>CO 2: Understand the Physiology of Circulation &amp; nerve impulse and Reflex Action.</p> <p>CO 3: Understand the Physiology of muscle contraction &amp; Excretion</p> <p>CO4: Understand the Physiology &amp; Types of Endocrine glands.</p>
<b>206 B</b>	<b>Plant Physiology</b>	<p>CO 1: Understand the various physiological life processes in plants</p> <p>CO 2: Students will also gain about the various uptake and transport mechanisms in plants and are able to coordinate the various processes.</p> <p>CO 3: Students will understand the role of various hormones, signalling compounds, thermodynamics and enzyme kinetics.</p>

	<b>206 C</b>	<b>Bioenergetics and Metabolism</b>	<p>CO-1: comprehend various biochemical changes that obey the basic thermodynamic principles.</p> <p>CO-2: correlate how the living organisms exchange energy and matter with the surroundings for their survival, and store free energy in the form of energy-rich compounds</p> <p>CO-3: recognize how the catabolic breakdown of the substances is associated with release of free energy; whereas, free energy is utilized during synthesis of biomolecules i.e., anabolic pathways</p> <p>CO-4: assess the crucial role of some hormones with regard to the integration of metabolic pathways.</p> <p>CO-5: apply the knowledge of metabolic pathways to biotechnological and biochemical research.</p>
<b>SEMESTER-3</b>			
	<b>301</b>	<b>Genetic Engineering</b>	<p>CO1: Students will learn about the basics of Genetic Engineering</p> <p>CO2: Students will comprehend about the construction and screening of gene libraries</p> <p>CO3: Students will be introduced about the concept of recombinant DNA and molecular markers</p> <p>CO4: Students will be taught about the characterization of cloned genes and mutagenesis</p>
	<b>302</b>	<b>Immunology and Immuno-techniques</b>	<p>CO1: Explain the role of immune cells and their mechanism in body defense mechanism.</p> <p>CO2: Apply the knowledge of immune associated mechanisms in medical biotechnology research.</p> <p>CO3: Adopt immunological techniques for industrial uses. Demonstrate the association of immune system with cancer, autoimmunity, transplantation and infectious disease.</p> <p>CO4: find out new vaccine target and develop strategy to design new vaccine.</p>
	<b>303</b>	<b>Bioinformatics and Computational Biology</b>	<p>CO1: Understand about overview of bioinformatics scope and their disciplines and methods for generation of large-scale data in the field of molecular biology.</p> <p>CO2: Review of database source, database management system, biological databases and their classifications including knowledge about data storage model/format, retrieval of information and integration.</p> <p>CO 3: experiment pair wise and multiple sequence alignment and will analyze the secondary and tertiary structures of protein sequences along with their algorithms</p> <p>CO 4: Understand the basics of molecular docking and molecular dynamics simulations will be able to apply these techniques to virtual screening and lead optimization processes in drug discovery</p>
	<b>304</b>	<b>Environmental Biotechnology and Ecology</b>	<p>1. Theoretical knowledge of Environment; Basic concepts; Resources; Eco system: plants, animals, microbes; Ecosystem management; Pollution, Renewable resources; Sustainability; Microbiology of degradation and decay.</p> <p>2. Study of role of biotechnological techniques in environment protection. Waste water collection; control and management; Waste water treatment; Sewage treatment through chemical, microbial and biotech techniques</p>

			3. Concept building about applications of Remote sensing & Geographical Information System (GIS)
<b>Value added Course</b>			
	<b>A</b>	<b>Biofertilizer Technology</b>	CO1: To impart hands on training on the skills associated with Biofertilizer organism's isolation, production and application. CO2: To study the impact of soil management practices on microbial functions and soil health. To improve biofertilizer technology to ensure high quality and improved delivery
	<b>B</b>	<b>Entrepreneurship in Biotechnology</b>	CO1: To understand the processes of value addition to develop novel products, services and their possible commercialization. CO2: create awareness about entrepreneurship among students. This course focuses on motivating students for entrepreneurship on creativity and innovation
<b>IDSE Papers</b>			
	<b>306 A</b>	<b>Medical Biotechnology</b>	CO-1: are able to work in a team in planning and organizing laboratory activities; CO-2: have developed analytical skills for the management and communication of experimental data in a scientific framework; CO-3: have developed social and communication skills to work also in international contexts
	<b>306 B</b>	<b>Developmental Biology (Plants and Animals)</b>	CO-1: Describe evolutionary history of complex multicellular life forms; Compare environmental influence on development and homeostasis of animals and plants; Interpret, analyse and present experimental results and conclusions in a scientific manner.
	<b>306 C</b>	<b>Bioprocess technology</b>	CO-1: Able to acquire a sound knowledge in mathematics and natural science and apply engineering principles in determining and solving contemporary and complex problems related to bioprocessing. CO-2: Understand the practical aspects of bioprocess engineering and the role of bioprocess engineer in industry
<b>SEMESTER-4</b>			
	<b>401</b>	<b>Research Methodology</b>	CO1-Develop understanding on various kinds of research, objectives of doing research, research process, research designs and sampling. CO2-Have basic knowledge on qualitative research techniques CO3-Have adequate knowledge on measurement & scaling techniques as well as the quantitative data analysis CO4- Have basic awareness of data analysis-and hypothesis testing procedures
	<b>402</b>	<b>Agricultural Biotechnology</b>	CO1. Students will be provided with a firm understanding in the principles and application of agriculture biotechnology CO2. To understand the diversity and complexity of eukaryotic and prokaryotic genomes, their historical as well as evolutionary perspective and techniques commonly employed in studying genomics and proteomics

			CO3. To learn about plant primary and secondary metabolites, regulation of metabolic pathways, metabolic flux analysis and applications of metabolic flux analysis, methods for the experimental determination of metabolic fluxes.
	<b>403</b>	<b>IPR, Biosafety and Bioethics</b>	CO 1: Interpret basics of biosafety and bioethics and its impact on all the biological sciences and the quality of human life. CO 2: Understand the legal framework for biotechnology research including the regulations and laws governing biotechnology research, such as intellectual property laws and patent laws, and understand how to promote innovation. CO 3: Develop critical thinking and communication skills and able to critically evaluate ethical, safety, and legal issues in biotechnology research, and effectively communicate their findings. CO 4: Comprehend benefits of GM technology and related issues as well as recognize the importance of protection of new knowledge and innovations and its role in business.
	<b>404</b>	<b>Genomics proteomics and metabolomics</b>	CO1: Students will have a thorough understanding of various genomic technologies such as whole genome mapping & sequencing, genome annotation, global gene cloning and gene expression technologies CO2: The students will know about the concept of comparative genomics CO3: Students will be introduced about the concept of proteomics CO4: Students will learn about the role of metabolomics and its application in Biotechnology
	<b>405</b>	<b>Project work and Seminar Presentation</b>	CO1: In a specialization domain of his / her choice, student manager will be able to choose an appropriate topic for study and will be able to clearly formulate & state a research problem CO2: For a selected research topic, student manager will be able to compile the relevant literature and frame hypotheses for research as applicable CO3: For a selected research topic, student manager will be able to plan a research design including the sampling, observational, statistical and operational designs if any

**LIST of COs for the PG syllabus in Anthropology-2023-24**

**FIRST SEMESTER**

<b>Course code</b>	<b>Name of the Course</b>	<b>Course Outcomes</b>
<b>Core Paper 101</b>	Fundamentals of Social Anthropology	<p><b>CO-1:</b> Demonstrate the knowledge on different concept and domains of social anthropology.</p> <p><b>CO-2:</b> Analyze the development of different theories in anthropology in brief.</p> <p><b>CO-3:</b> Identify different concepts frequently used in social anthropology.</p> <p><b>CO-4:</b> Articulate broad scopes of anthropology in everyday life of human being.</p>
<b>Core Paper 102</b>	Fundamentals of Physical/Biological Anthropology	<p><b>CO-1:</b> Understand the basic concept of evolutionary process and different theories of evolution.</p> <p><b>CO-2:</b> Discuss the classification of animal kingdom specifically about primate order and similarity of man and living primate.</p> <p><b>CO-3:</b> Explain the human evolution and dispersal of modern human</p> <p><b>CO-4:</b> Analyse the existing variation among different population with the help of population</p>
<b>Core Paper 103</b>	Fundamentals of Prehistoric Archaeology	<p><b>CO-1:</b> Understand the basic concept of Archaeology</p> <p><b>CO-2:</b> Interpret the technological development of prehistoric man of Europe chronologically</p> <p><b>CO-3:</b> Interpret the technological development of prehistoric man of India chronologically</p> <p><b>CO-4:</b> Analyze technological development of prehistoric man of European and Indian</p> <p><b>CO-5:</b> Reconstruct the recent trends in world prehistory, European prehistory and Indian</p>
<b>Core Paper 104</b>	Research Methodology	<p><b>CO-1:</b> Understand the concepts of research approaches and formulation of research problem.</p> <p><b>CO-2:</b> Discuss an insight about various research design, formulation and testing of hypothesis.</p> <p><b>CO-3:</b> Demonstrate about various types of sampling, sampling error &amp; graphical &amp; tabular presentation of data.</p> <p><b>CO-4:</b> Develop proper understanding different type</p>
<b>Practical Paper</b>	Practical A: Physical/Biological Anthropology	<p><b>CO-1:</b> Identify, draw and describe human bones.</p> <p><b>CO-2:</b> Interpret somatometric measurements and somatoscopic observations.</p> <p><b>CO-3:</b> Apply the knowledge in the field of human growth and development, forensic, sports science</p>
<b>Practical</b>	Fundamentals of	<p><b>CO-1:</b> Identify, draw and describe prehistoric tools.</p> <p><b>CO-2:</b> Interpret the cognitive development of</p>
<b>SECOND SEMESTER</b>		

<b>Core Paper 201</b>	Social Institutions	<p><b>CO-1:</b> Discuss the key concepts in Social and Cultural Anthropology</p> <p><b>CO-2:</b> Develop an insight about evolutionary perspectives of economic patterns and its organization.</p> <p><b>CO-3:</b> Explain the concepts of power, authority law among the tribal community.</p>
<b>Core Paper 202</b>	Human Genetics	<p><b>CO-1:</b> Understand the origin and growth of human genetics.</p> <p><b>CO-2:</b> Explain the theoretical basis of the latest advances in molecular genomic technologies.</p> <p><b>CO-3:</b> Describe the genetic basis of simple, heterogeneous and complex traits.</p>
<b>Core Paper 203</b>	Anthropology of India	<p><b>CO-1:</b> Understand the basic feature of Indian society</p> <p><b>CO-2:</b> Interpret the theories of social change and</p>
<b>Core Paper 204</b>	Statistical Application and Anthropological Research	<p><b>CO-1:</b> Recognize different research methods used in different domains of anthropology.</p> <p><b>CO-2:</b> Formulate different research tools and methods used in anthropological research.</p> <p><b>CO-3:</b> Generate a justified study design and outline the appropriate data collection methodology.</p> <p><b>CO-4:</b> Evaluate the role of participation, community partnership, and informed consent in applied research.</p>
<b>Core Paper 205</b>	Practical and Project	<p><b>CO-1:</b> Learn the methods of different serological and biochemical test</p> <p><b>CO-2:</b> Identify mode of inheritance of a genetic trait, blood group typing</p>
<b>Core Paper 206</b>	Medical Anthropology	<p><b>CO-1:</b> Understand the basic concepts about health, sickness and disease from anthropological perspectives</p> <p><b>CO-2:</b> Explain ethnomedical practices</p> <p><b>CO-3:</b> Interpret the association of cultural practices with health</p> <p><b>CO-4:</b> Analyse how anthropology as a discipline has</p>
<b>THIRD SEMESTER</b>		
<b>Core Paper 301</b>	Demographic Anthropology	<p><b>CO-1:</b> Understand different demographic phenomena in current and past populations using anthropological methods and theories.</p> <p><b>CO-2:</b> Explain basic concepts of demography and statistics.</p>

<b>Core Paper 302</b>	Anthropology of Museum	<p><b>CO-1:</b> Students are oriented to understand the concept of Museum along with basic guiding principles of Museology.</p> <p><b>CO-2:</b> Exposed on basic principles of museum management and administration.</p> <p><b>CO-3:</b> Exposed on technical knowledge viz. collection, documentation, preservation, lighting, display etc.</p>
<b>Core Paper 303</b>	Anthropological Theory	<p><b>CO-1:</b> Describe the important classical theories of anthropology and new theories to understand the cultural changes.</p> <p><b>CO-2:</b> Analyse the importance of culture for the formation and development of personality</p> <p><b>CO-3:</b> Explore the systems of meaning, beliefs, values, world views, forms of feeling, style of thought in term of which particular people construct their existence with new anthropological</p>
<b>Core Paper 304 (A)</b>	Tribal Anthropology	<p><b>CO-1:</b> Discuss the concept of tribal society and the tribal situation in Odisha and India</p> <p><b>CO-2:</b> Demonstrate the forest-tribe interaction</p> <p><b>CO-3:</b> Summarize the tribal problems</p> <p><b>CO-4:</b> Categorize the different tribal development</p>
<b>Core Paper 304 (B)</b>	Human Growth, Development and Nutrition	<p><b>CO-1:</b> The students will learn about the concepts and indicators of human growth and development.</p> <p><b>CO-2:</b> Acquire knowledge about different stages of pre-natal and post-natal growth.</p> <p><b>CO-3:</b> Explain and assess body composition, physique and their association with health</p>
<b>Core Paper 305</b>	Fieldwork Training and Museum visit	<p><b>CO 1:</b> Understand the nature of Anthropological research.</p> <p><b>CO 2:</b> Develop skill in various types of data collection methods.</p> <p><b>CO 3:</b> Explore different problem areas of human society</p>
<b>IDSE Paper - 306 A</b>	Bio-Cultural Dynamics of Indian Population	<p><b>CO-1:</b> Understand the concept of society, culture, social structure and racial elements of India</p> <p><b>CO-2:</b> Identify Socio-cultural changes occurring in contemporary Indian society as well during hominid evolution.</p> <p><b>CO-3:</b> Explore the biological diversity of Indian population and to find out the human adaptation to various ecological niches.</p>

<b>IDSE Paper - 306 B</b>	Anthropology	<p><b>CO - 1:</b> Identify different areas to become a practicing anthropologist.</p> <p><b>CO - 2:</b> Identify different domains of application of anthropological knowledge.</p> <p><b>CO - 3:</b> Employ anthropological knowledge in criminal identification, racial detection and diasporic study.</p> <p><b>CO - 4:</b> Contribute in the policy formulation to different area of development.</p>
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Prehistory in India  
**CO-1:** Understand the Geological Features of India  
**CO-2:** Interpret the technological development of prehistoric man of India chronologically

**IDSE Paper - 306 C**

**CO-3:** Analyze technological development of

**FOURTH SEMESTER**

<b>FOURTH SEMESTER</b>		
<b>Core Paper 401</b>	Applied Anthropology (Biological and Social)	<p><b>CO-1:</b> Identify different domains of application of anthropological knowledge.</p> <p><b>CO-2:</b> Employ anthropological knowledge in solving human problems.</p> <p><b>CO-3:</b> Select the appropriate methodologies and employ them in an applied policy setting.</p> <p><b>CO-4:</b> Examine different anthropological theories and methods in the field of community development and research.</p>
<b>Core Paper 402</b>	Anthropology of Marginalized Communities	<p><b>CO-1:</b> Understand the concept of marginality</p> <p><b>CO-2:</b> Discover the different types of marginalization in India</p> <p><b>CO-3:</b> Explain the different types of marginalized groups in India</p>
<b>Core Paper 403 (A)</b>	Human Population Genetics	<p><b>CO-1:</b> Understand Mendelian population.</p> <p><b>CO-2:</b> Explain genetic polymorphism.</p> <p><b>CO-3:</b> Analyse genetic abnormalities in populations and the reasons thereof.</p> <p><b>CO-4:</b> Identify</p>
<b>Core Paper 403 (B)</b>	Anthropology of Development	<p><b>CO-1:</b> It gives a groundbreaking examination of Developments within the field to define how it might advance empirically, methodologically and theoretically, and cement a central place in academic study both within anthropology and across disciplines.</p> <p><b>CO-2:</b> It shares an idea of commitment and simultaneously critical to understand the perspectives of development and improve the economic wellbeing of marginalized.</p> <p><b>CO-3:</b> It brings to tackle some of the challenges</p>



<p><b>Core Paper 404</b></p>	<p>Ecological Anthropology</p>	<p><b>CO-1:</b> Understand how and why both human culture and the natural environment are dynamic creations of their mutual interaction.</p> <p><b>CO-2:</b> Become familiar with different theoretical models and epistemologies regarding the nature and drivers of human-environmental relationships.</p> <p><b>CO-3:</b> Become aware of the linkages among environment, technology, economics, politics, social organization, ideology, religion and ethics.</p> <p><b>CO-4:</b> See how people's perception, value and use of the natural environment are mediated by cultural filters.</p> <p><b>CO-5:</b> Gain an appreciation for the rationality and contemporary relevance of non-western, unscientific knowledge systems and associated</p>
<p><b>Core Paper 405</b></p>	<p>Dissertation and Viva</p>	<p><b>CO-1:</b> To make the students understand the nature of Anthropological research.</p> <p><b>CO-2:</b> To make students acquainted with various types of data Analysis methods.</p> <p><b>CO-3:</b> To able the students to write report.</p>

**LIST of COs for the PG syllabus in Anthropology-2022-23**

**FIRST SEMESTER**

Course code	Name of the Course	Course Outcomes
<b>Core Paper 101</b>	Fundamentals of Social Anthropology	<p><b>CO-1:</b> Demonstrate the knowledge on different concept and domains of social anthropology.</p> <p><b>CO-2:</b> Analyze the development of different theories in anthropology in brief.</p> <p><b>CO-3:</b> Identity different concepts frequently used in social anthropology.</p> <p><b>CO-4:</b> Articulate broad scopes of anthropology in everyday life of human being.</p> <p><b>CO-5:</b> Discuss the development of anthropology in contemporary contexts.</p>
<b>Core Paper 102</b>	Fundamentals of Physical/Biological Anthropology	<p>process and different theories of evolution.</p> <p><b>CO-2:</b> Discuss the classification of animal kingdom specifically about primate order and similarity of man and living primate.</p> <p><b>CO-3:</b> Explain the human evolution and dispersal of modern human</p> <p><b>CO-4:</b> Analyse the existing variation among different population with the help of population model.</p> <p><b>CO-5:</b> Apply the biological anthropological knowledge in the field of medicine, forensic science, industries, defense services and genetic counseling</p>
<b>Core Paper 103</b>	Fundamentals of Prehistoric Archaeology	<p><b>CO-1:</b> Understand the basic concept of Archaeology</p> <p><b>CO-2:</b> Interpret the technological development of prehistoric man of Europe chronologically</p> <p><b>CO-3:</b> Interpret the technological development of prehistoric man of India chronologically</p> <p><b>CO-4:</b> Analyze technological development of prehistoric man of European and Indian</p> <p><b>CO-5:</b> Reconstruct the recent trends in world prehistory, European prehistory and Indian prehistory</p>
<b>Core Paper 104</b>	Research Methodology	<p>and formulation of research problem.</p> <p><b>CO-2:</b> Discuss an insight about various research design, formulation and testing of hypothesis.</p> <p><b>CO-3:</b> Demonstrate about various types of sampling, sampling error &amp; graphical &amp; tabular presentation of data.</p> <p><b>CO-4:</b> Develop proper understanding different type tools and techniques of data collection.</p>
<b>Practical Paper</b>	Practical A: Physical/Biological Anthropology	<p><b>CO-1:</b> Identify, draw and describe human bones.</p> <p><b>CO-2:</b> Interpret somatometric measurements and somatoscopic observations.</p> <p><b>CO-3:</b> Apply the knowledge in the field of human growth and development, forensic, sports science etc.</p>
<b>Practical Paper</b>	Fundamentals of Prehistoric Archaeology	<p><b>CO-1:</b> Identify, draw and describe prehistoric tools.</p> <p><b>CO-2:</b> Interpret the cognitive development of prehistoric man</p>
<b>SECOND SEMESTER</b>		

<b>Core Paper 201</b>	Social Institutions	<p><b>CO-1:</b> Discuss the key concepts in Social and Cultural Anthropology</p> <p><b>CO-2:</b> Develop an insight about evolutionary perspectives of economic patterns and its organization.</p> <p><b>CO-3:</b> Explain the concepts of power, authority law among the tribal community.</p> <p><b>CO-4:</b> Develops an insight of how and why social categories shape human experiences.</p>
<b>Core Paper 202</b>	Human Genetics	<p>of the latest advances in molecular genomic technologies.</p> <p><b>CO-3:</b> Describe the genetic basis of simple, heterogeneous and complex traits.</p> <p><b>CO-4:</b> Interpret genetic and epigenetic mechanisms of gene expression control and their role in human inherited disease</p>
<b>Core Paper 203</b>	Anthropology of India	<p><b>CO-2:</b> Interpret the theories of social change and the contemporary trends</p> <p><b>CO-3:</b> Analyze the contribution of Early Indian Anthropologists</p>
<b>Core Paper 204</b>	Quantitative Research Methods: Computer Application and Fieldwork Anthropology	<p><b>CO-1:</b> Recognize different research methods used in different domains of anthropology.</p> <p><b>CO-2:</b> Formulate different research tools and methods used in anthropological research.</p> <p><b>CO-3:</b> Generate a justified study design and outline the appropriate data collection methodology.</p> <p><b>CO-4:</b> Evaluate the role of participation, community partnership, and informed consent in applied research.</p> <p><b>CO-5:</b> Analyse ethics of conducting social research.</p>
<b>Core Paper 205</b>	Practical and Project	<p>biochemical test    <b>CO-2:</b> Identify mode of inheritance of a genetic trait, blood group typing</p> <p><b>CO-3:</b> Analyse gene frequency, and dermatoglyphic traits.</p>
<b>DSE 206 A</b>	Anthropology of Childhood and Children	<p><b>CO-1:</b> Understand the situation of children in India</p> <p><b>CO-2:</b> Identify the children under difficult situations</p> <p><b>CO-3:</b> Analyse UN Convention on the Right of the Child</p> <p><b>CO-4:</b> Discuss the strategies to address punishment and abuse of children</p>
<b>DSE 206 B</b>	Human Population Genetics	<p><b>CO-1:</b> Understand Mendelian population.</p> <p><b>CO-2:</b> Explain genetic polymorphism.</p> <p><b>CO-3:</b> Analyse genetic abnormalities in populations and the reasons thereof.</p> <p><b>CO-4:</b> Identify and interpret genetic markers on the basis of traditional anthropological methods.</p>
<b>DSE 206 C</b>	Prehistoric Archaeology	<p><b>CO-1:</b> Understand the regional archaeology.</p> <p><b>CO-2:</b> Identity different prehistoric cultures of Africa.</p> <p><b>CO-3:</b> Demonstrate the prehistoric cultures of Europe.</p> <p><b>CO-4:</b> Understand prehistoric cultures of India.</p>

<b>DSE 206 D</b>	Human Growth, Development and Nutrition	<p><b>C-O1:</b> The students will learn about the concepts and indicators of human growth and development.</p> <p><b>C-O2:</b> Acquire knowledge about different stages of pre-natal and post-natal growth.</p> <p><b>C-O3:</b> Explain and assess body composition, physique and their association with health</p> <p><b>C-O4:</b> Assess growth and nutritional status.</p>
<b>DSE 206 C</b>	Practical	<b>CO-2:</b> Interpret the cognitive development of prehistoric man
<b>THIRD SEMESTER</b>		
<b>Core Paper 301</b>	Demographic Anthropology	<p>in current and past populations using anthropological methods and theories.</p> <p><b>CO-2:</b> Explain basic concepts of demography and statistics.</p> <p><b>CO-3:</b> Analyse population structure</p> <p><b>CO-4:</b> Summarize demographic data and dynamics of population change</p>
<b>Core Paper 302</b>	Anthropology of Museum	<p><b>CO-1:</b> Demonstrate the knowledge on development and scope of anthropological museum.</p> <p><b>CO-2:</b> Analyse the knowledge on collection and exhibition of different museum objects.</p> <p><b>CO-3:</b> Identify different techniques used in museum collections, preservation and exhibition.</p> <p><b>CO-4:</b> Assess knowledge on various experiments used in museum management.</p> <p><b>CO-5:</b> Design the anthropological museum in term of display and exhibitions.</p>
<b>Core Paper 303</b>	Anthropological Theory	<p>anthropology and new theories to understand the cultural changes.</p> <p><b>CO-2:</b> Analyse the importance of culture for the formation and development of personality</p> <p><b>CO-3:</b> Explore the systems of meaning, beliefs, values, world views, forms of feeling, style of thought in term of which particular people construct their existence with new anthropological theory and understanding.</p> <p><b>CO-4:</b> Develop an insight to conceptualize the research and relation with theory.</p>
<b>Core Paper 304</b>	Tribal Anthropology	<p>tribal situation in Odisha and India</p> <p><b>CO-2:</b> Demonstrate the forest-tribe interaction</p> <p><b>CO-3:</b> Summarize the tribal problems</p> <p><b>CO-4:</b> Categorize the different tribal development programmes</p>
<b>Core Paper 305</b>	Practical and Field-based report	<p><b>CO-1:</b> Learn about the use of some statistical software for analysis of demographic data</p> <p><b>CO-2:</b> Analyze various demographic data pertaining to age sex composition as well as various measures of demographic characters like fertility and mortality.</p>

<b>IDSE- 306</b>	Bio-Cultural Dynamics of Indian Population	structure and racial elements of India <b>CO-2:</b> Identify Socio-cultural changes occurring in contemporary Indian society as well during hominid evolution. <b>CO-3:</b> Explore the biological diversity of Indian population and to find out the human adaptation to
<b>IDSE- 306</b>	Anthropology in Practice	anthropologist. <b>CO-2:</b> Identify different domains of application of anthropological knowledge. <b>CO-3:</b> Employ anthropological knowledge in criminal identification, racial detection and diasporic study. CO -4: Contribute in the policy formulation to different area of development. <b>CO-5:</b> Examine different anthropological theories and methods in the field of community development and research.
<b>IDSE- 306</b>	Prehistory in In	<b>CO-1:</b> Understand the Geological Features of India <b>CO-2:</b> Interpret the technological development of prehistoric man of India chronologically <b>CO-3:</b> Analyze technological development of prehistoric man of European and Indian
<b>FOURTH SEMESTER</b>		
<b>Core Paper 401</b>	Applied Anthropology (Biological and Social)	anthropological knowledge. <b>CO-2:</b> Employ anthropological knowledge in solving human problems. <b>CO-3:</b> Select the appropriate methodologies and employ them in an applied policy setting. <b>CO-4:</b> Examine different anthropological theories and methods in the field of community development and research. <b>CO-5:</b> Formulate and analyze action research leading to policy
<b>Core Paper 402</b>	Anthropology of Marginalized Communities	<b>CO-2:</b> Discover the different types of marginalization in India <b>CO-3:</b> Explain the different types of marginalized groups in India <b>CO-4:</b> Summarize the theory and practices of
<b>Core Paper 403</b>	Medical Anthropology	sickness and disease from anthropological perspectives <b>CO-2</b> Explain ethnomedical practices <b>CO-3:</b> Interpret the association of cultural practices with health <b>CO-4:</b> Analyse how anthropology as a discipline has responded to health challenges around the world and how the discipline has influenced international health policy.

<p><b>Core Paper 404</b></p>	<p>Ecological Anthropology</p>	<p><b>CO-1:</b> Understand how and why both human culture and the natural environment are dynamic creations of their mutual interaction.</p> <p><b>CO-2:</b> Become familiar with different theoretical models and epistemologies regarding the nature and drivers of human-environmental relationships.</p> <p><b>CO-3:</b> Become aware of the linkages among environment, technology, economics, politics, social organization, ideology, religion and ethics.</p> <p><b>CO-4:</b> See how people’s perception, value and use of the natural environment are mediated by cultural filters.</p> <p><b>CO-5:</b> Gain an appreciation for the rationality and contemporary relevance of non-western, unscientific knowledge systems and associated practices.</p> <p><b>CO-6:</b> Understand the economic and political underpinnings of resource management behavior. Comprehend how people’s contact and experience with the natural environment are structured by race,</p>
<p><b>Core Paper 405</b></p>	<p>Field work and Dissertation</p>	<p>research.</p> <p><b>CO-2:</b> Develop skill in various types of data collection methods.</p> <p><b>CO-3:</b> Explore different problem areas of human society</p> <p><b>CO-4:</b> Acquire skills in Field work, data analysis and report writing.</p> <p><b>CO-5:</b> Interpret both biological and social issues of</p>

**LIST of COs for the PG syllabus in Anthropology-2021-22**

**FIRST SEMESTER**

<b>Course code</b>	<b>Name of the Course</b>	<b>Course Outcomes</b>
<b>Core Paper 101</b>	Fundamentals of Social Anthropology	<p><b>CO-1:</b> Demonstrate the knowledge on different concept and domains of social anthropology.</p> <p><b>CO-2:</b> Analyze the development of different theories in anthropology in brief.</p> <p><b>CO-3:</b> Identity different concepts frequently used in social anthropology.</p> <p><b>CO-4:</b> Articulate broad scopes of anthropology in everyday life of human being.</p> <p><b>CO-5:</b> Discuss the development of anthropology in contemporary contexts.</p>
<b>Core Paper 102</b>	Fundamentals of Physical/Biological Anthropology	<p>evolutionary process and different theories of evolution.</p> <p><b>CO-2:</b> Discuss the classification of animal kingdom specifically about primate order and similarity of man and living primate.</p> <p><b>CO-3:</b> Explain the human evolution and dispersal of modern human</p> <p><b>CO-4:</b> Analyse the existing variation among different population with the help of population model.</p>
<b>Core Paper 103</b>	Fundamentals of Prehistoric Archaeology	<p>Archaeology</p> <p><b>CO – 2:</b> Interpret the technological development of prehistoric man of Europe chronologically</p> <p><b>CO – 3:</b> Interpret the technological development of prehistoric man of India chronologically</p> <p><b>CO – 4:</b> Analyze technological development of prehistoric man of European and Indian</p> <p><b>CO – 5:</b> Reconstruct the recent trends in world</p>
<b>Core Paper 104</b>	Research Methodology	<p>problem.</p> <p><b>CO-2:</b> Discuss an insight about various research design, formulation and testing of hypothesis.</p> <p><b>CO-3:</b> Demonstrate about various types of sampling, sampling error &amp; graphical &amp; tabular presentation of data.</p> <p><b>CO-4:</b> Develop proper understanding different type tools and techniques of data collection.</p>
<b>Practical Paper</b>	Practical A: Physical/Biological Anthropology	<p><b>CO-2:</b> Interpret somatometric measurements and somatoscopic observations.</p> <p><b>CO-3:</b> Apply the knowledge in the field of human growth and development, forensic, sports science etc.</p>

<b>Practical B</b>	Fundamentals of Prehistoric Archaeology	tools. <b>CO-2:</b> Interpret the cognitive development of
<b>SECOND SEMESTER</b>		
<b>Core Paper 201</b>	Social Institutions	Cultural Anthropology <b>CO-2:</b> Develop an insight about evolutionary perspectives of economic patterns and its organization. <b>CO-3:</b> Explain the concepts of power, authority law among the tribal community. <b>CO-4:</b> Develops an insight of how and why
<b>Core Paper 202</b>	Human Genetics	human genetics. <b>CO-2:</b> Explain the theoretical basis of the latest advances in molecular genomic technologies. <b>CO-3:</b> Describe the genetic basis of simple, heterogeneous and complex traits. <b>CO-4:</b> Interpret genetic and epigenetic mechanisms of gene expression control and
<b>Core Paper 203</b>	Anthropology of India	<b>CO – 2:</b> Interpret the theories of social change and the contemporary trends <b>CO – 3:</b> Analyze the contribution of Early Indian Anthropologists
<b>Core Paper 204</b>	Quantitative Research Methods: Computer Application and Fieldwork Anthropology	used in different domains of anthropology. <b>CO-2:</b> Formulate different research tools and methods used in anthropological research. <b>CO-3:</b> Generate a justified study design and outline the appropriate data collection methodology. <b>CO-4:</b> Evaluate the role of participation, community partnership, and informed consent in applied research. <b>CO-5:</b> Analyse ethics of conducting social
<b>Core Paper 205</b>	Practical and Project	Identify mode of inheritance of a genetic trait, blood group typing <b>CO-3:</b> Analyse gene frequency, and dermatoglyphic traits.
<b>DSE 206 A</b>	Anthropology of Childhood and Children	India <b>CO-2:</b> Identify the children under difficult situations <b>CO-3:</b> Analyse UN Convention on the Right of the Child <b>CO-4:</b> Discuss the strategies to address



<b>DSE 206 B</b>	Human Population Genetics	<b>CO-2:</b> Explain genetic polymorphism. <b>CO-3:</b> Analyse genetic abnormalities in populations and the reasons thereof. <b>CO-4:</b> Identify and interpret genetic markers on the basis of traditional anthropological methods.
<b>DSE 206 C</b>	Prehistoric Archaeology	<b>CO-2:</b> Identity different prehistoric cultures of Africa. <b>CO-3:</b> Demonstrate the prehistoric cultures of Europe. <b>CO-4:</b>
<b>DSE 206 D</b>	Human Growth, Development and Nutrition	concepts and indicators of human growth and development. <b>C-02:</b> Acquire knowledge about different stages of pre-natal and post-natal growth. <b>C-03:</b> Explain and assess body composition, physique and their association with health <b>C-04:</b> Assess growth and nutritional status.
<b>DSE 206 C</b>	Practical	tools. <b>CO-2:</b> Interpret the cognitive development of
<b>THIRD SEMESTER</b>		
<b>Core Paper 301</b>	Demographic Anthropology	phenomena in current and past populations using anthropological methods and theories. <b>CO-2:</b> Explain basic concepts of demography and statistics. <b>CO-3:</b> Analyse population structure <b>CO-4:</b> Summarize demographic data and
<b>Core Paper 302</b>	Anthropology of Museum	museum. <b>CO-2:</b> Analyse the knowledge on collection and exhibition of different museum objects. <b>CO-3:</b> Identify different techniques used in museum collections, preservation and exhibition. <b>CO-4:</b> Assess knowledge on various experiments used in museum management. <b>CO-5:</b> Design the anthropological museum in term of display and exhibitions.
<b>Core Paper 303</b>	Anthropological Theory	of anthropology and new theories to understand the cultural changes. <b>CO-2:</b> Analyse the importance of culture for the formation and development of personality <b>CO-3:</b> Explore the systems of meaning, beliefs, values, world views, forms of feeling, style of thought in term of which particular people construct their existence with new anthropological theory and understanding. <b>CO-4:</b> Develop an insight to conceptualize the

<b>Core Paper 304</b>	Tribal Anthropology	the tribal situation in Odisha and India CO 2: Demonstrate the forest-tribe interaction CO 3: Summarize the tribal problems CO 4: Categorize the different tribal development programmes
<b>Core Paper 305</b>	Practical and Field-based report	software for analysis of demographic data <b>CO-2:</b> Analyze various demographic data pertaining to age sex composition as well as various measures of demographic characters like fertility and mortality.
<b>IDSE- 306 A</b>	Bio-Cultural Dynamics of Indian Population	culture, social structure and racial elements of India <b>CO - 2:</b> Identify Socio-cultural changes occurring in contemporary Indian society as well during hominid evolution. <b>CO - 3:</b> Explore the biological diversity of Indian population and to find out the human
<b>IDSE- 306 B</b>	Anthropology in Practice	practicing anthropologist. <b>CO-2:</b> Identify different domains of application of anthropological knowledge. <b>CO-3:</b> Employ anthropological knowledge in criminal identification, racial detection and diasporic study. CO - 4: Contribute in the policy formulation to different area of development. <b>CO-5:</b> Examine different anthropological theories and methods in the field of
<b>IDSE- 306 C</b>	Prehistory in India	India CO – 2: Interpret the technological development of prehistoric man of India chronologically CO – 3: Analyze technological development of
<b>FOURTH SEMESTER</b>		
<b>Core Paper 401</b>	Applied Anthropology (Biological and Social)	of anthropological knowledge. CO 2: Employ anthropological knowledge in solving human problems. CO 3: Select the appropriate methodologies and employ them in an applied policy setting. CO 4: Examine different anthropological theories and methods in the field of community development and research. CO 5: Formulate and
<b>Core Paper 402</b>	Anthropology of Marginalized Communities	marginalization in India <b>CO-3:</b> Explain the different types of marginalized groups in India <b>CO-4:</b> Summarize the theory and practices of empowerment of marginalized communities

<b>Core Paper 403</b>	Medical Anthropology	<p>health, sickness and disease from anthropological perspectives</p> <p><b>CO-2</b> Explain ethnomedical practices</p> <p><b>CO-3:</b> Interpret the association of cultural practices with health      <b>CO-4:</b> Analyse how anthropology as a discipline has responded to health challenges around the world and how the discipline has influenced</p>
<b>Core Paper 404</b>	Ecological Anthropology	<p><b>CO-1:</b> Understand how and why both human culture and the natural environment are dynamic creations of their mutual interaction.</p> <p><b>CO-2:</b> Become familiar with different theoretical models and epistemologies regarding the nature and drivers of human-environmental relationships.</p> <p><b>CO-3:</b> Become aware of the linkages among environment, technology, economics, politics, social organization, ideology, religion and ethics.</p> <p><b>CO-4:</b> See how people's perception, value and use of the natural environment are mediated by cultural filters.</p> <p><b>CO-5:</b> Gain an appreciation for the rationality and contemporary relevance of non-western, unscientific knowledge systems and associated practices.</p> <p><b>CO-6:</b> Understand the economic and political underpinnings of resource management</p>
<b>Core Paper 405</b>	Field work and Dissertation	<p>Anthropological research.</p> <p><b>CO-2:</b> Develop skill in various types of data collection methods.</p> <p><b>CO-3:</b> Explore different problem areas of human society</p> <p><b>CO-4:</b> Acquire skills in Field work, data analysis</p>

## MCA 2022-2023 CO

Course Cr Name	Corresponding CO's
MCA101	<p>Programming and Data Structure</p> <p>Explain Linear data structure and their Linked Representation.            Perform operation on tree data structure and their operation,            Analyse performance of different Sorting Techniques.            Explain and represent B tree and AVL tree along with their operations.            Use both Linear and Nonlinear Data structure in Real time Application through Coding.</p>
MCA102	<p>Data Communication and Networks</p> <p>Identify the networks with their related concepts.             Memorize the protocols at different layers of the network.             Compare the same concepts with different dimension.             Practice the numerical problems of the related concept.             Explain the signals with their differences.</p>
MCA103	<p>Operating Systems</p> <p>Describe the lifecycle of a process and its attributes with its scheduling algorithms            Analyze the concept of Deadlock            Apply segmentation and paging techniques            Explain the structure and organization of the file systems and I/O systems</p>
MCA104	<p>Mathematical Foundations of Computer Science</p> <p>fundamental mathematical concepts such as sets, relations, and functions.            To apply mathematical foundations, algorithmic principles, and computer science theory to the modelling and design of computer based systems.</p>
MCA201	<p>Object Oriented Programming using JAVA</p> <p>Explain the basic principles of object-oriented programming along with its strength and weakness            Identify Java standard libraries and classes            Apply the object-oriented programming techniques in developing small to medium-sized application programs            Identify Java code utilities in applets, Java packages, and</p>
MCA202	<p>Computer Organization and Architecture</p> <p>sequential circuits.            Identify the addressing modes used in macro instructions.            Describe the memory organization with the virtual memory concept along with the mapping and replacement technique.            Describe the input / output organization technique with its implementation.            Identify the interrupt of the system and characteristics of types</p>

MCA203	Database Management Systems	<p>systems, architecture of database systems, and the role of database users. Explain effectively the features of database management systems and data models.</p> <p>Construct formal queries using relational algebra and relational calculus and structured query languages to perform database operations.</p> <p>Identify the attributes to code a real world entity and create E-R models for designing databases for real-world applications. Examine the database design to check for improvement using normalization.</p>
MCA204	Formal Language and Automata Theory	<p>Design regular expression for regular sets.</p> <p>Design and implement grammar and PDA for context free languages and demonstrate their properties. Construct Turing machines for context sensitive and un-restricted languages.</p> <p>Describe the Chomsky hierarchy of Formal Languages and Grammar.</p> <p>Explain the concept of decidability &amp; recursive enumerability, and classify a given language to the P, NP or NPC complexity classes.</p>
<b>MCA206 A</b>	<b>Data Warehousing and Mining</b>	<p>components.</p> <p>Explain the data warehouse life cycle.</p> <p>Explain the concepts of data mining and data pre-processing.</p> <p>Analyze different classification algorithms and apply the same to real life problems.</p> <p>Apply different clustering algorithms for solving problems in various domains.</p>
<b>MCA206 B</b>	<b>ECommerce</b>	<p>infrastructure.</p> <p>Analyse the mobile-commerce with e-commerce.</p> <p>Explain different payment systems used in e-commerce.</p> <p>Describe the security and security related threats in e-commerce.</p>
<b>MCA206 C</b>	<b>Internet of Things</b>	<p>design.</p> <p>Employ the communication mechanisms between sensors and systems using various protocols and network models.</p> <p>Explain IoT with respect to machine to machine and design IoT systems with data synchronization and resource manipulation. Explore various application protocols.</p> <p>Discuss and describe different security issues and challenges.</p>

<b>MCA206D</b>	<b>Mobile Application Development</b>	<p>Android development environment.</p> <p>Implement adaptive, responsive user interfaces that work across a wide range of devices.</p> <p>Infer long running tasks and background work in Android applications.</p> <p>Demonstrate methods in storing, sharing and retrieving data in Android applications.</p> <p>Describe the steps involved in publishing Android application to share with the world.</p>
<b>MCA206E</b>	<b>Machine Learning</b>	<p>Explain the concepts of supervised machine learning and its functionalities.</p> <p>Perform classification using Bayes classifier, SVM, Decision Tree, and Random Forest.</p> <p>Reduce dimension of feature space using feature selection and feature extraction.</p> <p>Explain the concepts of unsupervised machine learning and its functionalities.</p> <p>Apply supervised and unsupervised machine learning methods to solve real life problems.</p>
<b>MCA301</b>	<b>Software Engineering and OOAD</b>	<p>phases.</p> <p>Prepare requirements analysis report, estimation, planning, scheduling, and perform other software project management activities.</p> <p>Apply object oriented analysis and design to build a software system.</p> <p>Explain project management tasks, design artifacts, testing strategies and implement them appropriately.</p>
<b>MCA302</b>	<b>Web Technology</b>	<p>static web-pages.</p> <p>Describe different styles in web page design. Apply style sheets and java script to prepare elegant web-pages with client side validations.</p> <p>Implement server side business logic into dynamic web pages using PHP.</p> <p>Use PHP to design user interactive forms for data entry with proper validation.</p> <p>Develop aesthetic web applications with database connectivity using PHP.</p>
<b>MCA303</b>	<b>Design and Analysis of Algorithms</b>	<p>measuring algorithm behaviour</p> <p>Apply mathematical principles in analysis of algorithms</p> <p>Analyze and apply the complexities of various algorithms and select the best</p> <p>Know the different strategies that are known to be useful in finding efficient algorithms to solve problems and to be able to apply them</p> <p>Choose appropriate data structures and algorithms and use it to design algorithms for a specific problem</p>

	<b>DSE-II</b>	
<b>MCA304A</b>	<b>Data Science</b>	(Remembering) , applications of data science Explain concepts of algebra in the context of data science and classify data science problems into standard typology (Comprehension) Elucidate supervised algorithms to achieve data insights and correlate results to the solution approach followed (Analysis) Assess the solution approach (Evaluation) Construct use cases to validate approach and identify modifications required (Creating)
<b>MCA304B</b>	<b>Compiler Construction</b>	Identify phases of a compiler, process of designing lexical analyzer, and apply LEX tool. Construct parsing tables and implement parser using BISON tool. Understand use of symbol table and design SDT as semantic analyzer for a language.
<b>MCA304C</b>	<b>Information Security</b>	Identify the basic categories of threats in a networks Able to demonstrate the design and use of hash functions, digital signatures, and key distribution with a wide range of key types Discuss about Web security and Firewalls Discuss about Intrusion Detection system.
<b>MCA304D</b>	<b>Digital Image Processing</b>	image transforms and their properties Develop any image processing application. Understand the rapid advances in Machine vision Learn different techniques employed for the enhancement of images Understand a digital image and different processing
<b>MCA304E</b>	<b>Soft Computing</b>	design automation system for real life problems Apply the concepts of genetic algorithm to solve engineering optimization problems. Train the Artificial Neural Network for decision making in real life environment. Use the concepts of Artificial Neural Network (ANN) to solve real life engineering and societal problems. Apply the concepts of Simulated Annealing, Ant-Colony Optimization, Particle Swarm Optimization, Multi-objective optimization techniques to solve engineering optimization problems.
<b>IDSE Papers</b>		

CSC306A	<b>Network and Internet Technologies</b>	<p>with architecture.</p> <p>Basic Concept of various Network Devices Understand the basic concept of transmission media, LAN topology.</p> <p>Understand Fundamentals of Web Design Develop Web Applications using Web Technologies</p>
CSC306B	<b>Fundamentals of Computer</b>	<p>Describe the basic of computer. Classify the architectural level of the system Explain the memory and its related concepts of the system. Evaluates the complements of the numbers both for positive and negative numbers. Discuss the concepts of Programming languages and its basic classifications.</p>
CSC306C	<b>Introduction to Programming Using Python</b>	<p>Operate the installation of the software and its operation. Memorize the concepts of Python language. Breakdown the problems and Model according to that. Design the programs according the given problems. Compare this language with other language with its benefits.</p>



Name of The Department: Library and Information Science			
Programme: PG			
	Course Code	Course Title	Course Outcome
Semester- I	101	Foundation of Library and Information Science	CO-1 Understand the basic concept and philosophies of the subject. CO-2 To analyze the role of professional associations. CO-3 To apply the concept of data, information and knowledge CO-4 To implement the different models and their application in information science.
	102	Organization of Knowledge – Classification Theory	CO-1.Explain the nature and attributes of universe of knowledge. CO-2 To Understand the functions of different classification schemes. CO-3 Express the meaning, purpose, functions, theories, and canons of Library classification. CO-4 To become aware of the recent trends and developments in Library Classification.
	103	Organization of Knowledge – Cataloguing Theory	CO-1 Recognize and understand the fundamental concepts of Library Cataloguing, various forms of catalogue, catalogue code, laws, canons, principles and its importance in knowledge organisation.  CO-2 Analyse the importance of catalogue codes, filling rules and subject headings in performing cataloguing work in libraries.  CO-3 Apply the knowledge of different standards of bibliographic description in information exchange.  CO-4 Implement knowledge on different forms of catalogue, catalogue code, bibliographic stands and bibliographic record format
	104	Management of Library & Information Centres	CO 1 To remember the concept of modern Library & Information Centres. CO 2 To understand the Library and Information center resources and operations. CO 3.To analyze the skills of Library Professionals required by the Human Resources Managers. CO 4 To apply the financial rules and regulations for managing the Libraries after passing out..
	105	Organization of Knowledge – Classification Practice and Cataloguing Practice	CO-1 Develop practical knowledge to classify and catalogue library resources.  CO-2 Analyse and demonstrate the importance of classification, catalogue main entry, added entries and reference entries in cataloguing library materials.  CO-3Implement the suitable principles of DDC for assigning class numbers to documents representing simple, compound, and complex subjects.  CO-4 Create catalogue for different types of libraries using AACR II (R) and use subject

			headings.
Semester- II	201	Search Strategies and Techniques	CO-1 Understand the fundamental concepts of search strategies, search techniques, vocabulary control tools and its importance in information searching and retrieval. CO-2 Demonstrate the features and functionalities of different online searching tools, federated searching, web searching and automatic indexing CO-3 Analyse different kind of indexing system, vocabulary control tools and learn its application. CO-4 Implement the knowledge of online searching, searching tools, vocabulary control tools and different indexing system.
	202	Information Sources & Services	CO-1.Understand the various types of Information resources. CO-2. Analyze the importance of various E-Resources and their use in the library. CO-3 Apply the various types of information services provided to users. CO-4. Implementation and use the various types of collaborative service platform.
	203	Basics of Information and Communication Technology & Application in Libraries	CO 1 To remember the basic knowledge about computers and how they are used in Libraries.  CO 2 To understand the benefits of Computer Technology, Communication Technology, Library Automation software packages.  CO 3 To apply the difference between traditional Library System and integrated library system by the use of computers.  CO 4. To evaluate the working knowledge of various types of Library Software Packages and how they are used in Libraries.
	204	Personality Development & Communication Skill	CO 1. Effectively communicate through verbal/oral communication and improve the listening skills CO2. Write precise briefs or reports and technical documents, Actively participate in group discussion / meetings / interviews and prepare & deliver presentations CO3. Become more effective individual through goal/target setting, self-motivation and practicing creative thinking. CO 4. Function effectively in multi-disciplinary and heterogeneous teams through the knowledge of team work, Inter-personal relationships and conflict management skills.
	205	ICT and Library Management Software-Practice	CO-1 Understand the fundamental concepts of computer application software, programming language, Database management system Ms-office and library automation software. CO-2 Demonstrate the features and functionalities of MS-Word, MS-Excel, MS-PowerPoint, Ms-Access and different library automation software. CO-3 Analyse different kind of library automation software and hands-on practice in learning to use koha, e-Granthalaya and Newgenlib software.

