



## INTERNAL QUALITY ASSURANCE CELL (IQAC)

### LAXMINARAYAN COLLEGE, JHARSUGUDA

(NAAC ACCREDITED)

PO- K.M.ROAD,

JHARSUGUDA-768202 (ODISHA)

Estd. 1969

#### LEARNING OUTCOMES FOR ALL PROGRAMS: PROGRAM OUTCOMES, PROGRAM SPECIFIC OUTCOMES AND COURSE OUTCOMES

Laxminarayan College, Jharsuguda has a vision to improve the lives of all the beneficiaries through creating a sustainable learning culture in response to the need of the society and to provide opportunities to individuals for achieving their personal and professional goals to become responsible and disciplined citizens and human beings. In order to meet this vision, the institution has prepared a road map and has decided certain outcomes to attain. Deciding outcomes for academic achievements and it's attainment for assessment and formulation is based on a learning theory called Outcome Based Education. By the end of the educational experience, each student should have achieved the goal. There is no single specified style of teaching or assessment in OBE; instead, classes, opportunities, and assessments should all help students achieve the specified outcomes. The role of the faculty adapts into instructor, trainer, facilitator, and/or mentor based on the outcomes targeted. Outcome based education emphasizes on

- Stating what a teacher wants her/his students to be able to do at the end of the program,
- Assessing the students whether they are able to do what they are expected to do,
- Orienting teaching and other academic processes to facilitate students to do what they are expected to do.

These Outcomes are different from the course objectives. They are more like signboards and roadmaps to help the learners reach where they're supposed to reach, and contribute to progress. Education focused on rote learning and scorecards are changed forever. Our higher education demands better, intelligent workforce for the sake of improving quality.

# **LAXMINARAYAN COLLEGE, JHARSUGUDA.**

## **DEPARTMENT OF BOTANY – ( POs, PSOs, and COs).**

### **1. PROGRAM OUTCOMES OF BACHELOR OF SCIENCE –( BOTANY HONOURS) :**

#### **Introduction :**

Botany is a broad discipline encompassing various subjects involved with the plants. B.Sc. (Hons.) in Botany programme is designed to provide students with a sound theoretical background and practical training in all aspects of botany and help them develop an appreciation of the importance of botany in all different contexts.

The syllabus for Botany at undergraduate level using the Choice Based Credit System has been framed in compliance with model syllabus given by UGC. While framing the syllabus as per the UGC guidelines, the topics have been kept as generic as possible per our own infrastructure, expertise and strength.

The main objective of framing this new syllabus is to give the students a holistic understanding of the subject giving substantial weightage to both the core content and techniques used in Botany. Keeping in mind and in tune with the changing nature of the subject, adequate emphasis has been given on new techniques and understanding of the subjects.

The syllabus has also been framed in such a way that basic skills of the subjects are taught to the students, and everyone might not need to go for higher studies and the scope of securing a job after graduation will increase. To ensure implementation of a holistic pedagogical model, a number of choices for Generic electives from allied disciplines like Chemistry, Zoology have been included in this framework in addition, considering the employability aspect of B.Sc. Botany Graduates, due importance has been given towards their core competency in this subject matter, both theoretical and practical. To expand the employability of graduates, certain ability enhancement electives to develop language proficiency and many skill bases elective courses from relevant disciplines like chemistry, zoology, mathematics etc. have been introduced. The syllabus will also enable the students to equip for national level competitive exams that they may attempt in future.

#### **1.1. PROGRAM OUTCOMES (POs) :**

- PO 1: Sound domain knowledge – Students can acquire a strong, basic knowledge on origin, evolution and diversification in the basic and applied fields of Botany. They can develop relationship with the environments including their economic values.
- PO 2: Laboratory skill – the syllabus has aim to develop good laboratory skills with latest advanced tools, instruments and modern technologies to address emerging problems with scientific viewpoint.
- PO 3: Overall skill – Students will able to think logically and scientifically into structural outline, gather appropriate knowledge and skill for future career, planning and conducting independent project proposal and make appropriate report on it.

- PO 4: Team work – The syllabus will enhance the development of the spirit of the team work, learn to harbour collaborative approach to explore new facts.
- PO 5: Academic and scientific endeavour – Students will gain cognitive development, innovative approach, technical knowledge, entrepreneurship and management skill to set up a new start-up.
- PO 6: Eco-friendly approach – The course has a futuristic approach to develop eco-friendly management practices to make socio-economic upliftment.
- PO 7: Ethical awareness – Development of ethical awareness among students regarding research & publications is another outcome of the proposed course.
- PO 8: Goal of life – The syllabus will help to inculcate visions in students so that they can play a vital role for the advancement of the discipline in the greater benefits of the society.

### **1.2. PROGRAM SPECIFIC OUTCOMES (PSOs) :**

- PSO 1: rational analysis – Development of fundamental concepts, rational thinking & analytical skill.
- PSO 2: Skill development – Development of skill in some area like Mushroom culture technology, Nursery & Gardening, Biofertilizer, vermicomposting etc. Students will gain knowledge through different hands-on training program on agro-economic activities.
- PSO 3: Soft skill proficiency – Development of communication skill, attitudes, leadership quality, ethical values and social awareness.
- PSO 4: Ethical awareness – Development of concept on ethical principles of education and research, responsibility on environment and knowledge of norms of the biodiversity conservations.
- PSO 5: Environmental consciousness – Increase in eco-friendly consciousness, waste management practices to overcome environmental pollution and degradation of environment.
- PSO 6: Scientific attitude – Inculcation of research mind and approach to develop eco-friendly products and knowledge of basic sciences, life sciences, and fundamental process of plants to study analyse any related fact.
- PSO 7: Resource management –Development of knowledge & skill on natural renewable resource management.
- PSO 8: Awareness against diseases – Development of awareness against infectious and fatal diseases.
- PSO 9: Ecological awareness – Understanding the valuable impact of the plant diversity in social and environmental aspects and demonstrate the knowledge and need of sustainable development.
- PSO 10: Ethno-medical practices – Development of knowledge on ethno- medicinal plants, their commercial usage and worldwide applications.
- PSO 11: Social interactions – Development of community link up through regular survey on Health & Nutritional parameters, Ethno- veterinary interests of local villagers.
- PSO 12: Compatible agriculture – Development of concept about significance of crop improvement through genetic engineering in the present context of growing populations.

### **1.3. COURSE OUTCOMES (COs) :**

#### **SEMESTER – I.**

##### ➤ **DSC 1 – MICROBIOLOGY AND PHYCOLOGY.**

- C01: Developing the concept of Microbes and Algae: classification and types.
- C02: Understanding Viruses – their characteristics and structures.
- C03: Understanding the facts regarding diseases and awareness.
- C04: Examining the general characteristics of Bacteria and their cell reproduction/Recombination.
- C05: Characteristics of algae and their reproduction.
- C06: Increasing the concept of utilization of Viruses Bacteria and Algae in Human Welfare.
- C07: Conduct practical experiments using skills appropriate to the study of the Microbes and Algae.

##### ➤ **DSC 2 – BIOMOLECULES AND CELL BIOLOGY.**

- C01: Understanding the basic concept of Cell Biology.
- C02: This course gives a vast knowledge about cell and its different Biomolecules and structures and functions of Biomolecules.
- C03: Important information about Bioenergetics, Enzyme which are really important for the living world.
- C04: Concept about Cell organelles, Cell cycle, Cell division and multiplications.
- C05: Gather knowledge about the Biochemical analysis of different biomolecules, Chromosomes study, different physical process involved in cell.

##### ➤ **GE 1 – BIODIVERSITY (MICROBES, ALGAE, FUNGI & ARCHEGONIATE).**

- C01: Study characterization and economic importance of various groups of algae.
- C02: Develop understanding on the concept of microbes their nutrition, growth, metabolism, reproduction and recombination process.
- C03: Prepare microbial samples for microscopic observation and temporary and permanent slides for different algal samples.
- C04: Understanding the economic importance of microbes in human welfare.
- C05: Understand the concept of extinct and extant primitive archaegoniates (bryophytes, pteridophytes & gymnosperms).
- C06: Understand about the morphology, anatomy, of different vegetative parts and reproductive organs with life cycle of different genus.
- C07: Gather knowledge about the evolution among the plants and evolution of land plants.

## SEMESTER – II.

### ➤ **DSC 3 – MYCOLOGY AND PHYTOPATHOLOGY.**

- C01: Developing the knowledge on Fungi and basic concept on common Plant diseases.
- C02: Practice of skill development in laboratory and field work related to Mycology and Plant pathology.
- C03: Understanding the knowledge of allied groups of Fungi and Lichens and the approach of their utilizations in applied fields.

### ➤ **DSC 4 – ARCHEGONIATE.**

- C01: Understanding of Archegoniate-Bryophytes, Pteridophytes, and Gymnosperms.
- C02: Understanding on Morphology, Anatomy and Reproduction of Bryophytes, Pteridophytes, and Gymnosperms.
- C03: Understanding of Plant evolution and their transitions to land habitat.
- C04: Demonstration of proficiency in the experimental techniques and methods of appropriate analysis of Bryophytes, Pteridophytes, Gymnosperms.
- C05: Understanding of plant evolution through time.

### ➤ **GE 2 – PLANT PHYSIOLOGY & METABOLISM.**

- C01: Understand water relations of plants with respect to physiological processes.
- C02: Explain chemical properties and deficiency symptoms in plants.
- C03: Classify aerobic and anaerobic respiration.
- C04: Explain the significance of photosynthesis and respirations.
- C05: Assess dormancy and germination of seeds.
- C06: To acquire adequate knowledge about translocation in plants, carbon dioxide concentrating mechanism, growth regulators and flowering of plants.

## SEMESTER – III.

### ➤ **DSC 5 – ANATOMY OF ANGIOSPERMS.**

- C01: Study the internal structure of plants for identification of the plant.
- C02: Know about the different plants organs like Root, Stem and Leaves and their importance.
- C03: Develop an understanding of concepts and fundamentals of plant anatomy, examine the internal anatomy of plant systems and organs.
- C04: Develop the critical understanding on the evolution of concept of organization of shoot and root apex.
- C05: Analyse the composition of different parts of plants and their relationships.
- C06: Evaluate the adaptive and protective systems of plants.
- C07: Generating in students an interest in plant structure and wood for having a wise approach in timber use, one of the most economically useful resources.

➤ **DSC 6 – ECONOMIC BOTANY.**

- C01: Learn the relationship between plant and people. This paper intersects many fields such as agronomy, chemistry, economic ethno-botany, geography, forestry, horticulture.
- C02: Understand core concepts Economic Botany and relate with Environment, Populations, Communities, and Ecosystems.
- C03: Develop critical understanding on the evolution of concept organizations of apex new crops, varieties, importance of germplasm diversity.
- C04: Develop a basic knowledge of taxonomic diversity and importance families of useful plants.
- C05: Increase in awareness and appreciation of plants and plant products encountered in everyday life.
- C06: Appreciate the diversity of plants and the plant products in human use.
- C07: To know about medicinal properties and uses of plants by folklore and Ayurveda system. Ability of conserve rare and threatened plant species both in-vivo and in-vitro conditions.

➤ **DSC 7 – GENETICS.**

- C01: Developing of detail knowledge about Mendelian and non-Mendelian genetics with several practical approaches. Here conceptual understanding of laws of inheritance, genetic basic of loci and alleles and their linkage.
- C02: Development of concept about the nucleic acids & how nucleic acids transport genetics information among offspring.
- C03: Understanding scientific cause behind several abnormal chromosomal syndromes.
- C04: Understanding basic causes of gene mutation its detection & DNA- repair mechanism.
- C05: Examine the structure, function and replication of DNA.
- C06: Analyse the effect of mutations on gene functions and dosage.
- C07: Developing critical understanding of chemical basis of genes and their interactions at populations and evolutionary levels.

## **SEMESTER – IV.**

➤ **DSC 8 – MOLECULAR BIOLOGY.**

- C01: Studies of the structures and chemical properties of DNA and RNA through various through historic experiments, and to develop practical concept.
- C02: Differentiate the main types of prokaryotes through their grouping abilities and their characteristic.
- C03: Evaluate the experiments establishing central dogma and genetic code.
- C04: Gain an understanding of various steps in transcription, protein synthesis and protein modification.

➤ **DSC 9 – PLANT ECOLOGY AND PHYTOGEOGRAPHY.**

- C01: Understand core concepts of biotic and abiotic environments.
- C02: Development of concept on global ecological issues.

- C03: Acquiring knowledge about ecosystems and biodiversity.
- C04: Knowledge about soils – physical, chemical and biological components.
- C05: Analysis of the phytogeography or phyto-geographical division of India.
- C06: Evaluation of energy sources of ecological system.
- C07: Acquiring the concept of adaptations of plants in relation to light, temperature, water, wind, and fire.
- C08: Development of skills for ecological practices.
- C09: Knowledge about the distribution of plants and their arrangement – both natural and manmade are studied for having a total view to relate the distribution pattern of plants to establish more sustainable plant community systems in the world.

➤ **DSC 10 – PLANT SYSTEMATICS.**

- C01: Knowledge about appropriate method of Identification of plants to contribute classifications to trace the evolution and interpretation among the plants.
- C02: Understanding the principles of general taxonomy and nomenclatural rules.
- C03: Explanation of concept of species.
- C04: Development of the concept to classify plants.
- C05: Recognition of the importance of Herbarium, virtual herbarium and Botanic garden.
- C06: Interpretation the rules of ICN in botanical nomenclature.
- C07: Assessment of terms and concepts related to phylogenetic systematics.

## SEMESTER – V.

➤ **DSC 11 – REPRODUCTIVE BIOLOGY OF ANGIOSPERMS.**

- C01: The students will be able to understand different reproductive parts of angiosperms and their functions. They also study about different kind of pollen grain, their structure and functions and also their effects on animals.
- C02: Palynology involved in plant identifications.
- C03: Important to learn about various plants parts, embryonic development, breeding activity and conservation techniques.
- C04: Recall the history of reproductive biology of angiosperms & recognise the importance of genetic and molecular aspects of flower development.
- C05: Evaluate and understand structure and functions of different reproductive structures.
- C06: Gain knowledge about Self-incompatibility in Pollination and Fertilization.

➤ **DSC 12 – PLANT PHYSIOLOGY.**

- C01: Understand the Water relation of plants with respect to various physiological processes.
- C02: Explain chemical properties and deficiency symptoms in plants.
- C03: Explain the significance of nitrogen fixation.

- C04: Students adequate the knowledge of translocations in plants.
- C06: Acquire adequate knowledge about plant growth regulators, phytochrome and flowering of plants.

➤ **DSE 1 – ANALYTICAL TECHNIQUES IN PLANT SCIENCES.**

- C01: Develop conceptual understanding of cell wall degradation enzymes and cell fractionation.
- C02: Classify different types of chromatography techniques.
- C03: Explain the principles of light microscopy, compound microscopy, fluorescence microscopy etc.
- C04: Apply suitable strategies in data collections and disseminating research findings.

➤ **DSE 2 – NATURAL RESOURCES MANAGEMENT.**

- C01: Understanding the idea of resources and examples of natural resources.
- C02: Development of the concept regarding the sustainability of using natural resources.
- C03: Develop idea on national and international efforts in resource management to make them sustainable.

## SEMESTER – VI.

➤ **DSC 13 – PLANT METABOLISM.**

- C01: Understanding the metabolism of plants and enzymes with respect to various physiological processes.
- C02: Explanation of chemical properties carbon compounds produced in plants.
- C03: Explanation of the significance of carbon metabolism in plants.
- C04: Acquiring the adequate knowledge of metabolism in plants.
- C05: Explain the ATP-synthesis.
- C06: To acquiring adequate knowledge about nitrogen metabolism in plants.
- C07: Explanation of the metabolism of signal transduction.

➤ **DSC 14 – PLANT BIOTECHNOLOGY.**

- C01: Understand the core concepts and fundamentals of plant biotechnology and genetic engineering.
- C02: Develop their competency on different types of plant tissue culture.
- C03: Analyse the enzymes and vectors for genetic manipulations.
- C04: Examine gene cloning and evaluate different methods of gene transfer.
- C05: Critically analyse the major concerns and applications of transgenic technology.
- C06: To learn about gene cloning, recombinant DNA technology and bioinformatics includes recent biotechnological advancement related to genomics.
- C07: Acquire the knowledge about gene transfer and applications biotechnology.



- C08: Acquire the knowledge about tissue culture techniques, restriction digestion, isolation and electrophoresis of plasmid DNA.

➤ **DSE 3 – HORTICULTURAL PRACTICES & POST HARVEST TECHNOLOGY.**

- C01: Understanding the horticultural practices as a livelihood occupations.
- C02: Establishment of the knowledge of using plants as economical and aesthetic values.
- C03: Knowledge of keeping the plant materials in storage and to visualize the post-harvest problems.
- C04: To know the tricks of the trade of the horticultural products.

➤ **DSE 4 – RESEARCH METHODOLOGY.**

- C01: Understand the concept of research and different types of research in the context of biology.
- C02: Develop laboratory experiment related skills.
- C03: Develop competence on data collection and process of scientific documentation.
- C04: Analyse the ethical aspects of research.
- C05: Evaluate the different methods of scientific writing and reporting.

## **DEPARTMENT OF CHEMISTRY**

**Programme outcome :** This programme helps in learning the scientific skills and temper for higher research in the fields of pure chemistry and allied fields like material science, nano science and technology, environmental science etc. This course also prepares the students for jobs as analysts, chemists and technical assistants in various industries like pharmaceutical, chemical, paints, fertilizer and polymer, to name a few. As a whole this programme of B.Sc. (Chemistry honours) holds a lot of promises and prospects for the students, both in academic pursuits as well as employability.

**Programme specific outcome:** after the end of the course, students usually get oriented towards higher studies and careers in higher researches. As has been observed over the years, a B.Sc. in Chemistry is a very yielding and fruitful for career build-up.

### **Course Outcome**

**Physical chemistry:** Teaching and learning of physical chemistry constitutes an important part of this course where students tend to acquire knowledge on critical aspects of the physical phenomena and laws governing them.

**Organic chemistry:** This enables the students to understand the huge branch consisting of millions of compounds, their synthesis, properties and applications along with the mechanism of reactions. Organic chemistry helps them to prepare for placement in various industries also.

**Inorganic chemistry:** Elements and their compounds, their structures through various types of bonding, their behaviour and applications constitute this vast branch which provides very basic and fundamental knowledge for further studies of higher and complex chemistry.

**Polymer chemistry:** This is purely an applied branch which caters to the need of students for research as well as for seeking jobs. It has wide scope as the polymers constitute the mainstay of materials for human use and students are trained on structures, properties and applications of the giant molecules.

**Industrial Chemistry:** By reading this course, students acquire knowledge on different aspect of industries involving chemical processes including techniques and analysis. This study is of high use for the students to do internship and jobs in different industries.

Green chemistry: This branch is a very new and promising one, which teaches the students about innovative ideas, and practices by which chemistry can be made clean, non-hazardous and energy conserving, thus adding much quality to do away with environmental ills. This course enables the students experiment and explore new possibilities in devising chemical reactions in green way.

PO 1.Critical Thinking:

**1.1.** Acquire the ability to apply the basic tenets of logic and science to thoughts, actions and Interventions.

**1.2.** Develop the ability to chart out a progressive direction for actions and interventions by learning to recognize the presence of hegemonic ideology within certain dominant notions.

**1.3.** Develop self-critical abilities and also the ability to view positions, problems and social issues from plural perspectives.

PO 2.Effective Citizenship:

**2.1.** Learn to participate in nation building by adhering to the principles of sovereignty of the nation, socialism, secularism, democracy and the values that guide a republic.

**2.2.** Develop and practice gender sensitive attitudes, environmental awareness, empathetic social awareness about various kinds of marginalisation and the ability to understand and resist various kinds of discriminations.

**2.3.** Internalise certain highlights of the nation's and region's history. Especially of the free do movement, the renaissance within native societies and the project of modernisation of the postcolonial society.

PO 3.Effective Communication:

**3.1.** Acquire the ability to speak, write, read and listen clearly in person and through electronicmedia in both English and in one Modern Indian Language

**3.2.** Learn to articulate, analyse, synthesise, and evaluate ideas and situations in a well-informedmanner.

**3.3.** Generate hypotheses and articulate assent or dissent by employing both reason and creativethinking.

PO 4.Interdisciplinarity:

**4.1.** Perceive knowledge as an organic, comprehensive, interrelated and integrated faculty of the human mind.

**4.2.** Understand the issues of environmental contexts and sustainable development as a basic interdisciplinary concern of all disciplines.

**4.3.** Develop aesthetic, social, humanistic and artistic sensibilities for problem solving and evolving a comprehensive perspective.

**PSO 1:** Acquire the ability to apply the basic tenets of logic and science to thoughts, actions and Interventions

**PSO 2:** Develop the ability to chart out a progressive direction for actions and interventions by learning to recognize the presence of hegemonic ideology within certain dominant notions.

**PSO 3:** Develop self-critical abilities and also the ability to view positions, problems and social issues from plural perspectives..

**PSO 4:** Learn to participate in nation building by adhering to the principles of sovereignty of the nation, socialism, secularism, democracy and the values that guide a republic.

**PSO 5:** Develop and practice gender sensitive attitudes, environmental awareness, empathetic social awareness about various kinds of marginalisation and the ability to understand and resist various kinds of discriminations.

**PSO 6:** Internalise certain highlights of the nations and regions history. Especially of the free do movement, the renaissance within native societies and the project of modernisation of the postcolonial society.

**PSO 7:** Acquire the ability to speak, write, read and listen clearly in person and through electronic media in both English and in one Modern Indian Language.

**PSO 8:** Learn to articulate, analyse, synthesise, and evaluate ideas and situations in a well-informed manner.

**PSO 9:** Generate hypotheses and articulate assent or dissent by employing both reason and creative thinking.

**PSO 10:** Perceive knowledge as an organic, comprehensive, interrelated and integrated faculty of the human mind.

**PSO 11:** Understand the issues of environmental contexts and sustainable development as a basic interdisciplinary concern of all disciplines.

