

## DEPARTMENT OF BOTANY

### PROGRAMME OUTCOME

After successful completion of three-year degree program in Botany a student shall be able to-

PO-1. Know about different types of lower & higher plants their evolution in from algae to angiosperm & also their economic and ecological importance.

PO-2. Comprehend about cell organelles & their functions

PO-3. Know about chemical properties of nucleic acid and their role in living systems.

PO-4. Internalize laws of inheritance, various genetic interactions, chromosomal aberrations & multiple alleles.

PO-5. Understand Structural changes in chromosomes.

PO-6. Describe morphological & reproductive characters of plant and also identified different plant families and classification.

PO-7. Use modern Botanical techniques and decent equipments.

PO-8. Inculcate the scientific temperament in the students and outside the scientific community.

### PROGRAMME SPECIFIC OUTCOME

PSO-1. Acquisition of fundamental Botanical knowledge through theory and practicals.

PSO-2. Explain basis plant of life, reproduction and their survival in nature.

PSO-3. Understand role of living and fossil plants in our life.

PSO-4. Understand good laboratory practices and safety.

PSO-5 Awareness about cultivation, conservation and sustainable utilization of biodiversity.

PSO-6. To know advance techniques in plant sciences like tissue culture, Phytoremediation, plant disease management, formulation of new herbal drugs etc.

PSO-7 Students able to start nursery, mushroom cultivation, biofertilizer production, fruit preservation and horticultural practices.

## **COURSE OUTCOME**

**After completion of these courses students should be able to-**

### **Semester-I**

#### **Core -1 (microbiology and phycology)**

1. Microbial world, microbial nutrition, growth and metabolism with practical.
2. Virology and immunology with practical.
3. Bacteria and cyanobacteria and their economic importance
4. Evolutionary significance of prochloron
5. Different types of algae with their ecology and evolution and their role in environment, agriculture, biotechnology and industry

#### **Core- 2 (Biomolecules and Cell**

#### **Biology) Course Outcome**

1. Water,  $p^h$ , buffer, chemical bonds and structure and function of different biomolecules including proteins, lipids, nucleic acids, and carbohydrates.
2. Basic concepts of enzymes and their mechanism of action
3. Acquire knowledge base of metabolic pathways occurring inside living cells.
4. This introductory section aims to give the student an overview of basic cell biology including cell structure, types and its application in and around the work place.
5. Key components that constitute living cells, dynamic attributes of cell including cell interaction, cell adhesion and cellular signaling.

6. Structure of DNA and RNA and their role in living body
7. Biological roles of protein
8. Structure and function of lipid
9. The significance of cell division inside living body

### **Semester-II**

#### **Core- 3 (Mycology and Phytopathology) Course outcome**

1. The students will study different types of fungi along with their affinities with plants.
2. They will study their classification along with ecology and classifications.
3. Role of fungi in biotechnology and mushroom cultivation.
4. Application of fungi in food industry in pharmaceutical preparations and in biological control
5. Geographical distribution of diseases and host- pathogen relationship
6. Prevention and control of plant diseases

#### **Core- 4**

##### **(Archegoniates)**

##### **Course Outcome**

1. Unifying features of archegoniates.
2. Origin of land plants and adaptation to land habit
3. Range of thallus organization, ecology and economic importance of bryophytes
4. Classifications, evolution, stellar evolution and economic importance of pterophytes and gymnosperms
5. Geological time scale, fossils and fossilization process

#### **Core- 5 (anatomy of angiosperms) Course**

##### **Outcome**

1. Scope of plant anatomy, applications in systematic, forensics and pharmacognosy
2. Idea on tissue and cyto differentiation of tracheary elements
3. Organization of root, shoot and stem apices
4. Seasonal activity of cambium
5. Normal and anomalous secondary growth
6. Adaptive and protective tissue systems and also secretory tissue system
7. Anatomical adaptations of xerophytes and hydrophytes

## **Semester-III**

### **Core- 6 (Economic Botany) Course**

#### **outcome**

1. Centers of origin, domestications, loss of genetic diversity, evolution of new crops/ varieties and importance of germplasm activity
2. Economic importance of cereals, legumes, sugars and starches, spices
3. Therapeutic and habit-forming drugs
4. Uses and health hazards of tobacco
5. Classification, extraction, uses and health implications of oil-bearing seeds
6. Rubber, timber and fibre yielding plants and their uses and extraction