			CO-4 Implement the knowledge of Ms-office, programming languages, Database management system and library automation software.
	206 (A)	Preservation & Conservation of Library Materials	CO-1 Understand the fundamental concepts of preservation, conservation, causes of hazards, control measures, digital preservation and binding of library materials.  CO-2 Identify the physical characteristics of library materials and causes of their deterioration  CO-3 Analyze features of different types of hazards and control measures to library materials  CO-4 Implement the different types of preventive measures, digital preservation techniques and binding for safeguard different types of library materials
	206 (B)	Community Information Service	CO1 To remember the basic concepts of Community information in Libraries. CO2 To create professionals as per the requirement of various organizations. CO3 To analyze the experience, knowledge and challenges of various Professionals in their organization. CO4 To evaluate the challenges in community information.
	206 (C)	Information Resource Development	CO-1. Understand the basic concept of Documentary and Non Documentary sources of information. CO-2. Analyze the importance of various book selection tools viz Drury's Principle, Dewey's Principle and Rangathan's principles. CO-3 Section of the various types of tools for providing services to users. CO-4. Implementation and use the various types of tools and documents in providing the information to patrons..
Semester- III	301	Information Retrieval	CO-1 Understand the fundamental concepts of ISAR Systems, Artificial intelligence, information searching, information evaluation, information retrieval model indexing language, indexing system, vocabulary control tools and its functions.  CO-2 Analyse the features and functions of different indexing systems, indexing techniques and learn the parameters of information evaluation.  CO-3 Distinguish controlled vocabulary from natural language and its applicability in libraries for subject indexing.  CO-4 Apply the knowledge of ISAR Systems, retrieval performance, indexing language, systems and techniques in information searching
	302	Digital Library and Content Management	CO-1 Remember the basic knowledge of content management and digitization

		CO-2 Analyze the need and importance of digital library and virtual library. CO-3 Design the content management and content developing strategies. CO-4 Implementation of content developing strategies in digitization process
303	Academic Library System	CO1 To remember the basic knowledge and functions of Academic Libraries. CO2 To understand Resource Development in the field of Library & Information Science. CO3.To apply for staff development courses through continuing education. CO 4 To analyze how the application of networking has changed the services and all the activities of the Libraries
304	Web Technologies	CO-1 Describe the concepts of World Wide Web, and the requirements of effective web design. CO-2 To analyse a web page and identify its elements and attributes. CO-3 Explain client and server-side scripting and their applicability. CO-4 To become aware with the use of current trends following web technologies.
305	Internship and Content Management Software Practice	<b>Practical Paper</b>
306 (A)	Intellectual Property Rights & Copyright	CO-1 Remember and understand the fundamental concepts of intellectual property right, copyright, Patent, licensing of copyright, copyright violation and infringement Creative Commons licence and Plagiarism. CO-2 Analyse the different IPR Acts, conventions and protection of inventions and its application in electronic environment. CO-3 Apply the principles of Indian copyright Act, Creative Commons licence and Plagiarism. CO-4 Evaluate IPR, Copyright and Patent laws of different countries and learn to avoid Violation and Infringement
306 (B)	Internet & Its Applications	CO1 To remember the basic concepts of internet in Libraries. CO2 To create professionals as per the requirement of latest technologies of internet. CO3 To analyze the experience, knowledge and challenges of various Professionals in internet applications. CO4 To evaluate the challenges and trends in internet.
306 (C)	Electronic Publishing (E-Publishing)	CO1 : Understand the kinds of electronic publishing. CO2 : Familiarize the components of electronic publishing. CO3 : Learn the methods of E-Publishing Technology. CO4 : Attain the concept and various types and models of e-publishing.
306 (D)	Open Access & Scholarly Communications	CO-1 Remember the basic concept of open access and scholarly communication.  CO-2 Analyze the need and importance of open access and scholarly communication. CO-3 Design the integrated policy to avoid plagiarism and detect Predatory Journals. CO-4 Implementation of the open access policy, development of various kinds of databases like Bibliographic databases, Citation Databases, Full-text Databases, E-Journal Gateways and Online Directories for disseminating the information to the users.

Semester- IV	401	Research Methodology	CO-1 Recognize and understand the fundamental concepts of research, its types, research process, methods, designs, report writing and ethics. CO-2 Analyse the different types of research methods, data collection tools, data presentation style, bibliometrics laws and learn to use different statistical tools CO-3 Design research proposal, conduct literature review, identify variables and apply correct methodology for conducting research which is crucial for the success of any research project CO-4 Implement the knowledge of different types of research, literature review, research process, basic bibliometrics laws, data analytics techniques and research report writing
	402	Information System and Networks	CO-1. Understand the basic concept of different information systems and networks. CO-2. Analyze the work and activities of the National and Global Information system. CO-3 Design the suitable networks and their use in information exchange. CO-4 Implementation of network services for information exchange in education and research.
	403	Knowledge Management	CO1. To know about the basic concept of different information systems and networks CO2. To know about the National and Global Information system CO3 To familiar with functioning and their use for information exchange CO 4 To be familiar with the use of Educational and Research network services available in India.
	404	Information Literacy	CO-1 Determine the nature and extent of information needed. CO-2 Access information effectively and efficiently. CO-3 Evaluate information and resources for their academic work. CO-4 Develop, implement, and evaluate progress toward achieving personal, academic, career, and lifelong learning goals.
	405	Dissertation/Project and Viva-voce	<b>Practical Paper</b>

## List of COs of UG Syllabus of School of IST

Course Code	Course Name	Course Outcomes (COs)	
CC-I	Fundamentals of Computing and Programming with C	<b>CO1</b>	Able to know the different parts of a computer and their uses. They can also know the use of software and the different functionalities of a modern computer.
		<b>CO2</b>	Able to plan and represent the solution of a problem using algorithms and flowcharts.
		<b>CO3</b>	Able to write codes in High Level Programming Language using the syntax of C.
		<b>CO4</b>	Develop effective and efficient programming solution for complex problems using different features of C language.
CC-II	Electronics Circuits	<b>CO1</b>	Students will know the basic concept of signals and electronic circuits.
		<b>CO2</b>	Understand and classify the different types of diodes and their characteristics.
		<b>CO3</b>	Effectively work to explore new applications.
		<b>CO4</b>	Design and develop the DC bias circuitry of BJT, FET, diode application circuits, amplifier circuits and oscillators employing BJT, FET devices.
GE-I	Physics	<b>CO1</b>	Students will be able to recognize vectors and electrostatic.
		<b>CO2</b>	Students will be able to explain magnetism and classify it's application
		<b>CO3</b>	Students will be able to implement transient response in some reallife application and analyze their behavior.
		<b>CO4</b>	Students can apply their knowledge and skills to develop basic RC, RL and RLC circuits.
CCIII	Data Structure (DS)	<b>CO1</b>	Learn the basics of data structure and its types.
		<b>CO2</b>	Identify the strength and weakness of different data structures.
		<b>CO3</b>	Develop appropriate algorithm associated with different data structures to solve given problem.
		<b>CO4</b>	Solve real life complex problems associated with data structure

CCIV	Computer System Architecture	<b>CO1</b>	Know about the basic logical structure of modern digital computers.
		<b>CO2</b>	Classify the different functional units and understand the principles of arithmetic and logic operations.
		<b>CO3</b>	Analyze the complex functionalities of different components of CPU and memory organization in digital computers. [UNIT
		<b>CO4</b>	Design the architecture of a personal computer and analyze it's performance with different models of other existing architectures.
GE-II	Mathematics	<b>CO1</b>	acquainted with quantitative information.
		<b>CO2</b>	Makesense of problems and identify the appropriate strategies to find solutions.
		<b>CO3</b>	Solve mathematical, statistical and quantitative problems with available information.
		<b>CO4</b>	critique and evaluate quantitative arguments that utilize numerical, statistical and quantitative information.
CC-V	Operating System (OS)	<b>CO1</b>	Remembers the basic functions and services of an Operating System.
		<b>CO2</b>	: Understand the different process scheduling algorithm and synchronization techniques.
		<b>CO3</b>	Interpret different memory management techniques like paging, segmentation and demand paging.
		<b>CO4</b>	Analys the different complex functionalities and behavior of processes and accordingly take appropriate decision to solve complex problems associated with operating system.
CC-VI	Digital Electronics	<b>CO1</b>	The students will recognize the use of number system, logic functions, different logic gates and different minimization techniques.
		<b>CO2</b>	Classify the different combinational and sequential circuits.
		<b>CO3</b>	Break the composite concept of storage blocks
		<b>CO4</b>	Apply the knowledge in VHDL programming
CC-VII	Discrete Mathematics (DM)	<b>CO1</b>	Remember the properties of relations, functions and sequences to complete operations.
		<b>CO2</b>	Learn the process of verifying the correctness of an argument using propositional logic.
		<b>CO3</b>	Apply counting techniques and combinatory to determine discrete probability.

		<b>CO4</b>	Solve real life problems associated with computer science using appropriate recurrence relation and model relationships using graph theories
GE-III	E-Commerce & E-BUSINESS	<b>CO1</b>	Know the limitation of traditional businesses, the advantages of the E-Commerce/E-Business, and the concept of electronic data interchange.
		<b>CO2</b>	Understand the process of E-transaction with different means of e-payment systems and aware about the potential risks associated with E-Payment systems.
		<b>CO3</b>	Cost estimation to build an E-commerce website, domain name selection, registration and website hosting.
		<b>CO4</b>	Process the financial transactions of E-commerce process and perform online-banking.
SEC -II	Cloud Computing	<b>CO1</b>	Learn the fundamental principles of distributed computing.
		<b>CO2</b>	Understand how the distributed computing environments can be built from lower service.
		<b>CO3</b>	Analyze the performance of cloud computing and identify the security threats.
		<b>CO4</b>	Take the responsibility of maintaining the cloud eco system of an organization.
CC-VIII	Microprocessor & Microcontroller	<b>CO1</b>	Learn the importance of microprocessors and microcontrollers.
		<b>CO2</b>	Explain the microprocessor's architectures and its features.
		<b>CO3</b>	Can apply 8051 Microcontroller architectures and its features for different configuration. [UNIT
CC-IX	Analog & Digital Communication	<b>CO1</b>	Know about the basic elements of a communication system.
		<b>CO2</b>	Explain and classify the different types of signals and their representations.
		<b>CO3</b>	Analyze various modulation and demodulation techniques and can take decision to implement appropriate techniques for different communications
		<b>CO4</b>	Set the height of sending and receiving antennas



			for communication purpose
CC-X	OOP with Core JAVA	<b>CO1</b>	Learn the basic principles of object-oriented programming.
		<b>CO2</b>	To understand the concept of objects and their relations with the members of a class.
		<b>CO3</b>	To instantiate objects and deploy java solutions with ease and confidence. [UNIT-III]
		<b>CO4</b>	Will be able to develop and deploy portable applications that run on servers and desktop systems spanning most operating systems. [UNIT
GE-IV	Foundations of Management & Organizational Behavior	<b>CO1</b>	Remember the importance and role of management in the organizations. [UNIT-I]
		<b>CO2</b>	Identify the different aspects related to decision making and controlling process.
		<b>CO3</b>	Analyze the different theories related to individual's behavior in the organization. [UNIT-III]
		<b>CO4</b>	Take appropriate decision based on the group behavioral influence in the organization.
CC-XI	Database Management System	<b>CO1</b>	Know the concept of computerized database, it's benefits and features.
		<b>CO2</b>	Define different entities, entity types, attributes and their relations with each other and formulate Queries using SQL .
		<b>CO3</b>	Apply different normal forms to design efficient relational databases.
		<b>CO4</b>	Implement indexing and structure mechanism for effective storage. [UNIT
CC-XII	Optical Fiber Communication	<b>CO1</b>	Learn the differences of Traditional and Modern communication.
		<b>CO2</b>	Explain the propagation of signals in optical fiber.
		<b>CO3</b>	Break the composite concept of wireless communication.
		<b>CO4</b>	Apply the knowledge to implement different communication protocols for communication.
DSE-I	Software Engineering (SE)	<b>CO1</b>	Know the end-user's requirements and the different software development models.
		<b>CO2</b>	Identify the appropriate SDLC model and software architectures to develop the software for a system.
		<b>CO3</b>	Do feasibility study and requirement analysis to

			develop the software for a system and to compute the functional Points.
		<b>CO4</b>	Develop efficient software and develop a simple testing report.
DSE-II	ELECTIVE-1 Internet of Things (IoT)	<b>CO1</b>	See what the IoT can enable.
		<b>CO2</b>	Understand IoT Architecture.
		<b>CO3</b>	Examine IoT network protocols.
		<b>CO4</b>	Use the latest innovation to bridge multiple standards and discover IoT use cases.
	ELECTIVE-2 Computer Graphics (CG)	<b>CO1</b>	To know about the applications areas of computer graphics and about the graphics devices and softwares.
		<b>CO2</b>	Classify the different architectures of computer graphics and hardware technologies associated with CG.
		<b>CO3</b>	Apply different principles and techniques of computer graphics for 2D and 3D transformations and projections.
		<b>CO4</b>	Apply computer graphics techniques in the development of computer games, information visualization and business applications
	ELECTIVE-3 Python	<b>CO1</b>	Know the use of python and it's popular features.
		<b>CO2</b>	Explain the different built in functions, modules and containers. [UNIT
		<b>CO3</b>	Perform different operations with strings and to write codes using the different decision control instructions.
		<b>CO4</b>	Develop software solution using repetition control instruction and lists.
	CC-XIII	Digital Signal Processing	<b>CO1</b>
<b>CO2</b>			Explain the mathematical tools like Z transform and Fourier transform as their uses.
<b>CO3</b>			Break the composite concept of digital filters

		<b>CO4</b>	Apply the knowledge to develop different filter realization.
CC-XIV	Data Communication & Computer Networks	<b>CO1</b>	Learn the basics of data communication, networking, internet and their importance.
		<b>CO2</b>	Calcify the different modulation and demodulation techniques.
		<b>CO3</b>	Establish a network of computers using different switching techniques.
		<b>CO4</b>	Detect errors and correct/recover in a computer network using different datalink layerprotocols.
DSE-III	ELECTIVE-1 Design & Analysis of Algorithm	<b>CO1</b>	Get idea on algorithmic design paradigms and analysis .
		<b>CO2</b>	Classify the different categories of algorithms.
		<b>CO3</b>	Break the complex problems into small modules to be solved easily and to decide the appropriate algorithm to solve specific problems. [UNIT- III]
		<b>CO4</b>	Performance analysis of algorithms using various designing techniques and methods.
	ELECTIVE-2 Embedded Systems Design	<b>CO1</b>	Remember the architecture and interconnection of embedded systems.
		<b>CO2</b>	Explain importance of microcontroller, different type of embedded system based on the configuration.
		<b>CO3</b>	Break the composite concept of the interfacing to real world devices.
		<b>CO4</b>	Apply the knowledge to develop microcontroller based embedded systems.
	ELECTIVE-3 Artificial Intelligence & Machine Learning (AI&ML)	<b>CO1</b>	Remember the fundamental concept and use of Artificial Intelligence (AI) .
		<b>CO2</b>	Give Examples of expert systems.
		<b>CO3</b>	Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation and learning
		<b>CO4</b>	Acquire the proficiency in applying scientific method to models of machine learning.
DSE-IV	Internship/ Project		

# Computer Science

<b>Course Code and</b>	<b>COs</b>
CSC101 Discrete Mathematical Structures	CO1 Able to use logical notation to define and reason about fundamental mathematical concepts such as sets, relations, and functions. CO2 To apply mathematical foundations, algorithmic principles, and computer science theory to the modelling and design of computer based systems. CO3 Able to construct simple mathematical proofs and possess the ability to verify them. CO4 Model problems in Computer Science using graphs and trees methods.
CSC102 Computer Architecture	CO1 Able to know the architecture behind the system, how the systems are working. CO2 Analyse the problems , and solve the questions by applying the mathematical formulas. CO3 Able to solve the process of pipeline programs and figure out how they are working.
CSC103 Data Communication & Networks	CO1 Understand the properties of digital and analog signals, functionality of different layers in OSI and TCP/IP network models and the factors which impact performance of data communication systems CO2 Understand the analog and digital transmission, properties of communication medias, and the concept of multiplexing of data on common communication channel. CO3 Understand different switching circuits, link layer addressing and exemplify the different coding methods and error detection and correction methods for digital data. CO4 Identify and describe the system functions in the <del>lowest protocol layer and further describe how the layers</del>
CSC104 Advanced Data Structures	CO1 Analyse performance of algorithms and apply basic data structures stack and queue to solve real world problems. CO2 Employ linked list to implement different ADTs and apply it in solving some problems. CO3 Examine various sorting algorithms and outline different hashing techniques. CO4 Describe hierarchical data structures and use it in real
CSC201 Object Oriented Programming using JAVA	CO1 Explain the basic principles of object-oriented programming along with its strength and weakness CO2 Identify Java standard libraries and classes. CO3 Apply the object-oriented programming techniques in developing small to medium sized application programs and use it in real life applications. CO4 Identify Java code utilities in applets. Java

CSC202 Mobile Computing	CO1 Explain the basic of Mobile Computing. CO2 Infer the fundamentals of wireless communications. CO3 Analyze security, energy efficiency, mobility, scalability, and their unique characteristics in wireless networks. CO4 <del>Demonstrate basic skills for cellular networks design.</del> CO5
CSC203 Advanced Operating Systems	CO1 Explain the different types of Operating systems. CO2 Describe the lifecycle of a process and its attributes with its scheduling algorithms. CO3 Analyze the concept of Deadlock. CO4 Apply segmentation and paging techniques.
CSC204 Theory of Computation	CO1 Develop and implement mathematical models with DFA, NFA for regular languages. CO2 Design regular expression for regular sets. CO3 Design and implement grammar and PDA for context free languages and demonstrate their properties. Construct Turing machines for <del>context sensitive and un-restricted languages.</del> CO4 Describe
CSC206A Data Warehousing and Mining	CO1 Describe the requirement of a data warehouse and its components. CO2 Explain the data warehouse life cycle. CO3 Explain the concepts of data mining and data pre-processing. CO4 Analyze different classification algorithms and apply the same to real life problems. CO5 Apply
CSC206B Wireless Sensor Networks	CO1 Define the basic concepts of wireless sensor networks, sensing, and challenges. CO2 Explain various deployment structures of wireless sensor networks. CO3 Describe and explore localization, radio standards and wireless characteristics. CO4 Discuss the communication protocols <del>adopted in wireless sensor networks and distinguish energy</del>
CSC206 C Internet of Things	CO1 Describe basic concepts of IoT, its architecture and system design. CO2 Employ the communication mechanisms between sensors and systems using various protocols and network models. CO3 Explain IoT with respect to machine to machine and design IoT systems with data synchronization and resource manipulation. Explore
CSC206D Microprocessor and Microcontroller	CO1 Analyze role of microprocessor and microcontroller in computer systems. CO2 Distinguish between maskable and non-maskable interrupt, and role of DMA in microprocessor. CO3 Analyze working of 8086 and its architecture. CO4 <del>Analyze the data transfer information through serial &amp;</del>
CSC301 Compiler Construction	CO1 Identify phases of a compiler, process of designing lexical analyzer, and apply LEX tool. CO2 Construct parsing tables and implement parser using BISON tool. CO3 Understand use of symbol table and design SDT as semantic analyzer for a language. CO4 Generate intermediate code <del>using lexical analyzer, parser and semantic analyzer.</del> CO5

CSC302 Database Management Systems	CO1 Define the basics of databases, database management systems, architecture of database systems, and the role of database users. Explain effectively the features of database management systems and data models. CO2 Construct formal queries using relational algebra and relational calculus and structured query languages to perform database operations. CO3 Identify the attributes to code a real world entity and create E-R models for designing databases for real-world applications. Examine the database design to check for improvement using normalization. CO4 Describe
CSC303 Design and Analysis of Algorithms	CO1 Describe asymptotic notation, its properties and use it in measuring algorithm behaviour CO2 Apply mathematical principles in analysis of algorithms to solve real world problems CO3 Analyze and apply the complexities of various algorithms and select the best one CO4 Know the different strategies that are known to be useful in finding efficient algorithms to solve problems and to be able to
CSC304 Web Technology	CO1 Identify basic HTML elements, XML elements and develop static webpages. CO2 Describe different styles in web page design. Apply style sheets and java script to prepare elegant webpages with client side validations. CO3 Implement server side business logic into dynamic web pages using PHP. CO4 Use PHP to design user interactive
CSC306A Network and Internet Technologies	CO1 Understand the fundamental concepts of Computer networks with architecture. CO2 Basic Concept of various Network Devices CO3 Understand the basic concept of transmission media, LAN topology. CO4 Understand
CSC306B Fundamentals of Computer	CO1 Describe the basic of computer. CO2 Classify the architectural level of the system CO3 Explain the memory and its related concepts of the system. CO4 Evaluates the complements of the numbers both for positive and negative
CSC306C Introduction to Programming Using Python	CO1 Operate the installation of the software and its operation. CO2 Memorize the programming elements of the Python language. CO3 Break down the real world problems and model them using the data structures available in Python. CO4 Design the programs using conditional and

CSC306D Artificial Intelligence	CO1 Explore agents, environments, and search goal state using uninformed techniques in a state space. CO2 Interpret logic, inference rules for decision making, and represent knowledge using semantic nets & frames. CO3 Apply planning and reasoning to handle uncertainty in real life problems. CO4 Design expert systems. to solve complex
CSC401 Machine Learning	CO1 Explain the concepts of supervised machine learning and its functionalities. CO2 Perform classification using Bayes classifier, SVM, Decision Tree, and Random Forest. CO3 Reduce dimension of feature space using feature selection and feature extraction. CO4 Explain the concepts
CSC402 Software Engineering and OOAD	CO1 Describe fundamentals of software engineering and SDLC phases. CO2 Prepare requirements analysis report, estimation, planning, scheduling, and perform other software project management activities. CO3 Apply object oriented analysis and design to build a software system. CO4 Explain project management tasks, design artifacts,
CSC403 Information Security	CO1 Analyze the working of various Symmetric and Asymmetric key cryptographic algorithms for information security purpose CO2 Identify the basic categories of threats in a networks CO3 Able to demonstrate the design and use of hash functions, digital signatures, and key distribution with a wide range of key types CO4 Discuss about Web security and Firewalls
CSC404 Cloud Computing	CO1 Ability to understand various service delivery models of a cloud computing architecture CO2 Describe the concepts of service-oriented architecture CO3 Analyze the different workflows of service-oriented architecture CO4 Ability to understand the security challenges and address the



Course Code and Name	COs
CSC101 Advanced Operating Systems	Operating systems. CO2 Describe the lifecycle of a process and its attributes with its scheduling algorithms. CO3 Analyze the concept of Deadlock. CO4 Apply segmentation and paging techniques. CO5
CSC102 Computer Architecture	computer along with the associate micro operations and reference instructions . CO2 Explain the processing unit with the micro-programmed control working. CO3 Describe the memory organization with the virtual memory concept along with the mapping and replacement technique. CO4 State the pipeline concept with the relative
CSC103 Data Communication and Networks	CO1 Understand the properties of digital and analog signals, functionality of different layers in OSI and TCP/IP network models and the factors which impact performance of data communication systems CO2 Understand the analog and digital transmission, properties of communication medias, and the concept of multiplexing of data on common communication channel. CO3 Understand different switching circuits, link layer addressing and exemplify the different coding methods and
CSC104 Advanced Data Structures	and apply basic data structures stack and queue to solve real world problems. CO2 Employ linked list to implement different ADTs and apply it in solving some problems. CO3 Examine various sorting algorithms and outline different hashing techniques. CO4 Describe hierarchical data

CSC201 Object Oriented Programming	oriented programming along with its strength and weakness CO2 Identify Java standard libraries and classes. CO3 Apply the object-oriented programming techniques in developing small to medium sized application programs and use it in real life applications. CO4 Identify Java code
CSC202 Mobile Computing	Computing. CO2 Infer the fundamentals of wireless communications. CO3 Analyze security, energy efficiency, mobility, scalability, and their unique characteristics in wireless networks. CO4 Demonstrate basic skills for cellular networks design.
CSC203 Discrete Mathematical Structures	and reason about fundamental mathematical concepts such as sets, relations, and functions. CO2 To apply mathematical foundations, algorithmic principles, and computer science theory to the modelling and design of computer based systems. CO3 Able to construct simple mathematical proofs and possess the ability to verify them. CO4 Model problems in Computer
CSC204 Theory of Computation	models with DFA, NFA for regular languages. CO2 Design regular expression for regular sets. CO3 Design and implement grammar and PDA for context free languages and demonstrate their properties. Construct Turing machines for context sensitive and un-restricted languages. CO4 Describe the Chomsky hierarchy of Formal
CSC206 A Data Warehousing and Mining	warehouse and its components. CO2 Explain the data warehouse life cycle. CO3 Explain the concepts of data mining and data pre-processing. CO4 Analyze different classification algorithms and apply the same to real life problems. CO5 Apply different

CSC206 B Wireless Sensor Networks	sensor networks, sensing, and challenges. CO2 Explain various deployment structures of wireless sensor networks. CO3 Describe and explore localization, radio standards and wireless characteristics. CO4 Discuss the communication protocols adopted in wireless sensor networks and distinguish
CSC206 C Internet of Things	architecture and system design. CO2 Employ the communication mechanisms between sensors and systems using various protocols and network models. CO3 Explain IoT with respect to machine to machine and design IoT systems with data synchronization and resource manipulation. Explore various application protocols. CO4
CSC206D Microprocesso r and Microcontrolle r	microcontroller in computer systems. CO2 Distinguish between maskable and non-maskable interrupt, and role of DMA in microprocessor. CO3 Analyze working of 8086 and its architecture. CO4 Analyze the data transfer information through serial &
CSC301 Compiler Construction	of designing lexical analyzer, and apply LEX tool. CO2 Construct parsing tables and implement parser using BISON tool. CO3 Understand use of symbol table and design SDT as semantic analyzer for a language. CO4 Generate intermediate code using lexical analyzer, parser and semantic

<p>CSC302 Database Management Systems</p>	<p>CO1 Define the basics of databases, database management systems, architecture of database systems, and the role of database users. Explain effectively the features of database management systems and data models. CO2 Construct formal queries using relational algebra and relational calculus and structured query languages to perform database operations. CO3 Identify the attributes to code a real world entity and create E-R models for designing databases for real-world applications. Examine the database design</p>
<p>CSC303 Design and Analysis of Algorithms</p>	<p>properties and use it in measuring algorithm behaviour CO2 Apply mathematical principles in analysis of algorithms to solve real world problems CO3 Analyze and apply the complexities of various algorithms and select the best one CO4 Know the different strategies that are known to be useful in finding efficient</p>
<p>CSC304A Data Science</p>	<p>key technologies in data science and business analytics: data mining, machine learning, visualization techniques, predictive modelling, and statistics. CO2 Practice problem analysis and decision-making. CO3 Gain practical, hands-on experience with statistical programming languages and tools through coursework and applied research experiences. CO4●</p>
<p>CSC304B Web Technology</p>	<p>elements and develop static webpages. CO2 Describe different styles in web page design. Apply style sheets and java script to prepare elegant webpages with client side validations. CO3 Implement server side business logic into dynamic web pages using PHP. CO4 Use PHP to design user</p>

CSC304C Information Security	Symmetric and Asymmetric key cryptographic algorithms for information security purpose CO2 Identify the basic categories of threats in a networks CO3 Able to demonstrate the design and use of hash functions, digital signatures, and key
CSC304D Digital Image Processing	transforms and their properties CO2 Develop any image processing application. CO3 Understand the rapid advances in Machine vision CO4 Learn different techniques employed for the enhancement of images CO5 Understand a digital image
CSC306A Network and Internet Technologies	of Computer networks with architecture. CO2 Basic Concept of various Network Devices CO3 Understand the basic concept of transmission media, LAN topology. CO4 Understand Fundamentals of Web Design
CSC306B Fundamentals of Computer	Classify the architectural level of the system CO3 Explain the memory and its related concepts of the system. CO4 Evaluates the complements of the numbers both for positive and negative numbers. CO5
CSC306C Introduction to Programming Using Python	and its operation. CO2 Memorize the programming elements of the Python language. CO3 Break down the real world problems and model them using the data structures available in Python. CO4 Design the programs using conditional and loop structures used in Python. CO5 Explore the
CSC306D Artificial Intelligence	search goal state using uninformed techniques in a state space. CO2 Interpret logic, inference rules for decision making, and represent knowledge using semantic nets & frames. CO3 Apply planning and reasoning to handle uncertainty in real life problems. CO4 Design expert systems. to











# School of Commerce

Code and Name	COs
CORE – 1 FINANCIAL ACCOUNTING	accounting. Explain various concepts and conventions. CO2 Explain the different concepts of AS, Ind AS, IFRS, Business income and depreciation. CO3 Practical solutions for the preparation of Final accounts and Accounts for Partnership firms. CO4 Differentiate between Hire Purchase and Installment
CORE – 2 BUSINESS LAW	Contract Act, of 1872. Understanding different provisions of general and special contracts. CO2 Explain the process of sale, transfer of ownership, and unpaid seller. Explain various rights and duties of consumers and provisions of the Consumer Protection Act. CO3 Practical aspects of modus operandi of Partnership firms and LLP in India. CO4 Differentiate LLP, Partnership and company. Explain various
Core-3 COST ACCOUNTING	Methods and Techniques of Costing. CO2 Define different terms related to Cost Accounting, Methods and Techniques of Costing. CO3 Practical aspects of Labour wage and Bonus payment system. Allocation, apportionment and re-apportionment of Overheads. CO4 Computation of total cost and profit using various methods of costing. CO5 To assess & evaluate the
Core-4 CORPORATE LAWS	Explain the various types of companies and the formation of the company. AOA and MOA of the company. CO3 Practical aspects of issues of share and debenture. CO4 Procedure and provisions relating to corporate meetings. CO5 To assess & evaluate the

Core-5 CORPORATE ACCOUNTING	CO1 Define the Final Accounts of Companies and list out the various provisions of Companies act in detail including corporate sectors & others. CO2 Explain the different concepts of reconstruction of capital structure in the companies such as Amalgamation, Absorption and Reconstruction & its accounting treatment. CO3 Practical solutions for preparation of consolidated balance sheet of holding company & preparation of Liquidator's final statement of accounts at the time of winding up of the companies. CO4 Differentiate between the preparation of books of account in Banking companies & Insurance companies as per their provisions. Analyze the guidelines of RBI for the compilation of financial statements, and preparation of
Core-6 INCOME TAX LAW AND PRACTICE	Act, of 1961 including residential status, the incidence of income and agricultural income. CO2 Explain the different concepts and processes of calculation of taxable income from salary and house property. CO3 Practical solutions calculation of taxable income under different heads like PGBP, capital gain and other sources. CO4 Differentiate between various deductions and provide direction for using them in the right
Core-7 MANAGEMENT PRINCIPLES &APPLI CATIONS	CO1 Define various concepts related to management. CO2 Explain the different concepts of reconstruction of capital structure in the companies such as Amalgamation, Absorption and Reconstruction & its accounting treatment. CO3 Practical solutions for preparation of consolidated balance sheet of holding company & preparation of Liquidator's final statement of accounts at the time of winding up of the companies. CO4 Differentiate between the preparation of books of account in Banking companies & Insurance companies as per their provisions. Analyze the guidelines of RBI for the compilation of financial statements, and preparation of Final accounts of Banking Companies
Core- 8 GST & INDIRECT TAX	describe the implementation of GST in India. CO2 Explain the procedure of levy, collection, and exemption of tax and various acts governing them. CO3 Practical solutions for registration and return and assessment.CO4 Differentiate between various deductions and provide direction for using them in the

FUNDAMENTALS OF DATA MANAGEMENT	prepare a presentation. CO2 Explain the various functions of spreadsheets. CO3 Practical solutions for problems related to database management. CO4 Designing website. CO5 To assess & evaluate the
Core- 10 MANAGEMENT ACCOUNTING	various concepts and conventions. CO2 Explain the different ratio and their applicability. It also explains the cash flow statement. CO3 Practical solutions to problems related to absorption and marginal costing. CO4 Differentiate between various types of costing. Creating various budgets. CO5 To assess & evaluate the
Core- 11 COMPUTERIZED ACCOUNTING & E-FILING OF TAX RETURNS	generic software. Learning to create company and ledger accounts, voucher entries, payroll accounting, & data management in accounting software packages including TDS and GST. CO2 Understanding DBMS Package. Practical aspects of using DBMS Package for designing computerized accounting system. CO3 Practical aspects of designing Payroll System, and report generation using DBMS Package. CO4 Practical
Core-12 FUNDAMENTALS OF FINANCIAL MANAGEMENT	CO1 Have a deeper understanding of the objectives of financial management and enable the students to access the proper sources of finance for the business. CO2 Enable the students to evaluate the finance plans based on the cost of capital and to acquaint a deeper knowledge of leverages to arrive at a better finance decision. CO3 Equip the students to construct an optimal capital structure through the conceptual knowledge of capital structure theories and enable them to make better dividend decisions. CO4 Impart a deeper understanding of working capital management to avail adequate working capital for business functions. CO5
AUDITING AND CORPORATE	procedure CO2 Explain the audit procedure of Limited companies and special areas of audit. CO3 Practical aspects of corporate governance. CO4 Applying the provision of CSR in the Companies Act, 2013. CO5
Core- 14 BUSINESS MATHEMATICS	and their practical application in Business problems. CO2 Understanding the basic terms of mathematical function, their types and their practical application. CO3 Evaluating the basic methods of business calculus and their basic application in practice. CO4 Practical aspects of compounding & discounting techniques, Annuity and depreciation of Assets. CO5 Linear Programming using

<b>Elective – I Group – A: Accounting &amp; Finance</b> FINANCIAL MARKETS, INSTITUTIONS	terms. Understanding the workings of the financial system. Identifying the factors affecting the financial system. CO2 A brief description of the performance of financial institutions. CO3 Describing a comparative role and functioning of banking and non-banking financial institutions. CO4 Explaining the variety of financial services. CO5 Explaining the conceptual and legal aspects of the operational framework of the
<b>Elective – I Group – B: Banking &amp; Insurance</b> INDIAN BANKING & INSURANCE	of banks and insurance. CO2 To understand the business operations and market conditions in Insurance Companies. CO3 Create valuable insights into an overview of Life Insurance and General Insurance Products. CO4 Apply the knowledge of current information, models, techniques and practices in all of the major business disciplines. CO5 Demonstrate the techniques of banking and insurance in real-time
<b>Elective – I Group – C: Management</b> HUMAN RESOURCE MANAGEMENT	Management as a Field of Professional Practice in Organization. CO2 Examine the concept, procedure and role of various methods and techniques of recruitment and selection which enhanced employee productivity. CO3 Analyze the Importance of training and Development and Employee Counselling in the organization. CO4 Familiarize with the concept and
<b>Elective – II Group – A: Accounting &amp; Finance</b> FINANCIAL STATEMENTS	Different types of Financial statements. CO2 Analysis and interpretation of financial statements, classification and understanding of the technique of financial statement analysis. CO3 Applying the ratios and interpreting for a better understanding CO4 Understanding the advanced techniques of ratio analysis & application of statistical tools. CO5 Analysing the cash-flow statement and several reports.
<b>Elective – II Group B: Banking &amp; Insurance</b> MERCHANT BANKING	CO1 Define the concept of Merchant Banking. CO2 Explain the various financial services.CO3 Understanding the process of factoring. CO4 Applying the provision of mortgage and security brokerage. CO5 Differentiating between broker and jobber.