**PSO 12:** Develop aesthetic, social, humanistic and artistic sensibilities for problem solving and evolving a comprehensive perspective.

## **Programme Objectives and expected outcomes**

B.Sc. (Honours) Physics (CBCS) is an under-graduate course of 3-year duration with six semesters. The objective is to provide the students with foundation knowledge possible for a Science-based career. There is no such specialization in this course. Graduates from this course can find jobs in business, teaching, marketing, research. It deals in developing creative thinking skills amongst the students and the power of imagination to enable graduates to work in research industry for a broader academic application. It provides skills required to gather information from resources and to use them appropriately.

Students graduating with a B.Sc. in Physics should be able to demonstrate proficiency in mathematics and the mathematical concepts needed for a proper understanding of physics. They will demonstrate knowledge of selected topics from classical mechanics, quantum mechanics, quantum mechanics, electromagnetism, quantum mechanics, and thermal physics, and be able to apply this knowledge to analyze a broad range of physical phenomena. Students will show that they have learned laboratory skills, enabling them to take measurements in a physics laboratory and analyze the measurements to draw valid conclusions. Students will be capable of oral and written scientific communication, and will prove that they can think critically and work independently.

### **Course Learning Outcomes (CLO)**

#### **C-I: MATHEMATICAL PHYSICS-I**

**(Credits: 06, Theory-04, Practicals-02)**

**(i) Course objectives:**

To develop the foundations of vector calculus in three dimensions, using Cartesian coordinates as well as other coordinate system. The techniques learnt in this module is a basic requirement for all learners taking up the study of physics at an advanced level. Students are exposed to the use of computers to aid in the visualization of the concepts learnt in the module.

**(ii) Course learning outcome:**

- Revise the knowledge of calculus, vectors, vector calculus, probability and probability distributions. These basic mathematical structures are essential in solving problems in various branches of Physics as well as in engineering.
- Learn the curvilinear coordinates which have applications in problems with spherical and cylindrical symmetries.
- Learn the Dirac delta function its properties, which have applications in various branches of Physics, especially quantum mechanics.
- In the laboratory course, learn the fundamentals of the C and C++ programming languages and their applications in solving simple physical

problems involving interpolations, differentiations, integrations, differential equations as well as finding the roots of equations.

**(iii) Skills to be learned**

- Training in calculus will prepare the student to solve various mathematical problems.
- He / she shall develop an understanding of how to formulate a physics problem and solve given mathematical equation risen out of it.

**C-II: MECHANICS**

**(Credits: 06, Theory-04, Practicals-02)**

**(i) Course objectives:**

The objective of the course is to impart a good foundation of the concepts of mechanical properties of matter. The students will acquire knowledge of the mechanical properties of matter in the solid and the liquid state which is essential for every student of physics.

**(ii) Course learning outcome:**

After going through the course, the student should be able to

- Understand laws of motion and their application to various dynamical situations, notion of inertial frames and concept of Galilean invariance. He / She will learn the concept of conservation of energy, momentum, angular momentum and apply them to basic problems.
- Understand the analogy between translational and rotational dynamics, and application of both motions simultaneously in analyzing rolling with slipping.
- Write the expression for the moment of inertia about the given axis of symmetry for different uniform mass distributions.
- Understand the phenomena of collisions and idea about center of mass and laboratory frames and their correlation.
- Understand the principles of elasticity through the study of Young Modulus and modulus of rigidity.
- Understand simple principles of fluid flow and the equations governing fluid dynamics.
- Apply Kepler's law to describe the motion of planets and satellite in circular orbit, through the study of law of Gravitation.
- Explain the phenomena of simple harmonic motion and the properties of systems executing such motions.
- Describe how fictitious forces arise in a non-inertial frame, e.g., why a person sitting in a merry-go-round experiences an outward pull.
- Describe special relativistic effects and their effects on the mass and energy of a moving object.
- Appreciate the nuances of Special Theory of Relativity (STR)
- In the laboratory course, the student shall perform experiments related to mechanics (compound pendulum), rotational dynamics (Flywheel), elastic

properties (Young Modulus and Modulus of Rigidity) and fluid dynamics (verification of Stokes law, Searle method) etc.

**(iii) Skills to be learned**

- Learn basics of the kinematics and dynamics linear and rotational motion.
- Learn the concepts of elastic in constant of solids and viscosity of fluids.
- Develop skills to understand and solve the equations of Newtonian Gravity and central force problem.
- Acquire basic knowledge of oscillation.
- Learn about inertial and non-inertial systems and essentials of special theory of relativity.

**C-III: ELECTRICITY AND MAGNETISM**

**(Credits: 06, Theory-04, Practicals-02)**

**(i) Course objectives:**

The objective is to help the students to acquire the conceptual knowledge of electricity and magnetism. The course content of this course equips the students to comprehend Physics better.

**(ii) Course learning outcome:**

After going through the course, the student should be able to

- Demonstrate Gauss law, Coulomb's law for the electric field, and apply it to systems of point charges as well as line, surface, and volume distributions of charges.
- Explain and differentiate the vector (electric fields, Coulomb's law) and scalar (electric potential, electric potential energy) formalisms of electrostatics.
- Apply Gauss's law of electrostatics to solve a variety of problems.
- Articulate knowledge of electric current, resistance and capacitance in terms of electric field and electric potential.
- Demonstrate a working understanding of capacitors.
- Describe the magnetic field produced by magnetic dipoles and electric currents.
- Explain Faraday-Lenz and Maxwell laws to articulate the relationship between electric and magnetic fields.
- Understand the dielectric properties, magnetic properties of materials and the phenomena of electromagnetic induction.
- Describe how magnetism is produced and list examples where its effects are observed.
- Apply Kirchhoff's rules to analyze AC circuits consisting of parallel and/or series combinations of voltage sources and resistors and to describe the graphical relationship of resistance, capacitor and inductor.
- Apply various network theorems such as Superposition, Thevenin, Norton, Reciprocity, Maximum Power Transfer, etc. and their applications in electronics, electrical circuit analysis, and electrical machines.

- In the laboratory course the student will get an opportunity to verify various laws in electricity and magnetism such as Lenz's law, Faraday's law and learn about the construction, working of various measuring instruments.
- Should be able to verify of various circuit laws, network theorems elaborated above, using simple electric circuits.

**(iii) Skills to be learned**

- This course will help in understanding basic concepts of electricity and magnetism and their applications.
- Basic course in electrostatics will equips the student with required prerequisites to understand electrodynamic phenomena.

**C-IV: WAVES AND OPTICS**

**(Credits: 06, Theory-04, Practicals-02)**

**(i) Course objectives:**

The objective of the course is to impart knowledge relating to waves, geometrical and physical optics. This will help the students to understand the basic knowledge simple harmonic motion and physical behavior of light.

**(ii) Course learning outcome:**

This course will enable the student to

- Recognize and use a mathematical oscillator equation and wave equation, and derive these equations for certain systems.
- Apply basic knowledge of principles and theories about the behaviour of light and the physical environment to conduct experiments.
- Understand the principle of superposition of waves, so thus describe the formation of standing waves.
- Explain several phenomena we can observe in everyday life that can be explained as wave phenomena.
- Use the principles of wave motion and superposition to explain the Physics of polarization, interference and diffraction.
- Understand the working of selected optical instruments like biprism, interferometer, diffraction grating, and holograms.
- In the laboratory course, student will gain hands-on experience of using various optical instruments and making finer measurements of wavelength of light using Newton Rings experiment, Fresnel Biprism etc. Resolving power of optical equipment can be learnt firsthand.
- The motion of coupled oscillators, study of Lissajous figures and behavior of transverse, longitudinal waves can be learnt in this laboratory course.

**(iii) Skills to be learned**



- He / she shall develop an understanding of various aspects of harmonic oscillations and waves specially
  - (i) Superposition of collinear and perpendicular harmonic oscillations
  - (ii) Various types of mechanical waves and their superposition.
- This course in basics of optics will enable the student to understand various optical phenomena, principles, workings and applications optical instruments.

## **C-V: MATHEMATICAL PHYSICS-II**

**(Credits: 06, Theory-04, Practicals-02)**

### **(i) Course objectives:**

The objective of the course is to impart basic knowledge of Mathematics in solving problems of interest to physicists. The course content of this course equips the students to comprehend Physics better.

### **(ii) Course learning outcome:**

- Learn the Fourier analysis of periodic functions and their applications in physical problems such as vibrating strings etc.
- Learn about the special functions, such as the Hermite polynomial, the Legendre polynomial, the Laguerre polynomial and Bessel functions and their differential equations and their applications in various physical problems such as in quantum mechanics which they will learn in future courses in detail.
- Learn the beta, gamma and the error functions and their applications in doing integrations.  
Know about the basic theory of errors, their analysis, estimation with examples of simple experiments in Physics.
- Acquire knowledge of methods to solve partial differential equations with the examples of important partial differential equations in Physics.
- In the laboratory course, learn the basics of the Scilab software, their utility, advantages and disadvantages.
- Apply the Scilab software in curve fittings, in solving system of linear equations, generating and plotting special functions such as Legendre polynomial and Bessel functions, solving first and second order ordinary and partial differential equations.

### **(iii) Skills to be learned**

- Training in mathematical tools like calculus, integration, series solution approach, special function will prepare the student to solve ODE, PDE's which model physical phenomena.
- He / she shall develop an understanding of how to model a given physical phenomena such as pendulum motion, rocket motion, stretched string, etc., into set of ODE's, PDE's and solve them.
- These skills will help in understanding the behavior of the modeled system/s.

## **C-VI: THERMAL PHYSICS**

**(Credits: 06, Theory-04, Practicals-02)**

**(i) Course objectives:**

The objective of the course is to give knowledge relating to thermal properties of matter. It gives the understanding of the physical laws and appreciation of the elegance and beauty of physics. The course content equips the students to comprehend physics better. Thermal Physics is concerned with the transformation of the energy of one kind into another. Relation of heat to other forms of energy such as magnetic, electrical, etc., also come under the scope of Thermal physics.

**(ii) Course learning outcome:**

- Comprehend the basic concepts of thermodynamics, the first and the second law of thermodynamics, the concept of entropy and the associated theorems, the thermodynamic potentials and their physical interpretations.
- Learn about Maxwell's thermodynamic relations.
- Learn the basic aspects of kinetic theory of gases, Maxwell-Boltzmann distribution law, equipartition of energies, mean free path of molecular collisions, viscosity, thermal conductivity, diffusion and Brownian motion.
- Learn about the real gas equations, Van der Waals equation of state, the Joule-Thompson effect.
- In the laboratory course, the students are expected to do some basic experiments in thermal Physics, viz., determinations of Stefan's constant, coefficient of thermal conductivity, temperature coefficient of resistance, variation of thermo-emf of a thermocouple with temperature difference at its two junctions and calibration of a thermocouple.

**(iii) Skills to be learned**

- This basic course in thermodynamics will enable the student to understand various thermodynamical concepts, principles.

**C-VII: ANALOG SYSTEMS AND APPLICATIONS**

**(Credits: 06, Theory-04, Practicals-02)**

**(i) Course objective:**

The objective of the course is to provide the student with an understanding of basic knowledge analog electronics. Electronics is a major discipline of physics, which has developed tremendously and has changed daily lives to the extent that was unimaginable a few decades back.

**(ii) Course learning outcome:**

- At the end of the course the student is expected to assimilate the following and possess basic knowledge of the following.
- N- and P- type semiconductors, mobility, drift velocity, fabrication of P-N junctions; forward and reverse biased junctions.
- Application of PN junction for different type of rectifiers and voltage regulators.

- NPN and PNP transistors and basic configurations namely common base, common emitter and common collector, and also about current and voltage gain.
- Biasing and equivalent circuits, coupled amplifiers and feedback in amplifiers and oscillators.
- Operational amplifiers and knowledge about different configurations namely inverting and non-inverting and applications of operational amplifiers in D to A and A to D conversions.
- To characterize various devices namely PN junction diodes, LEDs, Zener diode, solar cells, PNP and NPN transistors. Also construct amplifiers and oscillators using discrete components. Demonstrate inverting and non-inverting amplifiers using op-amps.

**(iii) Skills to be learned**

- Learn basic concepts of semiconductor diodes and their applications to rectifiers.
- Learn about junction transistor and their applications.
- Learn about different types of amplifiers including operational amplifier. (Op-Amp) and their applications.
- Learn about sinusoidal oscillators of various types and A/D conversion.

**C-VIII: MATHEMATICAL PHYSICS-III**

**(Credits: 06, Theory-04, Practicals-02)**

**(i) Course objectives:**

The objective of the course is to impart basic knowledge of Mathematics in solving problems of interest to physicists. It gives the understanding of the physical laws and appreciation of the elegance and beauty of physics. The course content equips the students to comprehend Physics better.

**(ii) Course learning outcome:**

- Learn about the complex numbers and their properties, functions of complex numbers and their properties such as analyticity, poles and residues. The students are expected to learn the residue theorem and its applications in evaluating definite integrals.
- Learn about the Fourier transform, the inverse Fourier transform, their properties and their applications in physical problems. They are also expected to learn the Laplace transform, the inverse Laplace transforms, their properties and their applications in solving physical problems.
- In the laboratory course, the students should apply their C++/Scilab programming language to solve the following problems:
  - a. Solution first- and second- order ordinary differential equations with appropriate boundary conditions,
  - b. Evaluation of the Gaussian integrals,
  - c. Evaluation of a converging infinite series up to a desired accuracy,
  - d. Evaluation of the Fourier coefficients of a given periodic function,
  - e. Plotting the Legendre polynomials and the Bessel functions of different orders and interpretations of the results,
  - f. Least square fit of a given data to a graph,

**(iii) Skills to be learned**

- Knowledge of various mathematical tools like complex analysis, integral transform will equip the student with reference to solve a given ODE, PDE.
- These skills will help in understanding the behavior of the modeled system/s.

**C-IX: ELEMENTS OF MODERN PHYSICS**

**(Credits: 06, Theory-04, Practicals-02)**

**(i) Course objective:**

The objective of this course is to familiarize the students with the branch of modern physics. Atomic Physics remains a key component of physics, both because of its fundamental importance to the understanding of many aspects of modern physics and also because of the exciting new developments that have occurred in this field.

**(ii) Course learning outcome:**

- Know main aspects of the inadequacies of classical mechanics and understand historical development of quantum mechanics and ability to discuss and interpret experiments that reveal the dual nature of matter.
- Understand the theory of quantum measurements, wave packets and uncertainty principle.
- Understand the central concepts of quantum mechanics: wave functions, momentum and energy operator, the Schrodinger equation, time dependent and time independent cases, probability density and the normalization techniques, skill development on problem solving e.g. one dimensional rigid box, tunneling through potential barrier, step potential, rectangular barrier.
- Understanding the properties of nuclei like density, size, binding energy, nuclear forces and structure of atomic nucleus, liquid drop model and nuclear shell model and mass formula.
- Ability to calculate the decay rates and lifetime of radioactive decays like alpha, beta, gamma decay. Neutrinos and its properties and role in theory of beta decay.
- Understand fission and fusion well as nuclear processes to produce nuclear energy in nuclear reactor and stellar energy in stars.
- Understand various interactions of electromagnetic radiation with matter. Electron positron pair creation.
- Understand the spontaneous and stimulated emission of radiation, optical pumping and population inversion. Three level and four level lasers. Ruby laser and He-Ne laser in details. Basic lasing.
- In the laboratory course, the students will get opportunity to perform the following experiments
  - i. Measurement of Planck's constant by more than one method.
  - ii. Verification of the photoelectric effect and determination of the work Function of a metal.
  - iii. Determination of the charge of electron and  $e/m$  of electron.
  - iv. Determination of the ionization potential of atoms.

- v. Determine the wavelength of the emission lines in the spectrum of Hydrogen atom.
- vi. Determine the absorption lines in the rotational spectrum of molecules.
- vii. Determine the wavelength of Laser sources by single and Double slit experiments
- viii. Determine the wavelength and angular spread of He-Ne Laser using plane diffraction grating.
- ix. Verification of the law of the Radioactive decay and determine the mean life time of a
- x. Radioactive Source, Study the absorption of the electrons from Beta decay. Study of the electron spectrum in Radioactive Beta decays of nuclei.
- xi. Plan and Execute 2-3 group projects in the field of Atomic, Molecular and Nuclear
- xii. Physics in collaboration with other institutions, if, possible where advanced facilities are available.

**(iii) Skills to be learned**

- Comprehend the failure of classical physics and need for quantum physics.
  - Grasp the basic foundation of various experiments establishing the quantum physics by doing the experiments in laboratory and interpreting them.
  - Formulate the basic theoretical problems in one, two and three dimensional physics and solve them.
- Learning to apply the basic skills developed in quantum physics to various problems in
- (i) Nuclear Physics
  - (ii) Atomic Physics
  - (iii) Laser Physics
- Learn to apply basic quantum physics to Ruby Laser, He-Ne Laser

**C-X: DIGITAL SYSTEMS AND APPLICATIONS**

**(Credits: 06, Theory-04, Practicals-02)**

**(i) Course objectives:**

The objective of the course is to provide the student with an understanding of basic knowledge digital electronics. Electronics is a major discipline of physics, which has developed tremendously and has changed daily lives to the extent that was unimaginable a few decades back. There is still tremendous scope for further developments in this field of physics, and thus it is essential that the students of physics have a good foundation of electronics, which the course intends to achieve.

**(ii) Course learning outcome:**

As the successful completion of the course the student is expected to be conversant with the following.

- Basic working of an oscilloscope including its different components and to employ the same to study different wave forms and to measure voltage, current, frequency and phase.
- Secure first-hand idea of different components including both active and passive components to gain a insight into circuits using discrete components and also to learn about integrated circuits.
- About analog systems and digital systems and their differences, fundamental logic gates, combinational as well as sequential and number systems.
- Synthesis of Boolean functions, simplification and construction of digital circuits by employing Boolean algebra.
- Sequential systems by choosing FlipFlop as a building block- construct multivibrators, counters to provide a basic idea about memory including RAM, ROM and also about memory organization.
- Microprocessor and assembly language programming with special reference to Intel  $\mu$ P 8085.
- In the laboratory he is expected to construct both combinational circuits and sequential circuits by employing NAND as building blocks and demonstrate Adders, Subtractors, Shift Registers, and multivibrators using 555 ICs. He is also expected to use  $\mu$ P 8085 to demonstrate the same simple programme using assembly language and execute the programme using a  $\mu$ P kit.

**(iii) Skills to be learned**

- Acquire skills to understanding the functioning and operation of CRO to measure physical quantities in electrical and electronic circuits.
- Learn the basics of IC and digital circuits, and difference between analog and digital circuits. Various logic GATES and their realization using diodes and transmitters.
- Learn fundamental of Boolean algebra and their role in constructing digital circuits.
- Learn about combinatorial and sequential systems by building block circuits to construct multivibrators and counters.
- Understand basics of microprocessor and assembly language programming with examples.

**C-XI: QUANTUM MECHANICS AND APPLICATIONS**

**QUANTUM MECHANICS**

**(Credits: 06, Theory-04, Practicals-02)**

**(i) Course objective:**

The objective of the course is to provide the concept of wave nature of particle, the basic mathematical representation of wave function and their practical applications in solving problems. Students will be able to understand the essence of quantum mechanics and apply it in solving physical problems

**(ii) Course learning outcome:**



- This course will enable the student to get familiar with quantum mechanics formulation.
- After an exposition of inadequacies of classical mechanics in explaining microscopic phenomena, quantum theory formulation is introduced through Schrodinger equation.
- The interpretation of wave function of quantum particle and probabilistic nature of its location and subtler points of quantum phenomena are exposed to the student.
- Through understanding the behavior of quantum particle encountering a i) barrier, ii) potential, the student gets exposed to solving non-relativistic hydrogen atom, for its spectrum and eigenfunctions.
- Study of influence of electric and magnetic fields on atoms will help in understanding Stark effect and Zeeman Effect respectively.
- The experiments using Sci-lab will enable the student to appreciate nuances involved in the theory.
- This basic course will form a firm basis to understand quantum many body problems.
- In the laboratory course, with the exposure in computational programming in the computer lab, the student will be in a position to solve Schrodinger equation for ground state energy and wave functions of various simple quantum mechanical one-dimensional and three-dimensional potentials.

**(iii) Skills to be learned**

- This course shall develop an understanding of how to model a given problem such as particle in a box, hydrogen atom, hydrogen atom in electric fields.
- Many electron atoms, L-S and J-J couplings.
- These skills will help in understanding the different Quantum Systems in atomic and nuclear physics.

**C-XII: SOLID STATE PHYSICS**

**(Credits: 06, Theory-04, Practicals-02)**

**(i) Course objective:**

The objective of the course is to provide the basic concepts of symmetrical structure and electric, magnetic, mechanical and thermodynamic properties of matter, their technological applications. The course provides the foundation of knowledge of students for further studies as well as their practical applications in electronic devices and modern technologies.

**(ii) Course learning outcome:**

At the end of the course the student is expected to learn and assimilate the following.

- A brief idea about crystalline and amorphous substances, about lattice, unit cell, miller indices, reciprocal lattice, concept of Brillouin zones and diffraction of X-rays by crystalline materials.
- Knowledge of lattice vibrations, phonons and in depth of knowledge of Einstein and Debye theory of specific heat of solids.

- At knowledge of different types of magnetism from diamagnetism to ferromagnetism and hysteresis loops and energy loss.
- Secured an understanding about the dielectric and ferroelectric properties of materials.
- Understanding above the band theory of solids and must be able to differentiate insulators, conductors and semiconductors.
- Understand the basic idea about superconductors and their classifications.
- To carry out experiments based on the theory that they have learned to measure the magnetic susceptibility, dielectric constant, trace hysteresis loop. They will also employ to four probe methods to measure electrical conductivity and the hall set up to determine the hall coefficient of a semiconductor.