### **Core - 7**

#### **(Genetics)**

#### **Course**

#### **Outcome**

1. Describing gene linkage sex influence and linkage.
2. Explaining genetic anomalies caused by changes in chromosome number.
3. Summarizing genetic anomalies caused by changes in chromosome structure.
4. Describing genetic deviations from mendelian principles of genetic analysis.
5. Differentiating between essential genes and both dominant and recessive lethal alleles.
6. Explaining the environmental influences on gene expression.
7. Listing examples of non-mendelian inheritance.

## **Semester-IV**

### **Core- 8 (Molecular Biology) Course**

#### **Outcome**

1. Biochemical nature of nucleic acids
2. The process and models of DNA replication and the involvement of enzymes
3. Deciphering and salient features of genetic code
4. Processing and modification of RNA
5. Mechanism of transcription and its regulation
6. The process of transcription and various steps of protein synthesis

**Core- 9 (Plant Ecology and  
Phytogeography) Course Outcome**

1. Inter-relationships between the living world and the environment
2. Role of climate in soil development
3. States of water in environment and its importance
4. Structural and functional aspects of an ecosystem
5. Principles of phytogeography
6. Phytogeographical division of

India

**Core- 10 (Plant Systematics)**

**Course Outcome**

1. Identification, classification and nomenclature of plants.
2. Taxonomic hierarchy and species concept.
3. Principles and rules of botanical nomenclature.
4. Systems of classification by eminent scientists.
5. Phylogenetic tree and cladogram for the study of. phylogeny of angiosperms.

**Semest-V**

**Core- 11 (Reproductive Biology of  
Angiosperms) Course Outcome**

1. Mechanism of pollination and role of anther by studying pollen biology
2. Types and structure of mature embryo sac
3. Basic concepts and methods to overcome self- incompatibility
4. Intra ovarian and in vitro pollination
5. Embryo and endosperm relationship
6. Importance and dispersal mechanism of seed
7. Causes and application of polyembryony and apomixis

**Core- 12 (plant  
physiology) Course**

**Outcome**

1. Ascent of sap and mechanism of stomatal movement
2. Trans membrane pathway of water movement

3. Source-sink relationship
4. Mineral nutrition, role of essential elements and mineral deficiency symptoms in plants
5. Chemical natures and bio assay of plant hormones
6. Physiological roles of auxin, gibberellin, cytokinin etc.

### **Semester-VI**

#### **Core- 13 (Plant Metabolism) Course**

##### **Outcome**

1. Anabolic and catabolic pathways of plant metabolism
2. Mechanism of signal transduction
3. Carbon assimilation in green plants and role of photosynthetic pigments for this process
4. Carbon oxidation
5. Mechanism of ATP synthesis taking into consideration of different experiments
6. Gluconeogenesis and its role in mobilization of lipids during seed germination
7. Physiology and biochemistry of nitrogen fixation

#### **Core - 14 (Plant Biotechnology) Course**

##### **Outcome**

1. The processes and applications of recombinant DNA technology.
2. The role of restriction endonucleases in gene manipulation.
3. The applicability of different kinds of cloning vectors.
4. The use of genomic libraries in gene detection and characterization.
5. the process of restriction mapping.
6. the process of southern blot analysis.
7. Summarizing methods used for DNA sequencing.
8. the principles of the polymerase chain reaction (PCR) and their applications.

#### **DSE- 1 (Analytical Techniques in Plant Sciences) Course Outcome**

1. Imaging and related techniques (light microscopy, fluorescence microscopy, flow cytometry).
2. Cell fractionation and centrifugation.
3. Chromatography, x-ray crystallography and electrophoresis
4. Principles and application of spectrophotometry in biological research.
5. Characterization of proteins and nucleic acids

## **DSE- 2 (Natural Resource**

### **Management) Course Outcome**

1. Types and sustainable utilization of natural resources.
2. Utilization and management of land.
3. Water harvesting technology.
4. Significance, types, threats and management strategies of biological resource.
5. Renewable and non renewable sources of energy.
6. Waste management and national and international efforts in resource management and conservation.