<b>Elective – II Group - C: Managemen t</b> INTERNATI	business and the complexities involved in international business. CO2 Evaluating the different factors influencing the business environment. CO3 Apply the different theories of international trade & barriers to international trade. CO4 Practical implications of different international bodies associated with
<b>Elective – III Group – A: Accounting &amp; Finance</b> FUNDAME NTALS OF CORPORAT	Evasion, Tax Avoidance, Tax Management, Assessment year & Financial year. CO2 The residential status of corporate & its incidence of tax, MAT and practical aspect of tax liability. CO3 Understanding the concept Carry forward, set-off of losses & unabsorbed depreciation and their practical application. CO4 Practical aspect of Tax planning concerning Depreciation, capital gain & Scientific research. CO5
<b>Elective – III Group B: Banking &amp; Insurance</b> FUNDAME	CO1 Define the concept of investment and investor protection. CO2 Explain the various fixed-income securities. CO3 Understanding various approaches to analysing equity. CO4 Analysing the portfolio. CO5 Differentiating between broker and jobber.
<b>Elective – III Group – C: Managemen t</b> CONSUME R AFFAIRS	
BUSINESS RESEARCH METHODS AND PROJECT WORK	Research. CO2 Discuss the blueprint of the Research and method for conducting research. CO3 Explain the concept of scale of measurement and their different types. CO4 Concept of hypothesis testing, Parametric and non-parametric test and their practical application. CO5 Introduction to report, its types, layout of the

GE – 1 MICRO ECONOMIC S	important. CO2 Use economic thinking to explain choice in a world of scarcity. CO3 Equip the students to analyze how buyers and sellers interact in a free and competitive market to determine prices and quantities of goods. CO4 Impart deeper understanding in Measuring how changes in price and income affect the behaviour of buyers and sellers. CO5 Analyze a firm’s profit-maximizing decisions under conditions of perfect and
GE – 2 MACRO & INDIAN ECONOMY	Macro Economics CO2 Explain about the concept of national income, GDP, and GNP. Measurement of National income CO3 Describe the concept of equilibrium, consumption and savings. CO4 Analysing the role of government- budget, government revenue and expenditure. CO5 Evaluate macroeconomic
GE – 3 BUSINESS STATISTIC S	Measures of Central Tendency (Mathematical & Positional Averages). CO2 Explain Dispersion & Various measures of dispersion. CO3 Definition of Correlation & Regression, their types, Properties & differences between them. CO4 Meaning and uses of Index numbers and the different methods for calculating
GE – 4 PRINCIPLE S OF MARKETIN G	selling and marketing mix. CO2 Explain the concept and importance of product classification and PLC. CO3 Describe the pricing and factors affecting it. It also describes channels of distribution.CO4 Examine promotion and communication. CO5 Applying recent
SEC- 1 E- COMMERC E	different business models. CO2 Explain the terms E-CRM & SCM, their components and strategies in business applications. CO3 Different modes of E-payment and the risk involved in E-payments.CO4 Concept of online banking including its importance and the terms associated with online banking system. CO5
ENTREPRE NEURSHIP DEVELOP MENT AND BUSINESS	business. CO2 Explain the different sources of business ideas and the process of designing a business plan. CO3 Differentiating public and private systems of stimulation, support and sustainability of entrepreneurship. CO4 Describe business ethics and its types.CO5 Initiating start-up ideas and mobilising

Course Code and Name	COs
101- Managerial Economics	<p>CO1: Define the role and functions of a managerial economist and explain the fundamental economic principles and concepts.; CO2: Apply managerial economic ideas in decision-making and forecasting methods for anticipating demand for diverse products and services.; CO3: Interpret the functional relationship between production and factors of production, to list various production expenses.; CO4: Analyse competitive strategies, based on the characteristics of products and market structures, including costing, price, product differentiation, and market environment.; CO5: Evaluate a methodical framework with regards to the price strategies to face the real-world business</p>
102- Advance Business Statistics	<p>CO1: Describe basic concepts and significance of probability theory and probability distribution.; CO2: Apply the theoretical distribution and tools for business decision making. Also understand population and sampling theories.; CO3: Formulation of research hypotheses and testing hypotheses under parametric and non-parametric framework.; CO4: Analyse the statistical quality control and other statistical tests.; CO5: Apply the correlation and regression techniques to determine</p>
103- Managerial Accounting	<p>CO1: Define Management Accounting and explain its role to overcome the limitations of Financial Accounting and make a cost benefit analysis.; CO2: Differentiate between Cost Accounting and Management Accounting and Marginal Costing and Absorption Costing.; CO3: Calculate, analyse and apply the technique of Marginal Costing in Managerial decision making.; CO4: Appraise Standard Costing Categorise, estimate and compare various types of variances.; CO5: Develop different types of budgets for managerial control.; CO6: Set</p>



104- Corporate Accounting	CO1: Define the Final Accounts of Companies and list out the various provisions of companies act in details including corporate sectors & others and replicate the process of valuation of goodwill and share.; CO2: Explain the different concepts of reconstruction of capital structure in the companies such as Amalgamation, Absorption and Reconstruction & its accounting treatment.; CO3: Practical solutions of preparation of consolidated balance sheet of holding company & preparation of Liquidator's final statement of accounts at the time winding up of the companies.; CO4: Differentiate between preparation of books of account in Banking companies & Insurance companies as per their provisions. Analyze the guidelines of RBI for compilation of financial statements, preparation of Final accounts of Banking Companies including
105- Organizational Theory and Behaviour	organizational behaviour & theories and describe the micro and macro approaches.; CO2: Identify & discuss the processes used in developing communication and resolving conflicts.; CO3: Analyze and compare different models and theories used to explain individual behaviour related to motivation and rewards.; CO4: Identify & evaluate the various leadership styles and the role of leaders in a decision-making process and explicate stress
201 Marketing Management	CO1: Identify the key marketing concepts, principles, scope, and functions of marketing in business and society and trace marketing mix strategies.; CO2: Describe the impact of marketing environment on marketing decisions.; CO3: Explain marketing strategies based on product, pricing, location, and promotion.; CO4: Apply the marketing mix and distribution process as a model for making marketing decisions.; CO5: Recognize the value, necessity, and methods of marketing planning and control in reference to distributions.;

202 Financial Econometrics	types of econometrics and analyse simple regression model. CO2: Analyze multiple regression model and narrate its assumption. CO3: Interpret different time series model and replicate its approaches. CO4: Innovate different multivariate models and interpret different different
203 Quantitative Technique for Business Decisions	tools, techniques available for decision making. CO2: Classification of quantitative techniques. Describe the use of various models in different decision-making situations.CO3: Formulate, implement & apply various business strategies by the use of game theory. CO4: Assess the time and resources for various projects involving a number of activities and events by the use of PERT & CPM. CO5: Develop and use
204 International Finance	of international finance. CO2 Interpret the international trade theory. Also, understand the foreign exchange market.CO3 Apply the ideas of foreign exchange markets and instruments. CO4 Analyse the components of exchange rate.CO5 Framing policy related decisions in controlling
205 Financial Management and Policy	and identify the role and goals of financial management in modern day business.CO2: Explain the theories of capital structure and discuss the determinants of capital structure in practice.CO3: Interpret forms of dividend policies and examine the determinants of dividend policy and different bias of behavioral finance. CO4: Examine the determinants and components of working capital management and calculate working capital requirement of business entities. CO5: Develop a

206 A International Accounting	<p>CO1: Define different dimensions of international accounting and identify reporting and disclosure practices. CO2: Describe and demonstrate a strategical approach towards global accounting practices and translation theories. CO3: Demonstrate progressive learning in the elements of international reporting of consolidated financial statements. CO4: Calculate the relevant price level changes in context to global markets. CO5: Analyse the harmonization process and price level changes.</p>
Strategic Cost Management	
206 C Corporate Reporting & Analysis	<p>reporting, IFRS, Ind AS, and IASB. CO2: Analyse contemporary issues of reporting. CO3: Interpret voluntary disclosure and related terms. CO4: Apply extensible language to reporting practice. CO5:</p>
301- Computer Application in Business	<p>CO 1 Define concepts like E-Commerce, DBMS and other computer programmes, software by recognising their importance of in business. CO 2 Explain various uses of computer programmes like DBMS in the context of business. CO 3 Apply these tools in business context, especially in accounting and E-Commerce. CO 4 Analyse various business-related problems using such computer applications. CO 5 Evaluate and assess various business activities through the application of different computer programmes. CO 6 Design website to get</p>

302- Research Methodology	<p>CO1 Describe basic concepts and significance of research and identify research problem to formulate hypothesis. Outline ethics in research.CO2 Describe marketing and behavioral research and discuss the methodologies of marketing research with exploratory factor analysis to solve social and business issues with latest tool and software.CO3 Apply finance research in relation to different tests and discuss the methodologies of finance research with regression to solve social and business issues with latest tool and software.CO4 Analyse the structure of a research report and breakdown the style of referencing with different referencing styles.CO5 Argue and assess a methodology for a</p>
303- Financial Institutions and Markets	<p>CO1 Define Financial Market, Financial Institutions and identify the various area of financial system by recognising its importance in economic development &amp; describe financial institutions.CO2 Classify different aspects of financial market like money market and capital market and explain various aspects of financial services and institutions. CO3 Apply the financial knowledge to know and get solution for contemporary issues and interpret their view on such matters in reference to mutual funds.CO4 Analyse the various problems in the financial system including area of financial inclusion. CO5 Assess the benefits of various</p>
304 - STRATEGIC MANAGEMENT	<p>CO 1 Define strategy, Arrange the levels at which strategies operate and recognise the components of strategic intent. CO 2 Identify the factors governing national global business environment analysis and demonstrate environment analysis. CO 3 Appraise the various strategies formulation alternatives, examine their application and evaluate the strategic options for their effective implementation. CO 4 Categorise the various modes of entry into international markets.CO 5 Develop and relate strategic tools and techniques to</p>

305 - ENTREPREN EURSHIP	identify the role of an entrepreneur. CO2 Classify entrepreneurship and differentiate between entrepreneurship and intreprenurship. CO3 Discover business ideas for a new venture and entrepreneurial challenges. CO4 Examine the legal issues involved in formation of business enterprises.CO5 Predict and appraise business
IDSE-306A FINANCIAL INSTITUTIO NS AND MARKETS	markets. CO2 Interpret types of financial markets and the working of various financial institutions.CO3 Applying the benefits of various financial services and mutual funds.CO4 Analyzing the process of financial inclusion and microfinance. CO5 Creating business and entrepreneurial
IDSE-306B- BUISNESS ORGANISAT ION & ENTERPREN URESHIP DEVELOPM ENT	scope and objectives. Identify the qualities of successful entrepreneur. CO2 Infer the salient features of different form of business organization. CO3 Classify various types of companies and distinguish between private and public limited companies.CO4 Appraise the procedural & legal formalities required for setting up of a business enterprise.CO5 Prepare a plan estimate & justify
IDSE-306C- F	accounting equation and accounting principles. CO2 Analysing and classifying accounts. CO3 Interpret subsidiary books and their usage.CO4 Apply final accounts in business and other
CORPORATE GOVERNAN CE, ETHICS AND CORPORATE SOCIAL RESPONSIBI	ethics and recognise the importance of ethical business practices.CO 2 Identify the various approaches to corporate ethics. CO 3 Interpret the regulatory and shareholders' framework of Corporate Governance. CO 4 Analyse the causes of major corporate failures in India and abroad and assess the Whistle Blower Policy across the countries. CO 5 Evaluate the existing CSR codes

<p>402- CORPORATE TAX STRUCTURE &amp; PLANNING</p>	<p>CO1 Define corporate tax planning and identify the rationale behind corporate tax planning by recognising different tax planning principles. CO2 Classify different aspects of tax planning and generalise its dimensions by reading charge to income tax, minimum alternative tax and deductions. CO3 Apply tax planning avenues in mergers, slump sale and business conversions by illustrating practical problems. CO4 Analyse and appraise tax planning schemes for capital gains discriminate leasing and hire purchase in regard to tax benefits. CO5 Evaluate the quantitative applicability of deductions, tax saving schemes and develop</p>
<p>403- HUMAN RESOURCE MANAGEMENT</p>	<p>CO1 Define concepts like Human Resource Management, recruitment, selection etc. and recognise the various roles of the HR manager. CO 2 Explain the role of HRM in Indian context and discuss its various function like recruitment process, human resource planning. CO 3 Apply the knowledge in implementing various HR works like job design, recruitment etc. CO 4 Analyse and compare the performance of employees and effectiveness in jobs assigned. CO 5 Evaluate and assess the performance of various employees as well as HR planning. CO 6 Design jobs and</p>
<p>404- INTERNATIONAL BUSINESS ENVIRONMENT</p>	<p>of the international business environment and its components. CO2 Interpret the international trade theory. Also, understand the international financial institutions and Contemporary Issues in International Business. CO3 Apply the ideas of international trade and financing. CO4 Analyse the components of balance of payments. CO5 Evaluate</p>
<p>405- PROJ E T W O R K R E P O R T A N D V I V A- V O C E</p>	<p>and Identifying research problem. CO2 Interpreting existing literature and finding research gap. CO3 Framing suitable methodology as per the objective. CO4 Developing hypotheses and testing them using appropriate tools. CO5 Analysing the collected data and interpreting the results. CO6 Preparing research</p>

MBA-FM			
COURSE CODE	COURSE TITLE	COURSE OUTCOME(CO)	COURSE OUTCOME(CO)- DETAILS
MFM-101	Management Concept And Organization Behaviour	CO1	Describe the concept of modern management thought and its utility in the field of real management.
		CO2	Analyze individual and group behavior, and understand the implications of organizational behavior on the process of management and modern techniques to reduce the employees stress.
		CO3	Interpret the concept of planning process and how it can enrich the decision making capacity of the manager in the real world
		CO4	Evaluate the appropriateness of various leadership styles and conflict management strategies used in organizations
		CO5	Describe and assess the basic design elements of organizational structure and evaluate their impact on employees.
		CO6	Explain how organizational change and culture affect working relationships within organizations.
MFM-102	Economic Analysis For Decision Making	CO1	Describe the concept of Economics and evolution of Managerial Economics; Application of economic theories in decision making
		CO2	Analyze the theory of demand and measurement of demand in response to change in its price.
		CO3	Discuss and interpret the concept of theory of firm with the help of production and cost theory
		CO4	Evaluate the appropriateness of the theory of cost minimization and profit maximization through numerical examples.

		CO5	Appraise and understand the basic structure of market and pricing under different market conditions with some real examples
		CO6	Explain how government policies affect economic conditions and thereby taking decision accordingly for an organization.
MFM-103	Financial Accounting	CO1	Describe the Conceptual knowledge on accounting and financial accounting
		CO2	Analyze accounting methods in an organization and balance sheet preparation
		CO3	Interpret the concept of how to prepare a profit and loss account for a company
		CO4	Evaluate the final accounts of company form of organizations
		CO5	Understand the concept of Nonprofit organization and their financing
		CO6	Interpret the Financing Statements and manage the financial data of the organization
MFM-104	Quantitative Techniques For Management	CO1	Understand the concept of average (central Tendency) in data analysis in an organization and its utility in the field of real management
		CO2	Analyze the role of dispersion in real management.
		CO3	Interpret the concept of correlation and regression and how it can enrich the decision making capacity of the manager in the real world.
		CO4	Evaluate the appropriateness of Probability theory and how it is used in organizations
		CO5	Describe and assess the basic design Probability distribution.
		CO6	Learn the use of various statistical inferences and Apply the non parametric tests to make various decision of the organization



MFM-105	Marketing Management	CO1	Describe the concept and evolution of Marketing and business environment
		CO2	Demonstrate how consumers behave while making any buying decision
		CO3	Explain product and development of new product and pricing the product
		CO4	Categories how to promote and advertise a product and service and different marketing strategy
		CO5	Evaluate the marketing concept in real managerial decision making process
MFM-106	Financial Management	CO1	Understand the concept of what is finance and objectives of financial management in business study and Apply this skill to deal financial decision making of the organization.
		CO2	Analyze the concept of Time value of money
		CO3	Interpret the techniques and formulas how to invest for evaluating different investment options and how it can enrich the decision making capacity of the manager in the real world.
		CO4	Evaluate the concept and calculation of cost of investment and different techniques for the same
		CO5	Describe and assess the basic understanding of various sources of finance.
		CO6	Explain what is working capital and factors influencing working capital.
	Business And	CO1	Identify the concept of broad business environment and changing pattern of business and business environment
		CO2	Analyzing different policies to curb changing scenarios with the help of GOVT policies like fiscal and monetary policy.

MFM-107	BUSINESS AND Financial Environment	CO3	Analyzing different policies to curb changing scenarios with the help of GOVT policies like fiscal and monetary policy.
		CO4	Apply and understand how government policies are related with business environment
		CO5	Design the proper action plan for the organization in an changing business environment.
MFM-108	Financial Markets And Instruments	CO1	Identify the concept of financial market and its growth since independence
		CO2	Analyze different types of market operating in India and its role in the Indian economic performance
		CO3	Interpret and understand the banking system in India; RBI and the role of RBI as a regulatory body
		CO4	Evaluate the role of RBI a policy maker and hence controlling financial market.
		CO5	Describe and assess the basic design of development banks and insurance sector and its functioning and contribution towards the economic growth.
		CO6	Applying the financial concepts and understanding the function of NBFCs/Mutual Funds as institutions in India"s financial market
<b>COURSE CODE</b>	<b>COURSE TITLE</b>	<b>COURSE OUTCOME(CO)</b>	<b>COURSE OUTCOME(CO)- DETAILS</b>
MFM-201	Management Of	CO1	Understand the concept of Financial Institutions and its utility in the field of real management
		CO2	Analyze the role of this institutions and the challenges faced by them
		CO3	Interpret the concept of finance and will understand its role the decision making capacity of the manager in the real world.

MFM-201	Financial Institutions	CO4	Evaluate the concept of Risk and Return which will be used in organizations
		CO5	Describe and assess the basic term Income and Liquidity which are very crucial for an organization
		CO6	Explain how organizations manage risk exposures and how to make financial inclusion possible.
MFM-202	Accounting For Managerial Decisions	CO1	Understand the basic concept of management accounting and how it is different from financial accounting
		CO2	Understand the basic concept of management accounting and how it is different from financial accounting
		CO3	Interpret various ratios which will help to judge the financial position of the company.
		CO4	Interpret various ratios which will help to judge the financial position of the company..
		CO5	Describe the various tools of cost control which are very crucial for an organization
MFM-203	Risk And Insurance Management	CO1	Understand the concept of risk management, methods of dealing with risk and its utility in the field of realmanagement.
		CO2	Interpret the insurance market and the various Acts involved with insurance sector which will help the manager in the real world.
		CO3	Evaluate the concept of life insurance, various policies involved with this and various calculations.
		CO4	Assess the basic terms like Fire insurance, Marine insurance, reinsurance, etc. which are very crucial for an organization.
		CO5	
		CO5	Explain how organizations manage risk exposures and apply this knowledge to deal with organizational risk management.
		CO1	

MFM-204	Investment Analysis And Equity Research	CO2	Understand the concept of investment and its utility in the field of real management.
		CO3	Analyze the approaches of investment decision making, risk in investment and various investment alternatives.
		CO4	
		CO5	Interpret the role of Securities Market, Primary Equity Market and Secondary Equity Market which will help the manager in the real world.
		CO6	Evaluate the concept of stock market indices depositories.
		CO7	Assess the basic tools used in fundamental analysis which are very crucial for an organization before making any investment decision.
		CO2	Understand the concept of working capital management and different sources of its financing in the field of real management.
		CO3	Analyze the concept of long term working capital and short term working capital.
		CO4	Evaluate various models for cash flow forecasting. And its interpretation.
		CO5	Assess the basic concept of receivable management.
		CO6	Explain how to take capital structure decision and how to make dividend decision.

MFM-205	Advanced Financial Management	CO7	<p>Understand the concept of working capital management and different sources of its financing in the field of real management.</p> <p>Analyze the concept of long term working capital and short term working capital.</p> <p>Evaluate various models for cash flow forecasting. And its interpretation.</p> <p>Assess the basic concept of receivable management.</p> <p>Explain how to take capital structure decision and how to make dividend decision.</p> <p>Apply this knowledge to deal with organizational financial challenges.</p>
MFM-206	International Business	CO1	
		CO2	Understand the concept of international business and its various strategies.
		CO3	Analyze different types of barriers in International business.
		CO4	Interpret the international environment and various legal aspects involved here.
		CO5	Evaluate various procedures for import, export trade and various procedures involved here.
		CO6	Assess various procedures involved in export import trade.
		CO7	Explain various theories relating to International trade and apply this knowledge to deal with organizational foreign trade challenges.
MFM-207	Mutual Fund & Portfolio Management	CO1	Understand the concept of mutual fund for investment decisions of the organization and apply this in real life situations.
		CO2	Analyze the risk involved in the mutual fund.
		CO3	Interpret the management of a portfolio and construction of portfolio.

	management	CO4	Evaluate various types of risk involved in a portfolio.
		CO5	Assess how to analyze a portfolio, which are very crucial for an organization.
		CO6	Know the Capital Asset Pricing Model.
MFM-208	Research Methodology & Business Communication	CO1	Understand research as a knowledge generation process through use of scientific methodology and its utility in the field of real management.
		CO2	Analyze how to differentiate conceptual and empirical research and the components thereof
		CO3	Interpret the different steps of a research process which will help the manager in the real world.
		CO4	Evaluate how to use advanced statistical packages for data analysis
		CO5	Assess get an overview of writing a research report such as a thesis/dissertation/scholarly research article for a journal
		CO6	Apply this knowledge to undertake various research work.
<b>COURSE CODE</b>	<b>COURSE TITLE</b>	<b>COURSE OUTCOME(CO)</b>	<b>COURSE OUTCOME(CO)- DETAILS</b>
MFM-301	Financial Derivatives & Commodity Market	CO1	Understand the concept characteristics of different types of derivative securities.
		CO2	Interpret the concept of various types of forward and future derivatives.
		CO3	Evaluate the concept options and risk management using options.
		CO4	Assess various hedging practices which are very crucial for an organization.
		CO5	Explain how to manage risk using swaps and various other commodity derivatives.
		CO6	Apply this knowledge to deal with various hedging practices.
		CO1	Understand the concept of international financial monetary system.

MFM-302	International Finance	CO2	Analyze the role of various international linkages in international trade and apply this knowledge to deal with organizational international trade finance
		CO3	Interpret the various concepts of foreign exchange market.
		CO4	Evaluate the concept of life insurance, various policies involved with this and various calculations.
		CO5	Assess the how to various risk involved in foreign trade and its management, which are very crucial
		CO6	for an organization.
MFM-303	I.T. For Managers	CO1	Understand the knowledge of different software and hardware system relevant in maintaining business transaction.
		CO2	Analyze the experience of computer usage in business organization.
		CO3	Interpret the computer knowledge with specific reference to commercial data processing systems.
		CO4	Evaluate the concept of management information system.
		CO5	Assess the various methods of data processing, which are very crucial for an organization.
		CO6	Apply this knowledge to solve various problems associated with organizational.
MFM-304	Strategic	CO1	Understand the concept of risk, methods of dealing with risk and its utility in the field of real management.
		CO2	Analyze the role of insurance in risk management.
		CO3	Interpret the insurance market and the various Acts involved with insurance sector which will help the manager in the real world.

MFM-304	Management	CO4	Evaluate the concept of life insurance, various policies involved with this and various calculations.
		CO5	Assess the basic terms like Fire insurance, Marine insurance, reinsurance, etc. which are very crucial for an organization.
		CO6	Explain how organizations manage risk exposures.
MFM-305	Tax planning & Management	CO1	Understand the concept of corporate tax and its utility in the field of real management.
		CO2	Analyze the head wise concept tax planning and tax management.
		CO3	Interpret various important concepts involved in taxation planning.
		CO4	Evaluate the concept of tax planning with reference to: Depreciation, Capital gain, House Property, Amalgamation & Merger.
		CO5	Assess the application o GST law.
		CO6	Explain concept of supply including composite and mixed supplies Charge of tax Exemption from tax.
MFM-306	Services Marketing	CO1	Understand the concept of service and its utility in the field of real management.
		CO2	Analyze the role of service marketing and its various elements.
		CO3	Interpret the management and planning of service marketing.
		CO4	Evaluate various strategies involved in marketing of services.
		CO5	Assess the concept of customer relationship in case of services.
		CO6	Explain how to know and fulfil the expectations of customers in case of services.
		CO1	Understand the concept of merger, acquisition and amalgamation.
		CO2	Analyze various strategic perspectives and approaches in corporate restructuring.



MFM-307	Corporate Restructuring & Financial Engineering	CO3	Interpret different methods involved in corporate restructuring.
		CO4	Evaluate various strategies involved in merger process and takeover.
		CO5	Assess the concept of different valuation approaches.
		CO6	Explain what the methods in financing merger and the concept of accounting for amalgamation are.
MFM-308	Training Report		
<b>COURSE CODE</b>	<b>COURSE TITLE</b>	<b>COURSE OUTCOME(CO)</b>	<b>COURSE OUTCOME(CO)- DETAILS</b>
MFM-401	Strategic Financial Management	CO1	Understand the concept of Strategic Financial Management and its various types.
		CO2	Analyze various strategies for Strategic Financial Planning Process.
		CO3	Interpret different methods involved in Management of Global Finance.
		CO4	Evaluate various Innovations in Financial Instruments.
		CO5	Assess the Emerging Area in Strategic Financial Management.
		CO6	Apply this knowledge to deal with strategy formulation relating finance of an organization.
MFM-402	Corporate Governance And Business Ethics	CO1	Understand the concept of Corporate governance and the governance system.
		CO2	Analyze various strategic for corporate disclosure and its guidelines.
		CO3	Interpret various committees involved for governance purpose.
		CO4	Evaluate the concept of business ethics.
		CO5	Assess the concept of Corporate Social Responsibility.

		CO6	Explain Common indicators of measuring for business social performance and whistle blowing.
		CO7	Apply this knowledge to deal with organizational governance and ethical practices.
MFM-403	Project Appraisal Planning And Control	CO1	Understand the concept of project and project management.
		CO2	Analyze various types of project and how to select the best one among them.
		CO3	Interpret the capital expenditure decision structure.
		CO4	Evaluate various strategies involved in project budget preparation.
		CO5	Assess the concept of technical analysis and financial analysis in project management.
		CO6	Explain the Network Techniques for Project Implementation, Monitoring and Control.
MFM-404	Retail Management	CO1	Understand the concept of Retailing and its importance for a business organization.
		CO2	Analyze various formats of retailing and its management.
		CO3	Interpret the decision making of Retail management.
		CO4	Evaluate various strategies involved in supply chain management.
		CO5	Assess the concept of Brand management.
		CO6	Explain various new technologies involved with retail management.
MFM-405	Business & Corporate Law	CO1	Understand the concept of a contract and various important Acts.
		CO2	Analyze various Acts which are crucial for a business organization, like- Indian Contract Act. Negotiable Instruments Act, Indian Stamp Act. Copy Right Act.
		CO3	Interpret MRTP Act, Indian Competition Act 2002, Consumer Protection Act, Patent Act. Information Technology Act.

		CO4	Evaluate various Workmen Compensation Act, Sick Industries Companies Act, Indian Companies (Amendment) Act.
		CO5	Assess the concept of FERA, FEMA, EXIM policy, etc.
		CO6	Apply this knowledge to deal with legal challenges of organizations.
MFM-406	Accounting Standards & Corporate Reporting	CO1	Understand the concept of accounting standard and its history.
		CO2	Analyze accounting standard prevailing in India.
		CO3	Interpret AS-1, 2, 3, 6, 10 and 14 in details.
		CO4	Evaluate other accounting standards which are crucial for a business manager.
		CO5	Assess the concept of Accounting standard and their different importance.
		CO6	Explain what IASB and IFRS are.
		CO7	Apply this knowledge to deal with legal accounting works of organizations.
MFM-407	Entrepreneurship & Small Business Management	CO1	Understand the concept of merger entrepreneurship and Small Scale Industries.
		CO2	Analyze various advantages and short comings of SSI units.
		CO3	Interpret different sources of preparing business plans and business incubation.
		CO4	Evaluate various strategies for project management and various institutions supporting the SSIs.
		CO5	Assess the concept of social cost benefit analysis.
		CO6	Explain the concept of global competition and start up.
		CO7	Apply this knowledge to deal with entrepreneurial challenges.
MFM-408	Final Project And Viva Voce		

BBA			
COURSE CODE	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
AECC I	Environmental Studies	CO1	Analyze the importance of wild life and environment protection.
		CO2	Apply the concepts of ecology to ensure sustainable development.
		CO3	Evaluating the methods for prevention of pollution.
		CO4	Formulating plan for disaster management.
GE I	Entrepreneurship Development	CO1	Evaluate the concepts related to entrepreneurship
		CO2	Evaluate the problem relating to planning and operating an enterprise.
		CO3	Understand the concept of social entrepreneurship
CC I	Fundamentals of Management & Organizational Behavior	CO1	Student will be able to address the human side of the organization.
		CO2	Student will be able to understand individual behaviour in an organization
		CO3	Student will be able to perform well in group by understanding the group behaviour
		CO4	Understand the organizational system including organizational structure, culture, etc.
CC II	Statistics for Business Decisions	CO1	Describe the basic concepts of statistical inferences to generalize research findings in the social science world.
		CO2	Interpreting Statistical Inference to measure the data variability and its uses in the real research world.
		CO3	Applying probability distribution which depicts the expected outcomes of possible values for a given data-generating process.
		CO4	Applied Correlation & Regression in the field of real research world such as marketing, HR and Finance
		CO5	Construct models related to decision-making relevant to research in the field of management.
COURSE CODE	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS

BBA			
COURSE CODE	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
AECC II	English Communications / Odia / Hindi	CO1	Students will review the grammatical forms of English and the use of these forms in specific communicative contexts
		CO2	Develop reading, writing and analytical skills and communicate their ideas critically, creatively, and persuasively through the medium of language.
		CO3	Increase confidence in their ability to read, comprehend, organize, and retain written information.
		CO4	Improve their ability to read and understand the written word in everyday life through the study of literary text
GE II	Production & Operations Management	CO1	To make the student able to properly plan the process and layout of the plant.
		CO2	To understand the Importance of maintenance management.
		CO3	To understand the concept of operation scheduling.
		CO4	to be able to apply the concept of statistical quality control
CC III	Managerial Economics	CO1	Develop Understanding to take business decisions in different business situation using theory and concept of Micro economics.
		CO2	Student can analyze consumer behavior and their utility for their consumption through utility, consumer equilibrium, indifference curve & demand concept.
		CO3	Apply the concept of demand and elasticity practically.
		CO4	Demonstrate future demand of a product using qualitative and quantitative techniques.

BBA			
COURSE CODE	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
CC IV	Business Accounting	CO1	Students will have basic understanding of accounting concepts and principles.
		CO2	Students will be able to apply critical thinking and problem solving skill for knowing the profitability and position of the firm.
		CO3	To have an understanding of Indian as well as International Accounting Standard.
		CO4	To be able to analyze the financial statement for making relevant business decisions.
COURSE CODE	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
SEC I	communicative English and English writingskill	CO1	Improve communication skill of the students.
		CO2	Students will learn skills and Prospect of new material in language learning.
		CO3	Students will learn deep knowledge about English grammar.
		CO4	Report writing techniques
GE III	India's Diversity & Business	CO1	Identify and describe the various aspects of culture which affect a person's Worldview, values, and behavior.
		CO2	Understand the diversity of worldviews, values, behavior, traditions, and Experiences of co-cultures and their interactions.
		CO3	Understand the roles of culture, language, power, and communication on global product development.
		CO4	Capable of making Business Administration decisions keeping cultural aspect into Consideration.
		CO1	Students will understand to measure concepts of national income and its related measure.

BBA			
COURSE CODE	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
CC V	Macroeconomics	CO2	Examine the GAP between theory of money and the present concepts of money along with concepts of supply of money.
		CO3	Analyze determinants of consumption and investment in the Macroeconomic environment.
		CO4	Capable of considering inflation factor while taking business decisions.
CC VI	Principles of Marketing	CO1	Students will learn concepts related to consumer behavior and market segmentation.
		CO2	Students will be able to analyze the concept of product, branding and product life cycle.
		CO3	Learn and understand the concepts of pricing and distribution.
		CO4	Demonstrate the concepts of promotion and promotion mix.
CC VII	Management Accounting	CO1	Acquaint with the fundamentals principles of management accounting.
		CO2	Prepare; analyze and interpret financial statements.
		CO3	Analyze typical business transactions to determine their effects on the principal elements of financial statements
		CO4	Understand the role of management accounts in planning, control and decision making in an organization
COURSE CODE	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
SEC II	E-Commerce	CO1	Understand the concepts of e-commerce
		CO2	Building and managing websites
		CO3	Manage the security threats and cyber crime

BBA			
COURSE CODE	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
GE IV	Ethics & Corporate Social Responsibility	CO1	It helps the students to comprehend the concept of business ethics and reasons of unethical business practices
		CO2	It exhibit a relationship between business ethics and the Changing Environment.
		CO3	Familiarize the students with cultural differences of CSR in Indian and International context.
CC VIII	Business Research	CO1	It familiarize the students with the concept, process, design, tools and techniques of RM.
		CO2	Apply tools, techniques/methods to assist various functions of management and to analyze various data.
		CO3	Preparation of research report
CC IX	Human Resources Management	CO1	To understand the concept of Human Resource Management and its importance in Indian organizations.
		CO2	To be capable of taking decisions for Human Resource Planning.
		CO3	To know importance of training and development as a leader.
		CO4	To know determination of compensation and to play the role of leader by applying knowledge of industrial relations.
		CO1	It enables the students to analyze the pattern of fund requirement and associated risk through financial planning.

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BBA			
COURSE CODE	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
CC X	Financial Management	CO2	Evaluate various theories of dividend and capital budgeting techniques to allocate funds to the most attractive investment opportunity
		CO3	Determine optimum capital structure and cost of capital of various sources like equity, debt, preference and retained earnings.
		CO4	Examine the determinants of working capital requirement of the company and its tools for smooth functioning of business.
COURSE CODE	COURSE TITLE	COURSE OUTCOME(CO)	
DSE I	International Finance	CO1	Student will gain knowledge for managing international business
		CO2	It provide details regarding the management of foreign exchange,
		CO3	Students become capable of making strategy for foreign exchange exposure.
		CO4	Students will be able to analyze the multinational financial system.
DSE II	Advertising & Brand Management	CO1	Students will understand the needs and importance of advertising, models of advertising and required planning framework for promotional strategy.
		CO2	Students will be able to analyze about the target audience, advertising media and its effectiveness.
		CO3	Demonstrate how to do brand management and strategies formulation for the business.
		CO4	Learn about the media planning, scheduling and media decisions.

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BBA			
COURSE CODE	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
CC XI	Quantitative Techniques for Management	CO1	Students will understand the key terminologies, concepts, tools and techniques of Quantitative techniques.
		CO2	Students will be able to understand and apply the concept of regression.
		CO3	Apply probability rules and theoretical distributions to solve problems.
		CO4	Students will get knowledge about association of attributes and inferential aspects such as test of hypotheses and associated concepts.
CC XII	Legal Aspects of Business	CO1	Students will understand the concepts of company law.
		CO2	Understand the detail concepts of various Act
		CO3	They will know the role of Consumers and norms prescribed for their protection
		CO4	Utilise theLegal aspects in real business world
COURSE CODE	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
DSE III	Performance & Compensation Management	CO1	Students will be able to design an organization's performance management process that is compliant with law.
		CO2	Compare and contrast various organizational performance management programs and best practices and define attributes of effective performance management
		CO3	Assess performance appraisal methods and various tools to devise their successful career paths (through feedback, mentoring, coaching, and competency development).

BBA			
COURSE CODE	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
		CO4	Understand basic compensation concepts and recognize job evaluation methods and related pay decisions.
DSE IV	Dissertation/ Project work		
CC XIII	Business Policy & Strategy	CO1	Students will be able to design, deploy and evaluate business strategies.
		CO2	Students will learn to conduct environmental scanning using different strategic methods.
		CO3	They will be able to implement tools and techniques fro strategic analysis and decision making.
CC XIV	Financial Institutions & Market	CO1	Understanding the concepts, structure, functioning and theories related to financial markets, institutions and services
		CO2	Illustrating an awareness of the current structure and functioning of the financial Markets, Institutions and Services.
		CO3	Demonstrating an awareness of the regulation of the Indian Financial Markets, Institutions and services sector.
		CO4	Identifying the Regulators in Financial System and understanding the role of various intermediaries in the system

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## MBA

COURSE C	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
CP – 101	Management Process and Organization Behavior	CO1	Understand the concept of modern management thought and its utility in the
		CO2	Analyze individual and group behavior, and understand the implications of organizational behavior on the process of management and modern techniques to reduce the employees' stress.
		CO3	Interpret the concept of the planning process and how it can enrich the decision-making capacity of the manager in
		CO4	Evaluate the appropriateness of various leadership styles and conflict management strategies used in organizations.
		CO5	Learn how organizational change and culture affect working relationships
		CO6	Apply interpersonal skills for group dynamics and group cohesiveness to
CP – 102	Quantitative Method	CO1	Describe the basic concepts of statistical inferences to generalize research
		CO2	Interpreting Statistical Inference to measure the data variability and its uses in the real research world.
		CO3	Applying probability distribution which depicts the expected outcomes of
		CO4	Applied Correlation & Regression in the field of real research world such as
		CO5	Construct models related to decision-making relevant to research in the field of management
		CO1	Define the role and functions of a managerial economist and explain the
		CO2	To Understand the importance of individual and aggregate demand and supply affecting the businesses as well as the economy.

## MBA

COURSE CODE	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
CP – 103	Managerial Economics	CO3	Apply managerial economic ideas in decision-making and forecasting methods for anticipating demand for diverse products and services.
		CO4	Applied Break-Even analysis to know the cost Minimisation and maximisation
		CO5	Evaluate a methodical framework with regards to the price strategies to face the real-world business challenges
		CO6	Construct models to explain the individual consumer behavior at micro level
		CO1	Define the role and functions of a environmental management and explain the key areas of environment which is related to production, energy, trade, water and biodiversity for the largest interest of human being
CP – 104	Environment Management	CO2	Understand the importance of ecosystem and its application of industrial
		CO3	Apply environmental auditing practices for giving clearance and permission
		CO4	Applied environmental accounting in the area of taxes shifts, green funding and corporate mergers
		CO5	Evaluate a methodical framework with regards to environmental ethics as per the guideline of GATT/WTO provisions
		CO6	Construct models to explain environmental laws and role of biodiversity in
		CO1	Define the business communication and its effectiveness for moulding shaping the personality of the manager

## MBA

COURSE CODE	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
CP-105	Managerial Skill Development	CO2	Understanding the importance of the corporate communication and application in the real business world
		CO3	Apply business communication in the key areas for the growth and sustainable development of the business.
		CO4	Evaluate communication process in the organization and reforms the process for further development of how writing business report,
		CO5	Construct models to understand the Legal aspects of business communication and methods to overcome it
CP-106	Indian Ethos and Values	CO1	To remember the various elements of Indian ethos and management lessons from Indian scriptures.
		CO2	Understand the Indian system of learning and the concepts
		CO3	Know the work ethos and values and its relevance to
		CO4	Apply managerial process to know the reasons of stress
		CO5	Construct a proper path and process to apply Indian ethos for personality development of the new age managers.
CP-107	Accounting for Managers	CO1	Understand the accounting principle and practice the same to maintaining
		CO2	To find out the performance of the business through profit acknowledgement with the help of PL account.
		CO3	Analyze the financial statement or the balance sheet to know about the financial position of the business
		CO4	Prepare, understand, interpret and analyze financial statements with confidence.

## MBA

COURSE CODE	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
		CO5	Use the analytical techniques of ratios and financial statement analysis and arriving at conclusions from financial information for the
CP – 108	Computers for Managers	CO1	Define the role of computers and its networking process for better Management Information System & ERP of the organisation.
		CO2	Understand the knowledge of different software and hardware system relevant in maintaining business transaction
		CO3	Apply the computer knowledge with specific reference to commercial data processing systems.
		CO4	Evaluate data basic data processing systems and its application in the real business field for smoothly capturing data for managerial
COURSE CODE	COURSE TITLE	SE OUTCOM	COURSE OUTCOME(CO)- DETAILS
CP – 201	Organization Effectiveness and Change	CO1	Define the degree of an organization attains its short-term (ends) and long-term (means) goals, the selection of which reflect strategic constituencies in the organization's environment, the self-interest of the evaluator and the life stage of the
		CO2	Understand organisation climate and culture. How it is empowering learning
		CO3	Applying behaviour approach in the organisation for enrich interpersonal behaviour of the employees
		CO4	Interpreting the nature and process of collaborations for
		CO5	Evaluate business ethics and effect on corporate
		CO6	Construct a model how to manage gender issues, cross-

## MBA

COURSE C	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
CP – 202	Management Science	CO1	Define the mathematical technique that helps businesses solve some problems they face. It helps them deal with constrained optimization situations in which they have to make the best of their resources, such as labour, given certain constraints
		CO2	Understand the Transportation Models for concerned with selecting the routes between supply and demand points in order to minimize costs of
		CO3	Applying mathematical study of the formation, function, and congestion of waiting lines, or queues
		CO4	Interpreting examines every component of waiting in line, including the arrival process, service process, number of servers, number of system places, goal programming
		CO5	Evaluate the express the importance of properly framing and defining the problem prior to pursuing a decision Pure & Mixed Strategy
		CO6	Construct the management science approach is a type of organizational environment theory
CP – 203	Human Resource Management	CO1	Define the mathematical technique that helps businesses solve some problems they face. It helps them deal with constrained optimization situations in which they have to make the best of their resources, such as labour, given certain constraints
		CO2	Understand the Transportation Models for concerned with selecting the routes between supply and demand points in order to minimize costs of
		CO3	Applying mathematical study of the formation, function, and congestion of waiting lines, or queues



## MBA

COURSE C	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
		CO4	Interpreting examines every component of waiting in line, including the arrival process, service process, number of servers, number of system places, goal programming
		CO5	Evaluate the express the importance of properly framing and defining the problem prior to pursuing a decision Pure & Mixed Strategy
		CO6	Construct the management science approach is a type of organizational environment theory
CP – 204	Financial Management	CO2	Define of the primary objectives of financial management are: Attempting to reduce the cost of finance. Ensuring sufficient availability of funds.
		CO3	Understand the dealing with the planning, organizing, and controlling of financial activities like the procurement and utilization of funds
		CO4	Applying in the demonstrate an understanding of the overall role and importance of the finance function & communicate effectively using standard business terminology
		CO5	Interpreting the financial analysis is the pinpointing of the strength and weaknesses of a business undertaking by regrouping and analysis of figures contained in financial statements, by making
		CO6	Evaluate the expert knowledge of principles and concepts used in financial management & Evaluate a company"s interest rates based
		CO7	Construct ability to apply such knowledge in decision-making and overall
		CO1	Define of the basic concepts of global marketing strategies implementations & determine strategies for developing new products and services that are consistent with

## MBA

COURSE C	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
CP-205	Marketing Management	CO2	Understand to formulate a marketing plan including its objectives, marketing mix, strategies and criteria for its evaluation.
		CO3	Applying strategy designed by the organizations to help the students to quickly identify and experience their brand
		CO4	Interpreting Know the process of developing global
		CO5	Evaluate wholesale is a middleman that buys its merchandise from a third party supplier and resells the merchandise to retail businesses or the end consumer. A wholesaler normally does not sell to
		CO6	Construct to green Marketing encourages production of pure products by pure technology, conservation of energy, preservation of environment, minimum use of natural
CP-206	Production and Operations Management	CO1	Describe the of operational function and management in production unit and to show different evolution in
		CO2	Understand broad idea about material management and cost reducing techniques & Understand the basic concepts of projects and its maintenance management.
		CO3	Applying ideas about networking and process planning.
		CO4	Interpreting Appreciate various facility location models and plant layout designs
		CO5	Evaluate Learn the concept of integrated materials management and various inventory control techniques.
		CO6	Construct product designing, process designing and value
		CO1	Define the of knowledge generation process through use of scientific methodology
		CO2	Understand the different steps of a research process & differentiate conceptual and empirical research and the
		CO3	Applying advanced statistical packages for data analysis

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MBA			
COURSE CODE	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
CP-207	Research Methodology	CO4	Interpreting writing a research report such as a thesis/dissertation/scholarly research article for a journal
		CO5	Evaluate appropriate statistical method depends on the following three things: Aim and objective of the study, Type and distribution of the data used, and Nature of the observations
		CO6	Construct the comprehensive layout of the research report should comprise preliminary pages, the main text and the
CP-208	International Business Environment and Management	CO1	Define of the process of focusing on the resources of the globe and objectives of the organizations on global business opportunities and threats.
		CO2	Understand markets have become truly global for most goods, many services, and especially for financial instruments of all types.
		CO3	Applying knowledge about International business scenario, its environment,
		CO4	Interpreting acquire information of Development and Regulations of Foreign Trade, FEMA and BOP.
		CO5	Evaluate Principles of Multilateral Trade Negotiations–GATT and its early Rounds– World Trade Organisation (WTO).
		CO6	Construct ideas about Global Ownership Strategies:
COURSE CODE	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
		CO1	Define the nature and importance of business Policy and strategy with company"s mission and vision
		CO2	Understand the concept of corporate business, function and strategy management and the criticality of a mission

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COURSE CODE	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
CP – 301	Business Policy and Strategic Analysis	CO3	Analysis and diagnose the company’s external environmental impact on organizational policy and strategy
		CO4	Apply competitive strategies for an organizational growth, stability and renewal.
		CO5	Evaluate the competitive strategies its offensive and
		CO6	Develop a strategic Framework to control and evaluate the function of organization and market with continuous
CP – 302	Decision Support Systems	CO1	Define the Management Information System, Database Management System and Decision Support System.
		CO2	and DMS.
		CO3	Analysis the Managerial Decision making process, Organisatinal MIS and DMS.
		CO4	Apply different models of decision making.
		CO5	classification of DSS.
		CO6	Develop an effective MIS and DMS Model from determining organizational decision process
CP – 303	Business Legislation	CO1	Define the law of contract and different terms of Laws
		CO2	Understand essential elements of contract and concept of various types of contract.
		CO3	Negotiable Instrument Act.
		CO4	amendments
		CO5	Understand the Consumer Protection Act and IT Act.
		CO6	various laws and Act.
CP – 304	Summer Training Project	CO2	
		CO3	
		CO4	
		CO5	
		CO6	

## MBA

COURSE CODE	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
		CO7	
FM-305	Securities Analysis and Portfolio Management	CO1	Define the features and objectives of investment.
		CO2	Portfolio Management
		CO3	Analysis and compute the Risk and return on Portfolio with the help of various indicators and charting tools.
		CO4	Apply efficient set , feasible set and utility theory for making an effective Portfolio
		CO5	Evaluate and monitor the Portfolio performance and learn the best technique for Portfolio Management
		CO6	Develop an effective strategy for investment using the technical tools of charting, indicators and volume price
FM-306	Corporate Restructuring	CO1	Define various types of corporate restructuring.
		CO2	Understand the importance and reasons for corporate
		CO3	Analysis the mergers and acquisitions in corporate
		CO4	Apply the financial aspect of mergers and acquisitions
		CO5	Evaluate the cash flow, capital estimate, terminal value
		CO6	Develop accounting principles for mergers and acquisitions in an organization.
FM-307	International Accounting	CO1	Define the international dimensions of accounting, conceptual development and comparative development
		CO2	Understand the concept of financial accounting, inflation in market and business transactions.
		CO3	Analysis currency transactions with international standards and foreign financial statement.
		CO4	Apply these dimensions of accounting in multinational
		CO5	Evaluate the process of transactions.
		CO6	Develop a transparent decentralized management system for financial transactions
		CO1	Define financial derivative securities and the factors contributing to the growth of derivatives Market in India.

## MBA

COURSE CODE	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
FM-308	Financial Derivatives	CO2	Understand the features and types of financial derivatives securities in Indian Market
		CO3	Analysis the Future Market contracting and pricing, analysis the trading mechanism and theories of Future
		CO4	Apply strategies for trading of derivatives in Indian Market, apply the combine hedging strategies of Future and
		CO5	portfolio.
		CO6	Develop a sound strategies for trading Future, option, currency, Cash, Metal and equity in the Stock Market.
FM-309	Project Planning, Analysis and Management	CO1	Define the characteristics and classification of project Management. Define the Role and responsibilities of
		CO2	Understand the concept and important of project Management, its generation and screening.
		CO3	Analysis the Project section process, its life cycle and asses the roles and responsibilities of project manager.
		CO4	Apply technical, situational and financial analysis to implement a project activities
		CO5	Evaluate and determine the risk, benefits and constrains of
		CO6	Develop Network technique for project Management and
FM-310	International Finance	CO1	Define the international financial system and capital flow.
		CO2	monetary system.
		CO3	exchange rates.
		CO4	international finance system
		CO5	stability of exchange Rates.
		CO6	Develop a strategy for forecasting the exchange rate and managing the risk and exposure.
		CO1	strategy.
		CO2	Understand various determinants attesting the consumer

## MBA

COURSE CODE	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
MM-305	Consumer Behaviour	CO3	Analysis the personality, perception and attitude of consumer, which influences the decision making process
		CO4	Apply Psychographic, opinion and lifestyle of reference group, social group, peer group, class group that influence
		CO5	Evaluate the model of consumer behaviour as to measure the performance of predicted consumer behaviour.
		CO6	Develop a strategy and model of consumer behaviour determining the decision making process.
MM-306	Advertising Management	CO1	marketing process.
		CO2	Understand the legal ethical and social aspects of
		CO3	Analysis the need and influencing strategy to attract the
		CO4	Apply the strategy building of advertising programme with campaign planning, Media and budgeting
		CO5	Evaluate advertising effectiveness and performance.
		CO6	Develop a creating strategy for informative and attracting
MM-307	Marketing of Services	CO1	Define the concept and important of service marketing.
		CO2	Understand the reasons behind the growth of services sector in India and 7 P"s of service marketing.
		CO3	Analysis the Management, and Strategies of Service
		CO4	Apply the demand supply theory for providing service to the costumers/clients.
		CO5	Evaluate the quality issue, gap, model, delivery channel, conflict and resolutions of Service Marketing.
		CO6	Develop strategy and model of SERVQUAL to implement in Financial, Tourism, Education, Health and Telecom Service.
		CO1	Define the concept of international marketing and
		CO2	Understand policy and procedures of import and export business, ECGC, commodity boards etc.