**(iii) Skills to be learned**

- Learn basics of crystal structure and physics of lattice dynamics
- Learn the physics of different types of material like magnetic materials, dielectric materials, metals and their properties.
- Understand the physics of insulators, semiconductor and conductors with special emphasis on the elementary band theory of semiconductors.
- Comprehend the basic theory of superconductors. Type I and II superconductors, their properties and physical concept of BCS theory.

**C-XIII: ELECTROMAGNETIC THEORY**

**(Credits: 06, Theory-04, Practicals-02)**

**(i) Course objective:**

This course emphasizes on foundations of electric magnetic phenomena using Maxwell's equations and their propagations through various wave guides. Students will be able to understand and solve Maxwell's equations for simple configurations and have a working knowledge on wave guides.

**(ii) Course learning outcome:**

- Achieve an understanding of the Maxwell's equations, role of displacement current, gauge transformations, scalar and vector potentials, Coulomb and Lorentz gauge, boundary conditions at the interface between different media.
- Apply Maxwell's equations to deduce wave equation, electromagnetic field energy, momentum and angular momentum density.
- Analyse the phenomena of wave propagation in the unbounded, bounded, vacuum, dielectric, guided and unguided media.
- Understand the laws of reflection and refraction and to calculate the reflection and transmission coefficients at plane interface in bounded media.
- Understand the linear, circular and elliptical polarisations of em waves. Production as well as detection of waves in laboratory.
- Understand propagation of em waves in anisotropic media, uni-axial and biaxial crystals phase retardation plates and their uses.



- Understand the concept of optical rotation, theories of optical rotation and their experimental rotation, calculation of angle rotation and specific rotation.
- Understand the features of planar optical wave guide and obtain the Electric field components, Eigen value equations, phase and group velocities in a dielectric wave guide.
- Understand the fundamentals of propagation of electromagnetic waves through optical fibres and calculate numerical apertures for step and graded indices and transmission losses.
- In the laboratory course, the student gets an opportunity to perform experiments Demonstrating principles of Interference, Refraction and diffraction of light using monochromatic sources of light.
  - a. Demonstrate interference, Refraction and Diffraction using microwaves.
  - b. Determine the refractive index of glass and liquid using total internal reflection of light.
  - c. Verify the laws of Polarisation for plane polarised light.
  - d. Determine Polarisation of light by Reflection and determine the polarization angle off or air-glass surface
  - e. Determine the wavelength and velocity of Ultrasonic waves in liquids using diffraction.
  - f. Study specific rotation of sugar using Polarimeter.
  - g. Analyze experimentally the Elliptically Polarised light using Babinet's Compensator
  - h. Study Experimentally the angle dependence of radiation for a simple dipole antenna
  - i. Plan and Execute 2-3 group projects for designing new experiments based on the Syllabii.

**(iii) Skills to be learned**

- Comprehend the role of Maxwell's equation in unifying electricity and magnetism.
- Derive expression for
  - (i) Energy density
  - (ii) Momentum density
  - (iii) Angular momentum density of the electromagnetic field
- Learn the implications of Gauge invariance in EM theory in solving the wave equations and develop the skills to actually solve the wave equation in various media like
  - (i) Vacuum
  - (ii) Dielectric medium
  - (iii) Conducting medium
  - (iv) Dilute plasma
- Derive and understand associated with the properties, EM wave passing through the interface between two media like
  - (i) Reflection
  - (ii) Refraction
  - (iii) Transmission
  - (iv) EM waves

- Learn the basic physics associated with the polarization of electromagnetic waves by doing various experiments for:
  - (i) Plane polarized light
  - (ii) Circularly polarized light
  - (iii) Circularly polarized light
- Learn the application of EM theory to
  - (i) Wave guides of various types
  - (ii) Optical fibers in theory and experiment

#### **C-XIV: STATISTICAL MECHANICS**

**(Credits: 06, Theory-04, Practicals-02)**

**(i) Course objective:**

This course is designed to give a basic fundamentals of classical and quantum statistics, mathematical analysis as well as theoretical calculations that are applied in various classical and quantum systems such as ideal gas, photon gas, electron gas etc. Students will be able to understand the mechanisms of phase transitions, linear response theory, kinetic equations etc. They will be able to apply statistical methods for simple non interacting systems.

**(ii) Course learning outcome:**

- Understand the concepts of microstate, macrostate, ensemble, phase space, thermodynamic probability and partition function.
- Understand the combinatoric studies of particles with their distinguishably or indistinguishably nature and conditions which lead to the three different distribution laws e.g. Maxwell-Boltzmann distribution, Bose-Einstein distribution and Fermi-Dirac distribution laws of particles and their derivation.
- Comprehend and articulate the connection as well as dichotomy between classical statistical mechanics and quantum statistical mechanics.
- Learn to apply the classical statistical mechanics to derive the law of equipartition of energy and specific heat.
- Understand the Gibbs paradox, equipartition of energy and concept of negative temperature in two level system.
- Learn to derive classical radiation laws of black body radiation. Wiens law, Rayleigh Jeans law, ultraviolet catastrophe. Saha ionization formula.
- Learn to calculate the macroscopic properties of degenerate photon gas using BE distribution law, understand Bose-Einstein condensation law and liquid Helium. Bose derivation of Plank's law
- Understand the concept of Fermi energy and Fermi level, calculate the macroscopic properties of completely and strongly degenerate Fermi gas, electronic contribution to specific heat of metals.
- Understand the application of F-D statistical distribution law to derive thermodynamic functions of a degenerate Fermi gas, electron gas in metals and their properties.
- Calculate electron degeneracy pressure and ability to understand the Chandrasekhar mass limit, stability of white dwarfs against gravitational collapse.

- In the laboratory course, the students gets an opportunity to
  - a. Verify Stefan's Law of radiation and determine Stefan's constant.
  - b. Design and perform some experiments to determine Boltzmann' Constant.

Use Computer simulations to study:

- c. Planck's Black Body radiation Law and compare with the Wien's Law and Raleigh-Jean's Law in appropriate temperature region.
- d. Specific Heat of Solids by comparing, Dulong-Petit, Einstein's and Debye's Laws and study their temperature dependence
- e. Compare the following distributions as a function of temperature for various energies and the parameters of the distribution functions:
- f. Maxwell-Boltzmann distribution
- g. Bose-Einstein distribution
- h. Fermi-Dirac distribution
- i. Do 3-5 assignments given by the course instructor to apply the methods of Statistical mechanics to simple problems in Solid State Physics and Astrophysics
- j. Do the regular weekly assignments of at least 2-3 problems given by the course instructor.

### **(iii) Skills to be learned**

- Learn the basic concepts and definition of physical quantities in classical statistics and classical distribution law.
- Learn the application of classical statistics to theory of radiation.
- Comprehend the failure of classical statistics and need for quantum statistics.
- Learn the application of quantum statistics to derive and understand
  - (i) Bose Einstein statistics and its applications to radiation.
  - (ii) Fermi-Dirac statistic and its applications to quantum systems.

## **DSE-I: CLASSICAL DYNAMICS**

**(Credits: 06, Theory-05, Tutorials -01)**

### **(i) Course objective:**

The emphasis of the course is on applications in solving problems of interest to physicists. Students are to be examined on the basis of problems, seen and unseen. They will have deep understanding of Newton's laws, Lagrangian and Hamiltonian approach. Students will be able to apply this knowledge to solve problems seen and unseen in classical systems.

### **(ii) Course learning outcome:**

Revise the knowledge of the Newtonian, the Lagrangian and the Hamiltonian formulations of classical mechanics and their applications in appropriate physical problems.

- Learn about the small oscillation problems.

- Recapitulate and learn the special theory of relativity- postulates of the special theory of relativity, Lorentz transformations on space-time and other four vectors, four-vector notations, space-time invariant length, length contraction, time dilation, mass-energy relation, Doppler effect, light cone and its significance, problems involving energy-momentum conservations.
- Learn the basics of fluid dynamics, streamline and turbulent flow, Reynolds's number, coefficient of viscosity and Poiseuille's equation.
- Review the retarded potentials, potentials due to a moving charge, Lienard Weichert potentials, electric and magnetic fields due to a moving charge, power radiated, Larmor's formula and its relativistic generalization.

**(iii) Skills to be learned**

- Learn to define generalised coordinates, generalised velocities, generalised force and write Lagrangian for mechanical system in terms of generalised coordinates.
- Learn to derive Euler-Lagrange equation of motion and solve them for simple mechanical systems.
- Learn to write Hamiltonian for mechanical systems and derive and solve Hamilton's equation of motion for simple mechanical systems.
- Formulate the problem of small amplitude oscillation and solve them to obtain normal modes of oscillation and their frequencies in simple mechanical systems.
- Develop the basic concepts of special theory of relativity and its applications to dynamical systems of particles.
- Develop the methods of relativistic kinematics of one and two particle system and its application to two particle decay and scattering.
- Develop and understand the basic concepts of fluid dynamics and its applications to simple problems in liquid flow.

**DSE-IX: NUCLEAR & PARTICLE PHYSICS**

**(Credits: 06, Theory-05, Tutorials-01)**

**(i) Course objective:**

This course emphasizes on properties of nuclei, nuclear models, radioactive decays, nuclear reactions, detectors, particle accelerators and basic fundamentals of Standard model. Students will be able to understand the importance of models in describing the properties of nuclei and nuclear collisions, familiar with many body systems, working principle of different particle detectors and accelerators used in high energy experiments.

**(ii) Course learning outcome:**

- Learn the ground state properties of a nucleus – the constituents and their properties, mass number and atomic number, relation between the mass number and the radius and the mass number, average density, range of force, saturation property, stability curve, the concepts of packing fraction and binding energy, binding energy per nucleon vs. mass number graph, explanation of fusion and fission from the nature of the binding energy graph.

- Know about the nuclear models and their roles in explaining the ground state properties of the nucleus –(i) the liquid drop model, its justification so far as the nuclear properties are concerned, the semi-empirical mass formula, (ii) the shell model, evidence of shell structure, magic numbers, predictions of ground state spin and parity, theoretical deduction of the shell structure, consistency of the shell structure with the Pauli exclusion principles.
- Learn about the process of radioactivity, the radioactive decay law, the emission of alpha, beta and gamma rays, the properties of the constituents of these rays and the mechanisms of the emissions of these rays, outlines of Gamow's theory of alpha decay and Pauli's theory of beta decay with the neutrino hypothesis, the electron capture, the fine structure of alpha particle spectrum, the Geiger-Nuttall law, the radioactive series.
- Learn the basic aspects of nuclear reactions, the Q-value of such reaction and its derivation from conservation laws, The reaction cross-sections, the types of nuclear reactions, direct and compound nuclear reactions, Rutherford scattering by Coulomb potential.
- Learn some basic aspects of interaction of nuclear radiation with matter- interaction of gamma ray by photoelectric effect, Compton scattering and pair production, energy loss due to ionization, Cerenkov radiation.
- Learn about the detectors of nuclear radiations- the Geiger-Mueller counter, the scintillation counter, the photo-multiplier tube, the solid state and semiconductor detectors.
- The students are expected to learn about the principles and basic constructions of particle accelerators such as the Van-de-Graff generator, cyclotron, betatron and synchrotron. They should know about the accelerator facilities in India.
- Gain knowledge on the basic aspects of particle Physics – the fundamental interactions, elementary and composite particles, the classifications of particles: leptons, hadrons (baryons and mesons), quarks, gauge bosons. The students should know about the quantum numbers of particles: energy, linear momentum, angular momentum, isospin, electric charge, colour charge, strangeness, lepton numbers, baryon number and the conservation laws associated with them.

### **(iii) Skills to be learned**

- Skills to describe and explain the properties of nuclei and derive them from various models of nuclear structure.
- To understand, explain and derive the various theoretical formulation of nuclear disintegration like  $\alpha$  decay,  $\beta$  decay and  $\gamma$  decays.
- Develop basic understanding of nuclear reactions and decays with help of theoretical formulate and laboratory experiments.
- Skills to develop basic understanding of the interaction of various nuclear radiation with matter in low and high energy
- Ability to understand, construct and operate simple detector systems for nuclear radiation and training to work with various types of nuclear accelerators.

- Develop basic knowledge of elementary particles as fundamental constituent of matter, their properties, conservation laws during their interactions with matter.

## **DSE-2: NANO MATERIALS AND APPLICATIONS**

**(Credits: 06, Theory-04, Practical-02)**

### **(i) Course learning outcome:**

- At the end of the course the student is expected to possess the concept the following.
- In the Nano systems and its implications in modifying the properties of materials at the nanoscale.
- Concept of Quantum confinement, 3D,2D,1D and 0D nanostructure with examples.
- Different synthesis techniques including top down and bottom up approaches.
- Characterization of nanostructured materials using X-ray diffraction, electron microscopy, Atomic Force Microscopy and Scanning Tunneling Microscopy.
- Optical properties of nanostructured materials, modification of band gap, excitonic confinement.
- Applications of nanostructured materials in making devices namely MEMS, NEMS and other heterostructures for solar cell and LEDs.
- The student will synthesize nanoparticles by different chemical routes and characterize them in the laboratory using the different techniques he has learnt in the theory. He will also carry out thin film preparation and prepare capacitors and evaluate its performance. He also expected to fabricate a PN diode and study its I-V characteristics.

### **(ii) Skills to be learned**

- Develop basic understanding of nanostructured materials.
- Learn the synthesis and characterization of nanostructured materials.
- Understanding the optical properties of nanostructured materials and electron transport phenomenon.
- Learn to understand the functioning of various analytical techniques using
  - (i) X-ray Diffraction
  - (ii) Atomic Force Microscopy
  - (iii) Scanning Electron Microscopy
  - (iv) Scanning Tunneling Microscopy
  - (v) Transmission Electron Microscopy
- Application of nanoparticles in various fields like:
  - (i) LED
  - (ii) Solar Cells
  - (iii) Single Electron Transport Devices
  - (iv) Magnetic Data Storage
  - (v) Micro-electrochemical Systems (MEMS)
  - (vi) Nano- electrochemical Systems (NEMS)

## **PROGRAM OUTCOME OF B.SC.:**

- PO1. Articulate the methods of science and explain why current scientific knowledge is both contestable and testable by future inquiry.
- PO2. Apply appropriate methods of research, investigation and design, to solve problem in science, mathematics, technology including the planning and conduct of a significant project problem or investigation.
- PO3. Articulate the relationship between different science communities of practice, the international scope of science, mathematics, technology and engineering knowledge and methods and the contributions to their development that have been made by people with diverse perspectives, culture and backgrounds.
- PO4. Students will express their own ideas as informed opinions, small projects, practical, research papers and understand how their own approach compare to variety of critical and theoretical approaches.

## **PROGRAM SPECIFIC OUTCOME OF B.SC. MATHEMATICS:**

- PSO1. Develop deep interest in learning mathematics.
- PSO2. Develop broad and balanced knowledge and understanding of definitions, concepts, principles and theorems.
- PSO3. Familiarize the students with suitable tools of mathematical analysis to handle issues and problems in mathematics and related sciences.
- PSO4. Enhance the ability of learners to apply the knowledge and skills acquired by them during the programme to solve specific theoretical and applied problems in mathematics.
- PSO5. Provide students with knowledge and skills enabling them to undertake further studies in mathematics and its allied areas on multiple disciplines concerned with mathematics.
- PSO6. Encourage the students to develop a range of generic skills helpful in employment, internships and social activities.

## **COURSE OUTCOME OF B.SC. MATHEMATICS:**

| SEMESTER | COURSE CODE | COURSE NAME          | COURSE OUTCOME   |
|----------|-------------|----------------------|--|
| 1        | C-I         | CALCULUS             | <ul style="list-style-type: none"><li>• Student will develop analytical and technical skills to handle practical and mathematical problems.</li><li>• Student will learn the concept of higher order derivatives.</li><li>• It also gives them methods to study the geometry of various types of functions, and hence evaluate the area &amp; volume using the techniques of integrations.</li><li>• Also they will be able to handle the scalar and vector functions.</li><li>• They will be able to plot various functions manually and also using MATLAB programme.</li></ul> |
|          | C-II        | DISCRETE MATHEMATICS | <ul style="list-style-type: none"><li>• Students will be acquainted with fundamental concepts like relations &amp; functions, matrix &amp; determinants, mathematical reasoning, modular arithmetic etc.</li><li>• They will be able to solve problems related to counting.</li><li>• The course will give them a foundation on graph theory.</li><li>• The acquired knowledge will help students in simple mathematical modelling and applications.</li></ul>   |
| 2        | C-III       | REAL ANALYSIS        | <ul style="list-style-type: none"><li>• Student will be enabled with the knowledge on basic properties of the field of real numbers, sequences, series and its convergence.</li></ul>  |



|   |        |   |   |
|---|--------|---|---|
|   |        |   | <ul style="list-style-type: none"> <li>• They will be able to understand fundamental properties of the real numbers that lead to the formal development of real analysis.</li> <li>• Also they will acquire the knowledge and understanding of limits and their use in sequences, series, differentiation and integration.</li> <li>• Students will be able to relate the abstract concepts of mathematics to practical problems.</li> </ul>  |
|   | C-IV   | DIFFERENTIAL EQUATIONS                            | <ul style="list-style-type: none"> <li>• Students will be familiarised with various methods of solving differential equations and to have qualitative applications through models.</li> <li>• The students will be able to solve differential equations and to model real life problems Ordinary Differential Equations.</li> <li>• They will gain a pre requisite knowledge to study partial differentiation.</li> <li>• Students will gain basic knowledge regarding MATLAB program to handle ordinary differential equations.</li> </ul>   |
| 3 | C-V    | THEORY OF REAL FUNCTIONS                          | <ul style="list-style-type: none"> <li>• Students will acquire the knowledge on limit, continuity and differentiability of functions and related theorems.</li> <li>• They will also be able to learn Taylor's theorem, series expansion and its applications.</li> <li>• Students will be able to deal with real functions and understands uniform continuity, mean value theorems.</li> </ul>   |
|   | C-VI   | GROUP THEORY-I                                    | <ul style="list-style-type: none"> <li>• Students will be enabled with the concepts of Group &amp; their properties.</li> <li>• They will get the knowledge on cyclic groups, permutation groups, normal subgroups etc.</li> <li>• The course gives a foundation to study ring theory, field theory, commutative algebras, linear classical groups etc.</li> <li>• Students will also be able to apply the knowledge to analyse and solve problems in physics, computer science, economics and engineering.</li> </ul>  |
|   | C-VII  | PARTIAL DIFFERENTIAL EQUATIONS AND SYSTEM OF ODES | <ul style="list-style-type: none"> <li>• Students will be able to understand basic concepts of partial derivative and will be able to classify the differential equations.</li> <li>• They will be able to learn the different methods like Charpit's Method, Jacobi Method to solve different PDEs.</li> <li>• They will be able to derive Wave equation, Heat equations, Laplace Equation and their solutions.</li> <li>• Students can apply the concepts to model and solve the problems arising in engineering and industries.</li> <li>• Students will gain basic knowledge regarding MATLAB program to handle Partial differential equations.</li> </ul>  |
| 4 | C-VIII | NUMERICAL METHODS AND SCIENTIFIC COMPUTING        | <ul style="list-style-type: none"> <li>• Students can handle physical problems to find approximate solutions.</li> <li>• They can find approximate solutions to nonlinear equations.</li> <li>• Approximate values of definite integrals can be found by students.</li> <li>• After getting trained, a student can opt for advance courses in Numerical analysis in higher mathematics.</li> <li>• Use of good mathematical software (MATLAB/Mathematica) will help in getting the accuracy one need from the computer and can assess the reliability of the numerical results, and determine the effect of round off error or loss of significance.</li> </ul> |



|   |        |                           |   |
|---|--------|---------------------------|---|
|   | C-IX   | TOPOLOGY OF METRIC SPACES | <ul style="list-style-type: none"> <li>• Students will understand the basic things like open sets, closed sets, continuous functions, connectedness and compactness in metric spaces.</li> <li>• Students can gain basic knowledge on metric spaces and their properties like openness, closedness, completeness, Bolzano Weierstrass property, compactness, and connectedness, etc.</li> <li>• Students will learn to work with abstract topological spaces. This is a foundation course for all analysis courses in future.</li> </ul>  |
|   | C-X    | RING THEORY               | <ul style="list-style-type: none"> <li>• This is a basic course of ring theory. Students will gain some basic knowledge of ring theory like rings, subrings, ideals, ring homomorphisms and their properties.</li> <li>• They will also learn about polynomial rings, fundamental properties of finite field extensions, and classification of finite fields.</li> <li>• This will help students to continue more courses in advanced Ring theory modules, Galois groups.</li> </ul>  |
| 5 | C-XI   | MULTIVARIATE CALCULUS     | <ul style="list-style-type: none"> <li>• Students will be able to deal with the limit, continuity and differentiability of more than one variable.</li> <li>• After reading this course a student will be able to calculate directional derivatives, extremum values and can calculate double, triple and line integrals.</li> <li>• They will have idea of basic vector calculus including Green's theorem, divergence theorem and Stokes theorem.</li> <li>• They will be able to do numerical computations involving several variables.</li> </ul>   |
|   | C-XII  | LINEAR ALGEBRA            | <ul style="list-style-type: none"> <li>• Linear algebra is a basic course in almost all branches of science. A full course in undergraduate program will help students in finding real life applications later.</li> <li>• This course will help students to understand real vector spaces, subspaces, basis, dimension and their properties.</li> <li>• Students will gain knowledge on the relations of linear transformations and system of linear equations.</li> <li>• This course also helps students to know the basic concepts of Eigen value and Eigen vector, which may be used later to handle Eigen value problems raised in engineering mathematics.</li> <li>• It has applications in computer science, finance mathematics, industrial mathematics, bio mathematics, etc., as such this course will help students to deal with many branches of engineering and sciences.</li> </ul> |
|   | DSE-I  | LINEAR PROGRAMMING        | <ul style="list-style-type: none"> <li>• Students will gain knowledge regarding various methods of solving Linear Programming Problems, Transportation Problems, Assignment Problems and their applications.</li> <li>• Students will be able to use the Simplex method, Two-phase method, Big-M method for solving optimization problems.</li> <li>• This is also a prerequisite for studying advanced courses in Nonlinear Programming Problems, Inventory Control Problem and Queuing Theory etc.</li> <li>• This topic will help the students to deal with industrial problems.</li> </ul>  |
|   | DSE-II | PROBABILITY AND           | <ul style="list-style-type: none"> <li>• The students shall learn probability and statistics for various random variables, multivariate distributions, correlations and</li> </ul>  |

|   |         |                       |  |
|---|---------|-----------------------|--|
|   |         | STATISTICS            | <p>relations.</p> <ul style="list-style-type: none"> <li>• They will learn about correlation and linear regression, which will be useful in prediction of one variable in terms of the other.</li> <li>• This course will help students to gain knowledge about the population distribution, t, F distribution, central limit theorem, chi-square test, etc.</li> </ul>  |
| 6 | C-XIII  | COMPLEX ANALYSIS      | <ul style="list-style-type: none"> <li>• This course will help students to Visualize complex numbers as points of Cartesian coordinate systems and stereographic projection of complex plane on the Riemann sphere.</li> <li>• Students will able to test the differentiability and analyticity of complex functions with the help of Cauchy-Riemann equations.</li> <li>• They will also learn the role of Cauchy-Goursat theorem and Cauchy integral formula to evaluate contour integrals.</li> <li>• They will able to deal with the Taylor and Laurent series expansions of analytic functions, classification of the nature of singularity, poles and residues and application of Cauchy Residue theorem.</li> </ul> |
|   | C-XIV   | GROUP-THEORY-II       | <ul style="list-style-type: none"> <li>• Students will get knowledge of automorphism, inner automorphism, and applications of factor groups, which will help to study more on field theory.</li> <li>• Students will earn the concepts of direct products, group actions, class equations and their applications with proof of results.</li> <li>• They will also gain knowledge of conjugacy class, p-groups, Sylow's theorems and their applications.</li> </ul>   |
|   | DSE-III | DIFFERENTIAL GEOMETRY | <ul style="list-style-type: none"> <li>• After completing this course, student will gain some basic knowledge on serret-Frenet formulae, relation between tangent, normal and binormals, first and second fundamental forms and ideas on various curvatures.</li> <li>• They will also learn about theory surfaces such as parametric curves, surfaces of revolutions, helicoids, etc.</li> <li>• This course helps students to deal with the problems involving curvatures, conjugate and asymptotic lines.</li> </ul>  |
|   | DSE-IV  | PROJECT               | <ul style="list-style-type: none"> <li>• This will help the students to make research proposals.</li> <li>• Students may construct mathematical models to handle industrial/real life problems.</li> <li>• Students will learn to analyze the present/past data.</li> <li>• This will help them in higher studies and project works.</li> </ul>  |