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COURSE CODE	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
MM-308	International Marketing	CO3	Analysis the constraints on international Marketing like fiscal and non fiscal barriers, non-tariff barriers.
		CO4	Apply the international marketing practice in domestic
		CO5	Evaluate the performance of promotional infrastructure of import-export marketing
		CO6	Develop a strategy for effective promotion, pricing and distribution for international business
MM-309	Sales and Distribution Management	CO1	Define the nature and scope of Sales Management and Distribution Management.
		CO2	Understand the formulating process and personal selling programmes
		CO3	Apply attractive strategies for wholesaling and retailing and logistic of distribution.
		CO4	Evaluate and asses the performance of Marketing channels
		CO5	Develop a information system and channel Management system to monitor the abidance of the polices and legal Acts.
		CO6	
MM-310	Retail Management	CO1	Define the formats and structure of market retailing.
		CO2	Understand the consumer purchase behaviour; cultural and social group influence
		CO3	Analysis the traffic flow, pattern, population and its
		CO4	Apply strategy like creative display, retail discount pricing and offers to attract consumer
		CO5	Evaluate Role of IT in Supply chain management and Direct Marketing and Selling
		CO6	Develop a modern strategy for retailing through using
		CO1	Define the importance of Human Resource Planning for an
		CO2	Understand various legal frame work of Industrial Relation



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MBA			
COURSE CODE	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
HR-305	Management of Industrial Relations	CO3	Analysis the role and future of trade unions and employee
		CO4	settlement
		CO5	Evaluate employee empowerment and quality Management in view of industrial relation.
		CO6	Design an effective strategy for developing participation Management System.
HR-306	Performance and Compensation Management	CO1	Define the conceptual framework of Performance Management in an organisation
		CO2	Understand various strategies and modes to improve performance Management
		CO3	Analysis the criteria, types of measure, performance standard and competency.
		CO4	Apply mentoring and counselling strategy for solving
		CO5	Evaluate the challenges and practices of Performance
		CO6	Develop a Compensation strategy for family and relative of
HR-307	Legal framework Governing Human Relations	CO1	Define the emergence of legal frame work at work place
		CO2	Understand about the laws and policies
		CO3	of equality
		CO4	employees in an organization.
		CO5	Evaluate the incentives/wages of Male and female workers by the theories of wage determination
		CO6	Develop a strategy/principle of Incentive Wage Plan and Equal pay for equal Work in an organization.
HR-308	Management Training and Development	CO1	development in an organization
		CO2	Understand the training and development polices.
		CO3	Analysis the pre and post training data to understand the knowledge gained by employees
		CO4	Apply reason and various models to measure the development in an organization.
		CO5	Evaluate the effectiveness of training and performance of employee after training.

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MBA			
COURSE CODE	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
		CO6	Develop a training module for assessing the adult learning, team building in an organization.
HR-309	Human Resource Development: Strategies and System	CO1	organization
		CO2	outcomes.
		CO3	Analysis the process of HRD programme
		CO4	management of HRD.
		CO5	various matrix
		CO6	Develop OD models to diagnose and intervene to improve the quality and performance of Human Resource in an organization
HR-310	Human Resource Planning and Development	CO1	Resource Planning.
		CO2	Planning
		CO3	Planning in corporate
		CO4	resource in an organization
		CO5	Evaluate effectiveness of Human Resource Plan and appraise the performance accordingly
		CO6	Develop a strategy for assigning, deploying, appraising Human Resource in an organization
COURSE CODE	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
CP – 401	Corporate Evolution and Strategic Management	CO1	Define the nature and scope of Strategic Management with organizational core competence, capability and
		CO2	an organization.
		CO3	Analysis the strength, weakness, opportunities and threat of an organization by using various tools like
		CO4	Apply various matrix and models like BCG Matrix and GE 9 Cell Model to know the status of organization
		CO5	Evaluate the performance of organization by using different tools and techniques.
		CO6	Develop a strategy to control and management mergers

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COURSE CODE	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
CP – 402	Project study	CO1	
		CO2	
		CO3	
		CO4	
		CO5	
		CO6	
		CO7	
FM-403	Securities Analysis and Portfolio Management	CO1	Define the features and objectives of investment.
		CO2	Portfolio Management
		CO3	Analysis and compute the Risk and return on Portfolio with the help of various indicators and charting tools.
		CO4	Apply efficient set , feasible set and utility theory for making an effective Portfolio
		CO5	Evaluate and monitor the Portfolio performance and learn the best technique for Portfolio Management.
		CO6	Develop an effective strategy for investment using the technical tools of charting, indicators and volume price
FM-404	International Finance	CO1	flow.
		CO2	monetary system.
		CO3	exchange rates.
		CO4	international finance system
		CO5	stability of exchange Rates.
		CO6	Develop a strategy for forecasting the exchange rate and managing the risk and exposure.
FM-405	Management	CO1	Define the nature and scope of Management Control
		CO2	Understand organizational goals, strategic planning, implementing, structure etc
		CO3	Analysis Programming budgetary Plan to expose for further organizational planning.

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COURSE CODE	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
MM-403	Control System	CO4	money
		CO5	Evaluate the qualitative and quantitative performance of Management Control Structure.
		CO6	Develop a model for measuring Human Behaviour aspect of Management control.
MM-403	Advertising Management	CO1	marketing process.
		CO2	advertising.
		CO3	the consumers.
		CO4	Apply the strategy building of advertising programme with campaign planning, Media and budgeting
		CO5	Evaluate advertising effectiveness and performance.
		CO6	attracting advertisement.
MM-404	International Marketing	CO1	Define the concept of international marketing and
		CO2	Understand policy and procedures of import and export business, ECGC, commodity boards etc.
		CO3	Analysis the constraints on international Marketing like fiscal and non fiscal barriers, non-tariff barriers
		CO4	business
		CO5	Evaluate the performance of promotional infrastructure of import-export marketing
		CO6	Develop a strategy for effective promotion, pricing and distribution for international business
		CO1	Define the nature and scope of Sales Management and Distribution Management.
		CO2	selling objectives
		CO3	programmes.

## MBA

COURSE CODE	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
MM-405	Sales and Distribution Management	CO4	Apply attractive strategies for wholesaling and retailing and logistic of distribution channels
		CO5	
		CO6	Develop a information system and channel Management system to monitor the abidance of the polices and legal Acts.
HR-403	Human Resource Planning and Development	CO1	Define the basic concept of Human Resource Planning and Development with the assessment of need and process.
		CO2	Understand the importance of HRP level, barriers and factors affecting it in corporate world.
		CO3	Analysis the behavioural factor of Human Resource based on attitude and thought process,
		CO4	Apply strategies and methods to gather information which would help in making further decision taking.
		CO5	Evaluate the career performance with using various strategies to alter the career if needed.
		CO6	Develop a multi-skilling strategy for HRP and performance
HR-404	Management Training and Development	CO1	Define the concept and rational of Training and Development System in an organization.
		CO2	development.
		CO3	training data.
		CO4	Apply various training modules to gain insight about how to design and implement training program successfully.
		CO5	Evaluate various models and theories like CIRO approach for effective training Management and development.
		CO6	Develop a training module in Indian organization and
	Human Resource	CO1	of HRD
		CO2	Understand different techniques of Management Human Resource Development

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COURSE CODE	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
HR-405	Human Resource Development : Strategies and System	CO3	Analysis the Human Resource Development mechanisms, process and outcomes.
		CO4	programme
		CO5	measure the effectiveness
		CO6	Develop OD programme Models for diagnosing, intervening and bringing change in an organizations
IT-403	System analysis and design	CO1	NA
		CO2	NA
		CO3	NA
		CO4	NA
		CO5	NA
		CO6	NA
		CO7	NA
IT-404	Application development using oracle	CO1	NA
		CO2	NA
		CO3	NA
		CO4	NA
		CO5	NA
		CO6	NA
		CO7	NA
IT-405	Internet programming for e-commerce	CO1	NA
		CO2	NA
		CO3	NA
		CO4	NA
		CO5	NA
		CO6	NA
IT-406	Practical	CO1	NA
		CO2	NA
		CO3	NA
		CO4	NA
		CO5	NA

# MBA

MBA			
COURSE C	COURSE TITLE	COURSE OUTCOME (CO)	COURSE OUTCOME(CO)- DETAILS
		CO6	NA
		CO7	NA

# UG COURSE OUTCOMES

ACADEMIC SESSION-20

COURSE

Papers

Title

OUTCOMES(CO'S)

## SEMESTER- I

CC-I	Calculus	<p><b>CO1.</b>Students are expected to be able to use Leibnitz's rule to evaluate derivatives of higher order,</p> <p><b>CO2.</b>Students will be able to study the geometry of various types of functions, evaluate the area, volume using the techniques of integrations</p> <p><b>CO3.</b>Students will be able to identify the difference between scalar and vector</p> <p><b>CO4.</b>Students acquired knowledge on some the basic properties of vector functions.</p>
CC-II	Discrete Mathematics	<p><b>CO1.</b>The acquired knowledge will help students in simple mathematical modeling</p> <p><b>CO2.</b>They can study advance courses in mathematical modeling</p> <p><b>CO3.</b> Students can develop skill and knowledge on computer science, statistics</p> <p><b>CO4.</b> Students can acquire knowledge on physics, chemistry etc.</p>
GE-I	Calculus & Differential Equations	<p><b>CO1.</b> Students are expected to be able to apply knowledge of calculus</p> <p><b>CO2.</b> They can apply the concepts in differential equations</p> <p><b>CO3.</b> They can solve the many scientific problems arising in different branch</p> <p><b>CO4</b> Students can employ the idea to their field and develop their project</p>

## SEMESTER-II

CC-III	Real Analysis	<p><b>CO1.</b>Students will be able to handle fundamental properties of the real numbers that lead to the formal development of real analysis.</p> <p><b>CO2.</b>Understand limits and their use in sequences, series, differentiation and integration.</p> <p><b>CO3.</b>Students will appreciate how abstract ideas.</p>
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CC-IV	Differential Equations	<p><b>CO4.</b>Students will be able to handle rigorous methods in mathematical analysis can be applied to important practical problems.</p> <p><b>CO1.</b>A student completing the course is able to solve differential equations</p> <p><b>CO2.</b>Students can able to model problems in nature using Ordinary Differential Equations</p> <p><b>CO3.</b>This course is prerequisite for studying the course in Partial Differential Equations</p> <p><b>CO4.</b>This is also models dealing with Partial Differential Equations.</p>
GE-II	Algebra	<p><b>CO1.</b> The acquired knowledge will help students to study further courses in mathematics</p> <p><b>CO2.</b> Students can achieve fundamental concepts on group theory, ring theory and field theory and linear algebra.</p> <p><b>CO3.</b> Students can apply the concepts on higher mathematics</p> <p><b>CO4.</b>They can also interrelate all the concepts to different branches of science subjects like computer science statistics, physics, chemistry etc.</p>

### SEMESTER-III

CC-V	Theory of Real Functions	<p><b>CO1.</b>Students will have working knowledge on the concepts and theorems of the elementary calculus of functions of one real variable</p> <p><b>CO2.</b> They will work out problems involving derivatives of function and their applications.</p> <p><b>CO3.</b>They can use derivatives to analyze and sketch the graph of a function of one variable; can also obtain absolute value and relative extrema of functions.</p> <p><b>CO4.</b>This knowledge is basic and students can take all other analysis courses after learning this course</p>
CC-VI	Group Theory-I	<p><b>CO1.</b> A student learning this course gets idea on concept and examples of groups and their properties</p> <p><b>CO2.</b> He understands cyclic groups, permutation groups, normal subgroups and related results</p>

		<p><b>CO3</b> After this course he can opt for courses in ring theory, field theory, commutative algebras, linear classical groups etc</p> <p><b>CO4.</b> Students can be apply this knowledge to problems in physics, computer science, economics and engineerin</p>
CC-VII	Partial Differential Equations & System of ODE's	<p><b>CO1.</b> After completing this course, a student will be able to take more courses on wave equation, heat equation, diffusion equation,</p> <p><b>CO2.</b> Students can solve different problems arising in gas dynamics, nonlinear evolution equations etc</p> <p><b>CO3.</b> All these courses are important in engineering for solving boundary value problem.</p> <p><b>CO4.</b> All these courses are important in industrial applications for solving boundary value problem.</p>
GE-III	Real Analysis	<p><b>CO1.</b> Students will be able to handle fundamental properties of the real numbers that lead to the formal development of real analysis</p> <p><b>CO2.</b> Students understand limits and their use in sequences, series, differentiation and integration.</p> <p><b>CO3.</b> Students will appreciate how abstract ideas and rigorous methods in mathematical analysis can be applied to important practical problems</p> <p><b>CO4.</b> Students can apply many mathematical tools such as convergence test in different field.</p>

#### SEMESTER-IV

CC-VIII	Numerical Methods & Scientific Computing	<p><b>CO1.</b> Students can handle physical problems to find an approximated solution.</p> <p><b>CO2.</b> Student can opt for advance courses in Numerical analysis in higher mathematics.</p> <p><b>CO3.</b> Use of good mathematical software will help in getting the accuracy one need from the computer and can assess the reliability of the numerical results.</p>
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CC-IX	Topology of Metric Spaces	<p><b>CO4.</b> Students can determine the effect of round off error or loss of significance</p> <p><b>CO1.</b> Students will learn to work with abstract topological spaces</p> <p><b>CO2.</b> Students will learn to work with abstract metric space spaces</p> <p><b>CO3.</b> Students will learn to relate abstract topological spaces and metric spaces</p> <p><b>CO4.</b> This is a foundation course for all analysis courses in future.</p>
CC-X	Ring Theory	<p><b>CO1.</b> Students will enable to achieve new algebraic structures</p> <p><b>CO2.</b> Students can relate new algebraic structures via mapping.</p> <p><b>CO3.</b> Students can achieve concept on Galois theory and their applications</p> <p><b>CO4.</b> They can solve many applied concepts via different contents of the syllabus.</p>
GE-IV	Numerical Methods	<p><b>CO1.</b> Students can handle physical problems to find an approximated solution</p> <p><b>CO2.</b> Students can opt for advance courses in Numerical analysis in higher mathematics.</p> <p><b>CO3.</b> Students can use of good mathematical software will help in getting the accuracy one need from the computer</p> <p><b>CO4.</b> They can assess the reliability of the numerical results, and determine the effect of round off error or loss of significance</p>
SECC-II	Introduction to MATLAB	<p><b>CO1.</b> Use MATLAB effectively to analyze and visualize data.</p> <p><b>CO2.</b> They are fully familiar to all the features of MATLAB software and easily handle the software.</p> <p><b>CO3.</b> Apply numeric techniques and computer simulations to solve engineering-related problems.</p> <p><b>CO4.</b> Can design refined data-analysis programs that can be operated by relatively inexperienced users.</p>

## SEMESTER-V

CC-XI	Multivariable Calculus	<p><b>CO1.</b> After reading this course a student will be able to calculate partial derivatives, directional derivatives, extremum values and can calculate double, triple and line integrals</p> <p><b>CO2.</b> He will have idea of basic vector calculus including Green's theorem, divergence theorem and Stoke's theorem</p> <p><b>CO3.</b> Students can take courses in calculus on manifolds, Differential geometry</p> <p><b>CO4.</b> This course helps in numerical computations involving several variables</p>
CC-XII	Linear Algebra	<p><b>CO1.</b> Students will get knowledge on vector space, subspace, basis, dimension of vector spaces etc.</p> <p><b>CO2.</b> They can interpret matrices, differential equations in vector spaces.</p> <p><b>CO3.</b> This course also enables on eigenvalues, eigen vector and many elements.</p> <p><b>CO4.</b> This course helps students for special structure such as normed linear spaces, inner product spaces</p>
CC-XIII	Multivariable Calculus	<p><b>CO1.</b> More knowledge on this topic in higher studies will help students to deal industrial models</p> <p><b>CO2.</b> This is also prerequisite for studying advanced courses in Nonlinear Programming Problems</p> <p><b>CO3.</b> Students shall obtain basic concepts on Inventory Control Problem</p> <p><b>CO4.</b> This course also motivates students towards Queuing Theory, stochastic process and Poison process.</p>
DSE-II	Probability & Statistics	<p><b>CO1.</b> The students shall learn probability and statistics for various random variables</p> <p><b>CO2.</b> The students shall learn probability and statistics for distribution functions</p> <p><b>CO3.</b> Students are able to know expectation, variance, covariance and their application in daily life</p> <p><b>CO4.</b> Students can apply various general aspects of random variables with their applications in practical life.</p>

## SEMSTER-VI

CC-XIII	Complex Analysis	<p><b>CO1.</b> Students will be able to handle certain integrals not evaluated earlier</p>
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CC-VIV	Group Theory-ii	<p><b>CO2.</b> Will know a technique for counting the zeros of polynomials</p> <p><b>CO3.</b> Students will be able to solve many applied contents</p> <p><b>CO4.</b> This course is prerequisite to many other advanced analysis courses</p> <p><b>CO1.</b> The knowledge of automorphism helps to study more on group theory</p> <p><b>CO2.</b> Students learn on direct products, group actions, class equations and their applications with proof of all results</p> <p><b>CO3.</b> This course helps to opt for more advanced courses in higher algebra.</p> <p><b>CO4.</b> Students able to enhance their concepts on modern algebra and linear classical group</p>
DSE-III	Differential Geometry	<p><b>CO1.</b> Student will learn on different formulas and properties on plane and space elements.</p> <p><b>CO2.</b> They can relation between tangent, normal and binormals among different geometrical objects</p> <p><b>CO3.</b> Students able to understand different forms such as first and second fundamental forms and ideas on various curvatures.</p> <p><b>CO4.</b> He has scope to take more advanced courses in surface theory and geometry.</p>
DSE-IV	Number Theory/Project	<p><b>CO1.</b> Upon successful completion of this course students will be able to know the basic definitions and theorems in number theory.</p> <p><b>CO2.</b> They can identify order of an integer, primitive roots, Euler's criterion, the Legendre symbol, Jacobi symbol and their properties</p> <p><b>CO3.</b> Students can understand modular arithmetic number-theoretic functions</p> <p><b>CO4.</b> They can understand application of number theory elements in cryptography</p>

**UNDERGRADUATE SYLLABUS OF SCHOOL OF EDUCATION WITH COs LIST**

- **PSO-1: *Disciplinary Knowledge in the field of Education:***
- **PSO-2: *Critical thinking in the field of Education:***
- **PSO-3: *ProblemsolvinginthefieldofEducation:***
- **PSO-4: *Research-related skill in the field of Education s:***
- **PSO-5: *Cooperation/Team work in the field of Education:***
- **PSO-6: *CommunicationSkillsoflearnerwithcommunitymembersandstakeholder:***
- **PSO-7: *Leadershipreadiness/qualities oflearnerforsociety:***
- **PSO-8: *MulticulturalcompetenceinthefieldofEducation:.***
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**CoursestructureofUGEducationHonours**

Semester	Course	CourseName	Credits	Totalmarks
<b>I</b>	AEC-I	AEC-I	04	100
	C-I	EducationalPhilosophy	04	75
	C-IPractical		02	25
	C-II	EducationalPsychology	04	75
	C-IIPractical		02	25
GE-I	• GE-I (A)	04	75	
		02	25	
			<b>20</b>	
<b>II</b>	AEC-II	AEC-II	04	100
	C-III	EducationalSociology	04	75
	C-IIIPractical		02	25
	C-IV	ChangingPedagogical Perspective	04	75
	C-IVPractical		02	25
GE-II	• GE-II (A)	04	75	
		02	25	
			<b>20</b>	

<b>III</b>	C-V	Educational Assessment and Evaluation	04	75
	C-V Practical		02	25
	C-VI	Educational Research	04	75
	C-VI Practical		02	25
	C-VII	Statistics in Education	04	75
	C-VII Practical		02	25
GE-III	GE-III	04	75	
GE-III Practical		02	25	
SEC-I	SEC-I	04	100	

			<b>26</b>	
<b>IV</b>	C-VIII	History of Education in India	04	75
	C-VIII Practical		02	25
	C-IX	Curriculum Development	04	75
	C-IX Practical		02	25
	C-X	Guidance and Counseling	04	75
	C-X Practical		02	25
GE-IV	GE-IV	04	75	
GE-IV Practical		02	25	
SEC-II	SEC-II	04	100	
			<b>26</b>	

Semester	Course	Course Name	Credits	Total marks
<b>V</b>	C-XI	Development of Education in Odisha	04	75
	C-XI Practical		02	25
	C-XII	Information and Communication Technology in Education	04	75
	C-XII Practical		02	25
DSE-I	A. Pedagogy of language (English) B. Pedagogy of language (Odia)	04	75	
DSE-I Practical		02	25	

	DSE-II	A. Pedagogy of Social Sciences	04	75
	DSE-II Practical	B. Pedagogy of Mathematics	02	25
			<b>24</b>	
<b>VI</b>	C-XIII	Contemporary Trends and Issues in Indian Education	04	75
	C-XIII Practical		02	25
	C-XIV	Educational Management and Leadership	04	75
	C-XIV Practical		02	25
DSE-III	A. Policy and Practices in School Education in India	04	75	
	DSE-III Practical	B. Policy and Practices in Higher Education in India	02	25
	DSE-IV	Inclusive Education (Theory)	04	75
	DSE-IV Practical		02	25
	<b>OR</b>			
	DSE-IV	Dissertation	06	100*
			<b>24</b>	





CO1 State and analyze the meaning of education and form own concept of education

CO2 Explain philosophy as the foundation of education

CO3 Analyze aims of education

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CO5 Compare and contrast Indian and western philosophies of education

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Paper

II

EDUC

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ALPSY

CHOL

OGY

### Course Outcomes:

On completion of this course, the learners shall be able to:

CO1. Explain the concept of educational psychology and its relationship with psychology. CO2. Understand different methods of educational psychology.

CO3. Describe the theoretical perspectives of educational psychology.

CO4. Explain the concepts of growth and development of child and adolescence, and underline general principles of growth and development.

CO5. Describe briefly the periods and the typical characteristics of growth and development during childhood and adolescence.

CO6. Specify the contexts and factors influencing development.

CO7. Explain the theory of cognitive development and its educational implications. CO8. State the different forms and characteristics of individual differences and the ways of meeting the classroom issues arising out of the differences.

CO9. Identify the learning needs during the different stages of development and adopt appropriate strategies in and out of school to meet the learning needs.

### Core Paper III

### EDUCATIONAL SOCIOLOGY

On completion of this course, the students shall:

- CO1. State the relationship between education and society.
- CO2. Understand the meaning of Educational Sociology and function of education as a social system.
- CO3. State different agencies of education and their functions.
- CO4. Justify the importance of education for social change.
- CO5. Describe the role of education in modernization and globalization.
- CO6. Describe the function of education to ensure equality and equity.

#### **Core Paper IV**

### CHANGING PEDAGOGICAL PERSPECTIVE

#### **Course Outcomes:**

On completion of this course, the students shall:

- CO1. Explain the concept of pedagogy
- CO2. Differentiate pedagogy from other allied concepts
- CO3. Explain different teaching tasks with examples
- CO4. Establish relationship between teaching and learning
- CO5. List out different approaches and methods of teaching
- CO6. Prepare a lesson plan following different designs

#### **Core Paper V**

### EDUCATIONAL ASSESSMENT AND EVALUATION

#### **Course Outcomes:**

On completion of this course, the students will:

- CO1. State the nature, purpose and types of educational assessment and evaluation.
- CO2. Develop and use different types of tools and techniques for continuous and comprehensive assessment of learning in the school situation.
- CO3. Explain the importance of assessment for learning and its processes for enhancing the quality of learning and teaching.
- CO4. Describe the characteristics of a good test.
- CO5. Analyze the trends and issues in learning and learner assessment.
- CO6. Analyze and interpret results of the assessment using standard score.
- CO7. Illustrate the principles of test construction in education.

#### **Core Paper VI**

### EDUCATIONAL RESEARCH

#### **Course Outcomes:**

On completion of this course, the student will:

- CO1. Describe nature, scope and limitation of educational research.
- CO2. Understand different types and methods of educational research.

- CO3. Explain sources from where knowledge could be obtained.
- CO4. Describe the process of research in education.
- CO5. Analyze research design in education.
- CO6. Illustrate procedure of collecting and analyzing data.
- CO7. Prepare the research report.

**Core Paper VII**  
**STATISTICS IN EDUCATION**

**Course Outcomes:**

On completion of this course, the students will:

- CO1. Describe the importance of statistics in education.
- CO2. Organize and represent educational data in tabular and graphical form.
- CO3. Compute and use various statistical measures of average, variation and bi-variate distribution to in analysis and interpretation of educational data.
- CO4. Describe the concept and importance of normal probability curve and interpret test scores in using normal probability curve.
- CO5. Understand the divergence of data from normality.

**Core Paper VIII**  
**HISTORY OF EDUCATION IN INDIA**

**Course Outcomes:**

On completion of this course, the student will

- CO1. Understand the development of education in India during ancient period, medieval period and pre-independence period.
- CO2. Describe the development of education in India during Post-independence period.
- CO3. Describe major recommendations of different Policies and committee reports on education in India.

**Core Paper IX**  
**CURRICULUM DEVELOPMENT**

**Course Outcomes:**

On completion of this course, the students will

- CO1. Differentiate curriculum from courses of study, text book.
- CO2. Analyze bases and sources of curriculum.
- CO3. Describe different types of curriculum.
- CO4. Critically examine National curriculum framework-2000 and 2005.
- CO5. Describe process of curriculum development and differentiate different models of curriculum development.
- CO6. Evaluate curriculum using different evaluation models.

**Core Paper X**  
**GUIDANCE AND COUNSELLING**

**Course Outcomes:**

On completion of this course, the students will

- CO1. State the concept, need, principles and bases of guidance.
- CO2. Use various tools and techniques of guidance in appropriate contexts.
- CO3. Explain the role of school in organizing different guidance programmes.
- CO4. State the concept, scope and type of counseling.
- CO5. Narrate the process, tools and techniques of counseling.
- CO6. Explain the qualities and role of a counselor.
- CO7. Describe different programmes for differently abled children.
- CO8. Explain the role of teacher and headmaster in organizing different guidance programmes.

**Core Paper XI**  
**DEVELOPMENT OF EDUCATION IN ODISHA**

**Course Outcomes**

On completion of the course the students will:

- CO1. Grasp the structure of educational system of Odisha
- CO2. State the function of institutions/units at the state and district levels
- CO3. Appreciate the contribution of Utkalmani Gopabandhu Das to the thoughts and
- CO4. Practices of Indian Education narrate the Course Outcomes and implementation process of the major education
- CO4. Schemes of central as well as state government being implemented in the state of Odisha
- CO5. Explain the role of various state and district level institutions in education
- CO6. Analyze the scenario of higher and technical education of Odisha
- CO7. Establish linkage between higher education and development of the state

**Core Paper XII**

**INFORMATION AND COMMUNICATION TECHNOLOGY IN EDUCATION**

**Course Outcomes**

On completion of this course, the student will:

- CO1. Explain the concept, nature and scope of ICT in education

- CO2. Explore ICT resources for Teaching and learning.
- CO3. Differentiate between Web 1.0 and Web 2.0
- CO4. Describe the importance of free and open source software in education
- CO5. Demonstrate the use of various application software in education.
- CO6. Develop the ability to use various tools connect the world
- CO7. Explain the content by using various subject tools.
- CO8. Explore tools and techniques of ICT for evaluation.

### **Core Paper XIII**

#### CONTEMPORARY TRENDS AND ISSUES IN INDIAN EDUCATION

#### **Course Outcomes**

On completion of this course the students will:

- CO1. Understand the importance of pre-school and elementary school education. Analyze various problems and issues for ensuring quality education.
- CO2. State the importance of secondary education and analyze various problems and issues for ensuring quality in secondary education.
- CO3. Enumerate the importance of higher education and analyze various problems and issues for ensuring quality in higher education.
- CO4. Justify the importance of teacher education and analyze various problems and issues for ensuring quality in teacher education.
- CO5. Analyze emerging concerns in Indian education.

### **Core Paper XIV**

#### EDUCATIONAL MANAGEMENT AND LEADERSHIP

#### **Course Outcomes**

On completion of this course, the students will

- CO1. Describe the concept, types and importance of educational management.
- CO2. Spell out the structure of educational management at different levels - from national to institution level.
- CO3. Describe different aspects and importance of educational management.
- CO4. Describe the concept, theories and style of leadership in educational management.
- CO5. Analyze the concept, principles and structures of total quality management approach in education.

## **Discipline Specific Elective Paper-I**

*(A student has to choose anyone from Pedagogy of English and Odia under DSE-1)*

### **A. PEDAGOGY OF LANGUAGE (ENGLISH)**

#### **Course Outcomes**

On completion of this course, the student will

- CO1. Analyze the issues relating to place of English in school curriculum, acquisition of skills in English, realization of aims and Course Outcomes of learning English and language Policy as conceived in NPE, 1986 and NCF – 2005
- CO2. Use various methods, approaches and strategies for teaching-learning English and transact various types of lesson plans covering all aspects of English language following different approaches
- CO3. Develop test items to assess learning in English and provide feedback as well as prepare enrichment materials
- CO4. Use the understanding of phonetics for facilitating students' speaking in English
- CO5. Plan appropriate pedagogical treatment of the prescribed contents for effective classroom transaction

## **Discipline Specific Elective Paper-I**

*(A student has to choose ANYONE from Pedagogy of English and Odia under DSE-1)*

### **A. PEDAGOGY OF LANGUAGE (ODIA)**

#### **Course Outcomes**

On completion of this course, the student will:

- CO1. State the importance and place of Odia as mother tongue in school curriculum.
- CO2. Develop the strategies to address the problems of Odia language acquisition in multilingual context.
- CO3. Use various strategies for facilitating the acquisition of language skills in Odia.
- CO4. Decide appropriate pedagogic approaches to transact different types of lessons in Odia.
- CO5. Prepare appropriate tools for comprehensive assessment of learning in Odia.
- CO6. Explain the fundamentals of Odia linguistics and their relevance in teaching learning Odia.
- CO7. Plan appropriate pedagogic treatment of the prescribed textual contents (in Odia) of classes IX and X.

## **Discipline Specific Elective Paper-II**

*(A student has to choose ANYONE from Pedagogy of Social Science and Mathematics)*

*under DSE-2)*

**A. PEDAGOGY OF SOCIAL SCIENCES**

**Course Outcomes**

On completion of this course, the student will:

- CO1. State the meaning, scope and importance of Social science
- CO2. Specify the skills and competencies to formulate specific COURSE OUTCOMES for different History and Political Science lessons
- CO3. Identify the different methods and skills of teaching History and Political Science for transacting the contents effectively.
- CO4. Explain the importance of time sense and prepare/ utilize timelines for effecting teaching of History
- CO5. Prepare Unit Plans and Lesson Plans in History and Political science
- CO6. Develop diagnostic achievement test, administer them and analyse the results for providing feedback

**Discipline Specific Elective Paper-II**

*(A student has to choose ANY ONE from Pedagogy of Social Science and Mathematics under DSE-II)*

**A. PEDAGOGY OF MATHEMATICS**

**Course Outcomes**

On completion of this course, the students will

- CO1. Narrate the evolution and nature of Mathematics and its importance in the school curriculum in the context of the recent curricular reforms.
- CO2. Use various methods and approaches of teaching and learning mathematics especially suitable for the secondary school classes.
- CO3. Plan lessons in Mathematics using traditional and constructivist approaches for effective classroom transactions.
- CO4. Develop and collect activities and resource materials for their use in enhancing the quality of learning Mathematics at the secondary level.
- CO5. Conduct continuous and comprehensive assessment for enhancing the quality of Mathematics learning.
- CO6. Explain the concepts in Mathematics included in the secondary school curriculum and make pedagogical analysis of those concepts

**Discipline Specific Elective Paper-III**

*(A student has to choose anyone from A & B under DSE-III)*

**A. POLICY AND PRACTICES IN SCHOOL EDUCATION IN INDIA**

**Course Outcomes**

On completion of this course, the student will:

- CO1. Analyse various Policies on education for school education



in India CO2. Evaluate progress of schools education  
CO3. Examine the problems in implementation of the Policies on school education CO4. Explore status of women education and education for SC, ST and Minorities in Indian

**Discipline Specific Elective Paper-III**

**(A student has to choose ANYONE from A & B under DSE-III)**

**A. POLICY AND PRACTICES IN HIGHER EDUCATION IN INDIA**

**Course Outcomes**

On completion of this course, the students shall:

CO1. Analyse various Policies on education for Higher education in India CO2. Evaluate progress of Higher education  
CO3. Examine the problems in implementation of the Policies on higher education CO4. Explore status of higher education.

**Discipline Specific Elective Paper-III**

**(A student has to choose ANYONE from A & B under DSE-III)**

**(C) LEARNING AND TEACHING**

Marks per paper - Midterm : 15 marks, End term : 60 marks, Practical : 25 marks

Total – 100 marks

**Learning Objectives**

On completion of the course, the learner shall be able to

- Explain the concept about differential learning needs of the learners with regard to abilities, learning styles, socio-cultural differences, language, and learning difficulties.
- Explore the different contexts of learning.
- Describe their own implicit understanding of the nature and kinds of learning.
- Gain an understanding of different theoretical perspectives of learning including the constructivist perspective.
- Analyze understanding about the concept of teaching from various perspectives.
- Explore teaching strategies to address diversity of students in a classroom.
- Analyze and Explain the concepts of teaching as a profession.

**Discipline Specific Elective**

**Paper-IV INCLUSIVE**

**EDUCATION**

### **Course Outcomes**

On completion of the course the students shall be able to:

- CO1. Define meaning and scope of inclusive education.
- CO2. identify the assumptions of disability underlying current general and special education practices
- CO3. understand the various suggestions given by different recent commissions on education of children with disabilities for realizing the concept of “Universalization of Education”;
- CO4. explore and utilize pedagogical approaches that can support students with a variety of learning profiles in respectful ways
- CO5. explain the meaning and implications of universal design in learning (UDL) for classroom pedagogy
- CO6. examine the different support services and collaboration for inclusive education

### **Generic Elective Paper I**

#### EDUCATIONAL PHILOSOPHY

### **Course Outcomes**

On completion of this course, the learners shall be able to:

- CO1. State and analyse the meaning of education and form own concept on education
- CO2. Explain philosophy as the foundation of education
- CO3. Analyse aims of education
- CO4. Describe the essence of different formal philosophies and draw educational implications
- CO5. Compare and contrast Indian and western philosophies of education

### **Generic Elective- I (B)**

#### GENDER, SCHOOL AND SOCIETY

**Marks per paper - Midterm: 15 marks, End term: 60 marks, Practical: 25 marks**

**Total – 100 marks**

#### Learning outcomes

On completion of the course, the learner shall be able to

- State the basic understanding and familiarity with key concepts-gender, gender bias, gender parity, equity and equality, patriarchy and feminism and transgender.
- Describe about policies, plans and schemes of the government for addressing all forms of disparities and inequalities existing in the society
- Explain gender issues in school, curriculum, textual materials across

disciplines, pedagogical processes and its intersection with class, caste, religion and region; and

- Critically analyzed the need to address gender-based violence in all social spaces.
- Analysis of Gender Jurisprudences in Indian context

#### **Generic Elective**

### **Paper II**

## **EDUCATIONAL PSYCHO**

## **LOGY**

### **Course Outcomes**

On completion of this course, the students will:

CO1. Explain the concept of educational psychology and its relationship with psychology. CO2. Understand different methods of educational psychology.

CO3. Explain the concepts of growth and development of child and adolescence, and underline general principles of growth and development.

CO4. Describe briefly the periods and the typical characteristics of growth and development during childhood and adolescence.

CO5. Explain the theory of cognitive development and its educational implications. CO6. State the different forms and characteristics of individual differences and the ways of meeting the classroom issues arising out of the differences.

CO7. Identify the learning needs during the different stages of development and adopt appropriate strategies in and out of school to meet the learning needs.

### **Generic Elective- II (B)**

## **EARLY CHILDHOOD CARE AND EDUCATION**

### **Learning Objectives**

The students will be able to

- Describe the concept of early childhood care and education
- Identify the common types of diseases at early childhood stage
- Analyze the curriculum at pre-school stage
- Evaluate the recommendations given by various organizations on ECCE

### **Generic Elective Paper III (A)**

## CONTEMPORARY TRENDS AND ISSUES IN INDIAN EDUCATION

### Course Outcomes

On completion of this course the students will

- CO1. Understand the importance of pre-school and elementary school education. Analyze various problems and issues for ensuring quality education.
- CO2. State the importance of secondary education and analyze various problems and issues for ensuring quality in secondary education.
- CO3. Enumerate the importance of higher education and analyze various problems and issues for ensuring quality in higher education.
- CO4. Justify the importance of teacher education and analyze various problems and issues for ensuring quality in teacher education.
- CO5. Analyze emerging concerns in Indian education.

**Generic**

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**Elective**

**III(B)**

Human Rights, Peace & Value Education

### Course Outcomes

*On completion of the course, it is expected that the students will be able to*

- A. Analyze the concept of human rights, peace and value education.
- B. Critically analyze the role of various agencies in promoting human rights education.
- C. Critically evaluate the role of Parents, Teachers, Society, Government etc. in protecting human rights and fostering values.
- D. Discuss the role of education in promoting human rights and value education.
- E. Apply different activities and strategies for inculcating peace and value education

**Generic Elective Paper IV**

**EDUCATIONAL ASSESSMENT AND EVALUATION**

### Course Outcomes

On completion of this course, the students will.

- CO1. State the nature, purpose and types of educational assessment and

evaluation.

CO2. Develop and use different types of tools and techniques for continuous and comprehensive assessment of learning in the school situation.

CO3. Explain the importance of assessment for learning and its processes for enhancing the quality of learning and teaching.

CO4. Describe the characteristic of a good test.

CO5. Analyze the trends and issues in learning and learner assessment.

CO6. Analyze and interpret results of the assessment using standard score. CO7. Illustrate the principles of test construction in education.

Session-2023-2024			
Name of the Department: Psychology			
Programme: PG			
Semester	Course Code	Course Title	Course Outcome
I	PSY-101	GENERAL PSYCHOLOGY I	CO1: Understand basic concept of sensation and perception, and its importance in perceptual process of perception. (Level-2) CO2: Explain various procedures of learning process also understanding of cognitive approaches in learning with related issues in everyday life. (Level 3) CO3: Execute various models of memory and able to compare Short Term Memory and Long-term Memory as well as other functions of Memory (Level 4) CO4: Analyze various stages in creative thinking, and use of algorithms and heuristics to solve problems in everyday life. (Level 4)
	PSY-102	BASIC PHYSIOLOGICAL PSYCHOLOGY	CO1: Describe neuroanatomy including the structure of a neuron, the properties of synapses, the central and peripheral nervous systems, and the structure of the brain. (Level-1) CO2: Understand the biological bases of human behaviour, its nature and scope. (Level-2) CO3: Explain the structures of human brain, their functions and impact on human behaviour. (Level-2) CO4: Apply scientific techniques for biological psychology and developing an awareness of ethical issues accompanying them. (Level- 3) CO5: Analyze the relationship between the mind and the body and, in doing so, will consider the purpose of consciousness. (Level-4)
	PSY-103	SOCIAL PSYCHOLOGY	CO1: Recall the major theoretical perspectives in social psychology in different social settings. (Level -1) CO2: Understand the techniques of forming and changing attitude. (Level -2) CO3: Apply the knowledge to respond to an emergency situation. (Level-3)
	PSY-104	INDUSTRIAL AND ORGANISATIONAL PSYCHOLOGY	CO1: Remember the basic concepts of organizational behaviour. (Level-1) CO2: understand the complexities associated with management of individual behaviour in the organization. (Level-2) CO3: Interpret the complexities associated with management of the group behaviour in an organization. (Level-3) CO4: Analyse thoroughly the organizational system. (Level-4)
	PSY-105	PRACTICAL	CO1: Understand the ways of conducting psychological experiments. (Level -2) CO2: Apply scientific methods for the solution of psychological problems. (Level -3) CO3: Use the knowledge of various psychological experiments and tests in social situations. (Level- 3)
II	PSY-201	GENERAL PSYCHOLOGY II	CO1: Explain various psychological process with major theories involved in this field (Level-2) CO2: Apply various theories of personality to study human behaviour. (Level-4) CO3: Analyse the important process of memory related to human being. (Level-4) CO4: Evaluate and analyse theories of emotion and how we express and recognize.
	PSY-202	STATISTICS	CO1: Understand the meaning and difference between regression and correlation. (Level -2) CO2: Use various techniques of data analysis. (Level -3) CO3: Apply different parametric and non-parametric measures while interpreting data.
	PSY-203	LIFE SPAN HUMAN DEVELOPMENT	CO1: Define the stages and theories of development. (Level-1) CO2: Classify various types of development occurring throughout the childhood. (Level-2) CO3: Interpret various types of development and relationship with peers and family during adolescence. (Level-3)
	PSY-204	HEALTH PSYCHOLOGY	CO1: Understand the biological, behavioural, cognitive and social determinants of health, and risk factors for health-compromising behaviours and strategies for their modification, across the lifespan.(Level-2) CO2: Summarize the theory and research of the field of Health Psychology by reviewing and discussing the fundamental and more recent contributions to the science.(Level-2) CO3: Evaluate research in health psychology and use this knowledge to explain mind-body interaction to health-care consumers and professionals.(Level-5) CO4: Critique and Synthesize research on the factors involved in causing,
	PSY-205	PRACTICAL	CO1: Analyze the level of intelligence among the individuals. (Level-4) CO2: Implement the learning style and decision-making style of participants. (Level-3) CO3: Examine the home environment of a pre-school child by interviewing the parents. (Level-4) CO4: Experiment and value how to handle the conflicts. (Level-5)
	PSY-206 (OF HAPPINESS)	PSYCHOLOGY OF HAPPINESS	CO1: Understand the difference between weaknesses and strengths, and how positive psychology emphasises the latter in contrast to traditional psychology's emphasis on the former. (Level-2) CO2: Use a variety of techniques designed to enhance happiness. (Level-3) CO3: Analyse your own strengths, and understand how you might go about exercising these in order to achieve lasting happiness. (Level-4)
	PSY-206 (CHILD PSYCHOLOGY)	CHILD PSYCHOLOGY	CO1: Explain how theories are used to understand child behavior and Development (Level2) CO2: Classify major theories of child development such as those of Piaget. (Level-2) CO3: Apply development theory to the analysis of child observations, surveys, and/or interviews using investigative research methodologies. (Level-3)

	SY-206 (ABNORMAL PSYCHOLOGY)	CO1: Define abnormality and the causal factors of abnormal behaviour. (Level-1) CO2: Classify the psychological disorders and the practice of psychiatric diagnosis. (Level-2) CO3: demonstrate knowledge of the classification system for psychosomatic disorders and be able to evaluate its impact. (Level-3)
	SY-206 (ENVIRONMENTAL PSYCHOLOGY)	CO1: Know the scope of studying social psychology and the methods to gather data in the social context to explain them. (Level-2) CO2: Understand the significance of social cognition, attitudes, stereotypes and prejudices in explaining human behaviour in social contexts. (level-3)
	SY-206 (SPORTS PSYCHOLOGY)	CO1: Apply psychological techniques and strategies to enhance performance in sports. (Level 3) CO2: Evaluate research in sport psychology and psychological factors related to performance and participation in sport and exercise settings. (Level-5) CO3: Implement motivational inhibitors and techniques that influence performance and participation in sports. (Level-3) CO4: Analyze the importance of effective team leadership and various functions of Dynamic team spirit. (Level 4)
	SY-206 (PSYCHOPATHOLOGY)	CO1: Understand the interactional relationships between environment and behavior. CO2: Understand the problems occurring to ecology and environment at the present time.
III	PSY-301 (RESEARCH METHODOLOGY)	CO1: Understand the basic orientation and methods of qualitative and quantitative research. (Level-2) CO2: Formulate good hypothesis and selected problems. (Level -4) CO3: Compare different types of research in psychology. (Level-4) CO4: Evaluate various types of psychological tools. (Level-5)
	PSY-302 (POSITIVE PSYCHOLOGY)	CO1: Understand about Western and Eastern prospective on positive psychology. (Level-2) CO2: Apply the various models and correlates of emotional intelligence and its importance in everyday life. (Level-3) CO3: Evaluate the importance of self-efficacy and benefits of optimism in various domains. (Level-5)
	PSY-303 (PSYCHOLOGY OF CRIME AND VIOLENCE)	CO1: Apply their knowledge to prevent aggression. (Level -3) CO2: Compare the two terms like crime and juvenile delinquency. (Level -4) CO3: Judge the role of school in juvenile delinquency. (Level-5) CO4: Plan for the prevention of crime and delinquency through early childhood education, moral education and value education. (Level-6)
	PSY-304 (COGNITIVE PSYCHOLOGY)	CO1: Understand the advanced theoretical, empirical and applied knowledge of basic mental processes, from a cognitive perspective. (Level-2) CO2: Use the various quantitative methods in Cognitive Psychology. (Level-3) CO3: Apply relevant theoretical and empirical research literature in a practical context, and use their research competence to update themselves academically. (Level-3) CO4: Analyze and critically reflect on central experimental findings, and on core cognitive processes in areas such as memory, consciousness, reasoning and the extent to which human thought can be considered rational, judgement and decision-making
	PSY-305 (PRACTICAL)	CO1: Understand the ways of conducting psychological experiments. (Level -2) CO2: Apply scientific methods for the solution of psychological problems. (Level -3) CO3: Use the knowledge of various psychological experiments and tests in social situations. (Level- 3) CO4: Analyze the psychological tests while undertaking research work. (Level 4)
	SY-306 (FUNDAMENTALS OF PSYCHOLOGY)	CO1: Understand various approaches, fields, and subfields of psychology along with their major concepts and important figures. (Level-2) CO2: Apply the primary research methods employed in the study of psychology. (Level-3) CO3: Analyse the role of experience & learning process to study human behavior.
	SY-306 (EDUCATIONAL PSYCHOLOGY)	CO1: Implement and direct the learning, growth and conduct. (Level -3) CO2: Execute a body of facts and principles to solve the problems of teaching and learning. (Level -3) CO3: Analyze students' behavior to facilitate adjustment and growth of personality.
	SY-306 (SOCIAL PSYCHOLOGY)	CO1 Know the scope of studying social psychology and the methods to gather data in the social context to explain them. (Level-3) CO2 Understand the significance of social cognition, attitudes, stereotypes, and prejudices in explaining human behavior in the social contexts. (Level-4)
	SY-306 (CHILD PSYCHOLOGY)	CO1: Explain how theories are used to understand child behavior and Development (Level2) CO2: Classify major theories of child development such as those of Piaget. (Level-2) CO3: Apply development theory to the analysis of child observations, surveys, and/or interviews using investigative research methodologies. (Level-3) CO4: Analyze the interdependence of the cognitive, psychosocial and physical
	SY-306 (PROCESSES OF HUMAN EMPOWERMENT)	CO1 Know the structural components and functional dynamics of both intelligence and personality. (Level-2) CO2 Understand the significance of emotion and motivation in behavior management. (Level-3) CO3: Understand the significance of emotion and motivation in behavior management.

	PSY-306	PSYCHOMETRICS	CO :1 State the characteristics of psychological tests and list the steps in construction of a test. CO :2 Illustrate steps to construct Intelligence Test and Personality Inventory. CO :3 Initiate a Plan to construct intelligence and personality tests. CO :4 Compute the Item analysis for selection items in an inventory/questionnaire
IV	PSY-401	COUNSELLING PSYCHOLOGY	CO1: Understand the factors which contribute to positive outcomes in counselling and psychotherapy based on contemporary research. (Level-2) CO2: Use a wide range of therapeutic interventions appropriate to the core model. (Level-3) CO3: Apply the techniques and skills in practical fields relevant to counselling and psychotherapy. (Level-3) CO4: Analyse therapeutic relationships founded on the qualities of empathy,
	PSY-402	GERIATRIC PSYCHOLOGY	CO1: State the key terms used in the field of aging. (Level-1) CO2: Identify the needs and challenges facing current generation of older adults. (Level-2) CO3: Interpret the behavioural, and biological aspects of aging. (Level-3) CO4: Analyse the ways aging affects areas such as family relations, personality etc. (Level-4)
	PSY-403	INTERNSHIP/	
	PSY-404	CLINICAL ASSESSMENT AND THERAPY	CO1: Understand the basic facts about psychological assessment. (Level-2) CO2: Apply the principles of Behavior Therapy, Cognitive Behavior Therapy and Family Therapy in clinical setting. (Level- 3) CO3: Analyze and compare the key techniques of above therapies. (Level- 4) CO4: Evaluate these approaches. (Level- 5)
	PSY-405	PROJECT	



**LIST of COs for the PG syllabus in Hindi-2022-23**

**FIRST SEMESTER**

Course code	Name of the Course	
<b>Paper 101</b>	हिन्दी भाषा और उसका विकास	CO1: हिन्दी भाषा और उसके विकास, हिन्दी प्रचार आंदोलन, विविध रूप का इतिहास जान पाएंगे। CO2: इसके द्वारा इतिहास के प्रति छात्रों की रुचि बढ़ेगी। CO3: पुरानी हिन्दी भाषा एवं साहित्य विषय पर नई अवधारणा बनेगी। CO4: साथ ही अन्य भाषाओं के साथ हिन्दी की तुलना कर पाएंगे।
<b>Paper 102</b>	भारतीय काव्य शास्त्र और आलोचना	CO1: भारतीय काव्य शास्त्र का इतिहास जान पाएंगे। CO2: काव्य शास्त्र के सिद्धांत, आचार्यों का मत एवं स्थापना को समझ पाएंगे। CO3: इससे छात्रों में काव्यशास्त्र को लेकर रुचि बढ़ेगी। CO4: प्राचीन एवं मध्यकालीन साहित्य के तात्विक विवेचन में शोधार्थियों को यह सहायक होगा। भारत की विभिन्न भाषाओं के काव्यशास्त्रीय तुलनात्मक अध्ययन को प्रोत्साहन मिलेगा।
<b>Paper 103</b>	हिन्दी साहित्य का इतिहास-1	CO1: हिन्दी साहित्य का इतिहास भाग -1 में प्राचीन एवं मध्यकालीन भारत की राजनीतिक, समाजिक व्यवस्था एवं आर्थिक चिंताधारा को समझ पाएंगे एवं भविष्यत में सचेत रहेंगे। CO2: आदिकालीन भारत में हिन्दी साहित्य को समझ पाएंगे। CO3: मध्यकालीन भारत में हिन्दी साहित्य को समझ पाएंगे। CO4: भक्तिकालीन और रीतिकालीन हिन्दी साहित्य को समझ पाएंगे।
<b>Paper 104</b>	आदिकालीन काव्य और भक्ति काव्य	CO1: आदिकालीन एवं भक्तिकालीन साहित्य के माध्यम से उस समय की साहित्य कला, प्रवृत्ति को समझ पाएंगे। CO2 : साथ ही हिन्दी के भक्तिकालीन महान कवियों को क्यों महान कहा जाता है जान पाएंगे। CO3 : हिन्दी की प्रसिद्ध रचनाओं के महत्व को समझ पाएंगे । CO4 : सूरदास, बिहारी, तुलसीदास की प्रसिद्ध रचनाओं के महत्व को समझ पाएंगे ।
<b>Paper 105</b>	रीति काव्य	CO1: भारत के उत्तर मध्यकाल में भारत की सामाजिक, सांस्कृतिक, राजनीतिक एवं कला संस्कृति की स्थिति को समझ पाएंगे। CO2: काव्य कला को समझ पाने में समक्ष होंगे CO3: रीति सिद्ध, रीति बद्ध एवं रीति मुक्त क्या है उसे समझ पाएंगे। CO4: हिन्दी रीतिकालीन प्रसिद्ध रचनाओं के महत्व को समझ पाएंगे । बिहारी, केशव, घननंद, भूषण की प्रसिद्ध रचनाओं के महत्व को समझ पाएंगे ।
<b>SECOND SEMESTER</b>		

Paper 201	भाषा विज्ञान	CO1: भारतीय एवं हिन्दी साहित्य की भाषा एवं व्याकरण की प्राचीनता, बनावट, वैज्ञानिकता के प्रति पश्चिमी शोधार्थियों का ध्यान आकर्षण कर पाएंगे। CO2: भाषा के निर्माण में ध्वनि, पद, अर्थ, वाक्य को समझ पाएंगे। CO3: भाषा शोधार्थियों को यह सहायक होगा। CO4: भाषा वैज्ञानिक दृष्टि से एक से अधिक भाषाओं का तुलनात्मक शोध में यह सहायक होगा। विश्व भाषा समूह का परिचय प्राप्त कर पाएंगे। शोध में प्रोत्साहन मिलेगा।
Paper 202	हिन्दी साहित्य का इतिहास-2	राजनीतिक, समाजाजिक व्यवस्था एवं आर्थिक चिन्ताधारा को समझ पाएंगे एवं भविष्यत में सचेत रहेंगे। CO2: हिन्दी गद्य साहित्य, हिन्दी पत्रकारिता के विकास को समझ पाएंगे। CO3: छायावाद की प्रवृत्ति को समझ पाएंगे। CO4: उपन्यास, नाटक, निबंध विधा को समझ पाएंगे।
Paper 203	आधुनिक काव्य-1	CO1: स्वतंत्रता पूर्व आधुनिक साहित्य के माध्यम से भारतीय साहित्य की कला एवं प्रवृत्ति को समझ पाएंगे। CO2: साथ ही हिन्दी के आधुनिक कवियों को क्यों महान कहा जाता है जान पाएंगे। CO3: आधुनिक हिन्दी साहित्य में साकेत, कामायनी, राम की शक्ति पूजा का महत्व जान पाएंगे। CO4: विभिन्न वादों पर सम्यक जानकारी प्राप्त कर सकते हैं।
Paper 204	कथा साहित्य- 1	CO1: साहित्य के विकास में गद्य साहित्य की भूमिका को समझ पाएंगे। CO2: साथ ही प्रेमचंद विश्व प्रसिद्ध कथाकार क्यों है को समझ पाएंगे एवं पश्चिम शोधार्थियों को समझा पाएंगे। CO3: प्रेमचंद, जैनेन्द्र, द्विवेदी अज्ञेय की प्रसिद्ध रचनाओं को समझ पाएंगे। CO4: हिन्दी साहित्य के अमर उपन्यासों की जानकारी प्राप्त कर पाएंगे।
Paper 205	पाश्चात्य काव्य चिन्तन	CO1: साहित्य के तात्विक विवेचन में पश्चिम काव्य चिन्तन क्या है और पाश्चात चिन्तक क्या सोचते हैं समझ पाएंगे। CO2: साथ ही भारतीय एवं पाश्चात्य काव्यशास्त्र चिन्तन की तुलना कर पाएंगे। CO3: पाश्चात्य कला अवधारणा को समझ पाएंगे। CO4: तात्विक विवेचन में शोधार्थियों को यह सहायक होगा।
Paper 206(A)	प्रेमचंद	CO1: प्रेमचंद साहित्य के माध्यम से तत्कालीन सामाजिक, आर्थिक, राजनीतिक एवं आर्थिक परिस्थिति को समझ पाएंगे। CO2: प्रेमचंद को क्यों विश्व प्रसिद्ध कथाकार कहा जाता है उसे समझ पाएंगे। CO3: प्रेमचंद की कालजयी रचनाओं की जानकारी प्राप्त कर पाएंगे। CO4: समाज पर उपन्यासों का प्रभाव जान पाएंगे।
Paper 206(B)	तुलसीदास	CO1: तुलसी साहित्य के माध्यम से तत्कालीन सामाजिक, आर्थिक, राजनीतिक एवं सांस्कृतिक स्थिति को समझा जा सकता है। CO2: तुलसी को क्यों विश्व प्रसिद्ध कवि कहा जाता है उसे समझ पाएंगे। CO3: रामचरित मानस क्यों प्रासंगिक है समझ पाएंगे। CO4: तुलसी साहित्य को समझ पाएंगे।

Paper 206(c)	जय शंकर प्रसाद	<p>CO1: जयशंकर प्रसाद के साहित्य के माध्यम से तत्कालीन सामाजिक, आर्थिक, राजनीतिक एवं सांस्कृतिक स्थिति को समझा जा सकता है।</p> <p>CO2: साथ ही हमारी वैदिक एवं प्राचीन संस्कृति को भी समझा जा सकता है।</p> <p>CO3: प्रसाद की कालजयी रचनाएं कामायनी, स्कंदगुप्त, तितली उपन्यास और उनकी कहानियों को समझ पाएंगे।</p> <p>CO4: प्रसाद की निबंध के माध्यम से छायावाद और यथार्थवाद को समझ पाएंगे।</p>
<b>THIRD SEMESTER</b>		
Paper 301	आधुनिक काव्य-2	<p>CO1: स्वतंत्रता पूर्व एवं स्वतंत्रता बाद आधुनिक साहित्य के माध्यम से भारतीय साहित्य की कला एवं प्रवृत्ति को समझ पाएंगे।</p> <p>CO2: साथ ही हिन्दी के आधुनिक कवियों के योगदान को समझ पाएंगे।</p> <p>CO3: प्रयोगवादी साहित्य को समझ पाएंगे।</p> <p>CO4: दिनकर, नागार्जुन, अज्ञेय, नागार्जुन, केदारनाथ अग्रवाल, मुक्तिबोध, कुंवर नारायण, रघुवीर सहाय, धूमिल जैसे रचनाकारों की कविता को समझ पाएंगे।</p>
Paper 302	कथा साहित्य- 2	<p>CO1: कथा साहित्य के माध्यम से तत्कालीन समाज व्यवस्था, परिवार व्यवस्था, आर्थिक एवं राजनीतिक व्यवस्था को समझ पाएंगे।</p> <p>CO2: यशपाल, श्रीलाल शुक्ल, रेणु की प्रतिनिधि रचनाओं की जानकारी प्राप्त कर पाएंगे।</p> <p>CO3: समाज पर उपन्यासों का प्रभाव जान पाएंगे।</p> <p>CO4: कहानियों को समझ पाएंगे।</p>
Paper 303	दलित साहित्य	<p>CO1: भारतीय दलित साहित्य तथा हिन्दी दलित साहित्य के इतिहास को जान पाएंगे।</p> <p>CO2: दलित साहित्य के प्रेरणास्रोत, उसका प्रभाव, सामाजिक, राजनीतिक, आर्थिक परिवर्तन को समझ पाएंगे।</p> <p>CO3: हिन्दी के दलित साहित्य समझ पाएंगे।</p> <p>CO4: हिन्दी के प्रतिनिधि दलित साहित्य को समझ पाएंगे।</p>
Paper 304	शोध प्रविधि	<p>CO1: इस पत्र के माध्यम से छात्र-छात्राएँ शोध की प्रविधि पर सैद्धांतिक जानकारी प्राप्त कर सकते हैं।</p> <p>CO2: इससे उनके शोध कार्य सटीक हो सकेगा।</p> <p>CO3: शोध कार्य में सहयोगी होगा।</p> <p>CO4: रचनाओं के आलोचना, समीक्षा, अनुशील, परिशीलन करते समय सहायक होगा, परियोजना कार्य में सहायक होगा।</p>
Paper 305	हिन्दी नाटक और एकांकी	<p>CO1: नाटक और रंगमंच क्या हैं समझ पाएंगे।</p> <p>CO2: मनोरंजन के सशक्त माध्यम के रूप में नाटक एवं एकांकी की भूमिका महत्वपूर्ण क्यों उसे समझ पाएंगे।</p> <p>CO3: साथ ही नाटकों के माध्यम से सामाजिक, आर्थिक, राजनीतिक एवं सांस्कृतिक परिस्थिति को भी समझ पाएंगे।</p> <p>CO4: नाटक का समाज पर प्रभाव को जान पाएंगे।</p>

Paper 306(A)	प्रयोजनमूलक हिन्दी	CO1: छात्र-छात्राओं में आधुनिक काल के तकनीकों विकास, नए क्षेत्र का विकास, आधुनिक प्रयोजन में हिन्दी का उपयोग को समझ पाएंगे। CO2: हिन्दी के विविध रूप को समझ पाएंगे। CO3: कामकाजी हिन्दी को समझ पाएंगे। CO4: पारिभाषिक शब्दावली समझ पाएंगे।
Paper 306(B)	तुलनात्मक साहित्य	CO1: तुलनात्मक साहित्य क्या है उसे समझ पाएंगे। CO2: साथ ही उसकी प्रक्रिया, उससे लाभ एवं उसके क्षेत्र को समझा जा सकता है। CO3: दो अलग-अलग भाषाओं को लेकर तुलनात्मक शोध कार्य को प्रोत्साहन मिलेगा। CO4: तुलनात्मक शोध करनेवाले विद्यार्थियों को सहायक होगा।
Paper 306(C)	हिन्दी पत्रकारिता	CO1: समाज तथा साहित्य के विकास में पत्रकारिता की भूमिका को समझ पाएंगे। CO2: हिन्दी साहित्य के विकास, स्वाधीनता आंदोलन को भी समझा जा सकता है। CO3: साथ ही आधुनिक काल में पत्रकारिता प्रमुख रोजगार का माध्यम कैसे बन सकता है उसे समझ पाएंगे। CO4: पत्रकारिता की बारिकी को समझ पाएंगे।
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Paper 401	हिन्दी आलोचना और आलोचना	CO1: विश्व तथा भारतीय परिप्रेक्ष्य में हिन्दी साहित्य का क्रम विकास पर ज्ञान प्राप्त होगा। CO2: साहित्यिक आलोचना के लिए शोधार्थियों के लिए मार्गदर्शन मिलेगा। CO3: इसके द्वारा विद्यार्थी आलोचना पद्धति को पहचान पाएंगे। CO4: साहित्य को नए आयाम में देखने का नजरिया बदलेगा।
Paper 402	निबंध तथा अन्य गद्य विधाएं	CO1: साहित्यिक निबंध के माध्यम से छात्र-छात्राओं के व्यक्ति, समाज, समूह, देश को देखने का नजरिया में परिवर्तन आएगा। CO2 : इसके माध्यम से वस्तु, जीव, मनुष्य को आंतरिक रूप से देखने, सौंदर्य का अनुभव करने, उसके कर्म करने की क्षमता आदि के बारे में पता चलेगा। CO3: इससे माध्यम से जीवन की आनेवाली समस्या को समझ पाएंगे। CO4: जीवन के विभिन्न रंगों को पहचान पाएंगे।
Paper 403	हिन्दी महिला कथाकार	CO1: महिला कथाकारों का इतिहास के बारे में जानकारों मिल पाएंगे। CO2: साहित्य के क्षेत्र में महिला कथाकारों की भूमिका को समझने में सहायता मिलेगी। CO3: केवल पुरुष ही नहीं महिलाएं भी साहित्य कला के क्षेत्र में कैसे सशक्त और प्रभावशाली हो चुकी है उसका पता लगेगा। CO4: काल्पनिक कथा के माध्यम समाज के विभिन्न रंगों को समाज पाएंगे।

Paper 404	भारतीय उपन्यास	CO1: भारतीय कथा साहित्य की जानकारी मिलेगी। CO2: शोधार्थियों को तुलनात्मक अध्ययन करने में सहायता मिलेगी। CO3: साथ ही भारतीय साहित्य कैसे एक दूसरे से प्रवृत्तिगत दृष्टि से जुड़े हुए हैं उसको समझ पाएंगे। CO4: भारतीय साहित्य में गद्य साहित्य की एक प्रकार से जानकारी हासिल होगी।
Paper 405	लघु शोध प्रबंध प्रस्तुत एवं (मौखिकी)	CO1: इससे शोध चिंतन को प्रस्तुत करने में छात्र-छात्राओं को अवसर प्राप्त होगा CO2: साथ ही जो शोध सिद्धांत बताया गया है उसे प्रयोग रूप में पेश करने का अवसर मिलेगा। CO3: इसके जरिए भविष्य में शोध लेखन में सहयोग मिलेगा। CO4: शोध का प्रायोगिक ज्ञान प्राप्त होगा।

**LIST of COs for the PG syllabus in Hindi-2023-24**

**FIRST SEMESTER**

Course code	Name of the Course	
<b>Paper 101</b>	हिन्दी भाषा और उसका विकास	विविध रूप का इतिहास जान पाएंगे। CO2: इसके द्वारा इतिहास के प्रति छात्रों की रुचि बढ़ेगी। CO3: पुरानी हिन्दी भाषा एवं साहित्य विषय पर नई अवधारणा बनेगी। CO4: साथ ही अन्य भाषाओं के साथ हिन्दी की तुलना कर पाएंगे।
<b>Paper 102</b>	भारतीय काव्य शास्त्र और आलोचना	CO1: भारतीय काव्य शास्त्र का इतिहास जान पाएंगे। CO2: काव्य शास्त्र के सिद्धांत, आचार्यों का मत एवं स्थापना को समझ पाएंगे। CO3: इससे छात्रों में काव्यशास्त्र को लेकर रुचि बढ़ेगी। CO4: प्राचीन एवं मध्यकालीन साहित्य के तात्विक विवेचन में शोधार्थियों को यह सहायक होगा। भारत की विभिन्न भाषाओं के काव्यशास्त्रीय तुलनात्मक अध्ययन को प्रोत्साहन मिलेगा।
<b>Paper 103</b>	हिन्दी साहित्य का इतिहास-1	CO1: हिन्दी साहित्य का इतिहास भाग -1 में प्राचीन एवं मध्यकालीन भारत की राजनीतिक, समाजिक व्यवस्था एवं आर्थिक चिंताधारा को समझ पाएंगे एवं भविष्यत में सचेत रहेंगे। CO2: आदिकालीन भारत में हिन्दी साहित्य को समझ पाएंगे। CO3: मध्यकालीन भारत में हिन्दी साहित्य को समझ पाएंगे। CO4: भक्तिकालीन और रीतिकालीन हिन्दी साहित्य को समझ पाएंगे।
<b>Paper 104</b>	आदिकालीन काव्य और भक्ति काव्य	CO1: आदिकालीन एवं भक्तिकालीन साहित्य के माध्यम से उस समय की साहित्य कला, प्रवृत्ति को समझ पाएंगे। CO2 : साथ ही हिन्दी के भक्तिकालीन महान कवियों को क्यों महान कहा जाता है जान पाएंगे। CO3 : हिन्दी की प्रसिद्ध रचनाओं के महत्व को समझ पाएंगे । CO4 : सूरदास, बिहारी, तुलसीदास की प्रसिद्ध रचनाओं के महत्व को समझ पाएंगे ।
<b>Paper 105</b>	रीति काव्य	पाएंगे। CO2: काव्य कला को समझ पाने में समक्ष होंगे CO3: रीति सिद्ध, रीति बद्ध एवं रीति मुक्त क्या है उसे समझ पाएंगे। CO4: हिन्दी रीतिकालीन प्रसिद्ध रचनाओं के महत्व को समझ पाएंगे । बिहारी, केशव, घननंद, भूषण की प्रसिद्ध रचनाओं के महत्व को समझ पाएंगे ।
<b>SECOND SEMESTER</b>		

Paper 201	भाषा विज्ञान	CO1: भारतीय एवं हिन्दी साहित्य की भाषा एवं व्याकरण की प्राचीनता, बनावट, वैज्ञानिकता के प्रति पश्चिमी शोधार्थियों का ध्यान आकर्षण कर पाएंगे। CO2: भाषा के निर्माण में ध्वनि, पद, अर्थ, वाक्य को समझ पाएंगे। CO3: भाषा शोधार्थियों को यह सहायक होगा। CO4: भाषा वैज्ञानिक दृष्टि से एक से अधिक भाषाओं का तुलनात्मक शोध में यह सहायक होगा। विश्व भाषा समूह का परिचय प्राप्त कर पाएंगे। शोध में प्रोत्साहन मिलेगा।
Paper 202	हिन्दी साहित्य का इतिहास-2	राजनीतिक, समाजाजिक व्यवस्था एवं आर्थिक चिन्ताधारा को समझ पाएंगे एवं भविष्यत में सचेत रहेंगे। CO2: हिन्दी गद्य साहित्य, हिन्दी पत्रकारिता के विकास को समझ पाएंगे। CO3: छायावाद की प्रवृत्ति को समझ पाएंगे। CO4: उपन्यास, नाटक, निबंध विधा को समझ पाएंगे।
Paper 203	आधुनिक काव्य-1	CO1: स्वतंत्रता पूर्व आधुनिक साहित्य के माध्यम से भारतीय साहित्य की कला एवं प्रवृत्ति को समझ पाएंगे। CO2: साथ ही हिन्दी के आधुनिक कवियों को क्यों महान कहा जाता है जान पाएंगे। CO3: आधुनिक हिन्दी साहित्य में साकेत, कामायनी, राम की शक्ति पूजा का महत्व जान पाएंगे। CO4: विभिन्न वादों पर सम्यक जानकारी प्राप्त कर सकते हैं।
Paper 204	कथा साहित्य- 1	पाएंगे। CO2: साथ ही प्रेमचंद विश्व प्रसिद्ध कथाकार क्यों है को समझ पाएंगे एवं पश्चिम शोधार्थियों को समझा पाएंगे। CO3: प्रेमचंद, जैनेन्द्र, द्विवेदी अज्ञेय की प्रसिद्ध रचनाओं को समझ पाएंगे।
Paper 205	पाश्चात्य काव्य चिंतन	CO1: साहित्य के तात्विक विवेचन में पश्चिम काव्य चिंतन क्या है और पाश्चात चिंतक क्या सोचते हैं समझ पाएंगे। CO2: साथ ही भारतीय एवं पाश्चात्य काव्यशास्त्र चिंतन की तुलना कर पाएंगे। CO3: पाश्चात्य कला अवधारणा को समझ पाएंगे। CO4: तात्विक विवेचन में शोधार्थियों को यह सहायक होगा।
Paper 206(A)	प्रेमचंद	CO2: प्रेमचंद को क्यों विश्व प्रसिद्ध कथाकार कहा जाता है उसे समझ पाएंगे। CO3: प्रेमचंद की कालजयी रचनाओं की जानकारी प्राप्त कर पाएंगे। CO4: समाज पर उपन्यासों का प्रभाव जान पाएंगे।
Paper 206(B)	तुलसीदास	राजनीतिक एवं सांस्कृतिक स्थिति को समझा जा सकता है। CO2: तुलसी को क्यों विश्व प्रसिद्ध कवि कहा जाता है उसे समझ पाएंगे। CO3: रामचरित मानस क्यों प्रासंगिक है समझ पाएंगे। CO4: तुलसी साहित्य को समझ पाएंगे।

<p><b>Paper 206(C)</b></p>	<p>जय शंकर प्रसाद</p>	<p>सामाजिक, आर्थिक, राजनीतिक एवं सांस्कृतिक स्थिति को समझा जा सकता है।  CO2: साथ ही हमारी वैदिक एवं प्राचीन संस्कृति को भी समझा जा सकता है।  CO3: प्रसाद की कालजयी रचनाएं कामायनी, स्कंदगुप्त, तितली उपन्यास और उनकी कहानियों को समझ पाएंगे।  CO4: प्रसाद की निबंध के माध्यम से छायावाद और यथार्थवाद को समझ पाएंगे।</p>
<p><b>THIRD SEMESTER</b></p>		
<p><b>Paper 301</b></p>	<p>आधुनिक काव्य-2</p>	<p>से भारतीय साहित्य की कला एवं प्रवृत्ति को समझ पाएंगे।  CO2: साथ ही हिन्दी के आधुनिक कवियों के योगदान को समझ पाएंगे।  CO3: प्रयोगवादी साहित्य को समझ पाएंगे।  CO4: दिनकर, नागार्जुन, अज्ञेय, नागार्जुन, केदारनाथ अग्रवाल, मुक्तिबोध, कुंवर नारायण, रघुवीर सहाय, धूमिल जैसे रचनाकारों की कविता को समझ पाएंगे।</p>
<p><b>Paper 302</b></p>	<p>कथा साहित्य- 2</p>	<p>परिवार व्यवस्था, आर्थिक एवं राजनीतिक व्यवस्था को समझ पाएंगे।  CO2: यशपाल, श्रीलाल शुक्ल, रेणु की प्रतिनिधि रचनाओं की जानकारी प्राप्त कर पाएंगे।  CO3: समाज पर उपन्यासों का प्रभाव जान पाएंगे।  CO4: कहानियों को समझ पाएंगे।</p>
<p><b>Paper 303</b></p>	<p>दलित साहित्य</p>	<p>CO1: भारतीय दलित साहित्य तथा हिन्दी दलित साहित्य के इतिहास को जान पाएंगे।  CO2: दलित साहित्य के प्रेरणास्रोत, उसका प्रभाव, सामाजिक, राजनीतिक, आर्थिक परिवर्तन को समझ पाएंगे।  CO3: हिन्दी के दलित साहित्य समझ पाएंगे।  CO4: हिन्दी के प्रतिनिधि दलित साहित्य को समझ पाएंगे।</p>
<p><b>Paper 304</b></p>	<p>शोध प्रविधि</p>	<p>CO1: इस पत्र के माध्यम से छात्र-छात्राएँ शोध की प्रविधि पर सैद्धांतिक जानकारी प्राप्त कर सकते हैं।  CO2: इससे उनके शोध कार्य सटीक हो सकेगा।  CO3: शोध कार्य में सहयोगी होगा।  CO4: रचनाओं के आलोचना, समीक्षा, अनुशील, परिशीलन करते समय सहायक होगा, परियोजना कार्य में सहायक होगा।</p>



Paper 305	हिन्दी नाटक और एकांकी	CO1: नाटक और रंगमंच क्या है समझ पाएंगे। CO2: मनोरंजन के सशक्त माध्यम के रूप में नाटक एवं एकांकी की भूमिका महत्वपूर्ण क्यों उसे समझ पाएंगे। CO3: साथ ही नाटकों के माध्यम से सामाजिक, आर्थिक, राजनीतिक एवं सांस्कृतिक परिस्थिति को भी समझ पाएंगे। CO4: नाटक का समाज पर प्रभाव को जान पाएंगे।
Paper 306(A)	प्रयोजनमूलक हिन्दी	क्षेत्र का विकास, आधुनिक प्रयोजन में हिन्दी का उपयोग को समझ पाएंगे। CO2: हिन्दी के विविध रूप को समझ पाएंगे। CO3: कामकाजी हिन्दी को समझ पाएंगे। CO4: पारिभाषिक शब्दावली समझ पाएंगे।
Paper 306(B)	तुलनात्मक साहित्य	CO1: तुलनात्मक साहित्य क्या है उस समझ पाएंगे। CO2: साथ ही उसकी प्रक्रिया, उससे लाभ एवं उसके क्षेत्र को समझा जा सकता है। CO3: दो अलग-अलग भाषाओं को लेकर तुलनात्मक शोध कार्य को प्रोत्साहन मिलेगा। CO4: तुलनात्मक शोध करनेवाले विद्यार्थियों को सहायक होगा।
Paper 306(C)	हिन्दी पत्रकारिता	CO1: समाज तथा साहित्य के विकास में पत्रकारिता की भूमिका को समझ पाएंगे। CO2: हिन्दी साहित्य के विकास, स्वाधीनता आंदोलन को भी समझा जा सकता है। CO3: साथ ही आधुनिक काल में पत्रकारिता प्रमुख रोजगार का माध्यम कैसे बन सकता है उसे समझ पाएंगे। CO4: पत्रकारिता की बारिकी को समझ पाएंगे।
Paper 404	भारतीय उपन्यास	CO1: भारतीय कथा साहित्य की जानकारी मिलेगी। CO2: शोधार्थियों को तुलनात्मक अध्ययन करने में सहायता मिलेगी। CO3: साथ ही भारतीय साहित्य कैसे एक दूसरे से प्रवृत्तिगत दृष्टि से जुड़े हुए हैं उसको समझ पाएंगे। CO4: भारतीय साहित्य में गद्य साहित्य की एक प्रकार से जानकारी हासिल होगी।
Paper 405	लघु शोध प्रबंध प्रस्तुत एवं (मौखिकी)	CO1: इससे शोध चिंतन को प्रस्तुत करने में छात्र-छात्राओं को अवसर प्राप्त होगा CO2: साथ ही जो शोध सिद्धांत बताया गया है उसे प्रयोग रूप में पेश करने का अवसर मिलेगा। CO3: इसके जरिए भविष्य में शोध लेखन में सहयोग मिलेगा। CO4: शोध का प्रायोगिक ज्ञान प्राप्त होगा।

**LIST of COs for the PG syllabus in Hindi-2021-22**

**FIRST SEMESTER**

Course code	Name of the Course	
<b>Paper 101</b>	हिन्दी भाषा और उसका विकास	CO1: हिन्दी भाषा और उसके विकास, हिन्दी प्रचार आंदोलन, विविध रूप का इतिहास जान पाएंगे। CO2: इसके द्वारा इतिहास के प्रति छात्रों की रुचि बढ़ेगी। CO3: पुरानी हिन्दी भाषा एवं साहित्य विषय पर नई अवधारणा बनेगी। CO4: साथ ही अन्य भाषाओं के साथ हिन्दी की तुलना कर पाएंगे।
<b>Paper 102</b>	भारतीय काव्य शास्त्र और आलोचना	CO1: भारतीय काव्य शास्त्र का इतिहास जान पाएंगे। CO2: काव्य शास्त्र के सिद्धांत, आचार्यों का मत एवं स्थापना को समझ पाएंगे। CO3: इससे छात्रों में काव्यशास्त्र को लेकर रुचि बढ़ेगी। CO4: प्राचीन एवं मध्यकालीन साहित्य के तात्विक विवेचन में शोधार्थियों को यह सहायक होगा। भारत की विभिन्न भाषाओं के काव्यशास्त्रीय तुलनात्मक अध्ययन को प्रोत्साहन मिलेगा।
<b>Paper 103</b>	हिन्दी साहित्य का इतिहास-1	CO1: हिन्दी साहित्य का इतिहास भाग -1 में प्राचीन एवं मध्यकालीन भारत की राजनीतिक, समाजिक व्यवस्था एवं आर्थिक चिंताधारा को समझ पाएंगे एवं भविष्यत में सचेत रहेंगे। CO2: आदिकालीन भारत में हिन्दी साहित्य को समझ पाएंगे। CO3: मध्यकालीन भारत में हिन्दी साहित्य को समझ पाएंगे। CO4: भक्तिकालीन और रीतिकालीन हिन्दी साहित्य को समझ पाएंगे।
<b>Paper 104</b>	आदिकालीन काव्य और भक्ति काव्य	CO1: आदिकालीन एवं भक्तिकालीन साहित्य के माध्यम से उस समय की साहित्य कला, प्रवृत्ति को समझ पाएंगे। CO2 : साथ ही हिन्दी के भक्तिकालीन महान कवियों को क्यों महान कहा जाता है जान पाएंगे। CO3 : हिन्दी की प्रसिद्ध रचनाओं के महत्व को समझ पाएंगे । CO4 : सूरदास, बिहारी, तुलसीदास की प्रसिद्ध रचनाओं के महत्व को समझ पाएंगे ।
<b>Paper 105</b>	रीति काव्य	CO1: भारत के उत्तर मध्यकाल में भारत की सामाजिक, सांस्कृतिक, राजनीतिक एवं कला संस्कृति की स्थिति को समझ पाएंगे। CO2: काव्य कला को समझ पाने में समक्ष होंगे CO3: रीति सिद्ध, रीति बद्ध एवं रीति मुक्त क्या है उसे समझ पाएंगे। CO4: हिन्दी रीतिकालीन प्रसिद्ध रचनाओं के महत्व को समझ पाएंगे । बिहारी, केशव, घननंद, भूषण की प्रसिद्ध रचनाओं के महत्व को समझ पाएंगे ।
<b>SECOND SEMESTER</b>		

Paper 201	भाषा विज्ञान	CO1: भारतीय एवं हिन्दी साहित्य की भाषा एवं व्याकरण की प्राचीनता, बनावट, वैज्ञानिकता के प्रति पश्चिमी शोधार्थियों का ध्यान आकर्षण कर पाएंगे। CO2: भाषा के निर्माण में ध्वनि, पद, अर्थ, वाक्य को समझ पाएंगे। CO3: भाषा शोधार्थियों को यह सहायक होगा। CO4: भाषा वैज्ञानिक दृष्टि से एक से अधिक भाषाओं का तुलनात्मक शोध में यह सहायक होगा। विश्व भाषा समूह का परिचय प्राप्त कर पाएंगे। शोध में प्रोत्साहन मिलेगा।
Paper 202	हिन्दी साहित्य का इतिहास-2	राजनीतिक, समाजाजिक व्यवस्था एवं आर्थिक चिंताधारा को समझ पाएंगे एवं भविष्यत में सचेत रहेंगे। CO2: हिन्दी गद्य साहित्य, हिन्दी पत्रकारिता के विकास को समझ पाएंगे। CO3: छायावाद की प्रवृत्ति को समझ पाएंगे। CO4: उपन्यास, नाटक, निबंध विधा को समझ पाएंगे।
Paper 203	आधुनिक काव्य-1	CO1: स्वतंत्रता पूर्व आधुनिक साहित्य के माध्यम से भारतीय साहित्य की कला एवं प्रवृत्ति को समझ पाएंगे। CO2: साथ ही हिन्दी के आधुनिक कवियों को क्यों महान कहा जाता है जान पाएंगे। CO3: आधुनिक हिन्दी साहित्य में साकेत, कामायनी, राम की शक्ति पूजा का महत्व जान पाएंगे। CO4: विभिन्न वादों पर सम्यक जानकारी प्राप्त कर सकते हैं।
Paper 204	कथा साहित्य- 1	CO2: साथ ही प्रेमचंद विश्व प्रसिद्ध कथाकार क्यों हैं को समझ पाएंगे एवं पश्चिम शोधार्थियों को समझा पाएंगे। CO3: प्रेमचंद, जैनेन्द्र, द्विवेदी अज्ञेय की प्रसिद्ध रचनाओं को समझ पाएंगे। CO4: हिन्दी साहित्य के अमर उपन्यासों की जानकारी प्राप्त कर
Paper 205	पाश्चात्य काव्य चिंतन	CO1: साहित्य के तात्विक विवेचन में पश्चिम काव्य चिंतन क्या है और पाश्चात चिंतक क्या सोचते हैं समझ पाएंगे। CO2: साथ ही भारतीय एवं पाश्चात्य काव्यशास्त्र चिंतन की तुलना कर पाएंगे। CO3: पाश्चात्य कला अवधारणा को समझ पाएंगे। CO4: तात्विक विवेचन में शोधार्थियों को यह सहायक होगा।
Paper 206(A)	प्रेमचंद	राजनीतिक एवं आर्थिक परिस्थिति को समझ पाएंगे। CO2: प्रेमचंद को क्यों विश्व प्रसिद्ध कथाकार कहा जाता है उसे समझ पाएंगे। CO3: प्रेमचंद की कालजयी रचनाओं की जानकारी प्राप्त कर पाएंगे। CO4: समाज पर उपन्यासों का प्रभाव जान पाएंगे।
Paper 206(B)	तुलसीदास	CO1: तुलसी साहित्य के माध्यम से तत्कालीन सामाजिक, आर्थिक, राजनीतिक एवं सांस्कृतिक स्थिति को समझा जा सकता है। CO2: तुलसी को क्यों विश्व प्रसिद्ध कवि कहा जाता है उसे समझ पाएंगे। CO3: रामचरित मानस क्यों प्रासंगिक है समझ पाएंगे। CO4: तुलसी साहित्य को समझ पाएंगे।

Paper 206(C)	जय शंकर प्रसाद	CO1: जयशंकर प्रसाद के साहित्य के माध्यम से तत्कालीन सामाजिक, आर्थिक, राजनीतिक एवं सांस्कृतिक स्थिति को समझा जा सकता है। CO2: साथ ही हमारी वैदिक एवं प्राचीन संस्कृति को भी समझा जा सकता है। CO3: प्रसाद की कालजयी रचनाएं कामायनी, स्कंदगुप्त, तितली उपन्यास और उनकी कहानियों को समझ पाएंगे। CO4: प्रसाद की निबंध के माध्यम से छायावाद और यथार्थवाद को समझ पाएंगे।
<b>THIRD SEMESTER</b>		
Paper 301	आधुनिक काव्य-2	CO1: स्वतंत्रता पूर्व एवं स्वतंत्रता बाद आधुनिक साहित्य के माध्यम से भारतीय साहित्य की कला एवं प्रवृत्ति को समझ पाएंगे। CO2: साथ ही हिन्दी के आधुनिक कवियों के योगदान को समझ पाएंगे। CO3: प्रयोगवादी साहित्य को समझ पाएंगे। CO4: दिनकर, नागार्जुन, अज्ञेय, नागार्जुन, केदारनाथ अग्रवाल, मुक्तिबोध, कुंवर नारायण, रघुवीर सहाय, धूमिल जैसे रचनाकारों की कविता को समझ पाएंगे।
Paper 302	कथा साहित्य- 2	CO1: कथा साहित्य के माध्यम से तत्कालीन समाज व्यवस्था, परिवार व्यवस्था, आर्थिक एवं राजनीतिक व्यवस्था को समझ पाएंगे। CO2: यशपाल, श्रीलाल शुक्ल, रेणु की प्रतिनिधि रचनाओं की जानकारी प्राप्त कर पाएंगे। CO3: समाज पर उपन्यासों का प्रभाव जान पाएंगे। CO4: कहानियों को समझ पाएंगे।
Paper 303	दलित साहित्य	CO1: भारतीय दलित साहित्य तथा हिन्दी दलित साहित्य के इतिहास को जान पाएंगे। CO2: दलित साहित्य के प्रेरणास्रोत, उसका प्रभाव, सामाजिक, राजनीतिक, आर्थिक परिवर्तन को समझ पाएंगे। CO3: हिन्दी के दलित साहित्य समझ पाएंगे। CO4: हिन्दी के प्रतिनिधि दलित साहित्य को समझ पाएंगे।
Paper 304	शोध प्रविधि	CO1: इस पत्र के माध्यम से छात्र-छात्राएं शोध की प्रविधि पर सैद्धांतिक जानकारी प्राप्त कर सकते हैं। CO2: इससे उनके शोध कार्य सटीक हो सकेगा। CO3: शोध कार्य में सहयोगी होगा। CO4: रचनाओं के आलोचना, समीक्षा, अनुशीलन, परिशीलन करते समय सहायक होगा, परियोजना कार्य में सहायक होगा।
Paper 305	हिन्दी नाटक और एकांकी	CO1: नाटक और रंगमंच क्या हैं समझ पाएंगे। CO2: मनोरंजन के सशक्त माध्यम के रूप में नाटक एवं एकांकी की भूमिका महत्वपूर्ण क्यों उसे समझ पाएंगे। CO3: साथ ही नाटकों के माध्यम से सामाजिक, आर्थिक, राजनीतिक एवं सांस्कृतिक परिस्थिति को भी समझ पाएंगे। CO4: नाटक का समाज पर प्रभाव को जान पाएंगे।

Paper 306(A)	प्रयोजनमूलक हिन्दी	CO1: छात्र-छात्राओं में आधुनिक काल के तकनीकी विकास, नए क्षेत्र का विकास, आधुनिक प्रयोजन में हिन्दी का उपयोग को समझ पाएंगे। CO2: हिन्दी के विविध रूप को समझ पाएंगे। CO3: कामकाजी हिन्दी को समझ पाएंगे। CO4: पारिभाषिक शब्दावली समझ पाएंगे।
Paper 306(B)	तुलनात्मक साहित्य	CO1: तुलनात्मक साहित्य क्या है उसे समझ पाएंगे। CO2: साथ ही उसकी प्रक्रिया, उससे लाभ एवं उसके क्षेत्र को समझा जा सकता है। CO3: दो अलग-अलग भाषाओं को लेकर तुलनात्मक शोध कार्य को प्रोत्साहन मिलेगा। CO4: तुलनात्मक शोध करनेवाले विद्यार्थियों को सहायक होगा।
Paper 306(C)	हिन्दी पत्रकारिता	CO1: समाज तथा साहित्य के विकास में पत्रकारिता की भूमिका को समझ पाएंगे। CO2: हिन्दी साहित्य के विकास, स्वाधीनता आंदोलन को भी समझा जा सकता है। CO3: साथ ही आधुनिक काल में पत्रकारिता प्रमुख रोजगार का माध्यम कैसे बन सकता है उसे समझ पाएंगे। CO4: पत्रकारिता की बारिकी को समझ पाएंगे।
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Paper 401	हिन्दी आलीचक और आलोचना	पर ज्ञान प्राप्त होगा। CO2: साहित्यिक आलोचना के लिए शोधार्थियों के लिए मार्गदर्शन मिलेगा। CO3: इसके द्वारा विद्यार्थी आलोचना पद्धति को पहचान पाएंगे। CO4: साहित्य को नए आयाम में देखने का नजरिया बदलेगा।
Paper 402	निबंध तथा अन्य गद्य विधाएं	CO1: साहित्यिक निबंध के माध्यम से छात्र-छात्राओं के व्यक्ति, समाज, समूह, देश को देखने का नजरिया में परिवर्तन आएगा। CO2 : इसके माध्यम से वस्तु, जीव, मनुष्य को आंतरिक रूप से देखने, सौंदर्य का अनुभव करने, उसके कर्म करने की क्षमता आदि के बारे में पता चलेगा। CO3: इससे माध्यम से जीवन की आनेवाली समस्या को समझ पाएंगे। CO4: जीवन के विभिन्न रंगों को पहचान पाएंगे।
Paper 403	हिन्दी महिला कथाकार	CO2: साहित्य के क्षेत्र में महिला कथाकारों की भूमिका को समझने में सहायता मिलेगी। CO3: केवल पुरुष ही नहीं महिलाएं भी साहित्य कला के क्षेत्र में कैसे सशक्त और प्रभावशाली हो चुकी है उसका पता लगेगा। CO4: काल्पनिक कथा के माध्यम समाज के विभिन्न रंगों को समाज पाएंगे।

Paper 404	भारतीय उपन्यास	CO1: भारतीय कथा साहित्य की जानकारी मिलेगी। CO2: शोधार्थियों को तुलनात्मक अध्ययन करने में सहायता मिलेगी। CO3: साथ ही भारतीय साहित्य कैसे एक दूसरे से प्रवृत्तिगत दृष्टि से जुड़े हुए हैं उसको समझ पाएंगे। CO4: भारतीय साहित्य में गद्य साहित्य की एक प्रकार से जानकारी हासिल होगी।
Paper 405	लघु शोध प्रबंध प्रस्तुत एवं (मौखिकी)	CO1: इससे शोध चिंतन का प्रस्तुत करने में छात्र-छात्राओं को अवसर प्राप्त होगा CO2: साथ ही जो शोध सिद्धांत बताया गया है उसे प्रयोग रूप में पेश करने का अवसर मिलेगा। CO3: इसके जरिए भविष्य में शोध लेखन में सहयोग मिलेगा। CO4: शोध का प्रायोगिक ज्ञान प्राप्त होगा।