## **ZOOLOGY PROGRAM OUTCOMES, PROGRAM SPECIFIC**

### **OUTCOMES AND COURSE OUTCOMES**

#### **ZOOLOGY PROGRAM OUTCOMES:**

1. **PO1** - Students gain knowledge and skill in the fundamentals of animal sciences, understands the complex interactions among various living organisms
2. **PO2** – Analyse complex interactions among the various animals of different phyla, their distribution and their relationship with the environment
3. **PO3** – Apply the knowledge of internal structure of cell, its functions in control of various metabolic functions of organisms.
4. **PO4** – Understands the complex evolutionary processes and behaviour of animals
5. **PO5** – Correlates the physiological processes of animals and relationship of organ systems
6. **PO6** – Understanding of environmental conservation processes and its importance, pollution control and biodiversity and protection of endangered species
7. **PO7** – Gain knowledge of Small Scale industries like Sericulture, Fish farming, butterfly farming and vermicompost preparation.
8. **PO8** – Understands about various concepts of genetics and its importance in human health
9. **PO9** - Apply ethical principles and commit to professional ethics and responsibilities in delivering his duties
10. **PO10** – Apply the knowledge and understanding of Zoology to one's own life and work
11. **PO11** – Develops empathy and love towards the animals

#### **PROGRAM SPECIFIC OUTCOMES:**

1. **PSO1.** Understand the nature and basic concepts of cell biology, genetics, taxonomy, physiology, ecology and applied Zoology
2. **PSO2.** Analyze the relationships among animals, plants and microbes
3. **PSO3.** Perform procedures as per laboratory standards in the areas of Taxonomy, Physiology, Ecology, Cell biology, Genetics, Applied Zoology, Animal Behavior, tools and techniques of Zoology, Biochemistry, Fish biology, Animal Biochemistry, Immunology and Research methodology
4. **PSO4.** Understand the applications of biological sciences in Apiculture, Aquaculture and Immunology.
5. **PSO5.** Gains knowledge about research methodologies, effective communication and skills of problem-solving methods.

#### **COURSE OUTCOMES:**

#### **DSC 1 (NONCHORDATES-1 PROTISTA TO PSEUDOCOELOMATES)**

**CO1:** Describe general taxonomic rules on animal classification

**CO2:** Classify Protista up to phylum using examples from parasitic adaptation

**CO3:** Classify Phylum Porifera to Nematelminths with taxonomic keys

**CO4:** Describe Phylum Nematoda and give examples of pathogenic Nematodes

### **DSC II (PRINCIPLES OF ECOLOGY)**

**CO1:** Describe the different components of ecosystem, the types of biogeochemical cycles and importance of energy as drivers of ecosystem functioning correctly;

**CO2:** Demonstrate an understanding that the physico-chemical and biological factors governed ecosystems.

**CO3:** Analyse a biological problem, derive testable hypotheses and then design experiments and put the tests into practice.

**CO4:** Solve the environmental problems involving interaction of humans and natural systems at local or global level.

### **DSC III (NONCHORDATES II- COELOMATES)**

**CO1:** Classify Phylum Coelomates to Echinodermata with taxonomic keys.

**CO2:** Study the larval forms of all the phylum.

**CO3:** Study the social insects in detail.

**CO4:** Understand the evolutionary significance.

### **DSC IV (CELL BIOLOGY)**

**CO1:** Structural and functional aspects of basic unit of life i.e. cell concepts.

**CO2:** Understand virus and viral life cycle in detail.

**CO3:** Understand the functioning of nucleus and extra nuclear organelles and understand the intricate cellular mechanisms involved.

**CO4:** Acquire the detailed knowledge of different pathways related to cell signalling and apoptosis thus enabling them to understand the anomalies in cancer.

### **DSC V (DIVERSITY AND DISTRIBUTION OF CHORDATES)**

**CO1:** Understand the Protochordates and the Origin Of Chordates.

**CO2:** Classify Phylum Chordata with taxonomic keys.

**CO3:** Differentiate Agnatha to Gnathostomes.

**CO4:** Understand different Zoogeographical Realms and Distribution of Vertebrates.

### **DSC VI (PHYSIOLOGY-CONTROLLING AND COORDINATING SYSTEM)**

**CO1:** Understand how cells, tissues, and organisms function at different levels.

**CO2:** Understand muscular tissue and nervous tissue in detail.

**CO3:** Understand the Reproductive system in detail and methods of Contraception.

**CO4:** Interactions and interdependence of physiological and biochemical processes with Endocrine system.

### **DSC VII (FUNDAMENTALS OF BIOCHEMISTRY)**

**CO1:** Understand about the importance and scope of biochemistry.

**CO2:** Understand the structure and biological significance of carbohydrates, amino acids, proteins, lipids and nucleic acids.

**CO3:** Understand the structure and function of immunoglobulins.

**CO4:** Understand the concept of enzyme, its mechanism of action and regulation.

**CO5:** Learn biochemical tests for amino acids, carbohydrates, proteins and nucleic acids.

**CO6:** Learn measurement of enzyme activity and its kinetics.

### **DSC VIII (COMPARATIVE ANATOMY OF VERTEBRATES)**

**CO1:** Develop an understanding of the characters used to classify besides being able to differentiate the organisms belonging to different taxa.

**CO2:** Understand modification of different system in the Vertebrates.

**CO3:** Comparison of different systems in all the vertebrates.

**CO4:** Learn to identify all bones by disarticulated skeletons.

### **DSC IX (PHYSIOLOGY LIFE SUSTAINING SYSTEMS)**

**CO1:** Acquire knowledge of the coordinated functioning of complex human body machine.

**CO2:** Seeks to understand the mechanisms that work to keep the **human body** alive and functioning.

**CO3:** Interactions and interdependence of physiological and biochemical processes.

**CO4:** Students gain fundamental knowledge of animal physiology.

### **DSC X (BIOCHEMISTRY OF METABOLIC PROCESSES)**

**CO1:** Understand the metabolic processes in detail

**CO2:** Learn the basics of carbohydrate protein and lipid metabolism.

**CO3:** Learn practical techniques of estimation of total protein and other biochemical assays.

**CO4:** Understand the Redox Systems in our body properly.

### **DSC XI (MOLECULAR BIOLOGY)**

**CO1:** Develop an understanding of concepts, mechanisms and evolutionary significance and relevance of molecular biology in the current scenario.

**CO2:** Understand the molecular basis of genetic processes.

**CO3:** Learn practical techniques of molecular biology which will help them in research projects.

**CO4:** Apply their knowledge in problem solving and future course of their career development in higher education and research.

## **DSC XII (PRINCIPLES OF GENETICS)**

**CO1:** Apply the principles of Mendelian inheritance.

**CO2:** Gain knowledge on Bacterial genetics.

**CO3:** Understand the cause and effect of alterations in chromosome number and structure.

**CO4:** Relate the conventional and molecular methods for gene manipulation in other biological system.

## **DSC XIII (DEVELOPMENTAL BIOLOGY)**

**CO1:** Gains knowledge about gametogenesis, cleavage mechanisms, gastrulation and role of hormones in metamorphosis and regeneration.

**CO2:** Understand different stages of development in detail.

**CO3:** Develop critical understanding how a single-celled fertilized egg becomes an embryo and then a fully formed adult by going through three important processes of cell division, cell differentiation and morphogenesis.

**CO4:** Understand the relevance of developmental biology in medicine or its role in development of diseases.

## **DSC XIV (EVOLUTIONARY BIOLOGY)**

**CO1:** Imparts knowledge regarding the various theories of evolution, evolutionary process such as variation, speciation, natural selection, origin of primates and man

**CO2:** Understanding evolution helps them solve biological problems that impact their lives.

**CO3:** Describe the mechanism behind molecular clocks for phylogenetic reconstruction and the potential problems with their use.

**CO4:** Explain why random processes are part of the mechanism of evolution.

## **DSE-I (ANIMAL BEHAVIOUR AND CHRONOBIOLOGY)**

**CO1:** Learn a wide range of theoretical and practical techniques used to study animal behaviour.

**CO2:** Develop skills, concepts and experience to understand all aspects of animal behaviour.

**CO3:** Objectively understand and evaluate information about animal behaviour and ecology encountered in our daily lives.

**CO4:** Understand and be able to objectively evaluate the role of behaviour in the protection and conservation of animals in the wild.

**CO5:** Consider and evaluate behaviour of all animals, including humans, in the complex ecological world, including the urban environment.

## **DSE-II (IMMUNOLOGY)**

**CO1:** Provides basics knowledge about immune system and allows the student to create

insight as how to improve their immune system and good health.

**CO2:** Understand Types of immunity, antigens-antibodies and their properties

**CO3:** Learn the functioning of Complement system, MHC's and immune responses

**CO4:** Understanding of types of hypersensitivity reactions and auto immune diseases and vaccines.

### **DSE III (FISH AND FISHERIES)**

**CO1:** By learning this topic the students can easily identify the fish species.

**CO2:** Understand water quality criteria for aquaculture techniques.

**CO3:** Gain knowledge on Fish Pathology and Transgenesis.

**CO4:** Differentiate inland and Marine Fishery and laws regulating Fish culture.

### **DSE IV (RESEARCH METHODOLOGY)**

**CO1:** Make research proposal.

**CO2:** Construct tool of data collection.

**CO3:** Learn fieldwork modalities

**CO4:** Understand the process of data analysis

**CO5:** Writing research report

## **DEPARTMENT OF COMMERCE**

### **COURSE OBJECTIVE AND COURSE LEARNING OUTCOMES**

#### **CORE – 1: FINANCIAL ACCOUNTING**

##### **Course Objective:**

The objective of this paper is to help students to acquire conceptual knowledge of financial accounting and to impart skills for recording various kinds of business transactions.

##### **Course Learning Outcomes**

After completing the course, the student shall be able to:

CO1: understand the theoretical framework of accounting and to prepare financial statements

CO2: explain and determine depreciation and basics of AS, Ind AS, IFRS and XBRL and measure business income applying relevant accounting standards

CO3: develop the skill of preparation of trading and profit and loss account and balance sheet and understand the concepts of partnership firm and prepare accounts for dissolution of a partnership firm.

CO4: learn accounting for hire purchase transactions, leases, branches and departments

#### **CORE – 2: BUSINESS LAW**

##### **Course Objective:**

The objective of the course is to impart basic knowledge of the important business laws along with relevant case laws

##### **Course Learning Outcomes**

After completing the course the student shall be able to:

CO1: understand basic aspects of contracts for making the agreements, contracts and subsequently enter valid business propositions and be able to recognize and differentiate the special contracts and identify their appropriate usage at varied business scenarios

CO2: equip the students about the legitimate rights and obligations under The Sale of Goods Act 1930, Consumer Protection Act 1986 and RTI

CO3: enable with skills to initiate entrepreneurial ventures as partnership and LLP

CO4: understand the fundamentals of negotiable instrument Act 1881.

#### **Core-3: COST ACCOUNTING**

##### **Course Objective:**

To acquaint the students with basic concepts used in cost accounting, various methods involved in cost ascertainment and to provide an in-depth study of the cost accounting principles for identification,



classification and analysis of cost components and cost ascertainment in different industries using various costing methods

### **Course Learning Outcomes**

After completing the course, the student shall be able to:

CO1: understand thoroughly the conceptual framework of Cost Accounting; identification of differences between different financial and cost accounting; cost concepts and elements of cost; preparation of cost sheet.

CO2: understand the accounting and control of material

CO3: understand the accounting for labour and develop ability to understand classification, allocation, apportionment and absorption of overheads in cost determination; under and over absorption of overheads; treatment of various item of overheads

CO4: develop ability to calculate the cost of contracts and processes after understanding the basic concepts and processes involved in them.

### **Core-4: CORPORATE LAWS**

#### **Course Objectives:**

The objective of the course is to impart basic knowledge of the provisions of the Companies Act, 2013 and the Depositories Act, 1996. Case studies involving issues in corporate laws are required to be discussed.

#### **Course Learning Outcomes:**

After completing the course, the student shall be able to:

CO1: understand the regulatory aspects and the broader procedural aspects involved in different types of companies covering the Companies Act 2013 and formation of company.

CO2: follow the basic legal documents and their usage essential for operations and management of company.

CO3: enable the students to understand the procedure of issue of share and debenture under companies Act 2013

CO4: equip the students with framework of corporate meetings

### **Core-5: CORPORATE ACCOUNTING**

#### **Course Objectives:**

To help the students to acquire the conceptual knowledge of the corporate accounting and to learn the techniques of preparing the financial statements.

#### **Course Learning Outcomes**

After completing the course, the student shall be able to:

CO1: develop an understanding of accounting for share capital and debentures

CO2: examine the matters related to redemption of preference shares and debentures of a company.

CO3: provide clarity in the preparation of financial statements of a company and methods of valuation of goodwill and shares.

CO4: understand the accounting for liquidation of companies

#### **Core-6: INCOME TAX LAW AND PRACTICE**

##### **Course Objective:**

To provide basic knowledge and equip students with the application of principles and provisions of Income Tax Act 1961 and It also aims to enable the students to apply the same practically.

##### **Course Learning Outcomes:**

After completing the course, the student shall be able to:

CO1: understand the basic concepts in the law of income tax and determine the residential status of different persons and the concept of exempted income and agricultural income.

CO2: compute income under the heads 'Salaries' and 'Income from House Property'.

CO3: compute income under the head 'Profits and gains of business or profession', 'Capital gains' and Income from other sources.

CO4: understand the provisions relating to income of other persons included in assessee's total income; understand clubbing provisions, aggregate income after set-off and carry forward of losses, and deductions allowed under the Income Tax Act; and further to compute taxable income and tax liability of individuals and develop the ability to file online returns of income and provision of TDS.

#### **Core-7: MANAGEMENT PRINCIPLES &APPLICATIONS**

##### **Course Objective:**

The objective of the course is to provide the student with an understanding of basic management concepts, principles and practices.

##### **Course Learning Outcomes**

After completing the course, the student shall be able to:

CO1: understand the significance of management and evolution of management.

CO2: comprehend and analyze applicability of managerial functions of planning and organizing.

CO3: analyze the role of directing and staffing in management

CO4: appraise the function of motivation, co-ordination and controlling.

## **Core-8: GST & INDIRECT TAX**

### **Course Objective:**

The objective is to equip students with the principles and provisions of Goods and Services Tax (GST), which is, implemented from 2017 under the notion of One Nation, One Tax and One Market and to acquaint students with basic provisions of GST Law and basic working knowledge and to enable the students to apply the same practically.

### **Course Learning Outcomes**

After completing the course, the student shall be able to:

CO1: connect with the genesis of goods and services tax (GST), decipher the constitutional amendment carried out to install GST in India.

CO2: understand the structure and terminology of CGST Act, Odisha SGST Act and IGST Act, comprehend the meaning of supply under GST law, differentiate between intra-state and inter-state supply, provisions related to place of supply, time of supply and compute the value of supply and procedure relating to levy, collection and exemption from GST

CO3: understand the provisions for registration, return and assessment under GST.

CO4: comprehend the composition and working of GST council and its regulatory framework.

## **Core-9: FUNDAMENTALS OF DATA MANAGEMENT**

### **Course Objective**

This paper will provide the basic knowledge of computer literacy on word processing, spread sheet, DBMS and website designing so as to equip and apply them in the business.

### **Course Learning Outcomes**

After completing the course, the student shall be able to:

CO1: provide knowledge and skills for working with word processing and acquire skills to create and make good presentations.

CO2: enable the students in managing worksheet and its application in the different areas of business.

CO3: provide basic knowledge and application of DBMS in the area of accounting, inventory and HRM.

CO4: understand the process and techniques involved in website designing.

## **Core-10- MANAGEMENT ACCOUNTING**

### **Course Objective:**

To acquaint the students with basic concepts of management accounting, and basic understanding of tools and techniques used for managerial decision making

**Course Learning Outcomes:**

After completing the course, the student shall be able to:

CO1: understand thoroughly the conceptual framework of Management Accounting; identification of differences between different forms of accounting.

CO2: understand the concept and utility of ratio analysis and cash flow statement.

CO3: understand the concept of marginal cost and marginal costing; preparation of income statements using absorption and variable costing; learning of cost-volume-profit analysis and break-even analysis using mathematical and graphical approaches; and the application in businesses.

CO4: understand budgetary control and standard costing system as a tool for managerial planning and control.

**Core-11: COMPUTERIZED ACCOUNTING & E-FILING OF TAX RETURNS****Course Objective**

To provide basic knowledge on practical application of computerized accounting system, Database Management and E-Filing of Tax Return.

**Course Learning Outcomes**

After completing the course, the student shall be able to:

CO1: understand Computerized Accounting System environment, create structure of Computerized Accounting System for a business firm, record day to day business transactions in Computerized Accounting System and make necessary tax adjustments while recording business transactions and to generate various Accounting Reports for analysis and decision making using basic computerized accounting software like Tally Prime.

CO2: enable the students to learn, design and apply the DBMS package in the different area of accounting and payroll system.

CO3: equip the students with the practical skills required for E-filing of tax returns under Income Tax and GST laws.

**Core-12: FUNDAMENTALS OF FINANCIAL MANAGEMENT****Course Objective:**

To familiarize the students with the principles and practices of financial management.

**Course Learning Outcomes**

After completing the course, the student shall be able to:

CO1 - understand the overview of financial management as well as time value of money and risk return trade off.

CO2 – estimate the various sources of finance and compute the cost of capital.

CO3 - analyze capital budgeting process and capital budgeting techniques analyze and critically examine various theories of dividend and factors affecting dividend policy.

CO4 - examine the concept of working capital and estimate working capital requirements of a firm.

### **Core-13: AUDITING AND CORPORATE GOVERNANCE**

#### **Objective:**

To provide knowledge of auditing principles, procedures and techniques in accordance with current legal requirements and professional standards and to give an overview of the principles of Corporate Governance and Corporate Social Responsibility (CSR).

#### **Course Learning Outcome:**

After completing the course, the student shall be able to:

CO1: summarize the basic concepts of auditing, differentiate between different aspects of auditing especially for internal check, internal control and internal audit.

CO2: comprehend the basic concepts of audit of limited company and special area of audit

CO3: understand the concept of corporate governance in organizations and its essence for management

CO4: recognize the essence of CSR under companies Act 2013

### **Core-14: BUSINESS MATHEMATICS**

#### **Course Objective:**

The objective of this course is to familiarize the students with the basic mathematical tools with emphasis on applications to business and economic situations.

#### **Course Learning Outcomes:**

After completing the course, the student shall be able to:

CO1: understand and analyze how matrices and determinant are used as a mathematical tool in representing a system of equations.

CO2: understand differential calculus to solve business problems.

CO3: comprehend the tools and techniques of mathematics of finance.

CO4: develop and formulate linear programming for solving business problems

### **DSE – 1: Financial Markets, Institutions, & Services**

#### **Course Objectives:**

To provide students an overview of financial markets and to enable them to understand the financial institutions operating in India and services provided by them.

#### **Course Learning Outcome:**

After completing the course, the student shall be able to:

CO1: understand the meaning and scope of financial system in India.

CO2: understand the concepts and role of financial and non-banking financial institution.

CO3: examine the Financial Services Industry.

CO4: comprehend the regulatory framework of Indian financial system .

### **DSE-2: Financial Statement Analysis and Reporting**

#### **Course Objectives:**

To enable the students to understand the basic knowledge about the financial statement analysis and reporting for economic decision making

#### **Course Learning Outcome:**

After completing the course, the student shall be able to:

CO1: understand the concept and different components of financial statements.