**LIST of COs for the PG syllabus in Hindi-2020-21**

**FIRST SEMESTER**

Course code	Name of the Course	
<b>Paper 101</b>	हिन्दी भाषा और उसका विकास	CO1: हिन्दी भाषा और उसके विकास, हिन्दी प्रचार आंदोलन, विविध रूप का इतिहास जान पाएंगे। CO2: इसके द्वारा इतिहास के प्रति छात्रों की रुचि बढ़ेगी। CO3: पुरानी हिन्दी भाषा एवं साहित्य विषय पर नई अवधारणा बनेगी। CO4: साथ ही अन्य भाषाओं के साथ हिन्दी की तुलना कर पाएंगे।
<b>Paper 102</b>	भारतीय काव्य शास्त्र और आलोचना	CO1: भारतीय काव्य शास्त्र का इतिहास जान पाएंगे। CO2: काव्य शास्त्र के सिद्धांत, आचार्यों का मत एवं स्थापना को समझ पाएंगे। CO3: इससे छात्रों में काव्यशास्त्र को लेकर रुचि बढ़ेगी। CO4: प्राचीन एवं मध्यकालीन साहित्य के तात्विक विवेचन में शोधार्थियों को यह सहायक होगा। भारत की विभिन्न भाषाओं के काव्यशास्त्रीय तुलनात्मक अध्ययन को प्रोत्साहन मिलेगा।
<b>Paper 103</b>	हिन्दी साहित्य का इतिहास-1	CO1: हिन्दी साहित्य का इतिहास भाग -1 में प्राचीन एवं मध्यकालीन भारत की राजनीतिक, समाजिक व्यवस्था एवं आर्थिक चिंताधारा को समझ पाएंगे एवं भविष्यत में सचेत रहेंगे। CO2: आदिकालीन भारत में हिन्दी साहित्य को समझ पाएंगे। CO3: मध्यकालीन भारत में हिन्दी साहित्य को समझ पाएंगे। CO4: भक्तिकालीन और रीतिकालीन हिन्दी साहित्य को समझ पाएंगे।
<b>Paper 104</b>	आदिकालीन काव्य और भक्ति काव्य	CO1: आदिकालीन एवं भक्तिकालीन साहित्य के माध्यम से उस समय की साहित्य कला, प्रवृत्ति को समझ पाएंगे। CO2 : साथ ही हिन्दी के भक्तिकालीन महान कवियों को क्यों महान कहा जाता है जान पाएंगे। CO3 : हिन्दी की प्रसिद्ध रचनाओं के महत्व को समझ पाएंगे । CO4 : सूरदास, बिहारी, तुलसीदास की प्रसिद्ध रचनाओं के महत्व को समझ पाएंगे ।

Paper 105	रीति काव्य	<p>CO1: भारत के उत्तर मध्यकाल में भारत की सामाजिक, सांस्कृतिक, राजनीतिक एवं कला संस्कृति की स्थिति को समझ पाएंगे।</p> <p>CO2: काव्य कला को समझ पाने में समक्ष होंगे</p> <p>CO3: रीति सिद्ध, रीति बद्ध एवं रीति मुक्त क्या है उसे समझ पाएंगे।</p> <p>CO4: हिन्दी रीतिकालीन प्रसिद्ध रचनाओं के महत्व को समझ पाएंगे। बिहारी, केशव, घननंद, भूषण की प्रसिद्ध रचनाओं के महत्व को समझ पाएंगे।</p>
<b>SECOND SEMESTER</b>		
Paper 201	भाषा विज्ञान	<p>CO1: भारतीय एवं हिन्दी साहित्य की भाषा एवं व्याकरण की प्राचीनता, बनावट, वैज्ञानिकता के प्रति पश्चिमी शोधार्थियों का ध्यान आकर्षण कर पाएंगे।</p> <p>CO2: भाषा के निर्माण में ध्वनि, पद, अर्थ, वाक्य को समझ पाएंगे।</p> <p>CO3: भाषा शोधार्थियों को यह सहायक होगा।</p> <p>CO4: भाषा वैज्ञानिक दृष्टि से एक से अधिक भाषाओं का तुलनात्मक शोध में यह सहायक होगा। विश्व भाषा समूह का परिचय प्राप्त कर पाएंगे। शोध में प्रोत्साहन मिलेगा।</p>
Paper 202	हिन्दी साहित्य का इतिहास-2	<p>CO1: हिन्दी साहित्य का इतिहास भाग -2 में आधुनिक भारत की राजनीतिक, समाजिक व्यवस्था एवं आर्थिक चिंताधारा को समझ पाएंगे एवं भविष्यत में सचेत रहेंगे।</p> <p>CO2: हिन्दी गद्य साहित्य, हिन्दी पत्रकारिता के विकास को समझ पाएंगे।</p> <p>CO3: छायावाद की प्रवृत्ति को समझ पाएंगे।</p> <p>CO4: उपन्यास, नाटक, निबंध विधा को समझ पाएंगे।</p>
Paper 203	आधुनिक काव्य-1	<p>CO1: स्वतंत्रता पूर्व आधुनिक साहित्य के माध्यम से भारतीय साहित्य की कला एवं प्रवृत्ति को समझ पाएंगे।</p> <p>CO2: साथ ही हिन्दी के आधुनिक कवियों को क्यों महान कहा जाता है जान पाएंगे।</p> <p>CO3: आधुनिक हिन्दी साहित्य में साकेत, कामायनी, राम की शक्ति पूजा का महत्व जान पाएंगे।</p> <p>CO4: विभिन्न वादों पर सम्यक जानकारी प्राप्त कर सकते हैं।</p>
Paper 204	कथा साहित्य- 1	<p>CO1: साहित्य के विकास में गद्य साहित्य की भूमिका को समझ पाएंगे।</p> <p>CO2: साथ ही प्रेमचंद विश्व प्रसिद्ध कथाकार क्यों है को समझ पाएंगे एवं पश्चिम शोधार्थियों को समझ पाएंगे।</p> <p>CO3: प्रेमचंद, जैनेन्द्र, द्विवेदी अज्ञेय की प्रसिद्ध रचनाओं को समझ पाएंगे।</p> <p>CO4: हिन्दी साहित्य के अमर उपन्यासों की जानकारी प्राप्त कर पाएंगे।</p>
Paper 205	पाश्चात्य काव्य चिंतन	<p>CO1: साहित्य के तात्विक विवेचन में पश्चिम काव्य चिंतन क्या है और पाश्चात चिंतक क्या सोचते हैं समझ पाएंगे।</p> <p>CO2: साथ ही भारतीय एवं पाश्चात्य काव्यशास्त्र चिंतन की तुलना कर पाएंगे।</p> <p>CO3: पाश्चात्य कला अवधारणा को समझ पाएंगे।</p> <p>CO4: तात्विक विवेचन में शोधार्थियों को यह सहायक होगा।</p>



Paper 206(A)	प्रेमचंद	CO1: प्रेमचंद साहित्य के माध्यम से तत्कालीन सामाजिक, आर्थिक, राजनीतिक एवं आर्थिक परिस्थिति को समझ पाएंगे। CO2: प्रेमचंद को क्यों विश्व प्रसिद्ध कथाकार कहा जाता है उसे समझ पाएंगे। CO3: प्रेमचंद की कालजयी रचनाओं की जानकारी प्राप्त कर पाएंगे। CO4: समाज पर उपन्यासों का प्रभाव जान पाएंगे।
Paper 206(B)	तुलसीदास	CO1: तुलसी साहित्य के माध्यम से तत्कालीन सामाजिक, आर्थिक, राजनीतिक एवं सांस्कृतिक स्थिति को समझा जा सकता है। CO2: तुलसी को क्यों विश्व प्रसिद्ध कवि कहा जाता है उसे समझ पाएंगे। CO3: रामचरित मानस क्यों प्रासंगिक है समझ पाएंगे। CO4: तुलसी साहित्य को समझ पाएंगे।
Paper 206(C)	जय शंकर प्रसाद	CO1: जयशंकर प्रसाद के साहित्य के माध्यम से तत्कालीन सामाजिक, आर्थिक, राजनीतिक एवं सांस्कृतिक स्थिति को समझा जा सकता है। CO2: साथ ही हमारी वैदिक एवं प्राचीन संस्कृति को भी समझा जा सकता है। CO3: प्रसाद की कालजयी रचनाएं कामायनी, स्कंदगुप्त, तितली उपन्यास और उनकी कहानियों को समझ पाएंगे। CO4: प्रसाद की निबंध के माध्यम से छायावाद और यथार्थवाद को समझ पाएंगे।
<b>THIRD SEMESTER</b>		
Paper 301	आधुनिक काव्य- 2	CO1: स्वतंत्रता पूर्व एवं स्वतंत्रता बाद आधुनिक साहित्य के माध्यम से भारतीय साहित्य की कला एवं प्रवृत्ति को समझ पाएंगे। CO2: साथ ही हिन्दी के आधुनिक कवियों के योगदान को समझ पाएंगे। CO3: प्रयोगवादी साहित्य को समझ पाएंगे। CO4: दिनकर, नागार्जुन, अज्ञेय, नागार्जुन, केदारनाथ अग्रवाल, मुक्तिबोध, कुंवर नारायण, रघुवीर सहाय, धूमिल जैसे रचनाकारों की कविता को समझ पाएंगे।
Paper 302	कथा साहित्य- 2	CO1: कथा साहित्य के माध्यम से तत्कालीन समाज व्यवस्था, परिवार व्यवस्था, आर्थिक एवं राजनीतिक व्यवस्था को समझ पाएंगे। CO2: यशपाल, श्रीलाल शुक्ल, रेणु की प्रतिनिधि रचनाओं की जानकारी प्राप्त कर पाएंगे। CO3: समाज पर उपन्यासों का प्रभाव जान पाएंगे। CO4: कहानियों को समझ पाएंगे।
Paper 303	दलित साहित्य	CO1: भारतीय दलित साहित्य तथा हिन्दी दलित साहित्य के इतिहास को जान पाएंगे। CO2: दलित साहित्य के प्रेरणास्रोत, उसका प्रभाव, सामाजिक, राजनीतिक, आर्थिक परिवर्तन को समझ पाएंगे। CO3: हिन्दी के दलित साहित्य समझ पाएंगे। CO4: हिन्दी के प्रतिनिधि दलित साहित्य को समझ पाएंगे।

Paper 304	शोध प्रविधि	CO1: इस पत्र के माध्यम से छात्र-छात्राएँ शोध की प्रविधि पर सैद्धांतिक जानकारी प्राप्त कर सकते हैं। CO2: इससे उनके शोध कार्य सटीक हो सकेगा। CO3: शोध कार्य में सहयोगी होगा। CO4: रचनाओं के आलोचना, समीक्षा, अनुशील, परिशीलन करते समय सहायक होगा, परियोजना कार्य में सहायक होगा।
Paper 305	हिन्दी नाटक और एकांकी	CO1: नाटक और रंगमंच क्या है समझ पाएंगे। CO2: मनोरंजन के सशक्त माध्यम के रूप में नाटक एवं एकांकी की भूमिका महत्वपूर्ण क्यों उसे समझ पाएंगे। CO3: साथ ही नाटकों के माध्यम से सामाजिक, आर्थिक, राजनीतिक एवं सांस्कृतिक परिस्थिति को भी समझ पाएंगे। CO4: नाटक का समाज पर प्रभाव को जान पाएंगे।
Paper 306(A)	प्रयोजनमूलक हिन्दी	CO1: छात्र-छात्राओं में आधुनिक काल के तकनीकी विकास, नए क्षेत्र का विकास, आधुनिक प्रयोजन में हिन्दी का उपयोग को समझ पाएंगे। CO2: हिन्दी के विविध रूप को समझ पाएंगे। CO3: कामकाजी हिन्दी को समझ पाएंगे। CO4: पारिभाषिक शब्दावली समझ पाएंगे।
Paper 306(B)	तुलनात्मक साहित्य	CO1: तुलनात्मक साहित्य क्या है उसे समझ पाएंगे। CO2: साथ ही उसकी प्रक्रिया, उससे लाभ एवं उसके क्षेत्र को समझा जा सकता है। CO3: दो अलग-अलग भाषाओं को लेकर तुलनात्मक शोध कार्य को प्रोत्साहन मिलेगा। CO4: तुलनात्मक शोध करनेवाले विद्यार्थियों को सहायक होगा।
Paper 306(C)	हिन्दी पत्रकारिता	CO1: समाज तथा साहित्य के विकास में पत्रकारिता की भूमिका को समझ पाएंगे। CO2: हिन्दी साहित्य के विकास, स्वाधीनता आंदोलन को भी समझा जा सकता है। CO3: साथ ही आधुनिक काल में पत्रकारिता प्रमुख रोजगार का माध्यम कैसे बन सकता है उसे समझ पाएंगे। CO4: पत्रकारिता की बारिकी को समझ पाएंगे।
Paper 401	हिन्दी आलोचना और आलोचना	CO1: विश्व तथा भारतीय परिप्रेक्ष्य में हिन्दी साहित्य का क्रम विकास पर ज्ञान प्राप्त होगा। CO2: साहित्यिक आलोचना के लिए शोधार्थियों के लिए मार्गदर्शन मिलेगा। CO3: इसके द्वारा विद्यार्थी आलोचना पद्धति को पहचान पाएंगे। CO4: साहित्य को नए आयाम में देखने का नजरिया बदलेगा।

Paper 402	निबंध तथा अन्य गद्य विधाएं	CO1: साहित्यिक निबंध के माध्यम से छात्र-छात्राओं के व्यक्ति, समाज, समूह, देश को देखने का नजरिया में परिवर्तन आएगा। CO2 : इसके माध्यम से वस्तु, जीव, मनुष्य को आंतरिक रूप से देखने, सौंदर्य का अनुभव करने, उसके कर्म करने की क्षमता आदि के बारे में पता चलेगा। CO3: इससे माध्यम से जीवन की आनेवाली समस्या को समझ पाएंगे। CO4: जीवन के विभिन्न रंगों को पहचान पाएंगे।
Paper 403	हिन्दी महिला कथाकार	CO1: महिला कथाकारों का इतिहास के बारे में जानकारों मिल पाएंगी। CO2: साहित्य के क्षेत्र में महिला कथाकारों की भूमिका को समझन में सहायता मिलेगी। CO3: केवल पुरुष ही नहीं महिलाएं भी साहित्य कला के क्षेत्र में कैसे सशक्त और प्रभावशाली हो चुकी है उसका पता लगेगा। CO4: काल्पनिक कथा के माध्यम समाज के विभिन्न रंगों को समाज पाएंगे।
Paper 404	भारतीय उपन्यास	CO1: भारतीय कथा साहित्य की जानकारी मिलेगी। CO2: शोधार्थियों को तुलनात्मक अध्ययन करने में सहायता मिलेगी। CO3: साथ ही भारतीय साहित्य कैसे एक दूसरे से प्रवृत्तिगत दृष्टि से जुड़े हुए हैं उसको समझ पाएंगे। CO4: भारतीय साहित्य में गद्य साहित्य की एक प्रकार से जानकारी हासिल होगी।
Paper 405	लघु शोध प्रबंध प्रस्तुत एवं (मौखिकी)	CO1: इससे शोध चिंतन को प्रस्तुत करने में छात्र-छात्राओं को अवसर प्राप्त होगा CO2: साथ ही जो शोध सिद्धांत बताया गया है उसे प्रयोग रूप में पेश करने का अवसर मिलेगा। CO3: इसके जरिए भविष्य में शोध लेखन में सहयोग मिलेगा। CO4: शोध का प्रायोगिक ज्ञान प्राप्त होगा।

**LIST of COs for the PG syllabus in English-2022-23**

**FIRST SEMESTER**

Course code	Name of the Course	Course Learning Outcome
<b>ENG 101</b>	<b>Renaissance Literature and Thought</b>	<p>CLO-1: Analyse the literature of this era with specific emphasis on its representative poets and playwrights like Marlowe, Spenser and Shakespeare.</p> <p>CLO-2: Explain how the age appealed to the popular imagination, and how literature instinctively transformed the human character and persona.</p> <p>CLO-3: Analyse specific seminal texts that set the course of British literature to follow.</p> <p>CLO-4: Interpret and analyse the immense significance and impact of the European canon on literary studies.</p> <p>CLO-5: Develop a critical acumen for research amongst students aspiring to do pursue research activities in Renaissance literature.</p>
<b>ENG 102</b>	<b>17<sup>th</sup> Century English Literature and Thought</b>	<p>CLO-1: Identify and comprehend the shifts and transformations that occurred in the realm of poetry in Seventeenth Century.</p> <p>CLO-2: Explain how Puritanism's religious and political ideologies and theological tracks replaced those of romantic poetry.</p> <p>CLO-3: Interpret the Metaphysical and Cavalier poets of the European canon.</p> <p>CLO-4: Analyse the trends, narratives and poetic styles of the 17th century.</p> <p>CLO-5: Develop a critical acumen for research amongst students aspiring to do pursue research activities in Puritan Literature and Revenge Play.</p>
<b>ENG 103</b>	<b>18th Century English Literature and Thought</b>	<p>CLO-1: Describe how the writers of the age showcased flair for experimentation and a desire for innovation through writing fiction and non-fiction.</p> <p>CLO-2: Explain how the age recognized and promoted innovative and non-traditional genres like journalism, diary writing, periodical essays and satiric prose.</p> <p>CLO-3: Analyse how the period's major fictional and nonfictional works demonstrated an unprecedented awareness of the maintenance of dignity and formality in writing.</p> <p>CLO-4: Demonstrate adequate and nuanced critical acumen towards studying Eighteenth Century prose and poetry.</p> <p>CLO-5: Develop an understanding of how the socio-cultural backdrop of Eighteenth Century was instrumental in producing the tremendous literary output of the era.</p>

<p><b>ENG 104</b></p>	<p><b>Literature and Thought of the Romantic Period</b></p>	<p>CLO-1: Describe how the representative poets and writers of the age were instrumental in the creation of the distinctive literary genre of romanticism.</p> <p>CLO-2: Analyse how different archetypal features like themes, conventions, movements and experiments have given shape and significance to the romantic period in English literature.</p> <p>CLO-3: Comprehend how the French Revolution played a significant role in shaping and augmenting the common populace's romantic imagination</p> <p>CLO-4: Demonstrate how the romantic poets constantly engaged with the mythical Greco-Roman past and its glorious romantic imagination in their poetry</p> <p>CLO-5: Analyse the phenomenal rise of the romantic novel in early Nineteenth Century.</p>
<p><b>ENG 105</b></p>	<p><b>Structure of the English Language</b></p>	<p>CLO-1: Describe how language works as both as a tool and medium of communication</p> <p>CLO-2: Interpret the essential concepts that effectuate and enhance the process of language acquisition.</p> <p>CLO-3: Analyse the what, the why and the how of the working of language.</p> <p>CLO-4: Discuss the essential perspectives on the history, status and prospects of English language teaching and learning.</p> <p>CLO-5: Demonstrate the structural and functional aspect of language effectively and accurately</p>
<p><b>SECOND SEMESTER</b></p>		
<p><b>ENG 201</b></p>	<p><b>Victorian Literature and Thought</b></p>	<p>CLO-1: Describe the socio-political-historical background of the Victorian Period.</p> <p>CLO-2: Explain various literary movements and terms associated with the Victorian Period.</p> <p>CLO-3: Analyse the inherent connections between the literary practices of the Victorian period and the historical and cultural context that generate them.</p> <p>CLO-4: Interpret the Victorian texts critically using critical theoretical lenses.</p> <p>CLO-5: Discuss critically the aesthetic principles underlying the use of genre in the Victorian Period and the ethical and cultural weight of those principles.</p>

<p><b>ENG 202</b></p>	<p><b>20<sup>th</sup> Century English Literature and Thought</b></p>	<p>CLO-1: Define such movements like Modernism, Realism, Postmodernism  CLO-2: Describe the socio-economic-political-historical background of the 20th century and, most importantly, the impact of two world wars in making new types of writing.  CLO-3: Analyse the literary texts critically using theoretical and critical lenses  CLO-4: Develop an understanding of Freudian Psychoanalysis theory, Bergson’s Time and Duree and the concept of intuitive knowledge.  CLO-5: Evaluate critically such genre and movements like “Theatre of Absurd,” “existentialism,” “stream of consciousness.”</p>
<p><b>ENG 203</b></p>	<p><b>European Novels in English Translation</b></p>	<p>CLO-1: Define realism and the key concepts and theoretical practices associated with European realism.  CLO-2: Describe the socio-economic-political and historical background of realistic novels in France, Russia, and Germany.  CLO-3: Analyse the literary texts critically using the latest critical debates concerning European realism.  CLO-4: Develop a critical understanding of the concept of “world-historical.”  CLO-5: Discuss the characters of the texts as the representatives of their age and time.</p>
<p><b>ENG 204</b></p>	<p><b>Women’s Writing</b></p>	<p>CLO-1: Develop a deeper understanding of the critical categories of gender, patriarchy and feministic consciousness.  CLO-2: Describe various types of feminisms and their intersection with other radical critical theories like race, caste, nationality, etc.  CLO-3: Analyse the literary texts critically through the lens of feminism.  CLO-4: Develop an understanding of “écriture feminine” and its applicability in Women’s Writing.  CLO-5: Evaluate “Women’s Writing” critically as an effectual counter-narrative to the male-centric canonical writings</p>

<p><b>ENG 205</b></p>	<p><b>English Literary Criticism up to Eliot</b></p>	<p>the Modern era and develop a robust critical acumentowards the study of literature during the metioned period.</p> <p>CLO-2: Illustrate the developing nuances in criticism from one literary generation to another along with the new additions, shifts and transformations to the former at a fundamental and conceptual level.</p> <p>CLO-3: Apply the potentcritical tools provided by Johnson to study, critique and appreciate the phenomenal literary productions of celebrated authors like Shakespeare.</p> <p>CLO-4: Evaluate, analyse and appreciate romantic literature from the radically innovative theoretical templates and postulations provided by Wordsworth and Coleridge that include the fundamental and defining concepts like ‘poetic diction,’ ‘fancy’ and ‘imagination.’</p> <p>CLO-5: Estimate Matthew Arnold’s contribution to a critical understanding of the value, significance and reconstitutive role of poetry in an era where moral and religious value-systems were exposed to ramant and progressive decadence.</p> <p>CLO-6: Appraise the advent and growth of modern criticism starting from T. S. Eliot and to firmly comprehend Eliot’s categorical emphasis on a constructive and symbiotic relationship between ‘tradition’ and ‘individual talent’ in terms of generating literary productions of the highest quality.</p>
	<p><b>Life Writing</b></p>	<p>CLO-1: Develop significant critical insights into the relatively newer “Life Writing” or autobiographical writing genre.</p> <p>CLO-2: Generate in themselves great intellectual stimulus to develop research interest and aptitude in this relatively less-explored area of literary studies.</p> <p>CLO-3: Assess the problematics of truth/fiction in the domain of “Life Writings.”</p> <p>CLO-4: Relate the different approaches taken by different authors towards writing the stories of their own lives.</p> <p>CLO-5: Evaluate the significance of studying regional autobiography in translation.</p> <p>CLO-6:Appraise the significance of female autobiography in “Life Writing.”</p>

<b>ENG 206</b>	<b>Literature and Environment</b>	<p>CLO-1: Describe the key ideas in ecocritical thinking</p> <p>CLO-2: Demonstrate a sensitive and organic understanding of nature</p> <p>CLO-3: Explain the complex relationship between nature, culture and humanity</p> <p>CLO-4: Analyse critically “anthropocentrism”, which has historically been the epicentre of the progressive and detrimental disconnection between man and the natural world surrounding him.</p> <p>CLO-5: Analyse the literary texts of different periods, genres and geographical locations at hand critically through the lens of ecocriticism</p>
	<b>Literature and Law</b>	<p>inclusively and cohesively.</p> <p>CLO-2: Explain the critical scholarships concerning the intersection of law and humanities</p> <p>CLO 3: Describe the significance of law in literary studies and vice versa.</p> <p>CLO-4: Compare the narratives of law and those of literature through contrapuntal readings of literary and legal texts</p> <p>CLO-5: Apply the legal knowledge and theories to analyse the syllabus specific literary texts and beyond.</p>
<b>THIRD SEMESTER</b>		
<b>ENG 301</b>	<b>Theoretical Approaches to Literature</b>	<p>CLO-1: Explain literary texts from Marxist theoretical perspectives.</p> <p>CLO-2: Identify critical tools to analyse literary texts with potent critical interventions like structuralism and post-structuralism, which are fundamentally linguistic in nature.</p> <p>CLO-3: Evaluate the inherently polysemic nature of texts leading to their multiple interpretations.</p> <p>CLO-4: Appraise the significance of feminist criticism in the domain of literary studies.</p> <p>CLO-5: Recognise the diminishing importance of the author in a text.</p> <p>CLO-6: Assess the death of the author and the birth of the reader in the realm of textual analysis.</p>



<p><b>ENG 302</b></p>	<p><b>Postcolonial Contexts and Texts</b></p>	<p>CLO-1: Define postcolonialism, its historicity, the difference between colonialism and postcolonialism</p> <p>CLO-2: Explain various theories of postcolonialism, that a postcolonial subject is not a homogenous category.</p> <p>CLO-3: Analyse the literary texts of various postcolonial nations critically using the latest critical debates.</p> <p>CLO-4: Develop a critical understanding of the intersection of colonialism, capitalism and imperialism and its implication and ramification on the postcolonial subjects and culture.</p> <p>CLO-5: Discuss the pluralistic nature of the postcolonial discourse where multiple voices clash and get intermingled so that even the postcolonial subject no more remains a homogeneous category.</p>
<p><b>ENG 303</b></p>	<p><b>Gender Studies</b></p>	<p>CLO-1: Define the key concepts, people and movements in the field of Gender Studies</p> <p>CLO-2: Explain the difference between Gender Studies and Sexuality Studies, and different types of feminism.</p> <p>CLO-3: Analyse the issues of gender and sexuality as they are represented in literature and non-fiction.</p> <p>CLO-4: Develop a sensitive and critical aptitude while dealing with issues related to gender and sexuality in everyday life.</p> <p>CLO-5: Discuss the complex social processes that underlie the social constructions of gender and sexuality with the help of contemporary theoretical discourses, i.e. caste, class, nationality, race, etc.</p>
<p><b>ENG 304</b></p>	<p><b>Translation Studies</b></p>	<p>CLO-1: Recognise the immense significance and relevance of “Translation Studies” in contemporary times.</p> <p>CLO-2: Classify different theories of translation studies into different theoretical categories such that they can form a nuanced understanding of the different and variegated approaches towards an act of translation.</p> <p>CLO-3: Analyse how the act of translation involves different and variegated approaches by different translators.</p> <p>CLO-4: Estimate the issues of translatability and untranslatability in the act of translation.</p> <p>CLO-5: Evaluate how an act of translation effectively negotiates between different languages and between different cultures.</p> <p>CLO-6: Recognise the cultural politics behind an act of translation.</p> <p>CLO-7: Evaluate how translation bridges cultural gaps, negotiates between cultures and forms cultural symbioses.</p>

<p><b>ENG 305</b></p>	<p><b>Travel Narratives</b></p>	<p>CLO-1: Recognise the enormous literary implications of ‘Travel Narrative’ as a distinct genre and sufficient understanding of the scope of research in this direction.</p> <p>CLO-2: Estimate how ‘Travel Narratives’ have been instrumental in forming cultural symbioses across regions and cultures by transcending the limiting confines of space and regionality.</p> <p>CLO-3: Analyse how travel narrative becomes instrumental in erasure spatial and cultural boundaries between divergent geographical and cultural landscapes.</p> <p>CLO-4: Evaluate the enormous scope of research this relatively younger genre of literature offers to the students.</p> <p>CLO-5: Compare and contrast the writings of different travel narrative writers from different nations and socio-cultural backgrounds.</p> <p>CLO-6: Examine and analyse the implicit cultural politics embedded in travel writing.</p>
<p><b>ENG 306</b></p>	<p><b>Communication Skills</b></p>	<p>CLO-1: Practice the art of developing good communication skills.</p> <p>CLO-2: Convert themselves into smart individuals both at personal and professional levels through the inculcation of the skills of effective communication.</p> <p>CLO-3: Demonstrate leadership qualities through the inculcation of effective communication skills.</p> <p>CLO-4: Distinguish themselves as better professionals in any sphere of activity that they enter into.</p> <p>CLO-5: Develop their quality of writing through the use of better language and vocabulary.</p> <p>CLO-6: Develop the ability to bridge cultural gaps by the use of practical communication skills.</p>
	<p><b>Creative Writing</b></p>	<p>CLO-1: Convert themselves into better thinkers in terms of their ability to imagine and recreate.</p> <p>CLO-2: Manipulate the creative process of the mind with a better sense of judgement.</p> <p>CLO-3: Assemble divergent ideas into a unified and coherent organic whole.</p> <p>CLO-4: Develop an ability to refine their creative sensibility.</p> <p>CLO-5: Compose their writings in more structured and meaningful ways.</p> <p>CLO-6: Generate an ability to synthesise ideas, images and narratives in a coherent and meaningful way.</p>

	<b>Introduction to Professional Writing</b>	<p>CLO-1: Demonstrate better expertise in the fields of content writing, editing etc.</p> <p>CLO-2: Show a better grasp of the mechanics of writing.</p> <p>CLO-3: Generate better employment opportunities for themselves.</p> <p>CLO-4: Develop themselves as good and effective communicators both in speech and writing activities.</p> <p>CLO-5: Generate an ability to become better leaders through the inculcation of good and effective communication in Speech and writing.</p> <p>CLO-6: Develop themselves as well-trained and well-articulated professionals.</p>
<b>FOURTH SEMESTER</b>		
<b>Elective A: Indian Literature</b>		
<b>ENG 401</b>	<b>Plural Poets and Short Stories</b>	<p>CLO-1: Identify the rich diversity of Indian poetic traditions</p> <p>CLO-2: Locate Indian poets across time in their respective socio-cultural contexts</p> <p>CLO-3: Critique and question the homogenisation of Indian literary practices</p> <p>CLO-4: Appraise the nuanced nature of poetic expression in various languages across time</p> <p>CLO-5: Reconstruct the history of Indian poetry with their knowledge of oral, folk and performative literary practices and read them vis-à-vis the printed texts.</p>
<b>ENG 402</b>	<b>Writing the Region/Nation: Fiction</b>	<p>CLO-1: Distinguish Indian novels from different languages (in English translation) in terms of the discourse of nationalism.</p> <p>CLO-2: Compare the representations of alternative realities in bhasha texts.</p> <p>CLO-3: Critically examine the novels spanning both colonial and postcolonial periods of history.</p> <p>CLO-4: Reconstruct the complexities surrounding representation in Indian fiction.</p> <p>CLO-5: Explain the contested debates on nation-formation and nationalism and its conflicts with regional identities.</p>
<b>ENG 403</b>	<b>Caste and Gender: Fiction</b>	<p>CLO-1: Offer a critical estimate of questions of caste and gender as they figure in Indian fiction.</p> <p>CLO-2: Examine the ideas of caste and gender-based oppression</p> <p>CLO-3: Assess the predicament of the marginalised from a humane perspective.</p> <p>CLO-4: Revise their perspectives on Indian fiction and see through the polemics of representation.</p> <p>CLO-5: Reorganise their notions of caste identity and hierarchy, thus embracing inclusiveness.</p>

<b>ENG 404</b>	<b>Identities: Drama</b>	<p>CLO-1: Identify Indian dramatic traditions and trace their evolution.</p> <p>CLO-2: Assess the ability of drama to display, through its complex performativity, the multiple identity-formations that underlie Indian reality.</p> <p>CLO-3: Appraise performance as a crucial attribute of identity formation in Postcolonial India.</p> <p>CLO-4: Revise their critical opinions on drama as a monolithic entity and appreciate its complex plurality.</p> <p>CLO-5: Reconstruct the history of Indian drama by incorporating lesser-known playwrights and their work.</p>
<b>ENG 405</b>	<b>Dissertation</b>	<p>CLO-1: Understand the mechanics the mechanics of writing</p> <p>CLO-2: Attain a clear and precise sense of argument along with the use of a more refined and idiomatic language.</p> <p>CLO-3: Demonstrate practical research-writing skills that will be highly crucial for conducting quality research in future times.</p> <p>CLO-4: Generate qualitative research output in the study of Indian Literature</p> <p>CLO-5: Develop critical insight and acumen through academic writing in Indian literature</p>
<b>FOURTH SEMESTER</b>		
<b>Elective B: American Literature</b>		
<b>ENG 401</b>	<b>The Beginnings</b>	<p>CLO-1: Understand the salient features of American transcendentalism.</p> <p>CLO- 2: Attain a clear and precise sense of the romantic temperament of American transcendentalism.</p> <p>CLO-3: Demonstrate an ability to comprehend how Nature plays a significant role in the growth of the American transcendentalist ideals.</p> <p>CLO-4: Generate an ability in students to the transcendentalist writings of writers like Thoreau and Emerson.</p> <p>CLO-5: Develop critical insight and acumen into the growth and development of Early American writing.</p>

<p><b>ENG 402</b></p>	<p><b>The Great American Novel</b></p>	<p>CLO-1: Describe how the writers of the age showcased flair for experimentation and a desire for innovation through writing fiction.  CLO-2: Explain how the age recognized and promoted innovative and non-traditional ways of representing the socio-political and racial issues of the time.  CLO-3: Analyse how the period’s major fictional outputs demonstrated an unprecedented awareness of the socio-political dynamics of the time.  CLO-4: Explain various literary movements and terms associated with the modern American Period.  CLO-5: Analyse the inherent connections between the literary praxes of the modern period and the historical and cultural context that generate them.</p>
<p><b>ENG 403</b></p>	<p><b>Race and Gender</b></p>	<p>CLO-1: Describe how the writers of the age showcased flair for experimentation and a desire for innovation through writing fiction.  CLO-2: Explain how the age recognized and promoted innovative and non-traditional ways of representing the socio-political and racial issues of the time.  CLO-3: Analyse how the period’s major fictional outputs demonstrated an unprecedented awareness of the socio-political dynamics of the time.  CLO-4: Explain various literary movements and terms associated with the modern American Period.  CLO-5: Analyse the inherent connections between the literary praxes of the modern period and the historical and cultural context that generate them.</p>
<p><b>ENG 404</b></p>	<p><b>The Twentieth Century: Poetry and Drama</b></p>	<p>CLO-1: Identify American dramatic traditions and trace their evolution.  CLO-2: Assess the ability of American drama to display, through its complex performativity, the multiple identity-formations that underlie American reality.  CLO-3: Appraise performance as a crucial attribute of identity formation in the evolving nation of America.  CLO-4: Revise their critical opinions on American drama as a multicultural entity and appreciate its complex plurality.  CLO-5: Reconstruct the history of American drama by incorporating lesser-known playwrights and their work.</p>

<b>ENG 405</b>	<b>Dissertation</b>	CLO-1: Understand the mechanics the mechanics of writing CLO-2: Attain a clear and precise sense of argument along with the use of a more refined and idiomatic language. CLO-3: Demonstrate practical research-writing skills that will be highly crucial for conducting quality research in future times. CLO-4: Generate qualitative research output in the study of Indian Literature CLO-5: Develop critical insight and acumen through academic writing in Indian literature
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## M.A. IN EDUCATION

### Programme Specific Outcomes (POs)

Programme Outcomes of M.A. (Education) programme of Gangadhar Meher University are as follows.

**PO1. Disciplinary Knowledge in Education:**

**PO2. Critical Thinking Abilities in Education:**

**PO3. Applications of theories in Education:**

**PO4. Use of Modern Tools and Technique in Educational research:**

**PO5. Conducting Research in Academic field:**

**PO6. Establishing link between School and Society:**

**PO7. Competency to Pursue Higher Education:**

### Detailed Course Structure and Distribution of Marks

#### 1<sup>st</sup> Year: Semester-I

Courses		Distribution of Marks		Total Marks	Credit
Course No	Title	Mid Term	End Term		
101	Philosophical Foundation of Education	20	80	100	4
102	Sociological Foundation of Education	20	80	100	4
103	Psychological Foundation of Education	20	80	100	4
104	Recent Trends and Issues in Education	20	80	100	4
105	Practicum	c-101	100	100	4
		c-102			
		c-103			
		c-104			
Total				500	20

#### 1<sup>st</sup> Year: Semester-II

Courses		Distribution of Marks		Total Marks	Credit
Course No	Title	Mid Term	End Term		
201	Educational Measurement and Evaluation	20	80	100	4
202	Educational Management	20	80	100	4
203	Curriculum Development	20	80	100	4

204	PedagogicalTrendandIssues		20	80	100	4
205	Practicum	c-201		100	100	4
		c-202				
		c-203				
		c-204				
<b>DSEPapers*</b>						
206(A)	OpenandDistanceLearning		20	80	100	4
206(B)	EnvironmentalEducationandSustainableDevelopment		20	80	100	4
206(C)	EarlyChildhoodCareandEducation		20	80	100	4
206(D)	ComparativeEducation		20	80	100	4
Total					600	24

*\*Discipline Specific Elective Paper. Any one paper can be opted by students of this Department. Minimum student's strength to run the course in each elective paper should be 8.*

## 2<sup>nd</sup> Year: Semester-III

Courses			Distribution of Marks		Total Marks	Credit
Course No	Title of Course		Mid Term	End Term		
301	Research Methodology in Education		20	80	100	4
302	Advanced Educational Statistics		20	80	100	4
303	Advanced Educational Technology		20	80	100	4
304	Development of Education in India		20	80	100	4
305	Practicum	c-301(a)	-	100	100	4
		c-301(b)				
		c-302				
<b>IDSE Papers*</b>						
306(A)	Philosophical Foundation of Education		20	80	100	4
306(B)	Sociological Foundation of Education		20	80	100	4
306(C)	Psychological Foundation of Education		20	80	100	4
306(D)	Economics of Education		20	80	100	4
Total					600	24

*\*Inter Discipline Specific Elective Paper. Any one paper can be opted by students from other Departments*



**2<sup>nd</sup>Year:Semester-IV**

Courses		Distributions of Marks		Total Marks	Credit
Course No	Title	Mid Term	End Term		
401	HigherEducationinIndia	20	80	100	4
402	TeacherEducation	20	80	100	4
403	GuidanceandCounselingin Education	20	80	100	4
404	InclusiveEducation	20	80	100	4
405	Dissertation(Practical)		100	100	4
	Total			500	20
22 Papers	GrandTotal			2200	88

LIST COs OF POST GRADUATE SYLLABUS

Sl no.	Paper code	Co1	Co2	Co3	Co4	Co5	Co6	Co7	Co8
	101	✓	✓	✓	✓	✓			
	102	✓	✓	✓	✓				
	103	✓	✓	✓	✓				
	104	✓	✓	✓	✓	✓			
	201	✓	✓	✓	✓	✓	✓	✓	
	202	✓	✓	✓	✓	✓	✓	✓	✓
	203	✓	✓	✓	✓	✓	✓		
	204	✓	✓	✓	✓	✓	✓	✓	
	206- A DSE	✓	✓	✓	✓				
	206 B	✓	✓	✓	✓				
	206 C	✓	✓	✓	✓				
	206-D	✓	✓	✓	✓				
	301	✓	✓	✓	✓	✓	✓	✓	
	302	✓	✓	✓	✓	✓			
	303	✓	✓	✓	✓	✓	✓	✓	
	304	✓	✓	✓	✓				
	306 A	✓	✓	✓	✓	✓			
	306-B	✓	✓	✓	✓				
	306-C	✓	✓	✓	✓				
	306- D	✓	✓	✓	✓	✓			
	401	✓	✓	✓	✓	✓			
	402	✓	✓	✓	✓	✓			
	403	✓	✓	✓	✓	✓	✓		
	404	✓	✓	✓	✓	✓	✓		

**PO1. Knowledge and Comprehension about Theories and Practice in Education:**

**PO2. Critical Thinking Abilities:**

**PO3. Applications:**

**PO4. Use of Modern Tools and Technique:**

**PO5. Conducting Research in Academic field:**

**PO6. Establishing link between School and Society:**

**PO7. Competency to Pursue Higher Education:**

## Programme Specific Outcomes (POs)

Programme Outcomes of M.A. (Education) programme of Gangadhar Meher University are as follows.

**PO1. Disciplinary Knowledge in Education:**

**PO2. Critical Thinking Abilities in Education:**

**PO3. Applications of theories in Education:**

**PO4. Use of Modern Tools and Technique in Educational research:**

**PO5. Conducting Research in Academic field:**

**PO6. Establishing link between School and Society:**

**PO7. Competency to Pursue Higher Education:**

**EDN-**

**101**

## Philosophical Foundations of Education

### Course Outcomes

On completion of this course, the students shall be able to

**CO1**

Define and describe about different Western and Indian philosophical thoughts in the light of Metaphysics, Epistemology, Axiology and their educational implications.

**CO2** Compare (similarities and differences) between different philosophical thoughts in the light of above dimensions.

**CO3**

Critically analyze the presented educational practices in the philosophical context. **CO4**

Describe the contributions of Western and Indian thinkers in education.

**CO5**

Elaborate philosophical outlook to relate and analyze the context and problems of education.

EDN- 102

## SOCIOLOGICAL FOUNDATION OF EDUCATION

### **Course Outcomes**

On completion of this course, the students shall be able to

- CO1** Identify different issues about inequality in Indian society. **CO2** Relate different social situation and practices of education.
- CO3** Explain concept of social stratification, social change and social mobility. **CO4** Critically analyze the social phenomenon in the context of Indian society.

EDN-103

## **PSYCHOLOGICAL FOUNDATION OF EDUCATION**

### **Course Outcomes**

On completion of this course, the students shall be able to

- CO1** Describe different theories and approaches of Psychology: learning, motivation, intelligence, creativity and personality.
- CO2** Compare among different psychological perspectives on student behavior, learning process and adjustment.
- CO3** Critically analyze different approaches of learning.
- CO4** Administer and interpret different psychological tests to measure psychological traits.

EDN-104

## RECENT TRENDS AND ISSUES IN EDUCATION

### **Course Outcomes**

On completion of this course, the students shall be able to

**CO1**

Identify recent trends and issues in education from global and Indian context. **CO2** Explain the constitutional and educational policies for primary, secondary, Higher education and inclusive education.

**CO3** Critically analyze the importance and the functions of different regulatory and statutory bodies of education.

**CO4** Explain the role of different agencies for quality assessment and assurance in higher education.

**SECOND SEMESTER EDN-201**

**EDUCATIONAL MEASUREMENT AND EVALUATION**

**COURSE OUTCOMES**

On completion of this course, the students shall be able to

**CO1**

Describe and differentiate about the various concepts like Test, Measurement, Assessment and Evaluation.

**CO2** Explain the conceptual framework of educational Measurement, Assessment and Evaluation.

**CO3** Calculate the Psychometric properties of the test.

**CO4** Explain the quality of good test.

**CO5** Construct and standardize of an Achievement test and prepare different types of test items.

**CO6** Critically evaluate the various Models of Evaluation.

**ED**

**N-202**

**EDUCATIONAL**

**MANAGEMENT**

**COURSE OUTCOMES**

On completion of this course, the students shall be able to

**CO1.** Describe and differentiate among concept of Administration, Management, Leadership.

**CO2 .** Explain the concept, theories and styles of leadership in Educational Management.

**CO3.** Illustrate the concept of leadership and different leadership styles in Education **CO4** Compare between the Educational Management and Educational Administration **CO5.** Describe the concept, principles of Total Quality Management approach in education.

**CO6.** Critically Evaluate the conceptual framework of Educational Management, Administration and Leadership.

**CO7.** Analyze different models of Leadership and their application in the field of Education.

**CO8.** Explain the role of various Quality Assurance agencies in Education.

### **EDN-203**

### **CURRICULUM DEVELOPMENT**

#### **COURSE OUTCOMES**

On completion of this course, the students shall be able to

**CO1**

Illustrate the concept of Curriculum Development and various stages of Curriculum Development

**CO2**

Compare among different types and models of curriculum development and their importance.

**CO3**

Explain the process of curriculum development and curriculum implementations.

**CO4**

Critically evaluate different Models of curriculum Evaluation

**CO5**

Critically analyze the Models of curriculum development and their practical

**CO6**

Explain various factors affecting Curriculum

### **EDN-204**

### **PEDAGOGICAL TRENDS AND ISSUES**

## **COURSE OUTCOMES**

On completion of this course, the students shall be able to

- CO1** Describe the process and importance of communication in teaching learning process.
- CO2** Explain these of traditional pedagogy in present
- CO3** Categories pedagogical trends from behavioristic to Constructivist prospective.
- CO4** Differentiate the modern pedagogical trends strategies from Traditional pedagogical designs.
- CO5** Evaluate various pedagogical issues in present scenario
- CO6** Critically analyze the pedagogical issues and challenges from classroom, institutional point of view.
- CO7** Critically analyze the various Issues and challenges of Teacher Education Institution

**EDN-206(A)**

## **OPEN AND DISTANCE LEARNING**

### **COURSE OUTCOMES**

On completion of this course, the students shall be able to

- CO1** Describe the meaning, nature and need of Distance Education in the present situation.
- CO2** Explain various kinds of information and communication Technologies used by (ICT and enable them to be familiar with their use in teaching-learning process of distance educational institutions)
- CO3** Describe and explain various modes of Student Support Services (SSS) and develop in them skills to manage such services for various kinds of programs through Distance Education.
- CO4** Evaluate programs of Distance Education and to develop the ability to enhance the quality and standards of different D. E. Programs.

**EDN-206(B)**

ENVIRONMENTAL EDUCATION  
AND SUSTAINABLE DEVELOPMENT

**COURSE OUTCOMES**

The students will be able to

- CO1** Describe the concept, importance, scope and aspect of environmental education
- CO2** Explain the possible environmental hazards and create awareness about pollution of environment
- CO3** Explain the attitude towards protection of environment.
- CO4** Differentiate various methods and strategies for realizing the objectives of environmental education

EDN-206(C)

EARLY CHILDHOOD CARE  
AND EDUCATION

**COURSE OUTCOMES**

The students will be able to

- CO1** Describe the concept of early childhood care and education. **CO2** Identify the common types of diseases at early childhood stage. **CO3** Analyze the curriculum at pre-school stage.
- CO4** Evaluate the recommendations given by various organizations on ECCE.

EDN-206 (D)  
COMPARATIVE  
EDUCATION

**Course Outcomes**

On completion of this course, the students shall be

- CO1** Explain the concept of comparative education and the factors affecting the educational systems.



**CO2** Critically analyze the development and approaches of comparative education.

**CO3** Compare the educational system and educational structure of different countries.

**CO4** Explain the vocationalization of secondary education.

### **THIRD SEMESTER**

#### **EDN-301**

#### **RESEARCH METHODOLOGY IN EDUCATION**

##### **COURSE OUTCOMES**

On completion of this course, the students shall be able to

**CO1** Describe about

evolutionary prospective of knowledge construction process.

**CO2** Describe the nature, scope and needs of Educational Research.

**CO3** Explain different approaches and designs of educational research.

**CO4** Identify and formulate research problem and state the hypothesis.

**CO5** Differentiate between Probability and Non-probability sampling techniques.

**CO6** Select and develop different types of data collection tools.

**CO7** Prepare the research proposal and report

#### **EDN-302**

#### **ADVANCED EDUCATIONAL STATISTICS**

##### **COURSE OUTCOMES**

On completion of this course, the students shall be able to

**CO1** Describe the concept, importance and use of Descriptive and inferential statistics in Research.

**CO2** Describe the concept, assumptions and use of Parametric and non-parametric statistics.

**CO3** Differentiate between the Parametric and Non-parametric statistics in terms of

**CO4** Compute and use various statistical measures of Co-efficient of correlation, Variability, Regression and Prediction.

**CO5** Demonstrate the skill of computation of various types of

Parametric and Non-parametric statistics by use of SPSS.

EDN-303

### ADVANCED EDUCATIONAL TECHNOLOGY

#### COURSE OUTCOMES

On completion of this course, the students shall be able to

- CO1** Describe the concept and nature of Educational Technology, ICT in education and Instructional Technology.
- CO2** Explain the models of Instructional Design.
- CO3** Explain the various applications of Computer in education.
- CO4** Describe the concept and approaches of e-learning and Social learning.
- CO5** Relate various Learning Theories with corresponding Instructional Strategies.
- CO6** Distinguish among different types of Instructional model.
- CO7** Apply the knowledge of Educational Technology, ICT and Instructional Technology to search information on different Open Educational Resources

EDN-304

### DEVELOPMENT OF EDUCATION IN INDIA

IA

#### COURSE OUTCOMES

On completion of this course, the students shall be able to

- CO1** Provide a broad sketch about the development of education in India from Pre-independence period to till date.
- CO2** Explain levelwise major schemes for quantity and quality expansion of Education.
- CO3** Compare the educational structure, provisions among three major Policies on Education
- CO4** Critically evaluate the Background, Objectives and recommendations of various Committees, Commissions and policies on Education.

INTER  
DISCIPLINARY  
SPECIFIC ELECTIVE (IDSE)

Anyone paper can be opted by students of other departments.

**EDN-306(A)**

**Philosophical Foundations of Education**

**Course Outcomes**

On completion of this course, the students shall be able to

- CO1** Explain about different Western and Indian philosophical thoughts in the light of Metaphysics, Epistemology, Axiology and their educational implications.
- CO2** Compare (similarities and differences) between different philosophical thoughts in the light of above dimensions.
- CO3** Critically analyze the present educational practices in the philosophical context.
- CO4** Explain the contributions of Western and Indian thinkers in education.
- CO5** Explain philosophical outlook to relate and analyze the context and problems of education.

EDN-306(B)

**SOCIOLOGICAL FOUNDATION OF EDUCATION**

**Course Outcomes**

On completion of this course, the students shall be able to

- CO1** Identify different issues about inequality in Indian society.
- CO2** Relate different social situations and practices of education.
- CO3** Explain concepts of social stratification, social change and social mobility.
- CO4** Critically analyze the social phenomenon in the context of Indian society.

EDN-306 (C) PSYCHOLOGICAL

FOUNDATION OF EDUCATION

**Course Outcomes**

On completion of this course, the students shall be able to

**CO1** Describe different theories and approaches of

Psychology: learning, motivation, intelligence, creativity and personality.

**CO2** Compare among different psychological perspectives on student behavior, learning process and adjustment.

**CO3** Critically analyze different approaches of learning.

**CO4** Administer and interpret different psychological tests to measure psychological traits.

EDN-306(D)

### **Economics of Education**

#### **Course Objectives**

On completion of this course, the students shall be

CO1. Explain the concept of planning, financing and cost of education.

CO2. State the types of educational costs.

CO3. State the link between the educational system and economic development.

CO4. Elaborate on the sources of finances for education.

CO5. Critically examine the process of budget preparation for educational institutions.

#### **FOURTH SEMESTER**

**EDN-401**

#### **HIGHER EDUCATION IN INDIA**

#### **Course Outcomes**

On completion of this course, the student

the student shall be able to **CO1** Analyze various policies and their

recommendations on various aspects of higher education.

**CO2** Evaluate the functions and importance of different Higher education institutions.

**CO3**

Examine the problems in implementation of the policies of higher education in India.

CO4

Explore the problems and reforms in higher education in India.

CO5 Analyze role of various agencies of higher education in India.

### **Edn-402 TEACHER**

#### **EDUCATION**

#### **Course Outcomes**

On completion of this course, the student shall be able to

**CO1**

Describe the concept, scope and importance of teacher education.

on.

**CO2** Analyze various policies and recommendations for teacher education in India

**CO3** Critically evaluate

professional ethics, autonomy and accountability of teachers in their profession

**CO4** Identify the problems in implementation of the policies for teacher education

**CO5** Analyze the role and functions of different agencies of teacher education in quality development of teacher education.

EDN-403

#### **GUIDANCE AND COUNSELING IN EDUCATION**

#### **Course Outcomes**

On completion of this course, the student-teacher shall be able to

**CO1** Summarize the concept, need, principles and bases of guidance.

**CO2** Apply various tools and techniques of guidance in appropriate contexts.

**CO3**

Identify the role of school in organizing different guidance programmes.

**CO4** Illustrate the concept, scope and type of counseling.

**CO5**

Extract the process, tools and techniques of counseling.

**CO6** Design different types of guidance services.

EDN-404

INCLUSIVE EDUCATIO

N

### **Course Outcomes**

On completion of this course, the student-teacher shall be able to **CO1**

Describe historical background of inclusive education.

**CO2**

Summarize concept, nature, and scope of inclusive education. **CO3** Categorize types of inclusive education.

**CO4** Illustrate the types, characteristics of physically and sensory handicapped.

**CO5** Identify characteristics, etiology and prevention of physically and sensory handicapped.

**CO6** Categorize and summarize the types, characteristics, etiology and prevention of mentally handicapped.

**LIST OF COs OF PG SYLLABUS OF SCHOOL OF ECONOMICS**

<b>COURSE CODE</b>	<b>Course Title</b>	
<b>Semester I</b>		
ECO-101	<b>Micro Economic Theory – I</b>	CO1: Analyze and evaluate consumer behavior at advanced level.
		CO2: Articulate the producer’s optimizing behavior.
		CO3: Derive and evaluate firm and industry behavior under competitive and monopoly market
		CO4: Evaluate oligopoly firm behavior under differential firm objectives.
ECO-102	<b>Macro Economic Theory – I</b>	CO1: Develop an understanding of elementary theoretical foundation of key issues and policies on national income accounting, inflation and interest rates.
		CO2: Possess deeper understanding of the concepts like multiplier, monetarism, the natural level of unemployment, and fiscal policy.
		CO3: Apply the art of abstracting and building small models related to the macroeconomics.
		CO4: Analyze the importance of regulating the financial system, and draws attention to the limitations to policymaking in an open economy.
ECO-103	<b>Economics of Social Infrastructure-I</b>	CO1: Identify and understand the concept of social infrastructure.
		CO2: Interpret the idea of human development and Examine the difference between human capital and human development.
		CO3: Analyze the importance of nutrition both in human development and human resource development.
		CO4: Assess and review social sector policies in India.
ECO-104	<b>Quantitative Techniques &amp; Computer Applications-I</b>	CO1: Understand the use of calculus in choice behaviour of economic agents.
		CO2: Illustrate matrix operation, minors, cofactors, use cofactor method to find inverse of a matrix, use Cramer’s rule to solve systems of equations.
		CO3: Demonstrate knowledge of dynamic optimization and time-varying choice problems of economic agent.
		CO4: Identify, critically evaluate and synthesize the substantive theories and create models for understanding economic behavior with computer applications.
ECO-105	<b>Development Economics-I</b>	CO1: Learn the models of economic development and critically analyze growth and development strategies.
		CO2: Examine about choices of technology with scale and investment criteria.
		CO3: Synthesize the different aspects of economic development and can use these things in their future research as well as in qualifying the
		CO4: Understand and acquaint with the evolution and measures of development.
<b>Semester II</b>		
ECO-201	<b>Micro Economic Theory-II</b>	CO1: Understand and compare modern developments in theory of firm’s behavior
		CO2: Explain and demonstrate factor pricing under different market conditions.
		CO3: Evaluate the conditions of general equilibrium and modern development in market failure

		CO4: Compare the various criteria for evaluating social welfare and arriving at a social choice.
ECO-202	<b>Macro Economic Theory-II</b>	CO1: Know the basic approaches involved in the Post-Keynesian demand for money. CO2: Examine the interrelationships involved among inflation and unemployment through Phillips curve. CO3: Examine expectations formation by using the business cycles. CO4: Analyze the movement of income, output and employment and develop a critical understanding of new classical macroeconomics.
ECO-203	<b>Economics of Social Infrastructure-II</b>	CO1: Identify the difference between health and health care and describe the features of health as an economic commodity. CO2: Interpret the demand and supply aspects of health care, education and articulate the different market forms in health care output. Analyze CO3: Assess the production function approach in education and judge the importance of investment in education as a matter of social choice. CO4: Synthesize the problem of market failure in health care due to asymmetric information and externalities in education and propose
ECO-204	<b>Quantitative Techniques &amp; computer applications-II</b>	CO1: Analyze the estimates of multiple regressions and inferential statistics with the help of software and interpret it. CO2: Validate the estimates of weights, distributive tables, regression and any other relevant techniques by using economic variables. CO3: Attain the basic knowledge on computer for testing economic hypotheses and forecasting. CO4: Develop the idea on uses of statistical software for better understanding of the subject matter.
ECO-205	<b>Development Economics-II</b>	CO1: Understand the significance of sectoral growth and development approaches in developing countries. CO2: Interpret the implications of international trade theories for developing countries. CO3: Review how the macroeconomic policies impact the internal growth prospects and external balance of developing economies. CO4: Propose suitable policy changes in regional and micro planning in the context of the Indian economy.
ECO-206 A	<b>New Institutional Economics (Elective)</b>	CO1: Understand the theories of old institutional economics. CO2: Outline the institutional structure of a society and the limits. Demonstrate the inter dependence of social, political and economic institutions. CO3: Assess the implications of transaction costs and property rights for economic institutions. CO4: Develop a suitable synthesis of best practices in the present scenario using property right institutions.
ECO-206 B	<b>Mathematical Economics (Elective)</b>	CO1: Understand the consumers equilibrium more objectively with the help of different forms of utility forms. CO2: Examine the theory of firm's equilibrium and familiarise the students with various forms of production functions having practical relevance. CO3: Experiment the idea of different types of market and equilibrium in the respective market mathematically. CO4: Develop solutions to Economic problems from programming and game theoretic approach. Appraise the Operations Research model like



ECO-206 C	<b>New Frontiers in Economics (Elective)</b>	CO1: Outline the nuances of new classical economics and post-Keynesian economics.
		CO2: Enable the students to identify and describe the latest developments in the field of economics.
		CO3: Illustrate different approaches to the concept of welfare from Rawls to Sen and Appraise gender issues and the feminist economic theories.
		CO4: Develop new ideas to deal with troublesome environmental issues
<b>Semester III</b>		
ECO-301	<b>Public Economics (ECO-301)</b>	CO1: Understanding of the rationale for the existence of modern governments.
		CO2: Know how there is allocation of resources by public policy and role of voting system.
		CO3: Understand the functions and effectiveness of fiscal policy.
		CO4: Familiar with various tax system in India.
ECO-302	<b>International economics-I</b>	CO1: Understand and compare different theories of international trade
		CO2: Evaluate the importance of international trade as an engine of economic growth.
		CO3: Examine and reflect on the economic policies that include international trade.
		CO4: Deduce policies to attain balance in the economy
ECO-303	<b>Environment &amp; Resource Economics – I</b>	CO1: Define the key issues regarding sustainability, environmental degradation and economic growth.
		CO2: Describe the analytical framework adapted by the discipline of Economics to include the environmental concerns in its analysis.
		CO3: Appraise different techniques of valuation and cost benefit analysis that goes into decision making in environmental Economics.
		CO4: Develop ways in which economic principles can be used for environmental protection and pollution control.
ECO-304	<b>Advanced Econometrics – I</b>	CO1: State the use of statistical techniques to analyse Economic data and relations.
		CO2: Understand the Linear and Non- Linear regression models. Evaluate statistical significance of results obtained through hypothesis testing.
		CO3: Sketch the problems encountered in hypothesis testing and the remedies.
		CO4: Develop appropriate statistical models for use in economic modelling. Design economic models using simultaneous equations,
ECO-305	<b>Behavioural Economics</b>	CO1: Understand the basics of behavioural economics and recognize the anomalies of standard economic neoclassical models.
		CO2: Understand and evaluate the decision making under certain situation.
		CO3: To examine behaviour under uncertain situation and develop understanding of modern advancement in the field.
		CO4: Evaluate the strategic interaction & behaviour in dynamic time framework.
		CO1: List the basic characteristics of Indian economy and its potential on natural resources.

ECO-306 A	<b>Indian economy</b>	CO2: Examine agriculture as the foundation of economic growth and development, analyse the progress and changing nature of agricultural sector and its contribution to the economy as a whole.
		CO3: Not only appraise the status of the economy as a whole, they would understand the basic features of Odisha's economy, sources of revenue, how the state government finance its programmes and projects.
		CO4: Formulate policies of inclusive growth for the Indian economy in general and economy of Odisha in particular.
ECO-306 B	<b>Regional Economics</b>	Define the key issues relating to regional economic analysis.
		Demonstrate the theoretical background of development disparities of different regions.
		Examine the applicability of theories of location, migration, development with different dimensions of regional development.
		Critique of regional planning and point out the deficiencies in removing regional as well as rural urban disparities of India.
ECO-306 C	<b>Indian Financial System–</b>	CO1: List the broad features of Indian financial institutions with the regulating mechanism of NBFCs and promotion of development banking.
		CO2: Describe the trend of savings & liabilities, Mobilization of resources through mutual funds and development banking analysis.
		CO3: Examine the existence and development of non-banking financial institutions, know the important role of Mutual funds, investment
		CO4: Experiment the conditions of financial markets and its impact in the economy.
<b>Semester IV</b>		
ECO-401	<b>Public Economics-II</b>	CO1: Understand important theories of public expenditure and reforms in Indian expenditure budgeting.
		CO2: Recognise the fundamental concepts of public economics, public expenditure, public revenue, and public debt with special reference of
		CO3: Interpret various aspects of fiscal federalism in Indian fiscal scenario.
		CO4: Review and assess the recent developments of the different aspects of fiscal federalism.
ECO-402	<b>International Economics-II</b>	CO1: Deduce the effect of international trade on income and employment.
		CO2: Reflect on the open and restrictive policy of international trade.
		CO3: Corroborate the evolution and existence of International monetary system.
		CO4: Conjecture the possible changes in the role of the international financial institutions such as WTO, World Bank, IMF in the forthcoming periods.
ECO-403	<b>Environment &amp; Resource Economics – II</b>	CO1: List the dynamic resource utilisation problems in the context of <del>optimal allocation of resources, the tragedies, regulations and Human</del>
		CO2: Understand the diverse frameworks of national and global environmental problems, analytical tools, institutional and regulatory
		CO3: Argue that economic objectives are not necessarily in conflict with environmental goals, and that markets mechanisms combined with

		CO4: Design suitable environment policy tools to address the issues of management of environment and natural resources at regional and national level.
ECO-404	<b>Advanced Econometrics -II</b>	CO1: Develop understanding of the models in respect of simultaneous equations, time series analysis, multivariate analysis and dynamic
		CO2: Examine the forecasting technique with a single equation regression model and ARIMA technique with Box-Jenkins methodology.
		CO3: Organize the models in econometrics by adopting PCA, Discriminant analysis, factor analysis and cluster analysis in multivariate problems.
		CO4: Judge the basic concept of Auto regressive distributed lag model (ARDL) developed which will be helpful for future research work with time series data.
ECO-405	<b>Dissertation</b>	CO1: Identify an economic problem and build a hypothesis to examine
		CO2: Apply the text book knowledge in real world economic scenario
		CO3: Analyse and interpret the results derived from data.
		CO4: Write research papers.

## LIST OF COs OF PG SYLLABUS OF SCHOOL OF ECONOMICS

COURSE COD	Course Title	
<b>Semester I</b>		
ECO-101	<b>Micro Economic Theory – I</b>	CO1: Analyze and evaluate consumer behavior at advanced level.
		CO2: Articulate the producer's optimizing behavior.
		CO3: Derive and evaluate firm and industry behavior under competitive and monopoly market
		CO4: Evaluate oligopoly firm behavior under differential firm objectives.
ECO-102	<b>Macro Economic Theory – I</b>	CO1: Develop an understanding of elementary theoretical foundation of key issues and policies on national income accounting, inflation and interest rates.
		CO2: Possess deeper understanding of the concepts like multiplier, monetarism, the natural level of unemployment, and fiscal policy.
		CO3: Apply the art of abstracting and building small models related to the macroeconomics.
		CO4: Analyze the importance of regulating the financial system, and draws attention to the limitations to policymaking in an open economy.
ECO-103	<b>Economics of Social Infrastructure-I</b>	CO1: Identify and understand the concept of social infrastructure.
		CO2: Interpret the idea of human development and Examine the difference between human capital and human development.
		CO3: Analyze the importance of nutrition both in human development and human resource development.
		CO4: Assess and review social sector policies in India.
ECO-104	<b>Quantitative Techniques &amp; Computer Applications-I</b>	CO1: Understand the use of calculus in choice behaviour of economic agents.
		CO2: Illustrate matrix operation, minors, cofactors, use cofactor method to find inverse of a matrix, use Cramer's rule to solve systems of equations.
		CO3: Demonstrate knowledge of dynamic optimization and time-varying choice problems of economic agent.
		CO4: Identify, critically evaluate and synthesize the substantive theories and create models for understanding economic behavior with computer applications.
ECO-105	<b>Development Economics-I</b>	CO1: Learn the models of economic development and critically analyze growth and development strategies.
		CO2: Examine about choices of technology with scale and investment criteria.
		CO3: Synthesize the different aspects of economic development and can use these things in their future research as well as in qualifying the various national
		CO4: Understand and acquaint with the evolution and measures of development.
<b>Semester II</b>		
ECO-201	<b>Micro Economic Theory-II</b>	CO1: Understand and compare modern developments in theory of firm's behavior
		CO2: Explain and demonstrate factor pricing under different market conditions.
		CO3: Evaluate the conditions of general equilibrium and modern development in market failure
		CO4: Compare the various criteria for evaluating social welfare and arriving at a social choice.
		CO1: Know the basic approaches involved in the Post-Keynesian demand for money.

ECO-202	<b>Macro Economic Theory-II</b>	CO2: Examine the interrelationships involved among inflation and unemployment through Phillips curve. CO3: Examine expectations formation by using the business cycles. CO4: Analyze the movement of income, output and employment and develop a critical understanding of new classical macroeconomics.
ECO-203	<b>Economics of Social Infrastructure-II</b>	CO1: Identify the difference between health and health care and describe the features of health as an economic commodity. CO2: Interpret the demand and supply aspects of health care, education and articulate the different market forms in health care output. Analyze the problems CO3: Assess the production function approach in education and judge the importance of investment in education as a matter of social choice. CO4: Synthesize the problem of market failure in health care due to asymmetric information and externalities in education and propose suitable policy measures.
ECO-204	<b>Quantitative Techniques &amp; computer applications-II</b>	CO1: Analyze the estimates of multiple regressions and inferential statistics with the help of software and interpret it. CO2: Validate the estimates of weights, distributive tables, regression and any other relevant techniques by using economic variables. CO3: Attain the basic knowledge on computer for testing economic hypotheses and forecasting. CO4: Develop the idea on uses of statistical software for better understanding of the subject matter.
ECO-205	<b>Development Economics-II</b>	CO1: Understand the significance of sectoral growth and development approaches in developing countries. CO2: Interpret the implications of international trade theories for developing countries. CO3: Review how the macroeconomic policies impact the internal growth prospects and external balance of developing economies. CO4: Propose suitable policy changes in regional and micro planning in the context of the Indian economy.
ECO-206 A	<b>New Institutional Economics (Elective)</b>	CO1: Understand the theories of old institutional economics. CO2: Outline the institutional structure of a society and the limits. Demonstrate the inter dependence of social, political and economic institutions. CO3: Assess the implications of transaction costs and property rights for economic institutions. CO4: Develop a suitable synthesis of best practices in the present scenario using property right institutions.
ECO-206 B	<b>Mathematical Economics (Elective)</b>	CO1: Understand the consumers equilibrium more objectively with the help of different forms of utility forms. CO2: Examine the theory of firm's equilibrium and familiarise the students with various forms of production functions having practical relevance. CO3: Experiment the idea of different types of market and equilibrium in the respective market mathematically. CO4: Develop solutions to Economic problems from programming and game theoretic approach. Appraise the Operations Research model like Input-Output
ECO-206 C	<b>New Frontiers in Economics (Elective)</b>	CO1: Outline the nuances of new classical economics and post-Keynesian economics. CO2: Enable the students to identify and describe the latest developments in the field of economics. CO3: Illustrate different approaches to the concept of welfare from Rawls to Sen and Appraise gender issues and the feminist economic theories. CO4: Develop new ideas to deal with troublesome environmental issues
<b>Semester III</b>		

ECO-301	<b>Public Economics (ECO-301)</b>	CO1: Understanding of the rationale for the existence of modern governments.
		CO2: Know how there is allocation of resources by public policy and role of voting system.
		CO3: Understand the functions and effectiveness of fiscal policy.
		CO4: Familiar with various tax system in India.
ECO-302	<b>International economics-I</b>	CO1: Understand and compare different theories of international trade
		CO2: Evaluate the importance of international trade as an engine of economic growth.
		CO3: Examine and reflect on the economic policies that include international trade.
		CO4: Deduce policies to attain balance in the economy
ECO-303	<b>Environment &amp; Resource Economics – I</b>	CO1: Define the key issues regarding sustainability, environmental degradation and economic growth.
		CO2: Describe the analytical framework adapted by the discipline of Economics to include the environmental concerns in its analysis.
		CO3: Appraise different techniques of valuation and cost benefit analysis that goes into decision making in environmental Economics.
		CO4: Develop ways in which economic principles can be used for environmental protection and pollution control.
ECO-304	<b>Advanced Econometrics – I</b>	CO1: State the use of statistical techniques to analyse Economic data and relations.
		CO2: Understand the Linear and Non- Linear regression models. Evaluate statistical significance of results obtained through hypothesis testing.
		CO3: Sketch the problems encountered in hypothesis testing and the remedies.
		CO4: Develop appropriate statistical models for use in economic modelling. Design economic models using simultaneous equations, qualitative data and time
ECO-305	<b>Behavioural Economics</b>	CO1: Understand the basics of behavioural economics and recognize the anomalies of standard economic neoclassical models.
		CO2: Understand and evaluate the decision making under certain situation.
		CO3: To examine behaviour under uncertain situation and develop understanding of modern advancement in the field.
		CO4: Evaluate the strategic interaction & behaviour in dynamic time framework.
ECO-306 A	<b>Indian economy</b>	CO1: List the basic characteristics of Indian economy and its potential on natural resources.
		CO2: Examine agriculture as the foundation of economic growth and development, analyse the progress and changing nature of agricultural sector and its contribution to the economy as a whole.
		CO3: Not only appraise the status of the economy as a whole, they would understand the basic features of Odisha's economy, sources of revenue, how the state government finance its programmes and projects.
		CO4: Formulate policies of inclusive growth for the Indian economy in general and economy of Odisha in particular.
ECO-306 B	<b>Regional Economics</b>	Define the key issues relating to regional economic analysis.
		Demonstrate the theoretical background of development disparities of different regions.
		Examine the applicability of theories of location, migration, development with different dimensions of regional development.
		Critique of regional planning and point out the deficiencies in removing regional as well as rural urban disparities of India.

ECO-306 C	<b>Indian Financial System-</b>	CO1: List the broad features of Indian financial institutions with the regulating mechanism of NBFCs and promotion of development banking.
		CO2: Describe the trend of savings & liabilities, Mobilization of resources through mutual funds and development banking analysis.
		CO3: Examine the existence and development of non-banking financial institutions, know the important role of Mutual funds, investment companies etc.,
		CO4: Experiment the conditions of financial markets and its impact in the economy.
<b>Semester IV</b>		
ECO-401	<b>Public Economics-II</b>	CO1: Understand important theories of public expenditure and reforms in Indian expenditure budgeting.
		CO2: Recognise the fundamental concepts of public economics, public expenditure, public revenue, and public debt with special reference of Indian economy.
		CO3: Interpret various aspects of fiscal federalism in Indian fiscal scenario.
		CO4: Review and assess the recent developments of the different aspects of fiscal federalism.
ECO-402	<b>International Economics-II</b>	CO1: Deduce the effect of international trade on income and employment.
		CO2: Reflect on the open and restrictive policy of international trade.
		CO3: Corroborate the evolution and existence of International monetary system.
		CO4: Conjecture the possible changes in the role of the international financial institutions such as WTO, World Bank, IMF in the forthcoming periods.
ECO-403	<b>Environment &amp; Resource Economics – II</b>	CO1: List the dynamic resource utilisation problems in the context of optimal allocation of resources, the tragedies, regulations and Human Economy.
		CO2: Understand the diverse frameworks of national and global environmental problems, analytical tools, institutional and regulatory mechanisms for ensuring
		CO3: Argue that economic objectives are not necessarily in conflict with environmental goals, and that markets mechanisms combined with community
		CO4: Design suitable environment policy tools to address the issues of management of environment and natural resources at regional and national level.
ECO-404	<b>Advanced Econometrics –II</b>	CO1: Develop understanding of the models in respect of simultaneous equations, time series analysis, multivariate analysis and dynamic econometric models.
		CO2: Examine the forecasting technique with a single equation regression model and ARIMA technique with Box-Jenkins methodology.
		CO3: Organize the models in econometrics by adopting PCA, Discriminant analysis, factor analysis and cluster analysis in multivariate problems.
		CO4: Judge the basic concept of Auto regressive distributed lag model (ARDL) developed which will be helpful for future research work with time series data.
ECO-405	<b>Dissertation</b>	CO1: Identify an economic problem and build a hypothesis to examine
		CO2: Apply the text book knowledge in real world economic scenario
		CO3: Analyse and interpret the results derived from data.
		CO4: Write research papers.



## LIST OF COs OF PG SYLLABUS OF SCHOOL OF ECONOMICS

COURSE CO	Course Title	
<b>Semester I</b>		
ECO-101	<b>Micro Economic Theory – I</b>	CO1: Analyze and evaluate consumer behavior at advanced level. CO2: Articulate the producer's optimizing behavior. CO3: Derive and evaluate firm and industry behavior under competitive CO4: Evaluate oligopoly firm behavior under differential firm objectives.
ECO-102	<b>Macro Economic Theory – I</b>	CO1: Develop an understanding of elementary theoretical foundation of key issues and policies on national income accounting, inflation and CO2: Possess deeper understanding of the concepts like multiplier, CO3: Apply the art of abstracting and building small models related to CO4: Analyze the importance of regulating the financial system, and
ECO-103	<b>Economics of Social Infrastructure-I</b>	CO1: Identify and understand the concept of social infrastructure. CO2: Interpret the idea of human development and Examine the CO3: Analyze the importance of nutrition both in human development CO4: Assess and review social sector policies in India.
ECO-104	<b>Quantitative Techniques &amp; Computer Applications-I</b>	CO1: Understand the use of calculus in choice behaviour of economic CO2: Illustrate matrix operation, minors, cofactors, use cofactor method to find inverse of a matrix, use Cramer's rule to solve systems of CO3: Demonstrate knowledge of dynamic optimization and time-varying CO4: Identify, critically evaluate and synthesize the substantive theories and create models for understanding economic behavior with computer
ECO-105	<b>Development Economics-I</b>	CO1: Learn the models of economic development and critically analyze CO2: Examine about choices of technology with scale and investment CO3: Synthesize the different aspects of economic development and can use these things in their future research as well as in qualifying the CO4: Understand and acquaint with the evolution and measures of
<b>Semester II</b>		
ECO-201	<b>Micro Economic Theory- II</b>	CO1: Understand and compare modern developments in theory of firm's CO2: Explain and demonstrate factor pricing under different market CO3: Evaluate the conditions of general equilibrium and modern CO4: Compare the various criteria for evaluating social welfare and
ECO-202	<b>Macro Economic Theory- II</b>	CO1: Know the basic approaches involved in the Post-Keynesian demand CO2: Examine the interrelationships involved among inflation and CO3: Examine expectations formation by using the business cycles. CO4: Analyze the movement of income, output and employment and
ECO-203	<b>Economics of Social Infrastructure-II</b>	CO1: Identify the difference between health and health care and describe CO2: Interpret the demand and supply aspects of health care, education and articulate the different market forms in health care output. Analyze CO3: Assess the production function approach in education and judge the importance of investment in education as a matter of social choice. CO4: Synthesize the problem of market failure in health care due to asymmetric information and externalities in education and propose
ECO-204	<b>Quantitative Techniques &amp; computer applications- II</b>	CO1: Analyze the estimates of multiple regressions and inferential CO2: Validate the estimates of weights, distributive tables, regression CO3: Attain the basic knowledge on computer for testing economic CO4: Develop the idea on uses of statistical software for better



ECO-205	<b>Development Economics- II</b>	CO1: Understand the significance of sectoral growth and development CO2: Interpret the implications of international trade theories for CO3: Review how the macroeconomic policies impact the internal CO4: Propose suitable policy changes in regional and micro planning in
ECO-206 A	<b>New Institutional Economics (Elective)</b>	CO1: Understand the theories of old institutional economics. CO2: Outline the institutional structure of a society and the limits. Demonstrate the inter dependence of social, political and economic CO3: Assess the implications of transaction costs and property rights for CO4: Develop a suitable synthesis of best practices in the present
ECO-206 B	<b>Mathematical Economics (Elective)</b>	CO1: Understand the consumers equilibrium more objectively with the CO2: Examine the theory of firm's equilibrium and familiarise the students with various forms of production functions having practical CO3: Experiment the idea of different types of market and equilibrium in CO4: Develop solutions to Economic problems from programming and game theoretic approach. Appraise the Operations Research model like
ECO-206 C	<b>New Frontiers in Economics (Elective)</b>	CO1: Outline the nuances of new classical economics and post- CO2: Enable the students to identify and describe the latest developments CO3: Illustrate different approaches to the concept of welfare from Rawls to Sen and Appraise gender issues and the feminist economic theories. CO4: Develop new ideas to deal with troublesome environmental issues
<b>Semester III</b>		
ECO-301	<b>Public Economics (ECO-301)</b>	CO1: Understanding of the rationale for the existence of modern CO2: Know how there is allocation of resources by public policy and role CO3: Understand the functions and effectiveness of fiscal policy. CO4: Familiar with various tax system in India.
ECO-302	<b>International economics-I</b>	CO1: Understand and compare different theories of international trade CO2: Evaluate the importance of international trade as an engine of economic growth. CO3: Examine and reflect on the economic policies that include international trade. CO4: Deduce policies to attain balance in the economy
ECO-303	<b>Environment &amp; Resource Economics – I</b>	CO1: Define the key issues regarding sustainability, environmental CO2: Describe the analytical framework adapted by the discipline of CO3: Appraise different techniques of valuation and cost benefit analysis CO4: Develop ways in which economic principles can be used for
ECO-304	<b>Advanced Econometrics – I</b>	CO1: State the use of statistical techniques to analyse Economic data and CO2: Understand the Linear and Non- Linear regression models. Evaluate statistical significance of results obtained through hypothesis CO3: Sketch the problems encountered in hypothesis testing and the CO4: Develop appropriate statistical models for use in economic modelling. Design economic models using simultaneous equations,
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ECO-306 B	<b>Regional Economics</b>	Define the key issues relating to regional economic analysis. Demonstrate the theoretical background of development disparities of Examine the applicability of theories of location, migration, development Critique of regional planning and point out the deficiencies in removing
ECO-306 C	<b>Indian Financial System-</b>	CO1: List the broad features of Indian financial institutions with the CO2: Describe the trend of savings & liabilities, Mobilization of CO3: Examine the existence and development of non-banking financial institutions, know the important role of Mutual funds, investment CO4: Experiment the conditions of financial markets and its impact in the economy.
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ECO-401	<b>Public Economics-II</b>	CO1: Understand important theories of public expenditure and reforms in CO2: Recognise the fundamental concepts of public economics, public expenditure, public revenue, and public debt with special reference of CO3: Interpret various aspects of fiscal federalism in Indian fiscal CO4: Review and assess the recent developments of the different aspects
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ECO-403	<b>Environment &amp; Resource Economics – II</b>	CO1: List the dynamic resource utilisation problems in the context of optimal allocation of resources, the tragedies, regulations and Human CO2: Understand the diverse frameworks of national and global environmental problems, analytical tools, institutional and regulatory CO3: Argue that economic objectives are not necessarily in conflict with environmental goals, and that markets mechanisms combined with CO4: Design suitable environment policy tools to address the issues of management of environment and natural resources at regional and
ECO-404	<b>Advanced Econometrics –II</b>	CO1: Develop understanding of the models in respect of simultaneous equations, time series analysis, multivariate analysis and dynamic CO2: Examine the forecasting technique with a single equation CO3: Organize the models in econometrics by adopting PCA, Discriminant analysis, factor analysis and cluster analysis in multivariate CO4: Judge the basic concept of Auto regressive distributed lag model (ARDL) developed which will be helpful for future research work with
ECO-405	<b>Dissertation</b>	CO1: Identify an economic problem and build a hypothesis to examine CO2: Apply the text book knowledge in real world economic scenario CO3: Analyse and interpret the results derived from data. CO4: Write research papers.

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<b>COURSE COD</b>	<b>Course Title</b>	
<b>SEMESTER I</b>		
ECO-101	<b>Micro Economic Theory – I</b>	CO1: Analyze and evaluate consumer behavior at advanced level.
		CO2: Articulate the producer’s optimizing behavior.
		CO3: Derive and evaluate firm and industry behavior under competitive and
		CO4: Evaluate oligopoly firm behavior under differential firm objectives.
ECO-102	<b>Macro Economic Theory – I</b>	CO1: Develop an understanding of elementary theoretical foundation of key issues and policies on national income accounting, inflation and interest
		CO2: Possess deeper understanding of the concepts like multiplier,
		CO3: Apply the art of abstracting and building small models related to the
		CO4: Analyze the importance of regulating the financial system, and draws
ECO-103	<b>Economics of Social Infrastructure-I</b>	CO1: Identify and understand the concept of social infrastructure.
		CO2: Interpret the idea of human development and Examine the difference
		CO3: Analyze the importance of nutrition both in human development and
		CO4: Assess and review social sector policies in India.
ECO-104	<b>Quantitative Techniques &amp; Computer Applications- I</b>	CO1: Understand the use of calculus in choice behaviour of economic agents.
		CO2: Illustrate matrix operation, minors, cofactors, use cofactor method to find inverse of a matrix, use Cramer’s rule to solve systems of equations.
		CO3: Demonstrate knowledge of dynamic optimization and time-varying
		CO4: Identify, critically evaluate and synthesize the substantive theories and create models for understanding economic behavior with computer
ECO-105	<b>Development Economics-I</b>	CO1: Learn the models of economic development and critically analyze
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		CO4: Understand and acquaint with the evolution and measures of
<b>SEMESTER II</b>		
ECO-201	<b>Micro Economic Theory-II</b>	CO1: Understand and compare modern developments in theory of firm’s
		CO2: Explain and demonstrate factor pricing under different market
		CO3: Evaluate the conditions of general equilibrium and modern
		CO4: Compare the various criteria for evaluating social welfare and arriving
ECO-202	<b>Macro Economic Theory-II</b>	CO1: Know the basic approaches involved in the Post-Keynesian demand
		CO2: Examine the interrelationships involved among inflation and
		CO3: Examine expectations formation by using the business cycles.
		CO4: Analyze the movement of income, output and employment and
ECO-203	<b>Economics of Social Infrastructure-II</b>	CO1: Identify the difference between health and health care and describe the
		CO2: Interpret the demand and supply aspects of health care, education and articulate the different market forms in health care output. Analyze the
		CO3: Assess the production function approach in education and judge the importance of investment in education as a matter of social choice.
		CO4: Synthesize the problem of market failure in health care due to asymmetric information and externalities in education and propose suitable
ECO-204	<b>Quantitative Techniques &amp; computer applications- II</b>	CO1: Analyze the estimates of multiple regressions and inferential statistics
		CO2: Validate the estimates of weights, distributive tables, regression and
		CO3: Attain the basic knowledge on computer for testing economic
		CO4: Develop the idea on uses of statistical software for better

ECO-205	<b>Development Economics-II</b>	CO1: Understand the significance of sectoral growth and development CO2: Interpret the implications of international trade theories for developing CO3: Review how the macroeconomic policies impact the internal growth CO4: Propose suitable policy changes in regional and micro planning in the
ECO-206 A	<b>New Institutional Economics (Elective)</b>	CO1: Understand the theories of old institutional economics. CO2: Outline the institutional structure of a society and the limits. Demonstrate the inter dependence of social, political and economic CO3: Assess the implications of transaction costs and property rights for CO4: Develop a suitable synthesis of best practices in the present scenario
ECO-206 B	<b>Mathematical Economics (Elective)</b>	CO1: Understand the consumers equilibrium more objectively with the help CO2: Examine the theory of firm's equilibrium and familiarise the students with various forms of production functions having practical relevance. CO3: Experiment the idea of different types of market and equilibrium in the CO4: Develop solutions to Economic problems from programming and game theoretic approach. Appraise the Operations Research model like
ECO-206 C	<b>New Frontiers in Economics (Elective)</b>	CO1: Outline the nuances of new classical economics and post-Keynesian CO2: Enable the students to identify and describe the latest developments in CO3: Illustrate different approaches to the concept of welfare from Rawls to Sen and Appraise gender issues and the feminist economic theories. CO4: Develop new ideas to deal with troublesome environmental issues
ECO-206 D	Industrial Organization	CO1: Understand factors those affect the decision making of a firm. CO2: Evaluate the pricing in the oligopoly market structure. CO3: Analyze strategic choice of the firm in relation to other firms. CO4: Evaluate the firm strategies pertaining to trust issues.

### SEMESTER III

ECO-301	<b>Public Economics (ECO-301)</b>	CO1: Understanding of the rationale for the existence of modern CO2: Know how there is allocation of resources by public policy and role of CO3: Understand the functions and effectiveness of fiscal policy. CO4: Familiar with various tax system in India.
ECO-302	<b>International economics-I</b>	CO1: Understand and compare different theories of international trade CO2: Evaluate the importance of international trade as an engine of economic growth. CO3: Examine and reflect on the economic policies that include international trade. CO4: Deduce policies to attain balance in the economy
ECO-303	<b>Environment &amp; Resource Economics – I</b>	CO1: Define the key issues regarding sustainability, environmental CO2: Describe the analytical framework adapted by the discipline of CO3: Appraise different techniques of valuation and cost benefit analysis CO4: Develop ways in which economic principles can be used for
ECO-304	<b>Advanced Econometrics – I</b>	CO1: State the use of statistical techniques to analyse Economic data and CO2: Understand the Linear and Non- Linear regression models. Evaluate statistical significance of results obtained through hypothesis testing. CO3: Sketch the problems encountered in hypothesis testing and the CO4: Develop appropriate statistical models for use in economic modelling. Design economic models using simultaneous equations, qualitative data and
ECO-305	<b>Behavioural Economics</b>	CO1: Understand the basics of behavioural economics and recognize the CO2: Understand and evaluate the decision making under certain situation.

ECO-305	<b>BEHAVIOURAL ECONOMICS</b>	CO3: To examine behaviour under uncertain situation and develop CO4: Evaluate the strategic interaction & behaviour in dynamic time
ECO-306 A	<b>Indian economy</b>	CO1: List the basic characteristics of Indian economy and its potential on CO2: Examine agriculture as the foundation of economic growth and development, analyse the progress and changing nature of agricultural sector CO3: Not only appraise the status of the economy as a whole, they would understand the basic features of Odisha's economy, sources of revenue, how CO4: Formulate policies of inclusive growth for the Indian economy in
ECO-306 B	<b>Regional Economics</b>	Define the key issues relating to regional economic analysis. Demonstrate the theoretical background of development disparities of Examine the applicability of theories of location, migration, development Critique of regional planning and point out the deficiencies in removing
ECO-306 C	<b>Indian Financial System–</b>	CO1: List the broad features of Indian financial institutions with the CO2: Describe the trend of savings & liabilities, Mobilization of resources CO3: Examine the existence and development of non-banking financial institutions, know the important role of Mutual funds, investment companies CO4: Experiment the conditions of financial markets and its impact in the economy.
ECO-306 D	<b>Gender Economics</b>	CO1: Understand the basics of gender economics. CO2: Analyse Gender in household decision making. CO3: Analyse the discrepancy in labour market related to gender. CO4: Critically evaluate the gender policy at different levels of policy making.
ECO-306-E	<b>Rural Economics</b>	CO1: Analyze and understand the long-term tendencies in the rural economy and agricultural development in India CO2: Evaluate the coordination among various stakeholders for sustainable rural development CO3: Acquaint the knowledge on theories of rural development and rural local selfgovernance namely Panchayati Raj Institutions and its CO4: Understand the rural credit system, infrastructure development and various policies to eradicate socio-economic problems in rural
<b>SEMESTER IV</b>		
ECO-401	<b>Public Economics-II</b>	CO1: Understand important theories of public expenditure and reforms in CO2: Recognise the fundamental concepts of public economics, public expenditure, public revenue, and public debt with special reference of India CO3: Interpret various aspects of fiscal federalism in Indian fiscal scenario. CO4: Review and assess the recent developments of the different aspects of
ECO-402	<b>International Economics-II</b>	CO1: Deduce the effect of international trade on income and employment. CO2: Reflect on the open and restrictive policy of international trade. CO3: Corroborate the evolution and existence of International monetary CO4: Conjecture the possible changes in the role of the international financial institutions such as WTO, World Bank, IMF in the forthcoming
ECO-403	<b>Environment &amp; Resource Economics</b>	CO1: List the dynamic resource utilisation problems in the context of optimal allocation of resources, the tragedies, regulations and Human CO2: Understand the diverse frameworks of national and global environmental problems, analytical tools, institutional and regulatory

ECO-403	<b>Resource Economics – II</b>	CO3: Argue that economic objectives are not necessarily in conflict with environmental goals, and that markets mechanisms combined with CO4: Design suitable environment policy tools to address the issues of management of environment and natural resources at regional and national
ECO-404	<b>Advanced Econometrics –II</b>	CO1: Develop understanding of the models in respect of simultaneous equations, time series analysis, multivariate analysis and dynamic CO2: Examine the forecasting technique with a single equation regression CO3: Organize the models in econometrics by adopting PCA, Discriminant analysis, factor analysis and cluster analysis in multivariate problems. CO4: Judge the basic concept of Auto regressive distributed lag model (ARDL) developed which will be helpful for future research work with time
ECO-405	<b>Dissertation</b>	CO1: Identify an economic problem and build a hypothesis to examine CO2: Apply the text book knowledge in real world economic scenario CO3: Analyse and interpret the results derived from data. CO4: Write research papers.