CO2: analyze and interpret the quantitative information provided in the Financial Statements of a company

CO3: Compute and analyze accounting ratios of a company.

CO4: understand and summarize emerging areas in financial reporting.

### **DSE – 3: Fundamentals of Corporate Tax Planning**

#### **Course Objective:**

To provide a conceptual idea about the various provisions of tax planning related to corporate sector.

#### **Course learning outcome:**

After completing the course, the student shall be able to:

CO1: understand the concept of tax planning, tax management, tax avoidance and tax evasion and understand the scope of total income of corporate assesses.

CO2: understand the rule of set-off and carry forward for corporate tax

CO4: able to file corporate tax return.

### **DSE-4: Business Research Methods and Project Work**

#### **Course Objective:**

This course aims at providing the general understanding of business research and the methods of business research. The course will impart learning about how to collect, analyze, present and interpret data.

**Course Learning Outcome:**

After completion of this paper, the students will be able to assess and apply a range of research method on a practical project.

CO1: understand meaning and scope of business research.

CO2: analyze research concepts, its types and steps in the research process

CO3: get an insight into various scaling techniques, sources of data collection and hypothesis testing.

CO4: prepare a complete research report in appropriate format.

**GE – 1: MICRO ECONOMICS****Course Objective:**

Objective of the course is to acquaint the students with the concepts of micro- economics dealing with consumer behavior. The course also makes the student understand the supply side of the market through the production and cost behavior of firms

**Course Learning Outcomes:**

After the completion of the course, the learners will be able to:

CO1: Examine the nature and scope of micro economics and analyze how consumers try to maximize their satisfaction by spending on different goods.

CO2: understand the relationship between inputs used in production and the resulting outputs and costs.

CO3: analyze and interpret various facets of and pricing under perfect competition

CO4: analyze and interpret various facets of and pricing under imperfect competition

**GE-2: Macro & Indian Economy****Course Objectives:**

The course aims at providing the student with knowledge of basic concepts of the macro economics. The modern tools of macro-economic analysis are discussed and the policy framework is elaborated, including the open economy.

**Course Learning Outcomes:**

After completing the course, the student shall be able to:

CO1: describe the nature and scope of Macro Economics, Income, Expenditure and their components and determinants.

CO2: understand the concept of national income accounting.

CO3: comprehend the different concept of national income equilibrium.

CO4: describe the role of and function of Government and macroeconomics problem.

### **GE-3: Business Statistics**

#### **Course Objective:**

The objective of this course is to familiarize students with the basic statistical tools used for managerial decision-making.

#### **Course Learning Outcomes**

After completing the course, the student shall be able to:

CO1: examine and understand the various types of statistical data, measure of central tendency and positional average.

CO2: gather knowledge about various measures of variation.

CO3: understand the relationship between two variables using concepts of correlation and regression and its use in identifying and predicting the variables.

CO4: develop an understanding of the index numbers and their utility in daily life and stock market and become aware of the patterns revealed by the time series data and to use it to make predictions for the future.

### **GE-4: Principles of Marketing**

#### **Course Objective:**

The objective of this course is to provide basic knowledge of concepts, principles, tools and techniques of marketing.

#### **Course Learning Outcomes**

After completing the course, the student shall be able to:

CO1: understand the nature and scope of marketing, consumer behavior and market segmentation.

CO2: understand the dynamics of consumer behavior and process of market selection through STP stages.

CO3: analyze and understand the.

CO4: understand and analyze the process of value creation through marketing decisions involving product pricing and its distribution.

CO5: understand and analyze the process of value creation through marketing decisions involving product promotion and also to equip them with the knowledge of various developments in marketing area.



## DEPARTMENT OF ENGLISH

### PROGRAMME SPECIFIC LEARNING OUTCOMES AND COURSE OUTCOMES

#### **1.1 INTRODUCTION**

All knowledge is constituted in language. But without proficiency in language, it is difficult to transmit knowledge. Language is imperative for the acquisition, preservation, dissemination, application and creation of knowledge. Hence, the importance of language learning cannot be overemphasized. It is also a fact that language transcends boundaries and barriers; the more proficient in communication we are, the more the world expands for us. Today, the English language is a window to the world. It is not only the most important link language between communities but also the preferred language of pedagogy, employment, information technology, trade and commerce and travel and tourism in India and the world. To this extent, it is crucial that learners are given adequate opportunities to develop language proficiency and skills in not just the basics of grammar but also in communicating effectively across a variety of situations. This is best acquired through a nuanced understanding of the language of literary texts, to start with. Given this, learners should be sensitized to the creative processes and learn to use language both critically as well as creatively. It is also essential for learners to be aware of the implications of language vis-à-vis issues such as gender, caste, class, culture, etc. and thus use

language appropriately. Having considered this relationship between literature, language and learning, the UGC-Learning Outcomes based Curriculum Framework {UGC-LOCF (English)} committee suggests the following learning outcomes of English for undergraduate students. We, in the Department of English, Laxminarayan College, Jharsuguda, also adhere to the guidelines and inform the students these learning outcomes.

## **1.2 LEARNING ATTRIBUTES**

### **❖ Disciplinary Knowledge:**

- a) Ability to understand, speak, read and write English both at the basic and advanced levels.
- b) Ability to understand and engage texts with various linguistic, critical and creative concepts and categories
- c) Ability to read texts closely, paying attention to linguistic and stylistic variations and innovations and also exploring themes, generic conventions and historical contexts
- d) Ability to understand linguistic/pragmatic frameworks to appreciate literary texts and language use
- e) Ability to locate and engage with relevant scholarly works in order to develop one's own critical position and present views coherently and persuasively
- f) Ability to situate one's own reading in terms of society, religion, caste, region, gender and politics
- g) Ability to understand the world, to think critically and clearly about the local and the global through a reading of literatures in translation and in the original, to be a located Indian citizen of the world
- h) Ability to see and respect difference and to transcend binaries

### **❖ Communication Skills:**

- a) Ability to speak and write clearly in standard, academic English
- b) Ability to listen to and read carefully various viewpoints and engage with them.
- c) Ability to use critical concepts and categories with clarity

### **❖ Critical Thinking:**

- a) Ability to read and analyse texts
- b) Ability to place texts in historical contexts and be sensitive to their social relevance
- c) Ability to substantiate critical readings of literary texts in order to persuade others

❖ **Problem Solving:**

- a) Ability to cope with complex language use
- b) Ability to read any unfamiliar literary and non-literary texts

❖ **Analytical Reasoning:**

- a) Ability to evaluate the strengths and weaknesses in a literary text
- b) Ability to substantiate one's argument through an enhanced critical and communicative ability

❖ **Research-Related Skills:**

- a) Ability to problematize and formulate research questions, and to identify and consult relevant sources to find answers
- b) Ability to plan and write a research paper or assignment

❖ **Teamwork and Time Management:**

- a) Ability to participate constructively in classroom discussions
- b) Ability to meet a deadline

❖ **Scientific Reasoning:**

- a) Ability to analyse texts, evaluating ideas and literary strategies
- b) Ability to formulate logical and persuasive arguments

❖ **Reflective Thinking:**

- a) Ability to locate oneself and see its influence on critical thinking and reading
- b) Ability to carry the implications of a text to life and vice versa

❖ **Self-directed Learning:**

- a) Ability to work independently in terms of reading literary, non-literary and critical texts
- b) Ability to carry out personal research, postulate questions and search for answers

❖ **Digital Literacy:**

- a) Ability to use digital resources for gathering information
- b) Ability to use digital resources for presentations

❖ **Multicultural Competence:**

- a) Ability to engage with and understand language used in literary texts from different regions

b) Ability to respect and transcend differences

❖ **Moral and Ethical Values:**

a) Ability to interrogate one's own ethical values, and to be aware of ethical issues

b) Ability to read values inherited in literary texts *vis a vis* issues of environment, religion and spirituality, as also structures of power

❖ **Leadership Readiness:**

a) Ability to lead group discussions

b) Ability to formulate questions for the class in literary, academic and social contexts

❖ **Life-long Learning:**

a) Ability to retain and build on critical reading skills

b) Ability to infer, cherish and practise human values

c) Ability to transfer such skills in other domains of one's life and work

**1.3 Programme Learning Outcomes of SECC (Communicative English) Course for Arts/Science/Commerce**

Students will

- heighten their awareness of correct usage of English grammar in writing and speaking
- improve their speaking ability in English both in terms of fluency and comprehensibility
- give oral presentations and receive feedback on their performance
- increase their reading speed and comprehension of academic articles
- improve their reading fluency skills through extensive reading
- enlarge their vocabulary by reading English texts
- strengthen their ability to write papers, essays and summaries using the process approach.
- gain language competency to be ready for the job market as a good command over English language is one skill which various companies expect from the prospective employees

**1.4. Programme Specific Learning Outcomes of Generic English**

The programme learning outcomes relating to BA CBCS students adopting Generic English:

- Demonstrate a set of basic skills in literary and linguistic communication and explication of literary practices and process with clarity.
- Demonstrate a coherent and systematic knowledge of the field of English literature and Bhasha literatures translated into English, showing an understanding of the contemporary world.
- Cultivate ability to look at and evaluate the language of literary texts as a field of study and as part of the wider network of local and global culture by using digital resources.
- Display knowledge to cultivate a better understanding of values – both in the use of different language registers and literary forms and genres to arrive at transparent understanding of values of life at all stages.
- Recognize employability options in English literature and language studies programme as part of skill development and as career avenues open to graduates in today's global world such as professional writing, translation, teaching English at different levels, mass media, journalism, aviation communication and personality development
- To enable students to develop an awareness of the linguistic-cultural richness of India as an important outcome of English literary and language studies in India

### **1.5 Programme Specific Outcomes of Discipline Specific English Honours Course**

#### **❖ Introduction to Literature**

- Display a working knowledge of the genres of fiction, poetry, and drama by writers from various cultures and historical eras
- Identify and describe distinct characteristics of literary texts
- Analyze literary works for their structure and meaning
- Effectively communicate ideas related to the literary works during class and group activities

#### **❖ Introduction to Poetry**

- Display a working knowledge of poetry as a literary genre
- Identify and describe distinct literary characteristics of poetic forms
- Analyze poetic works for their structure and meaning, using correct terminology
- Effectively communicate ideas related to the poetic works during class and group activities

#### ❖ Readings in the Novel

- Display a working knowledge of the novel as a literary genre
- Identify and describe distinct literary characteristics of the novel
- Analyze novels for their structure and meaning, using correct terminology
- Effectively communicate ideas related to the novel during class and group activities

#### ❖ Readings in the Short Story

- Display a working knowledge of the short story as a literary genre
- Identify and describe distinct literary characteristics of the short story form
- Analyze short stories for their structure and meaning, using correct terminology
- Effectively communicate ideas related to the literary genre of the short story during class and group activities

#### ❖ History of British Literature

- Display a working knowledge of the historical and cultural contexts of British literature from the Anglo-Saxon period to the 18th century
- Identify and describe distinct literary characteristics of British literature from beginnings to the 20th century
- Analyze literary works for their structure and meaning
- Effectively communicate ideas related to the literary works during class and group activities

#### ❖ History of Indian Writing in English

- Classify the major genres in Indian Writing in English.
- Identify the unique features of Indian Writing in English.
- Identify the major literary features in Indian Writing in English.
- Discuss major class/caste issues in the context of Indian Literature.
- Describe the use of myth in Indian Writing in English and its contemporary relevance.

### **1.6 Course Outcomes of DSC for English Honours Students:**

#### **Core Paper I**

#### **BRITISH POETRY AND DRAMA: 14TH TO 17TH CENTURIES**

**Objectives:** The paper seeks to introduce the students to British poetry and drama from the 14th to the 17th century. It helps students sample and explore

certain seminal texts from the early modern period, covering the genesis of modern English poetry and the Renaissance that set British poetry and drama on their glorious course to greatness.

### **Course Level Learning Outcomes**

Some of the course learning outcomes that students of this course are required to demonstrate run thus:

- understand the tradition of English literature from 14th to 17th centuries.
- develop a clear understanding of Renaissance Humanism that provides the basis for the texts suggested
- engage with the major genres and forms of English literature and develop fundamental skills required for close reading and critical thinking of the texts and concepts
- appreciate and analyze the poems and plays in the larger socio-political and religious contexts of the time.

## **Core Paper II**

### **BRITISH POETRY AND DRAMA: 17TH AND 18TH CENTURY**

**Objectives:** The Introduction of this paper is to acquaint students with the Jacobean and the 18th century British poetry and drama, the first a period of the acid satire and the comedy of humours, and the second a period of supreme satiric poetry and the comedy of manners.

### **Course Level Learning Outcomes**

Some of the course learning outcomes that students of this course are required to demonstrate run thus:

- identify the major characteristics of the Comedy of Manners and Mock-Heroic poetry
- demonstrate in-depth knowledge and understanding of the religious, socio-intellectual and cultural thoughts of the 17th and 18th centuries
- examine critically keys themes in representative texts of the period, including Sin, Transgression, Love, Pride, revenge, sexuality, human follies, among others
- show their appreciation of texts in terms of plot-construction, socio-cultural contexts and genre of poetry and drama
- analyze literary devices forms and techniques in order to appreciate and interpret the texts

**Core Paper III**  
**BRITISH PROSE: 18TH CENTURY**

**Objectives:** The Introduction of the paper is to acquaint the students with a remarkable, newly evolved form of literature: the essay. The period is also known for its shift of emphasis from reason to emotion.

**Course Level Learning Outcomes**

Some of the course learning outcomes that students of this course are required to demonstrate run thus:

- explain and analyze the rise of the critical mind
- trace the development of Restoration Comedy and anti-sentimental drama examine and analyze the form and function of satire in the eighteenth century
- appreciate and analyze the formal variations of Classicism
- map the relationship between the formal and the political in the literature of the neoclassical period

**Core Paper IV**  
**INDIAN WRITING IN ENGLISH**

**Objectives:** Indian writing in English has been the fastest growing branch of Indian literature in the last one hundred years. It has produced a rich and vibrant body of writing spanning all genres. As a 'twice born' form of writing, it partakes of both the indigenous and the foreign perspectives and has an inherent tendency to be postcolonial. This paper seeks to introduce the students to the field through a selection of representative poems, novel and play.

**Course Level Learning Outcomes**

Some of the course learning outcomes that students of this course are required to demonstrate run thus:

- appreciate the historical trajectory of various genres of IWE from colonial times till the present
- critically engage with Indian literary texts written in English in terms of colonialism/postcolonialism, regionalism, and nationalism
- critically appreciate the creative use of the English language in IWE
- approach IWE from multiple positions based on historical and social locations

**Core Paper V**  
**BRITISH ROMANTIC LITERATURE**

**Objectives:** The paper aims at acquainting the students with the Romantic period and some of its representative writers. The students will be able to sample some seminal works of the Romantic age which gave expression to the



key ideas of the period such as return to nature, subjectivity, desire for personal freedom and the defiance of classicism-imposed restrictions on poetic form.

### **Course Level Learning Outcomes**

Some of the course learning outcomes that students of this course are required to demonstrate run thus:

- understand Romanticism as a concept in relation to ancillary concepts like Classicism
- understand the Romantic period in English literature in terms of its social, philosophical, intellectual, literary backgrounds including German and French influences
- analyze and understand the main characteristics of Romanticism
- appreciate the canonical and representative poems and prose of the writers of the Romantic period.
- develop skills of critical analysis and interpretation of selected poems in order to understand the theme, language, style, and elements of prosody.
- appreciate and analyze the sensibility of the British Romantic period: common man, equality, freedom, sense of community and fraternity
- relate Romantic literary texts to other forms of expression such as painting, for instance.

### **Core Paper VI**

#### **BRITISH LITERATURE 19TH CENTURY**

**Objectives:** This paper seeks to introduce the students to the exploits of the 19th century British Literature in prose, especially fiction and cultural criticism. It also includes samples of Victorian poetry.

### **Course Level Learning Outcomes**

Some of the course learning outcomes that students of this course are required to demonstrate run thus:

- identify and analyze the socio-economic-political contexts that inform the literature of the period
- comment on the historical and political awareness of literary texts as reflected in the transition from nature to culture across various genres
- understand the conflict between self and society in different literary genres of the period
- link the rise of the novel to the expansion of Colonialism and Capitalism understand the transition from Romantic to Victorian in literature and culture

- link the Victorian temper to political contexts in English colonies
- link the changes in the English countryside to changes brought about in similar settings in India

### **Core Paper VII**

#### **BRITISH LITERATURE: EARLY 20TH CENTURY**

**Objectives:** The paper aims at acquainting the students with the literature of Britain in the early 20th century, focusing on the modernist canon in poetry, novel, and literary criticism.

#### **Course Level Learning Outcomes**

Some of the course learning outcomes that students of this course are required to demonstrate run thus:

- trace the history of modernism in the socio-cultural and intellectual contexts of late nineteenth century and early twentieth century Europe
- link and distinguish between modernity and modernism
- explain the links between developments in science and experiments in literature
- explain the history of early twentieth-century modernism in the light of stream of consciousness, Jungian and Freudian ideas, Psychoanalysis, Imagism, Cubism, Vorticism
- identify and analyze the use and modernist technique in different genres in early twentieth century British literature
- trace the history of the self and subjectivity in literature in the light of colonial consciousness
- explain and analyze the idea of form in modernist literary texts from across major Genres

### **Core Paper VIII**

#### **AMERICAN LITERATURE**

**Objectives:** This is a survey paper providing an overview of canonical authors from American Literature in the established genres.

#### **Course Level Learning Outcomes**

Some of the course learning outcomes that students of this course are required to demonstrate run thus:

- understand the depth and diversity of American literature, keeping in mind the history and culture of the United States of America from the colonial period to the present (17th century to 21st century)
- understand the historical, religious and philosophical contexts of the American spirit in literature; social-cultural-ecological-political contexts

may, for example, include the idea of democracy, Millennial Narratives, the Myth of Success, the American Adam, the Myth of the Old South, the Wild West, Melting pot, Multiculturalism, etc.

- appreciate the complexity of the origin and reception of American literature, given its European and non-European historical trajectories, particularly in relation to writers of European ( Anglo-Saxon, French, Dutch and Hispanic) descent, as well as writers from black and non-European ( African, American Indian, Hispanic-American and Asian) writing traditions
- critically engage with the complex nature of American society, given its journey from specific religious obligations and their literary transformations (such as Puritanism, Unitarianism, Transcendentalism, etc.) to the growth of anti- or non-Christian sensibilities
- critically appreciate the diversity of American literature in the light of regional variations in climate, cultural traits, economic priorities
- explore and understand the nature of the relationships of human beings to other human beings and other life forms in relation to representative literary texts in various genres
- relate the African American experience in America to issues of exclusion in societies relevant to their learning experience
- analyze the American mind from global and Indian perspectives and situate the American in the contemporary world

### **Core Paper IX**

#### **EUROPEAN CLASSICAL LITERATURE**

**Objectives:** This paper seeks to introduce the students to European Classical literature, commonly considered to have begun in the 8th century BC in ancient Greece and continued until the decline of the Roman Empire in the 5th century AD. The paper seeks to acquaint the students with the founding texts of the European canon.

#### **Course Level Learning Outcomes**

Some of the course learning outcomes that students of this course are required to demonstrate run thus:

- historically situate classical European, i.e., Greek and Latin literary cultures and their socio-political-cultural contexts
- engage with classical literary traditions of Europe from the beginning till the 5<sup>th</sup> century AD
- grasp the evolution of the concept of classic and classical in the European literary thinking and its reception over a period of time
- appreciate classical literature of Europe and pursue their interests in it

- examine different ways of reading and using literary texts across a wide range of classical authors, genres and periods with comparative perspectives
- develop ability to pursue research in the field of classics
- develop academic and practical skills in terms of communication and presentation and also learn about human and literary values of classical period

### **Core Paper X WOMEN'S WRITING**

**Objectives:** The paper seeks to acquaint the students with the works of women writers from different cultures and nations in various genres. Further, it seeks to make them critically aware of the issues relating to the workings of patriarchy, issues of gender, and relations of desire and power.

#### **Course Level Learning Outcomes**

Some of the course learning outcomes that students of this course are required to demonstrate run thus:

- recognise the importance of gender specificity in literature
- understand and appreciate the representation of female experience in literature
- explain the difference between the feminine and the feminist as opposed to the female
- examine and appreciate the role played by socio-cultural-economic contexts in defining woman
- link the status of woman to social discrimination and social change
- draw a location specific trajectory of female bonding or empowerment
- to understand the complexity of social and biological constructions of manhood and womanhood
- to examine the relationship of women to work and production

### **Core Paper XI MODERN EUROPEAN DRAMA**

**Objectives:** The aim of this paper is to introduce the students to the best of experimental and innovative dramatic literature of modern Europe.

#### **Course Level Learning Outcomes**

Some of the course learning outcomes that students of this course are required to demonstrate run thus:

- understand the role of theatre and drama in the introduction and shaping of modernity

- understand and engage with concepts like realism, naturalism, symbolism, expressionism, the Avant Garde, the epic theatre, the theatre of the absurd, etc.
- understand how meaning is created in theatre and be able to write about innovations introduced into theatrical practice in the late nineteenth and the twentieth century

### **Core Paper XII INDIAN CLASSICAL LITERATURE**

**Objectives:** This paper seeks to create awareness among the students of the rich and diverse literary and aesthetic culture of ancient India.

#### **Course Level Learning Outcomes**

Some of the course learning outcomes that students of this course are required to demonstrate run thus:

- explain the eco-socio-political-cultural context of the age that produced Indian classical literature from its early beginning till 1100 AD
- appreciate the pluralistic and inclusive nature of Indian classical literature and its attributes
- historically situate the classical literature and diverse literary cultures from India, mainly from Sanskrit, but also Tamil, Prakrit and Pali by focusing on major texts in the principal genres
- trace the evolution of literary culture(s) in India in its/their contexts, issues of genres, themes and critical cultures
- understand, analyze and appreciate various texts with comparative perspectives

### **Core Paper XIII POSTCOLONIAL LITERATURES**

**Objectives:** This paper seeks to introduce the students to postcolonial literature —a body of literature that responds to European colonialism and empire in Asia, Africa, Middle East, the Pacific and elsewhere. The paper aims to provide the students with the opportunity to think through the layered response – compliance, resistance, mimicry, subversion – that is involved in the production of post-independence literature

#### **Course Level Learning Outcomes**

Some of the course learning outcomes that students of this course are required to demonstrate run thus:

- understand the social-historical-political-economic contexts of colonialism and postcolonialism in India and other countries affected by colonial rule

- understand the scope of postcolonial literatures in India and elsewhere, primarily as a response to the long shadow of colonialism, not just of colonial occupation
- see through a corpus of representative postcolonial texts from different colonial locations: the effects of colonial rule on the language, culture, economy and habitat of specific groups of people affected by it
- appreciate and analyze the growing spectres of inequality arising out of colonial occupation and the role played by postcolonial literatures to resist it in India and similar locations
- critically engage with issues of racism and imperialism during and after colonial occupation
- appreciate the changing role and status of English in postcolonial literatures
- link colonialism to modernity

**Core Paper XIV**  
**POPULAR LITERATURE**

**Objectives:** This paper seeks to introduce the students to genres such as children’s literature, detective fiction and campus fiction, which have a “mass” appeal, and can help us gain a better understanding of the popular and folk roots of literature.

**Course Level Learning Outcomes**

Some of the course learning outcomes that students of this course are required to demonstrate run thus:

- trace the early history of print culture in England and the emergence of genre fiction and best sellers
- engage with debates on high and low culture, canonical and non-canonical literature
- articulate the characteristics of various genres of non-literary fiction
- investigate the role of popular fiction in the literary polysystem of various linguistic cultures
- demonstrate how popular literature belongs to its time
- Use various methods of literary analysis to interpret popular literature

**1.6 Course Outcomes of Discipline Specific Elective (DSE) for English Honours Students:**

**Paper-I**  
**LITERARY THEORY**

**Objectives:** This paper seeks to expose the students to the basic premises and issues of major theoretical approaches to literary texts.

### **Course Level Learning Outcomes**

Some of the course learning outcomes that students of this course are required to demonstrate run thus:

- have a historical overview of major literary theorists, particularly of the 20th century
- show an understanding of historical and philosophical contexts that led to the development of literary theory and its practices
- develop awareness of various literary theories and the way they enrich and change our thinking about language, literature and society
- historically situate literary theorists whose works had informed and shaped various literary theoretical discourses
- identify theoretical concepts with theorists and movements with which they are associated and in the process understand their contexts
- apply various theoretical frameworks and concepts to literary and cultural texts
- evaluate and analyze strengths and limitations of theoretical frameworks and arguments
- sharpen interpretative skills in the light of various theoretical frameworks

## **Paper- II**

### **WORLD LITERATURE**

**Objectives:** This paper proposes to introduce the students to the study of world literature through a representative selection of texts from around the world. The idea is to read beyond the classic European canon by including defining literary texts from other major regions/countries—except the United States of America—written in languages other than English, but made available to the readers in English translation.

### **Course Level Learning Outcomes**

Some of the course learning outcomes that students of this course are required to demonstrate run thus:

- explain the concept of World Literature and its evolution in relation to other related concepts e.g. national literature, general literature, comparative literature and *Vishwa Sahitya*.
- appreciate the connectedness and diversity of human experiences and literary responses to them in different parts of the world.
- analyze and appreciate literary texts from different parts of the world and receive them in the light of one's own literary traditions.
- analyze and interpret literary texts in their contexts and locate them.

**Paper- III**  
**PARTITION LITERATURE**

**Objectives:** This paper seeks to expose the students to some significant writings on Indian partition, which brought untold miseries to those who lost lives and homes. The issues of loss, trauma, communalism etc. are explored by the texts.

**Course Learning Outcomes**

Some of the learning outcomes that learners of this course are required to demonstrate are mentioned below:

- explain historical and socio-cultural factors responsible for the Partition of Indian Sub-continent.
- demonstrate critical understanding of manifestations of the experience of the partition in various art forms.
- link and analyze the eco-socio-historical-cultural contexts and dimensions related to the Partition of India e.g. nation, nationalism, communication, violence, exile, homelessness, refugee, rehabilitation, resettlement, border and border lands (colonialism and post colonialism), literary responses to the partition in different parts of Indian continent and interpret them.
- interpret texts and experience and relate it to their contexts and experiences

**Paper- IV**  
**WRITING FOR MASS MEDIA**

**Objectives:** This paper proposes to introduce the students to the history of English in India, history of Journalism in English in India, status of English in India, Indian writers of English and their treatment of the English language a non-native variety

**Course Learning Outcomes**

Some of the learning outcomes that learners of this course are required to demonstrate are mentioned below:

- explain the history of English in India,
- link and analyze history of Journalism in English in India with the history of English in India
- explain the status of English in India
- understand the evolution of Indian writers of English and their treatment of the English language a non-native variety

Continued.....



**LAXMINARAYAN COLLEGE, JHARSUGUDA**

**Learning Outcomes based Curriculum Framework (LOCF) For  
(Political Science)**

**SEMESTER – 1**

**Core – I: Understanding Political Theory**

**Course Objective:**

This course is designed to develop a sound understanding of Political Science with the different meaning of politics and how is it interpreted differently by people holding different theoretical positions. Through this paper, students will be able to develop a very strong foundation for comprehending different political phenomena. Acquainting the students with fundamental values of Political Science is the chief motto of this paper.

**Course Level Learning Outcomes:**

- a. They will be able to answer why the state plays so much central place in the discourses on politics.
- b. They will be able to make a distinction between Polity, Political, Political science, Political Theory and Political Science.
- c. They will come to know about different theories on Political science.
- d. The students would be able to explain different approaches to politics and build their own understanding of politics.
- e. They will come to know how political science commenced in Greek City-State and how it evolved.
- f. They will come to know about democratic culture and develop the democratic values which will help the nation in long term. Along with this, they will be aware about their role and importance in the societal decision making process by actively participating in it.

**CORE – II : Constitutional Government and Democracy in India**

**Course Objective:** Main motto of this course is to acquaint students with the Constitutional design of state structures and institutions, and their actual working overtime. The Indian Constitution accommodates conflicting impulses (of liberty and justice, territorial decentralization and a strong union, for instance) within itself. The course traces the embodiment of some of these conflicts in constitutional provisions, and shows how these have played out in political practice. It further encourages a study of state institutions in their mutual interaction, and in interaction with the larger extra-constitutional environment.

**Course Level Learning Outcomes:**

- a. Students will be able to understand how why constituent assembly was formed and how it take drafted constitution.
- b. They will be able to know the Philosophy of constitution and core objectives of the constitution.

- c. They will come to know the importance of the Preamble in the constitutional design of India.
- d. They will be able to answer how constituent assembly decided about our National flag, National song, and Anthem and how debates unfolded on National language and Minority rights in the Constitution.
- e. They will be able to answer questions pertaining to the function and role of the President, Prime Minister, Governor, Chief Minister, Parliament and State legislature, and the courts in the Constitutional design of India.
- f. They will comprehend how through the method of decentralization power is distributed from central level to grassroots level and how problem of society is mitigated by it.

## **Generic Elective Paper I** **FEMINISM: THEORY AND PRACTICE**

**Introduction:** The aim of the course is to introduce students to contemporary debates on feminism and the history of feminist struggles. The course begins with a discussion on construction of gender and an understanding of complexity of patriarchy and goes on to analyze theoretical debates within feminism. It offers a gendered analysis of Indian society, economy and polity with a view to understanding the structures of gender inequalities. And the last section aims to understand the issues with which contemporary Indian women's movements are engaged with.

### **Course Level Learning Outcomes:**

- a. They will come to know about suffering of women and they will learn how to ensure security.
- b. Eradicate women related issues from the society.
- c. They will come to know feminism is not only an ideology but also a movement.
- d. They will exterminate the so called orthodox social system which deprived women from their dues.
- e. They will learn how a woman can be saved from any kind of violence.
- f. They will know how to provide them a dignified life.

## **SEMESTER – 2**

### **Core – II: POLITICAL THEORY-CONCEPTS AND DEBATES**

**Course objectives:** This course helps the student familiarize with the basic normative concepts of political theory. Each concept is related to a crucial political issue that requires analysis with the aid of our conceptual understanding. This exercise is designed to encourage critical and reflective analysis and interpretation of social practices through the relevant conceptual tool kit. Another part introduces the students to the important debates in the subject. These debates prompt us to consider that there is no settled way of understanding concepts and that in the light of new insights and challenges, besides newer ways of perceiving and interpreting the world around us, we inaugurate new modes of Political debates.

### **Course Level Learning Outcomes:**

- a. They will come to know how freedom is important for development of human personality in particular and nation in general.
- b. They will come to know what affirmative action is and how it affects us.
- c. Justice is the first virtue and they will think critically that how a just society can be formed.
- d. They will know how different values overlaps each other and how rights affects us.

- e. Students will know the beauty of diversity and they will learn how to be tolerant towards each other.

### **Core – III: Political Theory : Concepts and Debates**

**Introduction:** Student will be familiarized with the basic normative concepts of political theory. Each concept is related to a crucial political issue that requires analysis with the aid of our conceptual understanding. This exercise is designed to encourage critical and reflective analysis and interpretation of social practices through the relevant conceptual tool kit. Section B introduces the students to the important debates in the subject. These debates prompt us to consider that there is no settled way of understanding concepts and that in the light of new insights and challenges, besides newer ways of perceiving and interpreting the world around us, we inaugurate new modes of Political debates.

#### **Course Level Learning Outcomes:**

- a. They will come to know various dimension of freedom.
- b. They will know how freedom is linked with development.
- c. They will understand values of human rights.
- d. They will come to know how justice can be ensured in the society among various section of the society.
- e. They will understand the value of various culture.

### **Core – IV: POLITICAL PROCESS IN INDIA**

**Course objectives:** Actual politics in India diverges quite significantly from constitutional legal rules. An understanding of the political process thus calls for a different mode of analysis - that offered by political sociology. This course maps the working of ‘modern’ institutions, premised on the existence of an individuated society, in a context marked by communitarian solidarities, and their mutual transformation thereby. It also familiarizes students with the working of the Indian state, paying attention to the contradictory dynamics of modern state power.

#### **Course Level Learning Outcomes:**

- a. They will come to know about what is political parties and functioning of different political parties.
- b. How political party helps to aggregate the individual interest and mobilize people.
- c. They will come to know about the voting behavior of people. Later on, it will help students to be good citizen.
- d. They will come to know about the ECI which is an independent body. How it conducts election throughout the nation.
- e. Students will know about identity politics and how it has been dominating Indian politics.

### **Generic Elective Paper II** **GOVERNANCE: ISSUES AND CHALLENGES**

**Objectives:** This paper deals with concepts and different dimensions of governance highlighting the major debates in the contemporary times. There is a need to understand the importance of the concept of governance in the context of a globalizing world, environment, administration, development. The essence of governance is explored through the various good governance initiatives introduced in India.

#### **Course Level Learning Outcomes:**

- a. They will come to know how government functions.

- b. They will know what the various parameter of Good Governance are.
- c. They will learn about several initiative of Government.
- d. They will inculcate constitutional values in their day to day life.
- e. They will be more obliged towards the state.

### SEMESTER – 3

## **Core Paper V - INTRODUCTION TO COMPARATIVE GOVERNMENT AND POLITICS**

**Course objectives:** This is a foundational course in comparative politics. The purpose is to familiarize students with the basic concepts and approaches to the study of comparative politics. More specifically the course will focus on examining politics in a historical framework while engaging with various themes of comparative analysis in developed and developing countries.

**Course Level Learning Outcomes:**

- a. They will come to know about how comparative politics is linked with political science.
- b. They will come to understand what the parameters of comparison are.
- c. Students will develop knowledge about the political system of various countries.
- d. They will come to know about different forms of government and their working.
- e. They will know about different ideologies which runs the government.

## **Core Paper VI: INTRODUCTION TO PUBLIC ADMINISTRATION**

**Introduction:** The course provides an introduction to the discipline of public administration. This paper encompasses public administration in its historical context with an emphasis on the various classical and contemporary administrative theories. The course also explores some of the recent trends, including feminism and ecological conservation and how the call for greater democratization is restructuring public administration. The course will also attempt to provide the students a comprehensive understanding on contemporary administrative developments.

**Course Level Learning Outcomes:**

- a. Student will come to know about how Public Administration is part of political science.
- b. They will come to know how administration playing an important role in India.
- c. They will come to know about the different theories of public administration.
- d. They will come to understand how administration influenced the day to day phenomenon.
- e. They will learn how run an organization effectively and efficiently.
- f. They will know what Good governance is.

## **Core Paper VII: PERSPECTIVES ON INTERNATIONAL RELATIONS**

**Introduction:** This paper seeks to equip students with the basic intellectual tools for understanding International Relations. It introduces students to some of the most important theoretical approaches for studying international relations. The course begins by historically contextualizing the evolution of the international state system before discussing the agency-structure problem through the levels-of analysis approach. After having set the parameters of the debate, students are introduced to different theories in International Relations. It provides a fairly comprehensive overview of the major political developments and events starting from the twentieth century. Students are expected to learn about the key milestones in world history and equip them with the tools to understand and analyze the same from different perspectives.

A key objective of the course is to make students aware of the implicit Euro-centrism of International Relations by highlighting certain specific perspectives from the Global South.

**Course Level Learning Outcomes:**

- a. They will come to know how International Politics is related with Political Science.
- b. They will come to know the root of any political events by understanding its history.
- c. They will study different theories and they will develop their own skill to understand international phenomena.
- d. They will know what the major causes of war are.
- e. After understanding that they will seek silver bullet for that

## **SEMESTER – 4**

### **Core Paper VIII: POLITICAL PROCESSES AND INSTITUTIONS IN COMPARATIVE PERSPECTIVE**

**Introduction:** In this course students will be trained in the application of comparative methods to the study of politics. The course is comparative in both what we study and how we study. In the process the course aims to introduce undergraduate students to some of the range of issues, literature, and methods that cover comparative political.

**Course Level Learning Outcomes:**

- a. Students will come to know how why comparative politics emerged.
- b. They will know the theoretical foundation of comparative politics.
- c. They will know how nation state system emerged.
- d. They will come to understand various method of election adopted by several nation.
- e. They will come to know how party system work.

### **Core paper – IX PUBLIC POLICY AND ADMINISTRATION IN INDIA**

**Introduction:** The paper seeks to provide an introduction to the interface between public policy and administration in India. The essence of public policy lies in its effectiveness in translating the governing philosophy into programs and policies and making it a part of the community living. It deals with issues of decentralization, financial management, citizens and administration and social welfare from a nonwestern perspective.

**Course Level Learning Outcomes:**

- a. Students will come to know about how public policy is playing an important role in managing affairs in the country.
- b. They will come to know how executive work in the nation.
- c. They will come to know about the various plan and policies of government.
- d. They will understand what democratic decentralization is and how it works in grassroots level to alleviate the hardship of poor.
- e. They will come to know the real meaning of citizen and their respective duties towards the nation.

### **Core Paper X (C-X): GLOBAL POLITICS**

**Introduction:** This course introduces students to the key debates on the meaning and nature of globalization by addressing its political, economic, social, cultural and technological dimensions. In keeping with the most important debates within the globalization discourse, it imparts an understanding of the working of the world economy, its anchors and resistances

offered by global social movements while analyzing the changing nature of relationship between the state and transnational actors and networks. The course also offers insights into key contemporary global issues such as the proliferation of nuclear weapons, ecological issues, international terrorism, and human security before concluding with a debate on the phenomenon of global governance.

**Course Level Learning Outcomes:**

- a. They will come to know about Globalization and its pros and cons.
- b. They will come to know about various issues of contemporary world.
- c. They will come to know how to deal with such challenges.
- d. They comprehend how to secure global peace and security.
- e. They will about consequences of nuclear war.

**SEMESTER – 5**

**Core Paper XI: WESTERN POLITICAL PHILOSOPHY**

**Introduction:** This course goes back to Greek antiquity and familiarizes students with the manner in which the political questions were first posed. Machiavelli comes as an interlude inaugurating modern politics followed by Hobbes and Locke, Rousseau, Marx. This is a basic foundation course for students.

**Course Level Learning Outcomes:**

- a. They will come to know how political science begins.
- b. The root major political values could be found in political philosophy.
- c. They will able to differentiate between idealism and realism.
- d. They will come to know about alternative framework to run a nation.
- e. They will come to know about ideas of different political philosophers.

**Core Paper XII:( INDIAN POLITICAL THOUGHT (ANCIENT AND MEDIEVAL)**

**Introduction:** This course introduces the specific elements of Indian Political Thought spanning over two millennia. The basic focus of study is on individual thinkers whose ideas are however framed by specific themes. The course as a whole is meant to provide a sense of the broad streams of Indian thought while encouraging a specific knowledge of individual thinkers and texts. Selected extracts from some original texts are also given to discuss in class. The list of Reference books is meant for teachers as well as the more interested students.

**Course Level Learning Outcomes:**

- a. They can undertake comparative study of western and Indian Political thought.
- b. They will come to know about ideas of great Indian political thinkers.
- c. They will come to know how those thinker helped king to run the state.
- d. They will acquire hints from traditional political philosophy to tackle present day catastrophe.
- e. They will know about different societal values.

**Discipline Specific Elective Paper-I**  
**INTRODUCTION TO HUMAN RIGHTS**

**Introduction:** This course attempts to build an understanding of human rights among students through a study of specific issues in a comparative perspective. It is important for students to see how debates on human rights have taken distinct forms historically and in the contemporary

world. The course seeks to anchor all issues in the Indian context, and pulls out another country to form a broader comparative frame.

**Learning Outcomes:**

- a. They will learn what human rights is.
- b. They will know which human rights are granted to the citizens by constitution
- c. They will what the various provision of human rights across the world.
- d. They will acquire knowledge about how to solve humanitarian crisis.
- e. They will know what the various constitutional provision of human rights are.

**Discipline Specific Elective Paper II**  
**DEVELOPMENT PROCESS AND SOCIAL MOVEMENTS IN**  
**CONTEMPORARY INDIA**  
**(Project)**

**Introduction:** Under the influence of globalization, development processes in India have undergone transformation to produce spaces of advantage and disadvantage and new geographies of power. The high social reproduction costs and dispossession of vulnerable social groups involved in such a development strategy condition new theories of contestation and struggles. A variety of protest movements emerged to interrogate and challenge this development paradigm that evidently also weakens the democratic space so very vital to the formulation of critical consensus. This course proposes to introduce students to the conditions, contexts and forms of political contestation over development paradigms and their bearing on the retrieval of democratic voice of citizens.

**Course Level Learning Outcomes:**

- a. Students will come to know about real meaning of development.
- b. They will come to know what are the various developmental strategy
- c. They learn about various social movements.
- d. They will come to know what the various internal security threats are.
- e. They will know development process of India from independence to now

**SEMESTER – 6**

**Core Paper XII: CONTEMPORARY POLITICAL PHILOSOPHY**

**Introduction:** Philosophy and politics are closely intertwined. Students will be exposed to the manner in which the questions of politics have been posed in terms that have implications for larger questions of thought and existence. Contemporary political philosophy and debates are introduced to the students here.

**Learning Outcomes:**

- a. Students will come to know about ideas of various contemporary political thinker.
- b. They will come to know about how their ideas have provided an alternative perspective.
- c. They will refer to these ideas if they found any difficulties in current regime for their amendment.
- d. They will understand how justice is ensured in our country despite differences.
- e. They will augment their learning scope after understanding deep concepts of contemporary political philosophers.

**Core Paper XIV : MODERN INDIAN POLITICAL THOUGHT**

**Introduction:** Based on the study of individual thinkers, the course introduces a wide span of thinkers and themes that defines the modernity of Indian political thought. The objective is to study general themes that have been produced by thinkers from varied social and temporal contexts.

**Course Level Learning Outcomes:**

- a. Students can undertake comparative study of western and Indian Political thought.

- b. They will come to know about ideas of great Indian political thinkers.
- c. They will come to know how those thinker helped king to deal with difficult situation.
- d. They will come to know how reformation happened.
- e. They will take reference of major political thinker to overhaul the society.

### **Discipline Specific Elective Paper III** **INDIA'S FOREIGN POLICY IN A CHANGING WORLD**

**Introduction:** This course's objective is to teach students the domestic sources and the structural constraints on the genesis, evolution and practice of India's foreign policy. The endeavor is to highlight integral linkages between the 'domestic' and the 'international' aspects of India's foreign policy by stressing on the shifts in its domestic identity and the corresponding changes at the international level. Students will be instructed on India's shifting identity as a postcolonial state to the contemporary dynamics of India attempting to carve its identity as an 'aspiring power'. India's evolving relations with the superpowers during the Cold War and after, bargaining strategy and positioning in international politics facilitate an understanding of the changing positions and development of India's role as a global player since independence.

**Course Level Learning Outcomes:**

- a. Students will come to know what foreign policy is.
- b. They will come to know how foreign policy changes with the changing time.
- c. They will come to know about relations of India with different countries.
- d. They will know more about pragmatic politics.
- e. They will know how national interest is protected.

### **Discipline Specific Elective Paper IV** **WOMEN, POWER AND POLITICS**

**Introduction:** This course opens up the question of women's agency, taking it beyond 'women's empowerment' and focusing on women as radical social agents. It attempts to question the complicity of social structures and relations in gender inequality. This is extended to cover new forms of precarious work and labor under the new economy. Special attention will be paid to feminism as an approach and outlook.

**Course Level Learning Outcomes:**

- a. Here in this course they will learn different issues confronted by women in society.
- b. They will come to know how they were deprived of their fundamental rights.
- c. They will learn how to remove societal stigma smear upon women.
- d. They will know about constitutional provision for women.
- e. They will know how to empower the women.



# **Laxminarayan College, Jharsuguda**

## **Department of Economics**

### **VISION**

To develop outstanding economics and business analysis program that is recognized for excellence in instruction, research and service.