<b>COURSE CODE</b>	<b>Course Title</b>
ECO-101	<b>Micro Economic Theory – I</b>
ECO-102	<b>Macro Economic Theory – I</b>
ECO-103	<b>Economics of Social Infrastructure-I</b>
ECO-104	<b>Quantitative Techniques &amp; Computer Applications-I</b>
ECO-105	<b>Development Economics-I</b>
ECO-201	<b>Micro Economic Theory-II</b>
ECO-202	<b>Macro Economic Theory-II</b>
ECO-203	<b>Economics of Social Infrastructure-II</b>

ECO-204	<b>Quantitative Techniques &amp; computer applications-II</b>
ECO-205	<b>Development Economics-II</b>
ECO-206 A	<b>New Institutional Economics (Elective)</b>
ECO-206 B	<b>Mathematical Economics (Elective)</b>
ECO-206 C	<b>New Frontiers in Economics (Elective)</b>
ECO-206 D	Industrial Organization

ECO-301	<b>Public Economics (ECO-301)</b>
ECO-302	<b>International economics-I</b>
ECO-303	<b>Environment &amp; Resource Economics – I</b>
ECO-304	<b>Advanced Econometrics – I</b>



ECO-305	<b>Behavioural Economics</b>
ECO-306 A	<b>Indian economy</b>
ECO-306 B	<b>Regional Economics</b>
ECO-306 C	<b>Indian Financial System–</b>
ECO-306 D	<b>Gender Economics</b>
ECO-306-E	<b>Rural Economics</b>
ECO-401	<b>Public Economics-II</b>
	<b>International</b>

ECO-402	<del>International</del> <b>Economics-II</b>
ECO-403	<b>Environment &amp; Resource Economics – II</b>
ECO-404	<b>Advanced Econometrics –II</b>
ECO-405	<b>Dissertation</b>

**LIST OF COs OF PG SYLLABUS OF SCHOOL OF ECONOMICS**

**SEMESTER I**

CO1: Analyze and evaluate consumer behavior at advanced level.

CO2: Articulate the producer's optimizing behavior.

CO3: Derive and evaluate firm and industry behavior under competitive and monopoly

CO4: Evaluate oligopoly firm behavior under differential firm objectives.

CO1: Develop an understanding of elementary theoretical foundation of key issues and policies on national income accounting, inflation and interest rates.

CO2: Possess deeper understanding of the concepts like multiplier, monetarism, the natural level of unemployment, and fiscal policy.

CO3: Apply the art of abstracting and building small models related to the macroeconomics.

CO4: Analyze the importance of regulating the financial system, and draws attention to the limitations to policymaking in an open economy.

CO1: Identify and understand the concept of social infrastructure.

CO2: Interpret the idea of human development and Examine the difference between human capital and human development.

CO3: Analyze the importance of nutrition both in human development and human resource

CO4: Assess and review social sector policies in India.

CO1: Understand the use of calculus in choice behaviour of economic agents.

CO2: Illustrate matrix operation, minors, cofactors, use cofactor method to find inverse of a matrix, use Cramer's rule to solve systems of equations.

CO3: Demonstrate knowledge of dynamic optimization and time-varying choice problems

CO4: Identify, critically evaluate and synthesize the substantive theories and create models for understanding economic behavior with computer applications.

CO1: Learn the models of economic development and critically analyze growth and

CO2: Examine about choices of technology with scale and investment criteria.

CO3: Synthesize the different aspects of economic development and can use these things in their future research as well as in qualifying the various national level tests.

CO4: Understand and acquaint with the evolution and measures of development.

**SEMESTER II**

CO1: Understand and compare modern developments in theory of firm's behavior

CO2: Explain and demonstrate factor pricing under different market conditions.

CO3: Evaluate the conditions of general equilibrium and modern development in market

CO4: Compare the various criteria for evaluating social welfare and arriving at a social

CO1: Know the basic approaches involved in the Post-Keynesian demand for money.

CO2: Examine the interrelationships involved among inflation and unemployment through

CO3: Examine expectations formation by using the business cycles.

CO4: Analyze the movement of income, output and employment and develop a critical understanding of new classical macroeconomics.

CO1: Identify the difference between health and health care and describe the features of health as an economic commodity.

CO2: Interpret the demand and supply aspects of health care, education and articulate the different market forms in health care output. Analyze the problems of health care finance

CO3: Assess the production function approach in education and judge the importance of investment in education as a matter of social choice.

CO4: Synthesize the problem of market failure in health care due to asymmetric information and externalities in education and propose suitable policy measures.

CO1: Analyze the estimates of multiple regressions and inferential statistics with the help of software and interpret it.
CO2: Validate the estimates of weights, distributive tables, regression and any other relevant techniques by using economic variables.
CO3: Attain the basic knowledge on computer for testing economic hypotheses and
CO4: Develop the idea on uses of statistical software for better understanding of the subject
CO1: Understand the significance of sectoral growth and development approaches in
CO2: Interpret the implications of international trade theories for developing countries.
CO3: Review how the macroeconomic policies impact the internal growth prospects and external balance of developing economies.
CO4: Propose suitable policy changes in regional and micro planning in the context of the
CO1: Understand the theories of old institutional economics.
CO2: Outline the institutional structure of a society and the limits. Demonstrate the inter dependence of social, political and economic institutions.
CO3: Assess the implications of transaction costs and property rights for economic
CO4: Develop a suitable synthesis of best practices in the present scenario using property
CO1: Understand the consumers equilibrium more objectively with the help of different
CO2: Examine the theory of firm's equilibrium and familiarise the students with various forms of production functions having practical relevance.
CO3: Experiment the idea of different types of market and equilibrium in the respective
CO4: Develop solutions to Economic problems from programming and game theoretic approach. Appraise the Operations Research model like Input-Output model and Linear
CO1: Outline the nuances of new classical economics and post-Keynesian economics.
CO2: Enable the students to identify and describe the latest developments in the field of
CO3: Illustrate different approaches to the concept of welfare from Rawls to Sen and Appraise gender issues and the feminist economic theories.
CO4: Develop new ideas to deal with troublesome environmental issues
CO1: Understand factors those affect the decision making of a firm.
CO2: Evaluate the pricing in the oligopoly market structure.
CO3: Analyze strategic choice of the firm in relation to other firms.
CO4: Evaluate the firm strategies pertaining to trust issues.

### SEMESTER III

CO1: Understanding of the rationale for the existence of modern governments.
CO2: Know how there is allocation of resources by public policy and role of voting system.
CO3: Understand the functions and effectiveness of fiscal policy.
CO4: Familiar with various tax system in India.
CO1: Understand and compare different theories of international trade
CO2: Evaluate the importance of international trade as an engine of economic growth.
CO3: Examine and reflect on the economic policies that include international trade.
CO4: Deduce policies to attain balance in the economy
CO1: Define the key issues regarding sustainability, environmental degradation and
CO2: Describe the analytical framework adapted by the discipline of Economics to include the environmental concerns in its analysis.
CO3: Appraise different techniques of valuation and cost benefit analysis that goes into decision making in environmental Economics.
CO4: Develop ways in which economic principles can be used for environmental protection
CO1: State the use of statistical techniques to analyse Economic data and relations.
CO2: Understand the Linear and Non- Linear regression models. Evaluate statistical significance of results obtained through hypothesis testing.
CO3: Sketch the problems encountered in hypothesis testing and the remedies.

CO4: Develop appropriate statistical models for use in economic modelling. Design economic models using simultaneous equations, qualitative data and time series data.

CO1: Understand the basics of behavioural economics and recognize the anomalies of standard economic neoclassical models.

CO2: Understand and evaluate the decision making under certain situation.

CO3: To examine behaviour under uncertain situation and develop understanding of modern advancement in the field.

CO4: Evaluate the strategic interaction & behaviour in dynamic time framework.

CO1: List the basic characteristics of Indian economy and its potential on natural resources.

CO2: Examine agriculture as the foundation of economic growth and development, analyse the progress and changing nature of agricultural sector and its contribution to the economy

CO3: Not only appraise the status of the economy as a whole, they would understand the basic features of Odisha's economy, sources of revenue, how the state government finance

CO4: Formulate policies of inclusive growth for the Indian economy in general and economy of Odisha in particular.

Define the key issues relating to regional economic analysis.

Demonstrate the theoretical background of development disparities of different regions.

Examine the applicability of theories of location, migration, development with different dimensions of regional develop

Critique of regional planning and point out the deficiencies in removing regional as well as rural urban disparities of In

CO1: List the broad features of Indian financial institutions with the regulating mechanism of NBFCs and promotion of development banking.

CO2: Describe the trend of savings & liabilities, Mobilization of resources through mutual funds and development banking analysis.

CO3: Examine the existence and development of non-banking financial institutions, know the important role of Mutual funds, investment companies etc., utilize and effectively

CO4: Experiment the conditions of financial markets and its impact in the economy.

CO1: Understand the basics of gender economics.

CO2: Analyse Gender in household decision making.

CO3: Analyse the discrepancy in labour market related to gender.

CO4: Critically evaluate the gender policy at different levels of policy making.

CO1: Analyze and understand the long-term tendencies in the rural economy and agricultural development in India

CO2: Evaluate the coordination among various stakeholders for sustainable rural development

CO3: Acquaint the knowledge on theories of rural development and rural local selfgovernance namely Panchayati Raj Institutions and its role in planning and

CO4: Understand the rural credit system, infrastructure development and various policies to eradicate socio-economic problems in rural sector of India.

#### SEMESTER IV

CO1: Understand important theories of public expenditure and reforms in Indian

CO2: Recognise the fundamental concepts of public economics, public expenditure, public revenue and public debt with special reference of Indian economy.

CO3: Interpret various aspects of fiscal federalism in Indian fiscal scenario.

CO4: Review and assess the recent developments of the different aspects of fiscal

CO1: Deduce the effect of international trade on income and employment.

CO2: Reflect on the open and restrictive policy of international trade.

CO3: Corroborate the evolution and existence of International monetary system.
CO4: Conjecture the possible changes in the role of the international financial institutions such as WTO, World Bank, IMF in the forthcoming periods.
CO1: List the dynamic resource utilisation problems in the context of optimal allocation of resources, the tragedies, regulations and Human Economy.
CO2: Understand the diverse frameworks of national and global environmental problems, analytical tools, institutional and regulatory mechanisms for ensuring environmental quality
CO3: Argue that economic objectives are not necessarily in conflict with environmental goals, and that markets mechanisms combined with community participation can be useful
CO4: Design suitable environment policy tools to address the issues of management of environment and natural resources at regional and national level.
CO1: Develop understanding of the models in respect of simultaneous equations, time series analysis, multivariate analysis and dynamic econometric models.
CO2: Examine the forecasting technique with a single equation regression model and ARIMA technique with Box-Jenkins methodology.
CO3: Organize the models in econometrics by adopting PCA, Discriminant analysis, factor analysis and cluster analysis in multivariate problems.
CO4: Judge the basic concept of Auto regressive distributed lag model (ARDL) developed which will be helpful for future research work with time series data.
CO1: Identify an economic problem and build a hypothesis to examine
CO2: Apply the text book knowledge in real world economic scenario
CO3: Analyse and interpret the results derived from data.
CO4: Write research papers.







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**LIST OF COs OF UG SYLLABUS OF SCHOOL OF ECONOMICS**

COURSE	COURSE TITLE	
<b>Semester I</b>		
CC-I	<b>INTRODUCTORY MICROECONOMICS</b>	CO1:Understand basic concepts of Microeconomics CO2:Recognise nature and of consumer behaviour CO3:Classify different market structures CO4:Understand the basics of factor pricing.
CC-II	<b>MATHEMATICAL METHODS FOR ECONOMICS I</b>	CO1:Understand basic concepts of Mathematics. CO2:Understand various concepts of sets, relations, functions, linear algebra, sequence and time CO3:Apply various concepts of sets, relations, functions, linear algebra, sequence and time for applied economic analysis. CO4:Develop the ability to construct some basic mathematical model for analysis of economic theory.
GE-I	<b>INDIAN ECONOMY</b>	CO1:Identify the current economic problems facing India. CO2:Read the current economic situation in Indian Agriculture. CO3:Understand the industrial policy and the growth & problems of Indian Industry. CO4:Understand the phenomenal growth of the Tertiary sector in Indian economy especially after the economic reforms in 90's.
<b>Semester II</b>		
CC-III	<b>INTRODUCTORY MACROECONOMICS</b>	CO1:Understand basic concepts of macroeconomics. CO2:Understand various concepts of national income, consumption functions, investment function, monetary policies and fiscal policies. CO3:Articulate basic macroeconomic model for analysis of economic theory. CO4:Compare and contrast different paradigms of macroeconomics.
CC-IV	<b>MATHEMATICAL METHODS FOR ECONOMICS II</b>	CO1:Relate the use of linear algebra in economic analysis. CO2:Understand basic concepts of differential calculus and integral calculus which are highly required in Economics. CO3:Focus on the mathematical methods and models that are required to understand consumer behaviour. CO4:Use mathematical tools to understand optimisation by the consumer.
GE-II	<b>INDIAN ECONOMY II</b>	CO1:Read the performance of external sector in India. CO2:Understand the operations of financial market in India. CO3:Interpret the performance of budgets and budgetary policies in India CO4:Relate to the macroeconomic problems in Indian economy.
<b>Semester III</b>		

CC-V	MICROECONOMICS I	CO1:Understand the basics of consumer behavior.
		CO2:Apply and demonstrate consumer behavior in graph and mathematical equations.
		CO3:Explain the production process and solve problems related to it.
		CO4:Present the basics of firm's problem.
CC-VI	MACROECONOMICS I	of macroeconomics.
		CO2:Learn various policy making tools to fit into particular macroeconomic situation.
		CO3:Interpret the macroeconomic equilibrium and policy instruments.
		CO4:Learn Business cycle, inflation, unemployment to understand the working of economy better.
CC-VII	STATISTICAL METHODS FOR ECONOMICS	CO1:Get familiar with various concepts of averages and sampling techniques that are helpful in carrying out research work.
		CO2:Apply the statistical concepts for analyzing the data and find the solutions of many day to day problems.
		CO3:Compare the inter-temporal changes by using index numbers.
		CO4:Acquaint with the concept of probability, the only technique, to deal with many uncertain situations in life.
GE-III	INTRODUCTORY MICROECONOMICS	CO1:Understand basic concepts of Microeconomics
		CO2:Recognise nature and of consumer behaviour
		CO3:Classify different market structures
		CO4:Understand the basics of factor pricing.
SEC-I	Skill Enhancement Courses (SECC II Option-I): DATA ANALYSIS AND COMPUTER APPLICATION	CO1:Understand basic concepts of Computers.
		CO2:Understand various functions of excel, Database Management and Software Packages
		CO3:Apply various functions of excel for economic analysis.
		CO4:Use computer tools for presentation
Semester IV		
CC-VIII	MICROECONOMICS II	equilibrium.
		CO2:Understand the basics of welfare economics by applying indifference curve analysis.
		CO3:Summarize and interpret output and price determination in different forms of market.
		CO4:Understand deduce conclusions on agent's behaviour using basics of Game theory.
	MACROECONOMICS II	theory.
		CO2:Elaborate the Keynesian adjustment process in open economy by extending the analysis to goods market, money market and foreign exchange market.
		CO3:Comprehend the key concepts of New classical theories and New Keynesian Theories.

CC-IX		CO4:Identify the basic concepts underlying Balance of payments and exchange rate determination.
CC-X	<b>Research Methodology</b>	CO1:Learn the concepts and steps in research.
		CO2:Learn different methods to carry out research.
		CO3:Relate the issues and problems in research.
		CO4:Use computer techniques and tools to analyze and design research.
GE-IV	<b>INTRODUCTORY MACROECONOMICS</b>	CO1:Understand basic concepts of macroeconomics.
		CO2:Understand various concepts of national income, consumption functions, investment function, monetary policies and fiscal policies.
		CO3:Articulate basic macroeconomic model for analysis of economic theory.
		CO4:Compare and contrast different paradigms of macroeconomics.
SEC-II	<b>FINANCIAL ECONOMICS</b>	CO1:Understand the basic concepts and financial markets.
		CO2:Comprehend how securities are priced and affected by the institutional arrangements in stock market and other government regulations,
		CO3:Understand and analyze the fundamental operations of financial markets and instruments.
		CO4:Estimate the value of the financial assets like bonds, securities etc. and able to interpret the company's financial ratios.
<b>Semester V</b>		
CC-XI	<b>INDIAN ECONOMY I</b>	CO1:Understand the pre-independence economic situation in India.
		CO2:Classify different phases of Population growth and human development.
		CO3:Articulate the challenges facing Indian Economy and relate it to Economic development.
		CO4:Illustrate and correlate the planning and economic development in India.
CC-XII	<b>DEVELOPMENT ECONOMICS I</b>	CO1:Understand the development process of underdeveloped countries and gain better understanding of basic developmental problems that LDCs are facing.
		CO2:Know, understand the theories of economic development and apply them in their practical research problems.
		CO3:Learn to critically examine and analyse the relevance of various developmental policies.
		CO4:Interpret quantitatively the impact of various policy regimes with econometric techniques and provide policy suggestions.
		CO1:Understand the economic situation in pre-independence India.

DSE-II	ECONOMIC HISTORY OF INDIA 1857-1947	CO2:Understand the contribution of agriculture in the pre-independence period.
		CO3:Understand the development of industries in India.
		CO4:Compare the economic growth and development process between pre- & post independence India.
DSE-I	INTRODUCTORY ECONOMETRICS	CO1:Learn the basic econometric tools like regression and various estimation problems associated with it.
		CO2:Learn to test various economic theories with help of data by using econometric tools.
		CO3:Interpret econometrics model results and provide policy suggestions
		CO4:Know, understand and absorb the techniques and their practical research problems.
DSE-II	ODISHA ECONOMY	CO1:Understand the economic situation in the pre-independence period.
		CO2:Locate the macroeconomics problems in Odisha.
		CO3:Identify the sectoral contributions and problems in Odisha economy.
		CO4:Recognise the problems associated with social capital in Odisha.
DSE-II	MONEY, BANKING AND FINANCIAL MARKET	CO1:Classify money and its theoretical origin
		CO2:Recognise the functioning of Banking system.
		CO3:Articulate the operations and importance of central bank.
		CO4:Explore the functioning Financial Market and Financial Institutions.
Semester VI		
CC-XIII	INDIAN ECONOMY II	Agriculture.
		CO2:Relate the industrial policy and the growth & problems of Indian Industry.
		CO3:Understand the phenomenal growth of the Tertiary sector in Indian economy especially after the economic reforms in 90's.
		CO4:Sketch the policy in relation to environment and Sustainable development goals.
CC-XIV	DEVELOPMENT ECONOMICS II	development.
		CO2:Know, understand the theories of economic development and apply them in their practical research problems.
		CO3:Explore the environment-growth inter-linkages.
		CO4:Learn to critically examine and analyze the relevance of various developmental policies related to international trade and economic growth.
		CO1:Recognise central theories and empirical basis for budgeting.

DSE-III	<b>PUBLIC ECONOMICS</b>	CO2: Deal with the economic analysis of public expenditure for promoting socially efficient resource allocation.
		CO3:Relate to the taxation policy of the government.
		CO4:Explain the financing of the government and debt sustainability.
DSE-III	<b>Environmental Economics</b>	CO1:Evaluate the economic roots of environmental problems.
		CO2:Formulate environmental problems using economic theory.
		CO3:Understand the economic valuations of environmental resources
		CO4:Understand the current mechanism and the inherent economic interpretation of the pollution control measures at the national as well as at the global level.
DSE-III	<b>INTERNATIONAL ECONOMICS</b>	CO1:Understand the basis for trade between two economies.
		CO2:Measure the benefits accrued from international trade.
		CO3:Evaluate the cost and the rate at which the goods and services will be traded between two countries.
		CO4:Relate economic policies to international trade.
DSE-III	<b>AGRICULTURAL ECONOMICS</b>	CO1:Understand the importance of agriculture in economic development vis-à-vis major agricultural issues and policies.
		CO2:Endow with a theoretical understanding of agricultural marketing, price policy, credit structure etc that will enhance the analytical understanding of the issues.
		CO3:Analyze the complex nature of Indian Agriculture with the support of economic theory.
		CO4:Understand India's position in International Agricultural trade and evaluate the Impact of World Trade Organization on Indian agriculture
DSE-III	<b>HISTORY OF ECONOMIC THOUGHT</b>	CO1:Understand how the economic philosophy, theory and writings evolved with due course of time and happenings of the world.
		CO2:Compare the basic difference between early economic thought.
		CO3:Understand basis and origin of standard economic theory.
		CO4:Evaluate the unique and heterodox Indian development thinking in comparison to the concurrent conventional development thinking in the rest of the world.
	<b>DISSERTATION / RESEARCH PROJECT</b>	CO1:Understand how the economic philosophy, theory and writings evolved with due course of time and happenings of the world.
		CO2:Compare the basic difference between early economic thought.
		CO3:Understand basis and origin of standard economic theory.

DSE-IV

CO4: Evaluate the unique and heterodox Indian development thinking in comparison to the concurrent conventional development thinking in the rest of the world.

**LIST OF COs OF UG SYLLABUS OF SCHOOL OF ECONOMICS**

COURSE	COURSE TITLE	
<b>Semester I</b>		
CC-I	<b>INTRODUCTORY MICROECONOMICS</b>	CO1:Understand basic concepts of Microeconomics CO2:Recognise nature and of consumer behaviour CO3:Classify different market structures CO4:Understand the basics of factor pricing.
CC-II	<b>MATHEMATICAL METHODS FOR ECONOMICS I</b>	CO1:Understand basic concepts of Mathematics. CO2:Understand various concepts of sets, relations, functions, linear algebra, sequence and time CO3:Apply various concepts of sets, relations, functions, linear algebra, sequence and time for applied economic analysis. CO4:Develop the ability to construct some basic mathematical model for analysis of economic theory.
GE-I	<b>INDIAN ECONOMY</b>	CO1:Identify the current economic problems facing India. CO2:Read the current economic situation in Indian Agriculture. CO3:Understand the industrial policy and the growth & problems of Indian Industry. CO4:Understand the phenomenal growth of the Tertiary sector in Indian economy especially after the economic reforms in 90's.
<b>Semester II</b>		
CC-III	<b>INTRODUCTORY MACROECONOMICS</b>	CO1:Understand basic concepts of macroeconomics. CO2:Understand various concepts of national income, consumption functions, investment function, monetary policies and fiscal policies. CO3:Articulate basic macroeconomic model for analysis of economic theory. CO4:Compare and contrast different paradigms of macroeconomics.
CC-IV	<b>MATHEMATICAL METHODS FOR ECONOMICS II</b>	CO1:Relate the use of linear algebra in economic analysis. CO2:Understand basic concepts of differential calculus and integral calculus which are highly required in Economics. CO3:Focus on the mathematical methods and models that are required to understand consumer behaviour. CO4:Use mathematical tools to understand optimisation by the consumer.
GE-II	<b>INDIAN ECONOMY II</b>	CO1:Read the performance of external sector in India. CO2:Understand the operations of financial market in India. CO3:Interpret the performance of budgets and budgetary policies in India CO4:Relate to the macroeconomic problems in Indian economy.
<b>Semester III</b>		



CC-V	MICROECONOMICS I	CO1:Understand the basics of consumer behavior.
		CO2:Apply and demonstrate consumer behavior in graph and mathematical equations.
		CO3:Explain the production process and solve problems related to it.
		CO4:Present the basics of firm's problem.
CC-VI	MACROECONOMICS I	of macroeconomics.
		CO2:Learn various policy making tools to fit into particular macroeconomic situation.
		CO3:Interprete the macroeconomic equilibrium and policy instruments.
		CO4:Learn Business cycle, inflation, unemployment to understand the working of economy better.
CC-VII	STATISTICAL METHODS FOR ECONOMICS	CO1:Get familiar with various concepts of averages and sampling techniques that are helpful in carrying out research work.
		CO2:Apply the statistical concepts for analyzing the data and find the solutions of many day to day problems.
		CO3:Compare the inter-temporal changes by using index numbers.
		CO4:Acquaint with the concept of probability, the only technique, to deal with many uncertain situations in life.
GE-III	INTRODUCTORY MICROECONOMICS	CO1:Understand basic concepts of Microeconomics
		CO2:Recognise nature and of consumer behaviour
		CO3:Classify different market structures
		CO4:Understand the basics of factor pricing.
SEC-I	Skill Enhancement Courses (SECC II Option-I): DATA ANALYSIS AND COMPUTER APPLICATION	CO1:Understand basic concepts of Computers.
		CO2:Understand various functions of excel, Database Management and Software Packages
		CO3:Apply various functions of excel for economic analysis.
		CO4:Use computer tools for presentation
Semester IV		
CC-VIII	MICROECONOMICS II	equilibrium.
		CO2:Understand the basics of welfare economics by applying indifference curve analysis.
		CO3:Summarize and interpret output and price determination in different forms of market.
		CO4:Understand deduce conclusions on agent's behaviour using basics of Game theory.
	MACROECONOMICS II	theory.
		CO2:Elaborate the Keynesian adjustment process in open economy by extending the analysis to goods market, money market and foreign exchange market.
		CO3:Comprehend the key concepts of New classical theories and New Keynesian Theories.

CC-IX		CO4:Identify the basic concepts underlying Balance of payments and exchange rate determination.
CC-X	<b>Research Methodology</b>	CO1:Learn the concepts and steps in research.
		CO2:Learn different methods to carry out research.
		CO3:Relate the issues and problems in research.
		CO4:Use computer techniques and tools to analyze and design research.
GE-IV	<b>INTRODUCTORY MACROECONOMICS</b>	CO1:Understand basic concepts of macroeconomics.
		CO2:Understand various concepts of national income, consumption functions, investment function, monetary policies and fiscal policies.
		CO3:Articulate basic macroeconomic model for analysis of economic theory.
		CO4:Compare and contrast different paradigms of macroeconomics.
SEC-II	<b>FINANCIAL ECONOMICS</b>	CO1:Understand the basic concepts and financial markets.
		CO2:Comprehend how securities are priced and affected by the institutional arrangements in stock market and other government regulations,
		CO3:Understand and analyze the fundamental operations of financial markets and instruments.
		CO4:Estimate the value of the financial assets like bonds, securities etc. and able to interpret the company's financial ratios.
<b>Semester V</b>		
CC-XI	<b>INDIAN ECONOMY I</b>	CO1:Understand the pre-independence economic situation in India.
		CO2:Classify different phases of Population growth and human development.
		CO3:Articulate the challenges facing Indian Economy and relate it to Economic development.
		CO4:Illustrate and correlate the planning and economic development in India.
CC-XII	<b>DEVELOPMENT ECONOMICS I</b>	CO1:Understand the development process of underdeveloped countries and gain better understanding of basic developmental problems that LDCs are facing.
		CO2:Know, understand the theories of economic development and apply them in their practical research problems.
		CO3:Learn to critically examine and analyse the relevance of various developmental policies.
		CO4:Interpret quantitatively the impact of various policy regimes with econometric techniques and provide policy suggestions.
		CO1:Understand the economic situation in pre-independence India.

DSE-II	ECONOMIC HISTORY OF INDIA 1857-1947	CO2:Understand the contribution of agriculture in the pre-independence period.
		CO3:Understand the development of industries in India.
		CO4:Compare the economic growth and development process between pre- & post independence India.
DSE-I	INTRODUCTORY ECONOMETRICS	CO1:Learn the basic econometric tools like regression and various estimation problems associated with it.
		CO2:Learn to test various economic theories with help of data by using econometric tools.
		CO3:Interpret econometrics model results and provide policy suggestions
		CO4:Know, understand and absorb the techniques and their practical research problems.
DSE-II	ODISHA ECONOMY	CO1:Understand the economic situation in the pre-independence period.
		CO2:Locate the macroeconomics problems in Odisha.
		CO3:Identify the sectoral contributions and problems in Odisha economy.
		CO4:Recognise the problems associated with social capital in Odisha.
DSE-II	MONEY, BANKING AND FINANCIAL MARKET	CO1:Classify money and its theoretical origin
		CO2:Recognise the functioning of Banking system.
		CO3:Articulate the operations and importance of central bank.
		CO4:Explore the functioning Financial Market and Financial Institutions.
Semester VI		
CC-XIII	INDIAN ECONOMY II	Agriculture.
		CO2:Relate the industrial policy and the growth & problems of Indian Industry.
		CO3:Understand the phenomenal growth of the Tertiary sector in Indian economy especially after the economic reforms in 90's.
		CO4:Sketch the policy in relation to environment and Sustainable development goals.
CC-XIV	DEVELOPMENT ECONOMICS II	CO1:Articulate population in the process of economic development.
		CO2:Know, understand the theories of economic development and apply them in their practical research problems.
		CO3:Explore the environment-growth inter-linkages.
		CO4:Learn to critically examine and analyze the relevance of various developmental policies related to international trade and economic growth.
		CO1:Recognise central theories and empirical basis for budgeting.

DSE-III	PUBLIC ECONOMICS	CO2: Deal with the economic analysis of public expenditure for promoting socially efficient resource allocation.
		CO3:Relate to the taxation policy of the government.
		CO4:Explain the financing of the government and debt sustainability.
DSE-III	Environmental Economics	CO1:Evaluate the economic roots of environmental problems.
		CO2:Formulate environmental problems using economic theory.
		CO3:Understand the economic valuations of environmental resources
		CO4:Understand the current mechanism and the inherent economic interpretation of the pollution control measures at the national as well as at the global level.
DSE-III	INTERNATIONAL ECONOMICS	CO1:Understand the basis for trade between two economies.
		CO2:Measure the benefits accrued from international trade.
		CO3:Evaluate the cost and the rate at which the goods and services will be traded between two countries.
		CO4:Relate economic policies to international trade.
DSE-III	AGRICULTURAL ECONOMICS	CO1:Understand the importance of agriculture in economic development vis-à-vis major agricultural issues and policies.
		CO2:Endow with a theoretical understanding of agricultural marketing, price policy, credit structure etc that will enhance the analytical understanding of the issues.
		CO3:Analyze the complex nature of Indian Agriculture with the support of economic theory.
		CO4:Understand India's position in International Agricultural trade and evaluate the Impact of World Trade Organization on Indian agriculture
DSE-III	HISTORY OF ECONOMIC THOUGHT	CO1:Understand how the economic philosophy, theory and writings evolved with due course of time and happenings of the world.
		CO2:Compare the basic difference between early economic thought.
		CO3:Understand basis and origin of standard economic theory.
		CO4:Evaluate the unique and heterodox Indian development thinking in comparison to the concurrent conventional development thinking in the rest of the world.
	DISSERTATION / RESEARCH PROJECT	CO1:Understand how the economic philosophy, theory and writings evolved with due course of time and happenings of the world.
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DSE-IV

CO4: Evaluate the unique and heterodox Indian development thinking in comparison to the concurrent conventional development thinking in the rest of the world.

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CC-II	<b>MATHEMATICAL METHODS FOR ECONOMICS I</b>
GE-I	<b>INDIAN ECONOMY</b>
CC-III	<b>INTRODUCTORY MACROECONOMICS</b>
CC-IV	<b>MATHEMATICAL METHODS FOR ECONOMICS II</b>
GE-II	<b>INDIAN ECONOMY II</b>
CC-V	<b>MICROECONOMICS I</b>

CC-VI	<b>MACROECONOMICS I</b>
CC-VII	<b>STATISTICAL METHODS FOR ECONOMICS</b>
GE-III	<b>INTRODUCTORY MICROECONOMICS</b>
SEC-I	<b>Skill Enhancement Courses (SECC II Option-I): DATA ANALYSIS AND COMPUTER APPLICATION</b>
CC-VIII	<b><i>MICROECONOMICS II</i></b>
CC-IX	<b>MACROECONOMICS II</b>
CC-X	<b>Research Methodology</b>

GE-IV	<b>INTRODUCTORY MACROECONOMICS</b>
SEC-II	<b>FINANCIAL ECONOMICS</b>
CC-XI	<b>INDIAN ECONOMY I</b>
CC-XII	<b>DEVELOPMENT ECONOMICS I</b>
DSE-II	<b>ECONOMIC HISTORY OF INDIA 1857-1947</b>
DSE-I	<b>INTRODUCTORY ECONOMETRICS</b>



DSE-II	<b>ODISHA ECONOMY</b>
DSE-II	<b>MONEY, BANKING AND FINANCIAL MARKET</b>
CC-XIII	<b>INDIAN ECONOMY II</b>
CC-XIV	<b>DEVELOPMENT ECONOMICS II</b>
DSE-III	<b>PUBLIC ECONOMICS</b>
DSE-III	<b>Environmental Economics</b>
DSE-III	<b>INTERNATIONAL ECONOMICS</b>

DSE-III	<b>AGRICULTURAL ECONOMICS</b>
DSE-III	<b>HISTORY OF ECONOMIC THOUGHT</b>
DSE-IV	<b>DISSERTATION / RESEARCH PROJECT</b>

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CO1:Identify the current economic problems facing India.
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Semester IV
CO1:Learn various concepts and theories of firm and industry equilibrium.
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Semester V

CO1:Understand the pre-independence economic situation in India.
CO2:Classify different phases of Population growth and human development.
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CO1:Classify money and its theoretical origin
CO2:Recognise the functioning of Banking system.
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Semester VI
CO1:Connect with the current economic situation in Indian Agriculture.
CO2:Relate the industrial policy and the growth & problems of Indian Industry.
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CO4:Sketch the policy in relation to environment and Sustainable development goals.
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GE-I	<b>INDIAN ECONOMY</b>
CC-III	<b>INTRODUCTORY MACROECONOMICS</b>
CC-IV	<b>MATHEMATICAL METHODS FOR ECONOMICS II</b>
GE-II	<b>INDIAN ECONOMY II</b>
CC-V	<b>MICROECONOMICS I</b>



CC-VI	<b>MACROECONOMICS I</b>
CC-VII	<b>STATISTICAL METHODS FOR ECONOMICS</b>
GE-III	<b>INTRODUCTORY MICROECONOMICS</b>
SEC-I	<b>Skill Enhancement Courses (SECC II Option-I): DATA ANALYSIS AND COMPUTER APPLICATION</b>
CC-VIII	<b>MICROECONOMICS II</b>
CC-IX	<b>MACROECONOMICS II</b>
CC-X	<b>Research Methodology</b>
	<b>INTRODUCTORY</b>

	<b>MACROECONOMICS</b>
GE-IV	
	<b>FINANCIAL ECONOMICS</b>
SEC-II	
	<b>INDIAN ECONOMY I</b>
CC-XI	
	<b>DEVELOPMENT ECONOMICS I</b>
CC-XII	
	<b>ECONOMIC HISTORY OF INDIA 1857-1947</b>
DSE-II	
	<b>INTRODUCTORY ECONOMETRICS</b>
DSE-I	
	<b>ODISHA ECONOMY</b>

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DSE-II	
DSE-II	<b>MONEY, BANKING AND FINANCIAL MARKET</b>
CC-XIII	<b>INDIAN ECONOMY II</b>
CC-XIV	<b>DEVELOPMENT ECONOMICS II</b>
DSE-III	<b>PUBLIC ECONOMICS</b>
DSE-III	<b>Environmental Economics</b>
DSE-III	<b>INTERNATIONAL ECONOMICS</b>
	<b>AGRICULTURAL ECONOMICS</b>

DSE-III	
DSE-III	<b>HISTORY OF ECONOMIC THOUGHT</b>
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CO3:Analyze the complex nature of Indian Agriculture with the support of economic theory.



CO4:Understand India's position in International Agricultural trade and evaluate the Impact of World Trade Organization on Indian agriculture
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**LIST OF COs OF UG SYLLABUS OF SCHOOL OF ECONOMICS**

COURSE	COURSE TITLE	
<b>Semester I</b>		
CC-I	<b>INTRODUCTORY MICROECONOMICS</b>	CO1:Understand basic concepts of Microeconomics CO2:Recognise nature and of consumer behaviour CO3:Classify different market structures CO4:Understand the basics of factor pricing.
CC-II	<b>MATHEMATICAL METHODS FOR ECONOMICS I</b>	CO1:Understand basic concepts of Mathematics. CO2:Understand various concepts of sets, relations, functions, linear algebra, sequence and time CO3:Apply various concepts of sets, relations, functions, linear algebra, sequence and time for applied economic analysis. CO4:Develop the ability to construct some basic mathematical model for analysis of economic theory.
GE-I	<b>INDIAN ECONOMY</b>	CO1:Identify the current economic problems facing India. CO2:Read the current economic situation in Indian Agriculture. CO3:Understand the industrial policy and the growth & problems of Indian Industry. CO4:Understand the phenomenal growth of the Tertiary sector in Indian economy especially after the economic reforms in 90's.
<b>Semester II</b>		
CC-III	<b>INTRODUCTORY MACROECONOMICS</b>	CO1:Understand basic concepts of macroeconomics. CO2:Understand various concepts of national income, consumption functions, investment function, monetary policies and fiscal policies. CO3:Articulate basic macroeconomic model for analysis of economic theory. CO4:Compare and contrast different paradigms of macroeconomics.
CC-IV	<b>MATHEMATICAL METHODS FOR ECONOMICS II</b>	CO1:Relate the use of linear algebra in economic analysis. CO2:Understand basic concepts of differential calculus and integral calculus which are highly required in Economics. CO3:Focus on the mathematical methods and models that are required to understand consumer behaviour. CO4:Use mathematical tools to understand optimisation by the consumer.
GE-II	<b>INDIAN ECONOMY II</b>	CO1:Read the performance of external sector in India. CO2:Understand the operations of financial market in India. CO3:Interpret the performance of budgets and budgetary policies in India CO4:Relate to the macroeconomic problems in Indian economy.
<b>Semester III</b>		
	<b>MICROECONOMICS I</b>	CO1:Understand the basics of consumer behavior. CO2:Apply and demonstrate consumer behavior in graph and mathematical equations.

CC-V		CO3: Explain the production process and solve problems related to it. CO4: Present the basics of firm's problem.
CC-VI	<b>MACROECONOMICS I</b>	macroeconomics. CO2: Learn various policy making tools to fit into particular macroeconomic situation. CO3: Interpret the macroeconomic equilibrium and policy instruments. CO4: Learn Business cycle, inflation, unemployment to understand the working of economy better.
CC-VII	<b>STATISTICAL METHODS FOR ECONOMICS</b>	CO1: Get familiar with various concepts of averages and sampling techniques that are helpful in carrying out research work. CO2: Apply the statistical concepts for analyzing the data and find the solutions of many day to day problems. CO3: Compare the inter-temporal changes by using index numbers. CO4: Acquaint with the concept of probability, the only technique, to deal with many uncertain situations in life.
GE-III	<b>INTRODUCTORY MICROECONOMICS</b>	CO1: Understand basic concepts of Microeconomics CO2: Recognise nature and of consumer behaviour CO3: Classify different market structures CO4: Understand the basics of factor pricing.
SEC-I	<b>Skill Enhancement Courses (SECC II Option-I): DATA ANALYSIS AND COMPUTER APPLICATION</b>	CO1: Understand basic concepts of Computers. CO2: Understand various functions of excel, Database Management and Software Packages CO3: Apply various functions of excel for economic analysis. CO4: Use computer tools for presentation
<b>Semester IV</b>		
CC-VIII	<b>MICROECONOMICS II</b>	equilibrium. CO2: Understand the basics of welfare economics by applying indifference curve analysis. CO3: Summarize and interpret output and price determination in different forms of market. CO4: Understand deduce conclusions on agent's behaviour using basics of Game theory.
CC-IX	<b>MACROECONOMICS II</b>	theory. CO2: Elaborate the Keynesian adjustment process in open economy by extending the analysis to goods market, money market and foreign exchange market. CO3: Comprehend the key concepts of New classical theories and New Keynesian Theories. CO4: Identify the basic concepts underlying Balance of payments and exchange rate determination.
	<b>Research Methodology</b>	CO1: Learn the concepts and steps in research. CO2: Learn different methods to carry out research. CO3: Relate the issues and problems in research.

CC-X		CO4:Use computer techniques and tools to analyze and design research.
GE-IV	<b>INTRODUCTORY MACROECONOMICS</b>	CO1:Understand basic concepts of macroeconomics. CO2:Understand various concepts of national income, consumption functions, investment function, monetary policies and fiscal policies. CO3:Articulate basic macroeconomic model for analysis of economic theory. CO4:Compare and contrast different paradigms of macroeconomics.
SEC-II	<b>FINANCIAL ECONOMICS</b>	CO1:Understand the basic concepts and financial markets. CO2:Comprehend how securities are priced and affected by the institutional arrangements in stock market and other government regulations, CO3:Understand and analyze the fundamental operations of financial markets and instruments. CO4:Estimate the value of the financial assets like bonds, securities etc. and able to interpret the company's financial ratios.
Semester V		
CC-XI	<b>INDIAN ECONOMY I</b>	CO1:Understand the pre-independence economic situation in India. CO2:Classify different phases of Population growth and human development. CO3:Articulate the challenges facing Indian Economy and relate it to Economic development. CO4:Illustrate and correlate the planning and economic development in India.
CC-XII	<b>DEVELOPMENT ECONOMICS I</b>	CO1:Understand the development process of underdeveloped countries and gain better understanding of basic developmental problems that LDCs are facing. CO2:Know, understand the theories of economic development and apply them in their practical research problems. CO3:Learn to critically examine and analyse the relevance of various developmental policies. CO4:Interpret quantitatively the impact of various policy regimes with econometric techniques and provide policy suggestions.
DSE-II	<b>ECONOMIC HISTORY OF INDIA 1857-1947</b>	CO1:Understand the economic situation in pre-independence India. CO2:Understand the contribution of agriculture in the pre-independence period. CO3:Understand the development of industries in India. CO4:Compare the economic growth and development process between pre- & post independence India.
	<b>INTRODUCTORY</b>	CO1:Learn the basic econometric tools like regression and various estimation problems associated with it. CO2:Learn to test various economic theories with help of data by using econometric tools.

	<b>ECONOMETRICS</b>	CO3: Interpret econometrics model results and provide policy suggestions CO4: Know, understand and absorb the techniques and their practical research problems.
DSE-I		
	<b>ODISHA ECONOMY</b>	CO1: Understand the economic situation in the pre-independence period. CO2: Locate the macroeconomics problems in Odisha. CO3: Identify the sectoral contributions and problems in Odisha economy. CO4: Recognise the problems associated with social capital in Odisha.
DSE-II		
	<b>MONEY, BANKING AND FINANCIAL MARKET</b>	CO1: Classify money and its theoretical origin CO2: Recognise the functioning of Banking system. CO3: Articulate the operations and importance of central bank. CO4: Explore the functioning Financial Market and Financial Institutions.
DSE-II		
<b>Semester VI</b>		
	<b>INDIAN ECONOMY II</b>	CO1: Connect with the current economic situation in Indian Agriculture. CO2: Relate the industrial policy and the growth & problems of Indian Industry. CO3: Understand the phenomenal growth of the Tertiary sector in Indian economy especially after the economic reforms in 90's. CO4: Sketch the policy in relation to environment and Sustainable development goals.
CC-XIII		
	<b>DEVELOPMENT ECONOMICS II</b>	CO1: Articulate population in the process of economic development. CO2: Know, understand the theories of economic development and apply them in their practical research problems. CO3: Explore the environment-growth inter-linkages. CO4: Learn to critically examine and analyze the relevance of various developmental policies related to international trade and economic growth.
CC-XIV		
	<b>PUBLIC ECONOMICS</b>	CO1: Recognise central theories and empirical basis for budgeting. CO2: Deal with the economic analysis of public expenditure for promoting socially efficient resource allocation. CO3: Relate to the taxation policy of the government. CO4: Explain the financing of the government and debt sustainability.
DSE-III		
	<b>Environmental Economics</b>	CO1: Evaluate the economic roots of environmental problems. CO2: Formulate environmental problems using economic theory. CO3: Understand the economic valuations of environmental resources CO4: Understand the current mechanism and the inherent economic interpretation of the pollution control measures at the national as well as at the global level.
DSE-III		
	<b>INTERNATIONAL</b>	CO1: Understand the basis for trade between two economies. CO2: Measure the benefits accrued from international trade.

DSE-III	<b>INTERNATIONAL ECONOMICS</b>	CO3: Evaluate the cost and the rate at which the goods and services will be traded between two countries.
		CO4: Relate economic policies to international trade.
DSE-III	<b>AGRICULTURAL ECONOMICS</b>	CO1: Understand the importance of agriculture in economic development vis-à-vis major agricultural issues and policies.
		CO2: Endow with a theoretical understanding of agricultural marketing, price policy, credit structure etc that will enhance the analytical understanding of the issues.
		CO3: Analyze the complex nature of Indian Agriculture with the support of economic theory.
		CO4: Understand India's position in International Agricultural trade and evaluate the Impact of World Trade Organization on Indian agriculture
DSE-III	<b>HISTORY OF ECONOMIC THOUGHT</b>	CO1: Understand how the economic philosophy, theory and writings evolved with due course of time and happenings of the world.
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		CO3: Understand basis and origin of standard economic theory.
		CO4: Evaluate the unique and heterodox Indian development thinking in comparison to the concurrent conventional development thinking in the rest of the world.
DSE-III	<b>Business Analytics</b>	CO1: Understand basic nature and analysis of data.
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		CO3: Understand the risk involved in banking system and know methods to manage the risk.
		CO4: Evaluate the health care and workforce data using analytics.
DSE-IV	<b>DISSERTATION / RESEARCH PROJECT</b>	CO1: Understand how the economic philosophy, theory and writings evolved with due course of time and happenings of the world.
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 Director, IQAC  
 Gangadhar Meher University  
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 REGISTRAR  
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