### **MISSION**

To offer curriculum that provide critical thinking skill and enhance decision making abilities.

To enable learners to achieve their full potential and be recognized in the work place and community for their excellence, dedication and integrity.

To motivate students, acquire passion for knowledge and ability to learn independently and communicate effectively.

### **PROGRAM EDUCATIONAL OBJECTIVES (PEOs)**

The B.A. Economics students' program educational objectives are as follows

|             |  |
|-------------|--|
| <b>PEO1</b> | Economic graduates will be able to interpret the information from economic perspective. Hence will be an effective economic analyst, who could successfully complete a credential test.  |
| <b>PEO2</b> | Economic graduates will be able to assess situation and identify main economic problems and demonstrate an ability to offer alternative solution to problems. This will enhance critical thinking skills.                            |
| <b>PEO3</b> | Graduates of economics will be able to demonstrate their proficiency and skills necessary to attract the potential employers in the field of banking sector, insurance companies, marketing field and also in the field of teaching. |

## **PROGRAMME SPECIFIC OUTCOMES (PSOs)**

**On successful completion of the B.A. Economics program, the students are able to**

|              |  |
|--------------|--|
| <b>PSO1</b>  | <b>Have the Capability to demonstrate comprehensive knowledge and understanding on the basic concepts and theories that form a part of this programme.</b> |
| <b>PSO2</b>  | <b>Have the Capacity to analyse and evaluate the current events from an economic perspective.</b>  |
| <b>PSO3</b>  | <b>Expand skills in practical application of economic theory.</b>  |
| <b>PSO4</b>  | <b>Possess an ability to offer alternative solution on policy issues.</b>  |
| <b>PSO5</b>  | <b>Demonstrate the ability to analyse, interpret and draw valid conclusions from quantitative and qualitative data.</b>                                    |
| <b>PSO6</b>  | <b>Communicate effectively on specific economic issues and present complex information in a clear and concise manner.</b>                                  |
| <b>PSO7</b>  | <b>Kindle the interest to use ICT in learning environment.</b>   |
| <b>PSO8</b>  | <b>Nurture the spirit of leadership qualities and readiness to work and learn.</b>   |
| <b>PSO9</b>  | <b>Boost the spirit of self-confidence and inculcate the spirit of moral values.</b>   |
| <b>PSO10</b> | <b>Build strong foundation for pursuing continuous learning.</b>   |

# Specific Course Outcome of courses offered by the Department of Economics

| NAME OF THE COURSE                  | COURSE OUTCOME   |
|-------------------------------------|--|
| <b>Principles of Microeconomics</b> | This course is designed to expose the student to the basic principles in Microeconomic Theory and illustrate the same with applications.   |
| <b>Principles of Macroeconomics</b> | <p>This course introduces students to the basic concepts in Macroeconomics. Macroeconomics and deals with the aggregate economy. In this course the students are introduced to the definition, measurement of the macroeconomic variables such as GDP, consumption, savings, investment and balance of payments.</p> <p>The course also discusses various theories of determining GDP in the short run. It also introduces the student to concept of inflation, its relationship with unemployment and some basic concepts in an open economy.</p> |
| <b>Indian Economy</b>               | This course is designed to enable students to have in-depth knowledge of various problems and issues faced by Indian Economy. The course will concentrate on both the achievements and the issues of the economy.  |
| <b>Basic Econometrics</b>           | This course provides a comprehensive introduction to basic econometric concepts and techniques. It covers statistical concepts of hypothesis testing, estimation and diagnostic testing of simple and multiple regression models.  |
| <b>Development Economics</b>        | This course reviews major trends in aggregate economic indicators in India and places these against the backdrop of major policy debates in India in the post-Independence period.   |

| <b>NAME OF THE COURSE</b>                    | <b>COURSE OUTCOME</b>   |
|--|---|
| <b>International Economics</b>               | This course develops a systematic exposition of models that try to explain the composition, direction, and consequences of international trade, and the determinants and effects of trade policy. The basic aim of this course is to link international trade relations and its impact on exports of nations.   |
| <b>Mathematical Economics and statistics</b> | The main objective of this paper is to train the students to use the techniques of mathematical and statistical analysis, which are commonly applied to understand and analyse economic problems. The emphasis of this paper is on understanding economic concepts with the help of mathematical methods rather than learning mathematics itself. Hence in this paper a student will be initiated into various economic concepts, which are amenable to mathematical treatment. |
| <b>Statistical Methods</b>                   | This course introduces the student to collection and presentation of data. It also discusses how data can be summarized and analysed for drawing statistical inferences. The students will be introduced to important data sources that are available and will also be trained in the use of free statistical software to analyse data.   |
| <b>Economics of Development</b>              | This course is designed to instil in the student a deeper understanding of development and issues therein. The student is expected to also achieve an appreciation of institutional efforts aimed at achieving rural development.   |
| <b>Research Methodology</b>                  | This course is designed to rigorously train the students in the concepts, methodology and reasoning involved in analysing economic behaviour of firms and markets, in general, in both static and partial equilibrium frameworks.   |
| <b>Public Finance</b>                        | This course is a non-technical overview of government finances with special reference to India. The course does not require any prior knowledge of economics. It will look into   |

| NAME OF THE COURSE                    | COURSE OUTCOME  |
|---------------------------------------|---|
|                                       | <p>the efficiency and equity aspects of taxation of the centre, states and the local governments and the issues of fiscal federalism and decentralization in India.</p> <p>The course will be useful for students aiming towards careers in the government sector, policy analysis and business.</p>  |
| <p><b>Money and Banking</b></p>       | <p>This course exposes students to the theory and functioning of the monetary and financial sectors of the economy. It highlights the organization, structure and role of financial markets and institutions. It also discusses interest rates, monetary management and instruments of monetary control. Financial and banking sector reforms and monetary policy with special reference to India are also covered</p> <p>The course does not require any prior knowledge of economics. .</p> |
| <p><b>Project Work</b></p>            | <p>Project Work is one of the culminations point of the learning process, which will put to test the acquired ability of the candidate to independently take the charge of the project and use the understanding of economics developed in previous years to evaluate/analyse economic issues.</p>  |
| <p><b>Environmental Economics</b></p> | <p>This course focuses on economic causes of environmental problems. In particular, economic principles are applied to environmental questions and their management through various economic institutions, economic incentives and other instruments and policies. The course does not require any prior knowledge of economics.</p> <p>The course will be useful for students aiming towards careers in the government sector, NGOs, policy analysis, business and journalism.</p>           |



**B.A. (HONS) ODIA COURSE**  
**SEMESTER -I, CORE-1**

**ODIA SAHITYARA ITIHAS (PART-1)**

**PROGRAMME SPECIFIC OUTCOMES OF SEMESTER -1, CORE-1**

The objective of this paper is to help students the acquire fundamental knowledge about the history of Odia Literature. This paper mainly based on Odia Sahityara Itihasra Bhumika, Odia Sahityare Juga bibhajana Prasanga, Prak Sarala JugaraShitya, Sarala Juga, Pnchasakha Juga o Santha Sahityara Prusthabhumi.

**COURSE OUTCOMES OF CORE-1**

**Co-1:** To provide knowledge about Odia Sahityara PramukhaItihas Grantha (Only Introduction) Juga Bibhajana Aban Namakarana.

**Co-2:** To provide knowledge about Odia SahityaraPrak Sarala Sahityara Prushthabhumi Abang Bhumika, Prak Sarala Sahityara Baisisthya, Charya Gitika O Natha Sahitya, ahara Samajika, Dharmabhitika Abastha, Sahitika o Bhashatattwika Mullyana ityadi.

**Co-3:** To provide knowledge about Sarala Sahityara Samayasima, Sarala Sahityara Prusthabhumi, Maulikata, Samajika, Sanskrutika o Sahityaka Mullayana.

**Co-4:** To provide knowledge about PanchasakhaSahityara Samayasima, PanchasakhaSahityaraSrastha, Srusthi o Baisishtya.

**SEMESTER -I, CORE-2**

# **MADHYAJUGIA ODIA SAHITYA**

## **PROGRAMME SPECIFIC OUTCOMES OF SEMESTER-1, CORE-2**

The objective of this paper is to help students to acquire knowledge about Madhyajugia Odia Sahitya, Madhyajugia Kabya Kabitara Angika o Atmika Baichitri yaabang Madhyajugia Giti Parampara.

## **COURSE OUTCOMES OF CORE-2**

**Co-1:** To provide knowledge about Madhyajugia Odia Sahitya Prudthabumi( Samajika, Sanskrutika, Rajanitika o Dharmika)

**Co-2:** To provide deep knowledge about Madhyajugia Odia Kabya Kabitara Angika Baichitriya.

**Co-3:** To provide knowledge about Madhyajugia Odia Kabya Kabitara Atmika Baichitriya.

**Co-4:** To provide knowledge about Madhyajugia Odia Giti Kabitara Parampara o Bikashdhara.

## **SEMESTER -II, CORE-3**

### **ADHUNIKA ODIA SAHITYA**

#### **PROGRAMME SPECIFIC OUTCOMES OF SEMESTER-II, CORE-3**

The objective of this paper is to help students to acquire knowledge about Adhunika Odia Sahitya

## **COURSE OUTCOMES OF CORE-3**



**Co-1:** To provide knowledge about Adhunika Odia Sahityara Prushtha bhumi o Nabajagarana (Engraji Shikshyara Bistara, Patraprika Prakasana, Mudra Jantra Pratistha o Bhasha Andolana)

**Co-2:** To provide knowledge about Adhunika Odia Sahityara Pramukha Shrastha o Shrusthi.

**Co-3:** To provide knowledge about Adhunika Odia Sahityara Satyabadi Dhara, Ahi Jugara Samayasima Prusthabhumi, Odiya Sahityara Satyabadi Andolana, SatyabadiLekhaGosthi, Baishishtya o Bikashadhara.

**Co-4:** To provide knowledge about Adhunika Odia Sahityara Sabujadhara o Pragatibadi Dhara

## **SEMESTER -II, CORE-4**

### **SWADHINATA PARABARTI ODIA SAHITYA**

#### **PROGRAMME SPECIFIC OUTCOMES OF SEMESTER-II, CORE-4**

The objective of this paper is to help students to acquire knowledge about Swadhinata Parabarti Odia Kabita, Katha Sahitya, Nataka o Ekankika Abang Odia Gadya Sahitya.

#### **COURSE OUTCOMES OF CORE-4**

**Co-1:** To provide knowledge about Swadhinata Parabarti Odia Kabya Kabita.

**Co-2:** To provide knowledge about Swadhinata Parabarti Odia Katha Sahitya.

**Co-3:** To provide knowledge about Swadhinata Parabarti Odia Nataka o Ekankika.

**Co-4:** To provide knowledge about Swadhinata Parabarti Odia Gadya Sahityara Bikashadhara.

# **SEMESTER -III, CORE-5**

## **ODIA BHASHARA AITIHASIKA BIKASHAKRAMA**

### **PROGRAMME SPECIFIC OUTCOMES OF SEMESTER-III, CORE-5**

The objective of this paper is to help students to know about historical development of Odia language

### **COURSE OUTCOMES OF CORE-5**

**Co-1:** To provide knowledge about Odia BhasharaMoulikata o Baishisthya

**Co-2:** To provide knowledge about Odia LipiraAitihaska Bikashakrama

**Co-3:** To provide knowledge about Odia Shilalekhara Bhasha

**Co-4:** To provide knowledge about Odia Charyapada o Sarala sahityara Bhasha

## **COURSE OUTCOMES OF CORE-6**

**Co-1:** To provide knowledge about Bhashara Sangya, Swarupa o Prakaraveda.

**Co-2:** To provide knowledge about Bhasha Uttpati Samparkia Bivinna Siddhanta.

**Co-3:** To provide knowledge about Odia Bhasara Andolana Rupa

**Co-4:** To provide knowledge about Odia Bhasa Upare Bivinna Bhashara Prabhaba (Drabida, Astrika, Jabanika o Engraji)

## **SEMESTER -III, CORE-7**

### **ODIA BYABAHARIKA BYAKARANA**

#### **PROGRAMME SPECIFIC OUTCOMES OF SEMESTER-III, CORE-7**

The objective of this paper is to help students to know about Linguistics and Literature in the form of the correct speaking and writing

## **COURSE OUTCOMES OF CORE-7**

**Co-1:** To provide knowledge about Odia Barna Bichara, Bakyara Gathana Riti o Prakaraveda

**Co-2:** To provide knowledge about Karaka Bibhakti, Krudanta o Taddhita.

**Co-3:** To provide knowledge Upasarga, Sandhi o Samasa

**Co-4:** To provide knowledge about Odia SabdaSambhara

## **SEMESTER -IV, CORE-8**

### **ODIA LOKA SANSKRUTI O LOKA SAHITYA**

#### **PROGRAMME SPECIFIC OUTCOMES OF SEMESTER-IV, CORE-8**

The core objective of this paper is to help students to acquire knowledge about our Culture, Tradition, Folk Literature relation with society

#### **COURSE OUTCOMES OF CORE-8**

**Co-1:** To provide knowledge about Loka Sanskruti o Loka Sahityara Sangya, Swarupa o Prakarveda.

**Co-2:** To provide knowledge about Odia Lokagitara Swarupa, Prakarveda o BivinnaDiga

**Co-3:** To provide knowledge about Odia LokaKahaniraSwarupa o Prakarveda.

**Co-4:** To provide knowledge about Odia LokaNatakaraSwarupa o Prakarveda. (Pala, Dashkathia, DandaNacha, ChhouNacha, Lila, Dadhi, Dalkhai, Karma)

## **SEMESTER -IV, CORE-9**

### **SAHITYA TATTWA (PRACHYA O PASCHATYA)**

#### **PROGRAMME SPECIFIC OUTCOMES OF SEMESTER-IV, CORE-9**

The core objective of this paper is to help students to acquire fundamental knowledge about the definition of Prachya o PaschatyaTattwa Kabya Kabita (Rasa, Dhvani, Reeti, Bakroti, Alankara, Classism, Romantism, Pratikabada, Chitrakalpa)

This paper mainly based on “ Kabya Kabita Defination, Lakhyana, Prayojana, Feature and Type etc.

## **COURSE OUTCOMES OF CORE-9**

**Co-1:** To provide knowledge about Rasa o Dhvani

**Co-2:** To provide knowledge about Reeti, Bakruti o Alankar

**Co-3:** To provide knowledge about Classism, Romantism

**Co-4:** To provide knowledge about Pratikabada, Chitrakalpabada

## **SEMESTER -IV, CORE-10**

### **ODIA KABITA PRACHINARU ADHUNIKA**

#### **PROGRAMME SPECIFIC OUTCOMES OF SEMESTER-IV, CORE-10**

The core objective of this paper is to help students to acquire fundamental knowledge about the relationship between Prachina Abang Adhunika Kabya Kabita Feature of Ancient and Modern Poetry of Odia Literature.

## **COURSE OUTCOMES OF CORE-10**

**Co-1:** To provide knowledge about Sarala Mahabharata

**Co-2:** To provide knowledge about the Bhagabata (Chabisha Guru Prasanga)

**Co-3:** To provide knowledge about Dinakrushna Dasanka Rasha Kallola (Prathama Chhanda) o UpendraBhanjankaKotibramhandasundari (PratamaChhanda)

**Co-4:** To provide knowledge about Adhunika Kabita

## **SEMESTER -V, CORE-11**

### **ODIA NATAKA O EKANKIKA**

#### **PROGRAMME SPECIFIC OUTCOMES OF SEMESTER-V, CORE-11**

The core objective of this paper is to help students to acquire fundamental knowledge about the Drama and One Act Play of Odia Literature. This paper mainly based on “OdiaNataka o Ekankika.”

#### **COURSE OUTCOMES OF CORE-11**

**Co-1:** To provide knowledge about “RaktaMati” -Kali Charan Pattanayak

**Co-2:** To provide knowledge about “Nandikeshori”-Manoranjana Dash and “Tataniranjana”-Bijaya Mishra

**Co-3:** To provide knowledge about “Kokua”-Bijaya Kumar Satpathy

**Co-4:** To provide knowledge about Ekankika“SmrutiBibrata”-Pranabandhu Kara and “Chhadmadeshi”-Biswajeet Dash

**Co-5:** To provide knowledge about PrakalpaPrastuti

## **SEMESTER -V, CORE-12**

### **ODIA KATHA SAHITYA**

#### **PROGRAMME SPECIFIC OUTCOMES OF SEMESTER-V, CORE-11**

The core objective of this paper is to help students to acquire knowledge about the Novel and short Story of Odia Literature. This paper is mainly based on “Odia Katha Sahitya.”

## **COURSE OUTCOMES OF CORE-12**

**Co-1:** To provide knowledge about Odia Katha Sahitya

**Co-2:** To provide knowledge about “ Chha Mana Atha Guntha”- Fakir Mohan Senapati

**Co-3:** To provide knowledge about “Danapani”-Gopinath Mohanty Kimba “Nayanatara”-Dayanidhi Mishra

**Co-4:** To provide knowledge about Galpa Sahitya

**Co-5:** To provide knowledge about Prakalpa Prastuti

## **SEMESTER -VI, CORE-13**

### **ODIA GADYA SAHITYA**

#### **PROGRAMME SPECIFIC OUTCOMES OF SEMESTER-VI, CORE-13**

The core objective of this paper is to help students to acquire knowledge about the Biography, Auto-Biography, Criticism, Prose etc.

## **COURSE OUTCOMES OF CORE-13**

**Co-1:** To provide knowledge about Atamajibani Bhramana Kahani o SamalochanaTattwa ( Sangya Swarupa o Prakaraveda)

**Co-2:** To provide knowledge about “ Mo Phutadangara Kahani”- Phaturnanda

**Co-3:** To provide knowledge about “Paschima Afrikare Odia Dhinki”- Bhubaneswar Behera

**Co-4:** To provide knowledge about Prabandha

**Co-5:** To provide knowledge about Prakalpa Prastuti

# **SEMESTER -VI, CORE-14**

## **ODIA BHASHARA BYABAHARIKA PRAYOGA**

### **PROGRAMME SPECIFIC OUTCOMES OF SEMESTER-VI, CORE-14**

The core objective of this paper is to help students to acquire knowledge about creativity, personal Development, Self-Independence etc. This paper mainly based on “ OdiabhasharaByabaharikaPrayoga”.

### **COURSE OUTCOMES OF CORE-14**

**Co-1:** To provide knowledge about Bhashana kala, Dalagata Alochana o Sakhyatkar

**Co-2:** To provide knowledge about Sambada Prastuti, Feature Rachana o Bingyapana Prsatuti

**Co-3:** To provide knowledge about Karjyalayare Odia Likhana Bidhi

**Co-4:** To provide knowledge about Odia Bhasara Computerikarana, Software abang Hardware, Odia Funds, Key Board, Word processing. Babnan, Byakarana Alochana Prakriya, Odiare Internet Byabahara Odia Swarupa Website.

**Co-5:** To provide knowledge about Prakalpa Prustuti

## **DISCIPLINE SPECIFIC ELECTIVE –ODIA ELECTIVE**



## **PROGRAMME SPECIFIC OUTCOMES OF SEMESTER –V & VI (DSE-I)**

The core objective of this paper is to help students to acquire knowledge about cultural history of Odisha and Odia Literature

### **COURSE –I : ODISHARA SANSKRUTIKA ITIHAS O ODIA SAHITYA**

#### **UNIT-I : ODISHARA SANKSHITPA ITIHASA**

To provide knowledge about Odishara Sankshipta Itihasa

#### **UNIT- II : ODISHARA BOUDDHA SANSKRUTI, SHAIBA SANSKRUTI O BAISHANABA SANSKRUTI**

To provide knowledge about Odishara Sankshipta Itihasa Odishara Bouddha Sanskruti, Shaiba Sanskruti

#### **UNIT- III : SHRIJANNATHA SANSKRUTI O ADIBASI SANSKRUTI**

To provide knowledge about Shrijannatha Sanskruti o Adibasi Sanskruti

#### **UNIT- IV : ODIA OSHA BRATA O PARBAPARBANI**

To provide knowledge about Odia Osha Brata o Parbaparbani

## **PROGRAMME SPECIFIC OUTCOMES OF SEMESTER –V &VI (DSE-II)**

The core objective of this paper is to help students to acquire knowledge about the Odia Child Literature and odia Science base Literature

### **COURSE –II : ODIA SHISHU SAHITYA O BIGYANVITTIK SAHITYA**

#### **UNIT-I : ODIA SHISHU SAHITYARA SWARUPA O PRAKARAVEDA**

To provide knowledge about Odia Shishu Sahityara Swarupa o  
Prakaraveda

#### **UNIT-II :ODIA BIGYANVITTIK SAHITYARA SWARUPA O BIKASHADHARA**

To provide knowledge about Odia Bigyana Vittika Sahityara  
Swarupa o Bikashadhara

#### **UNIT-III : PRUTHIBI BAHARE MANISHA- GOKULANANDA MAHAPATRA**

To provide knowledge about Odia BigyanaVittika Sahitya –Pruthibi  
Bahare Manisha (Novel)

#### **UNIT-IV : BICHITRA BISHWA –DEBAKANTA MISHRA**

To provide knowledge about Odia BigyanaVittika Sahitya –Bichitra  
Bishwa

## **PROGRAMME SPECIFIC OUTCOMES OF SEMESTER –V & VI (DSE-III)**

The core objective of this paper is to help students to acquire knowledge about the Odia Poetry Literature

### **COURSE –III : ODIA PADYA SAHITYA**

**UNIT-I : JAGANNATHA JANANA – KABI SURYA  
BALADEBA RATHA  
AKASHA PRATI – MADHUSUDAN RAO  
JATRA SANGITA- BAIKUNTHANATHA  
PATTANAYAK  
MOUSUMI- RADHAMOHAN GADNAIK**

To provide knowledge about Odia poetry, poets & its background

**UNIT-II : KSHYUDRA GALPA  
DIMIRI PHULA- AKHILA MOHAN PATTANAYAK  
BHANGA KHELANA- KISHORI CHARAN DASH  
ANDHA RATIRA SURYA- MAHAPATRA  
NILAMANI SAHU  
BASI MADA- SURENDRA MAHANTY**

To provide knowledge about Odia Short Story, their Writers and the development of Odia Short Story etc.

**UNIT-III : PRABANDHA O SAMALOCHANA  
MAHASROTA – BISWANATHA KARA  
CHITRAGRIBAR UCHITA ABHIMAN- GOLOKA  
BIHARI DHALA  
TINOTI SAMALOCHANA – BAURIBANDHU KARA**

To provide knowledge about Odia Prose, Criticism, Writers and its development

**UNIT-IV : UPANYASA –  
MATIRA MANISHA – KALINDI CHARAN  
PANIGRAHI**

To provide knowledge about Odia Novel **MATIRA MANISHA**  
**Economical, Social & cultural background of that period of**  
**Odisha.**

## **PROGRAMME SPECIFIC OUTCOMES OF SEMESTER –V & VI (DSE-IV)**

The core objective of this paper is to help students to acquire knowledge about the Criticism, Translation, & Research

### **COURSE –IV : PRABANDHA PRASTUTI O UPASTHAPANA ANUBADA BA SAMPADANA BA ODIA SANKRUTI UPARE ANNYUNA 50 PRUSTHA MADHYARE NIBANDHA PRUSTI KIMBA**

**( SAMALOCHANA, ANUBADA, SAMPADANA,  
GABESHANA)**

#### **UNIT-I : SAMALOCHANRA SANGYA, SWARUPA O PRAKARA VEDA**

To provide knowledge about Criticism ( Defination, Nature, Scope  
& types of Criticism)

#### **UNIT-II : ANUBADARA SANGYA, SWARUPA O PRAKARA VEDA**

To provide knowledge about Translation ( Defination, Nature,  
Scope & types of Translation)

#### **UNIT-III : SAMPADANABIDHI**

To provide knowledge about Edition of Text Book.

#### **UNIT-IV : GABESHANA PRABIDHI**

To provide knowledge about Research Methodology.

## **GENERIC ELECTIVE (GE) – COURSE –ODIA**

### **PROGRAMME SPECIFIC OUTCOMES OF SEMESTER – I (GE-I)**

The core objective of this paper is to help students to acquire knowledge about Mass Media, Radio Art and Advertisement Art

#### **COURSE –I (COURSE COURSE-1) : GANAMADHYAMA, BETARA KALA O BIGYANAPANA KALA**

**UNIT-I : GANAMADHYAMA O TARA PRAKARA VEDA**  
To provide knowledge about Mass Media

**UNIT-II : BIGYAPANARA PARIBHASHA, PARISARA O  
UDDESHYA**  
To provide knowledge about Advertisement Art

**UNIT-III : STAMBHA LIKHANA O FICHAR LIKHANA**  
To provide knowledge about Editing and Feature Writing

**UNIT-IV : PATRA LIKHANA ( BANIJYAKA, KARYALAYA  
BHITTIKA, BYAKTIGATA O SAMPADAKANKU  
PATRA)**

To provide knowledge about Letter Writing

## **PROGRAMME SPECIFIC OUTCOMES OF SEMESTER – II (GE-II)**

The core objective of this paper is to help students to acquire knowledge about Literature Lesson

### **COURSE –II (COURSE COURSE-2) : SAHITYA ADHYAYANA**

**UNIT-I : GALPA SAHITYA**  
**BUDHA SHANKHARI- LAKSHMIKANTA**  
**MAHAPATRA**  
**MAGUNIRA SHAGADA- GODABARISH**  
**MAHAPATRA**  
**SHIKARA- BHAGABATI CHARAN PANIGRAHI**

To provide knowledge about Odia Short Stories

**UNIT-II : UPANYASA SAHITYA**  
**SHASTI- KANHU CHARAN MAHANTY**

To provide knowledge about Odia Short Novels

**UNIT-III : NATAKA**  
**SHESHA KATHA- DR. NARAYANA SAHU**

To provide knowledge about Odia Drama

**UNIT-IV : RAMYA RACHANA**  
**BAI MAHANTY PANJI (PRATHAMA BIDA)-**  
**GOPALA CHANDRA PRAHARAJ**  
**BATUA- GOBINDA CHANDRA TRIPATHY**  
**SADHU SANGA- CHOUDHURY HEMA KANTA**  
**MISHRA**

To provide knowledge about Odia Prose

## **PROGRAMME SPECIFIC OUTCOMES OF SEMESTER – III (GE-III)**

The core objective of this paper is to help students to acquire knowledge about Ancient, Mediaval& Modern Odia Literature

### **COURSE –III (COURSE COURSE-3) : PRACHINA, MADHYAYUGA O ADHUNIKA ODIA SAHITYA**

**UNIT-I : SARALA MAHABHARATARE KAHANI  
SATYA AMBA  
TULASIBANA BAGHA  
GANGA BOILE THIBI GANGI BOILE JIBI**

To provide knowledge about Ancient Odia Literature

**UNIT-II : BALARAM DASA O JAGANNATHA DASANKA  
KAHANI  
BALARAM DASANKA BAULA ADHYAYA O  
MRUGUNI STUTI  
JAGANNATH DASANKA KAPOTA UPAKSHYANA  
O PINGALA KAHANI**

To provide knowledge about Ancient Odia Literature

**UNIT-III : MADHYAKALIANA SAHITYA SHRASTANKA  
SANKSHITPA PARICHAYA  
DINAKRUSHNA DAS, ABHIMANYU SAMANTA  
SINGHARA, KABI SAMRATA UPENDRA BHANJA,  
KABI SURYA BALADEBA RATHA**

To provide knowledge about Mediaval Odia Literature

**UNIT-IV : ADUNIKA JUGARA SAHITYA SHRASTANKA  
SANKSHITPA PARICHAYA  
RADHA NATHA RAYA, FAKIR MOHAN  
SENAPATY, GANGADHAR MEHER, MAYADHAR  
MANSINGHA**

To provide knowledge about Modern Odia Literature

## **PROGRAMME SPECIFIC OUTCOMES OF SEMESTER – IV (GE-IV)**

The core objective of this paper is to help students to acquire knowledge about Computer and its Applications

### **COURSE –IV (COURSE COURSE-4) : ODIA COMPUTER SHIKSHYA**

#### **UNIT-I : COMPOTER KANA O KANHIKI COMPUTER RA BIBHINNA ANSHABISHESHA O KARYA**

To provide knowledge about Computer, its Application and Uses

#### **UNIT-II : UNIKODE MADHYAMARE ODIA DTP SHIKSHYA**

To provide knowledge about Education of Odia DTP through Unique Code

#### **UNIT-III : INTERNET MADHYAMARE ODIA CHITHI INTERNETRE SAMAJIKA GANAMADHYAMARA BYABAHARA**

To provide knowledge about Usse of Internet, Odia Letter Riting through Internet

#### **UNIT-IV : POWER POINT SLIDE PRASTUTI, TABLES, FIGURES ABANG PICTURES EXCLE RA BYABAHARA PRASTUTI**

To provide knowledge about uses of Power Point , Excel, Tables and Figures

### **ABILITY ENHANCEMENT COMPULSORY COURSE (AECC)**



## **MIL (COMMUNICATION) ODIA**

### **PROGRAMME SPECIFIC OUTCOMES OF SEMESTER – II (AECC)**

The core objective of this paper is to help students to acquire knowledge about Language Literature & Grammar. This paper mainly based on Communicative

### **COURSE –I : JOGAJOGA ANUBIDHI, REETI O MADHYAMA**

#### **UNIT-I : JOGAJOGARA PARIBHASHA, ANUBIDHI, PARISARA O PRAPRAKARA VEDA**

To provide knowledge about JogaajogaraParibhasha, Anubidhi, Parisara o Prakarveda

#### **UNIT-II : SAKSHYATAKARA O BHASHANA KALA**

To provide knowledge about Sakhyatkara, Bhashanakala

#### **UNIT-III : SAMBADARA PARIBHASHA, PARISARA O SAMBADA PRASTUTI**

To provide knowledge about SambadaraParibhasaha, Parisara o SambadaPrastuti

#### **UNIT-IV : ODIA BHASARA BARNAMALA, BARNNASUDDHI NIRAKARANA**

( BANAN TRUTI- SADRUSHYAJANITA  
ASHUDDHI, LINGAGATA ASHUDDHI,  
SANDHIGATA ASHUDDHI, SAMASA GATA  
ASHUDDHI, BACHANA O BIBHAKTIGATA  
ASHUDDHI, BAKYA BIDHIJANITA ASHUDDHI,  
SAMARTHA BODHAKA SHABDASHUDDHI,  
PRATYAYA JANITA ASHUDDHI, SHABDA  
SANJOGATMAKA O SWARASANGATI JANITA  
ASHUDDHI)

To provide knowledge about Odia Bhashara Barnamala,  
Barnasuddhira Nirakarana

# **ODIA (M.I.L.) AECC SEMESTER -II**

## **JOGAAJOGA ANUBIDHI, REETI O MADHYAMA**

### **PROGRAMME SPECIFIC OUTCOMES OF SEMESTER-II**

The core objective of this paper is to help students to acquire knowledge about Language Literature & Grammar. This paper mainly based on Communicative

### **COURSE OUTCOME**

**Co-1:** To provide knowledge about Jogaajogara Paribhasha, Anubidhi, Parisara o Prakarveda

**Co-2:** To provide knowledge about Sakhyatkara, Bhashanakala

**Co-3:** To provide knowledge about SambadaraParibhasaha, Parisara o Sambada Prastuti

**Co-4:** To provide knowledge about Odia Bhashara Barnamala, Barnasuddhira Nirakarana



DEPARTMENT OF HINDI

PSO/CO



PROGRAMME SPECIFIC OUTCOMES AND  
COURSE OUTCOMES OF  
HINDI (UG)

**VISION:**

The department of Hindi envisions to inspire and prepare a generation of youth in this part of Odisha to use their natural talent, and to inculcate a sense of integrity, humanity and civic sensibility among them through awareness towards study of literature as an art-form.

**MISSION:**

The department aims to inspire its students to develop language skill (listening, speaking, reading and writing). It encourages and promotes interest in appreciating literature, developing aesthetic sensibility and nurturing all forms of creativity inherent in students.

Programme outcomes: B.A. Hindi

AFTER SUCCESSFUL COMPLETION OF THREE-YEAR B.A. DEGREE PROGRAM IN HINDI A STUDENT SHOULD BE ABLE TO:

P.O.1- छात्रों को हिन्दी साहित्य के विभिन्न विधाओं, प्रवृत्तियों, रचनाओं एवं रचनाकारों का परिचय प्राप्त होगा।

P.O. 2- छात्रों को भारतीय एवं पाश्चात्य साहित्यशास्त्र का सैद्धांतिक एवं अनुप्रयोगात्मक ज्ञान प्राप्त होगा।

P.O. 3- समीक्षात्मक दृष्टिकोण का विकास होगा।

P.O.4- छात्रों में हिन्दी साहित्य के अध्ययन से उनके नैतिक मूल्यों, राष्ट्रीय मूल्यों तथा सामाजिक मूल्यों में अभिवृद्धि होगी।

P.O. 5- छात्रों को शासकीय कार्यालयों में अनुप्रयुक्त कार्यालयीय हिन्दी का परिचय होगा।

P.O. 6- हिन्दी भाषा और उसके विविध बोलियों के विकास के संबंध में ज्ञान प्राप्त होगा।

P.O. 7- विभिन्न भारतीय साहित्य का परिचयात्मक ज्ञान प्राप्त होगा।

P.O. 8- अनुसंधान करने की क्षमता का निर्माण होगा।

## HINDI COURSE OUTCOMES:

पाठ्यक्रम के इस भाग का अधिगम परिणाम निम्नवत होगा :--

- \* विद्यार्थी 11वीं शताब्दी से लेकर मध्यकाल तक के सामाजिक, सांस्कृतिक, राजनीतिक संदर्भों का ज्ञान प्राप्त कर सकेंगे ।
- \* हिन्दी साहित्य के प्रारम्भिक और विकासात्मक स्वरूप से परिचित हो सकेंगे ।
- \* हिन्दी साहित्य के इस काल के साहित्यकारों और उनकी रचनाओं के बारे में जान सकेंगे।
- \* हिन्दी के भावगत, भाषागत और शैलीगत विकास से परिचित हो सकेंगे।

प्रश्न पत्र - 2. भक्तिकालीन हिन्दी कविता (निर्गुण एवं रामभक्ति काव्यधारा)

पाठ्यक्रम के इस भाग का अधिगम परिणाम निम्नवत होगा:-

- \* विद्यार्थी उत्तर-मध्यकालीन (भक्तिकालीन) काव्य स्वरूपों से परिचित हो सकेंगे ।
- \* हिन्दी की भक्ति परंपरा को जान-समझ सकेंगे।
- \* भक्तिकालीन काव्यधारा के प्रमुख कवि और काव्यप्रवृत्तियों से परिचित हो सकेंगे।
- \* विद्यार्थी भक्तिकालीन कवियों की कविताओं से परिचित होकर कविता की प्रारम्भिक संरचना से परिचित हो सकेंगे।
- \* वे यह भी जान सकेंगे कि आखिर भक्तिकाल को 'हिन्दी साहित्य का स्वर्णकाल' क्यों कहा जाता है।

प्रश्न पत्र - 3. हिन्दी साहित्य का इतिहास (भाग -2)

पाठ्यक्रम के इस भाग का अधिगम परिणाम निम्नवत होगा :-

- \* विद्यार्थियों को भारतवर्ष की 18वीं - 19वीं शताब्दी के मध्य के सामाजिक, सांस्कृतिक, राजनीतिक और आर्थिक परिदृश्य का ज्ञान प्राप्त होगा।
- \* इस काल के साहित्यकार और उनकी रचनाओं से वे परिचित हो सकेंगे।
- \* विद्यार्थियों को इस काल के साहित्य का भावात्मक एवं राजसत्तात्मक प्रभाव ज्ञान प्राप्त होगा।
- \* इससे सृजन के काव्य रूप का ज्ञान प्राप्त होगा ।
- \* इससे साहित्य सृजन के आधार और हिन्दी भाषा के मौलिक स्वरूप का ज्ञान प्राप्त होगा ।

प्रश्न पत्र - 4. कृष्णभक्ति और रीतिकालीन हिन्दी कविता

पाठ्यक्रम के इस भाग का अधिगम परिणाम निम्नवत होगा :-

\* विद्यार्थियों को उत्तर मध्यकालीन हिन्दी साहित्य की काव्य प्रवृत्तियों एवं रचनाओं के बारे में जानकारी प्राप्त होगी ।

\* वे साहित्य में भक्ति काल के पश्चात रीतिकाल के उदय की परिस्थितियों से अवगत हो सकेंगे।

\* रीतिकालीन साहित्य के प्रमुख काव्य के वैशिष्ट्य, उसके भाव पक्ष, कला पक्ष एवं शिल्प विधान से परिचित हो सकेंगे।

\* भक्तिकालीन और रीतिकालीन काव्य समवेदनाओं और अभिव्यक्ति सौन्दर्य के अंतर से अवगत हो सकेंगे।

प्रश्न पत्र - 5. अनुवाद सिद्धांत

पाठ्यक्रम के इस भाग का अधिगम परिणाम निम्नवत होगा :-

\* विद्यार्थी अनुवाद के स्वरूप और उसके क्षेत्र से परिचित हो सकेंगे ।

\* वे अनुवाद की प्रक्रिया और विधि से अवगत हो सकेंगे ।

\* किसी हिन्दी या अंग्रेजी अवतरणों का अनुवाद कर वे अनुवाद का अभ्यास कर सकेंगे ।

प्रश्न पत्र - 6. हिन्दी कथा साहित्य (उपन्यास)

पाठ्यक्रम के इस भाग का अधिगम परिणाम निम्नवत है :-

\* कथा साहित्य के माध्यम से विद्यार्थी सम्पूर्ण मानव जगत की मानवीयता से परिचित होंगे ।

\* कथा साहित्य विद्यार्थियों को जीवन की वास्तविकता से परिचित कराएगा ।

\* कथा साहित्य के माध्यम से विद्यार्थियों में रचनात्मक विचार और सृजनात्मकता का विकास होगा ।

\* कथा साहित्य के विभिन्न संदर्भों और घटकों से विद्यार्थियों को जीवन में गतिशील रहने की प्रेरणा मिलेगी ।

\* कथा साहित्य से विद्यार्थियों को गंभीर भाव बोध को समझने का अवसर मिलेगा ।

प्रश्न पत्र - 7. हिन्दी कथा-साहित्य (कहानी)

● छात्र आधुनिक हिन्दी गद्य की विधाओं से परिचित होंगे ।

● छात्रों में कहानी की तात्त्विक समीक्षा क्षमता का विकास होगा ।

● छात्रों में हिन्दी कहानी के विविध स्वरूपों के माध्यम से मानवीय समवेदनाओं का विकास होगा ।

- छात्र हिन्दी के आरंभ से अब तक की कहानी कहन-प्रक्रिया से परिचित हो सकेंगे ।
- छात्रों में हिन्दी कहानी के विविध स्वरूपों के माध्यम से मानवीय समवेदनाओं का विकास होगा ।

प्रश्न पत्र - 8. कथेतर गद्य साहित्य :

- छात्र निबंध साहित्य के स्वरूप तथा शिल्पविधा से परिचित हो सकेंगे।
- छात्र जीवनी साहित्य के स्वरूप तथा शिल्पविधा से परिचित हो सकेंगे।
- छात्र आत्मकथा साहित्य के स्वरूप तथा शिल्पविधा से परिचित हो सकेंगे।
- छात्र रेखाचित्र साहित्य के स्वरूप तथा शिल्पविधा से परिचित हो सकेंगे।
- छात्रों में साकारात्मक कल्पनाशक्ति का विकास होगा ।

प्रश्न पत्र - 9. आधुनिक हिन्दी कविता (1)

- छात्र छायावादी और समकालीन जीवन-दर्शन से परिचित होंगे ।
- छात्रों को आधुनिक हिन्दी काव्य की प्रवृत्तियों का पता चलेगा ।
- छात्रों को तत्कालीन हिन्दी काव्य में दर्ज स्वतंत्रता-आंदोलन तथा उसके स्वरूप को जानने का अवसर मिलेगा ।

प्रश्न पत्र - 10. भाषा विज्ञान और हिन्दी भाषा

- छात्रों को भाषाविज्ञान के स्वरूप, अंग और शाखाओं को जानने का अवसर प्राप्त होगा ।
- छात्रों में भाषा के प्रयोग के संबंध में समुचित दृष्टिकोण का विकास होगा ।
- छात्र भाषा के विभिन्न बदलावों को सैद्धांतिक और तात्त्विक दृष्टि से जान सकेंगे ।

प्रश्न पत्र - 11. हिन्दी नाटक और रंगमंच

- इससे छात्र हिन्दी रंगमंच तथा नाटकों की गहन दुनिया से परिचित हो सकेंगे ।
- छात्रों में हिन्दी नाटक तथा एकाँकी विधा की तात्त्विक समीक्षा दृष्टि का विकास होगा ।
- छात्र 'आषाढ़ का एक दिन' और 'माधवी' नाटक के माध्यम से तदयुगीन साहित्य और उसकी भाषा से परिचित हो सकेंगे ।
- छात्रों में नाटक के आस्वाद की क्षमता का विकास होगा ।

प्रश्न पत्र - 12. भारतीय काव्यशास्त्र



- इससे छात्र भारतीय काव्यशास्त्र और उसकी परंपरा से परिचित हो सकेंगे ।
- छात्रों को पाश्चात्य काव्य शास्त्र के विकासक्रम का ज्ञान होगा ।
- छात्रों को इससे प्राचीन काव्य की तात्त्विक समीक्षा में काफी सहायता मिलेगी ।

#### प्रश्न पत्र - 13. आधुनिक हिन्दी कविता (2)

- छात्र इससे समकालीन हिन्दी काव्य से परिचित हो सकेंगे ।
- छात्रों को प्रगतिवादी, प्रयोगवादी और नयी कविता विधा का ज्ञान होगा ।
- छात्रों में काव्य के आस्वादन, अध्ययन और मूल्यांकन की दृष्टि का विकास होगा ।

#### प्रश्न पत्र -14. पाश्चात्य काव्यशास्त्र

- इससे छात्र पाश्चात्य काव्यशास्त्रीय परंपरा से परिचित हो सकेंगे ।
- आधुनिक काव्य को तात्त्विक दृष्टि से अनुगमन कर सकेंगे ।
- छात्र आधुनिक वैश्विक आलोचना पद्धति से परिचित हो सकेंगे ।

#### प्रश्न पत्र - DSE -1 तुलसीदास

- छात्र इस प्रश्नपत्र के माध्यम से भक्तिकालीन काव्य परंपरा से परिचित हो सकेंगे ।
- छात्र भक्तिकालीन प्राचीन कवि तुलसीदास रचनाओं का सांगोपांग अध्ययन कर सकेंगे ।
- छात्र हिन्दी के पूर्व की साहित्यिक भाषा से परिचित होंगे ।

#### प्रश्न पत्र - DSE - 2 प्रेमचंद

- छात्र कथासम्राट प्रेमचंद के साहित्य से परिचित हो सकेंगे ।
- प्रेमचंद के साहित्य को पढ़कर छात्र तत्कालीन समाज में व्याप्त कुरीतियों आदि को जान सकेंगे ।
- छात्र प्रेमचंद को पढ़कर उनके निबंध, उपन्यास और कहानी की समीक्षा कर सकेंगे ।

#### प्रश्न पत्र - DSE - 3 कार्यालयीय हिन्दी

- छात्र राजभाषा हिन्दी के संवैधानिक प्रावधान से परिचित हो सकेंगे ।
- छात्र कार्यालयीय हिन्दी के मानक स्वरूप से परिचित हो सकेंगे
- छात्र कंप्यूटर में हिन्दी के अनुप्रयोग से परिचित हो सकेंगे ।