## **DSE- 3 (Horticultural Practices and Post-Harvest**

### **Technology) Course Outcome**

1. Scope and importance and branches of horticulture
2. Types, classification and salient features of some ornamental plants
3. Production, origin and distribution of vegetable and fruit crops
4. Techniques and limitations of horticulture
5. Importance of post harvest technology in horticultural crops
6. Disease control and management of horticultural crops

## **DSE- 3**

### **(project)**

#### **Course**

#### **Outcome**

1. To select the topic.
2. Literature survey for the topic of the project.
3. Skill in practical work, experiments, use of biological tool and techniques.
4. Handle instruments for analysis and discuss their experimental results.
5. to prepare project reports and present it using power point presentation.
6. Work within a small team to achieve a common research goal.

# Department of Chemistry

## Programme outcome

After successful completion of three-year degree program in Chemistry a student shall be able to-

PO-1. Demonstrate, solve and an understanding of major concepts in all disciplines of chemistry.

PO-2. Solve the problem and also think methodically, independently and draw a logical conclusion.

PO-3. Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the results of chemical reactions.

PO-4. Create an awareness of the impact of chemistry on the environment, society, and development outside the scientific community.

PO-5. Find out the green route for chemical reaction for sustainable development.

PO-6. To inculcate the scientific temperament in the students and outside the scientific community.

PO-7. Use modern techniques, decent equipments and Chemistry software's

## Programme Specific Outcome

PSO-1. Gain the knowledge of Chemistry through theory and practical's.

PSO-2. To explain nomenclature, stereochemistry, structures, reactivity, and mechanism of the chemical reactions.

PSO-3. Identify chemical formulae and solve numerical problems.

PSO-4. Use modern chemical tools, Models, Chem-draw, Charts and Equipments.

PSO-5. Know structure-activity relationship.

PSO-6. Understand good laboratory practices and safety.

PSO-7. Develop research-oriented skills.

.

## Course Outcome

After completion of these courses students should be able to;

### SEMESTER-1

#### INORGANIC CHEMISTRY-I (C-1)

1. Discuss Bohr's theory of atom and spectrum of hydrogen atom.
2. Explains quantum mechanical model of atom.
3. Gives detail explanation of Schrodinger wave equation and its significance in H –atom.
4. Explains filling of electron in shell, sub shell and orbital.
5. Discuss different fundamental properties like Atomic radius, Ionization Enthalpy, Electron Gain Enthalpy, Electro negativity and their variation in periodic table.
6. Explains the bonding fundamentals for both ionic and covalent compounds including electro negativities, bond distances and bond energies using MO diagrams and thermodynamic data.
7. Discuss the percentage of ionic character in covalent bond and its determination and rules associated with it.
8. Provides qualitative idea of band theories of insulator and semiconductor, different weak interactions.
9. Explain VBT of H-bonding.
10. Explain the principles of redox reaction involved in volumetric analysis of Fe, Cu, and Mn.

#### PRACTICAL C-1

1. Give the way of preparation of solution of different Molarity and Normality.
2. Explain the principle of acid base titration involving mixture.
3. Explain the redox principle involving estimation of Fe and oxalic acid.

#### PHYSICAL CHEMISTRY (C-2)

##### Course Outcome

1. Discuss kinetics model of gas and their associated parameters.
2. Explain the Maxwell Boltzmann distribution of molecular velocities.

3. Discuss the deviation of real gases from ideal behaviour, derive vander Waals' equation of state, and explain its significance.
4. Explain critical phenomena and determination of critical constants.
5. Introduce general properties of liquid state.
6. Describe in detail vapour pressure and surface tension and important applications.
7. Explain viscosity and its measurement and also discuss how molar refraction measurements are useful in the structural elucidation.
8. Explain the general principle of ionic equilibrium with pH and common ion effect.
9. Derive Bragg equation and explain Miller indices.
10. Explain rotating crystal and powder pattern method of monovalent ionic crystals.
11. Describe the structure of glass and liquid crystals.
12. Explain the principle of salt hydrolysis, buffer solution, solubility product, acid- base indicator and their application in qualitative indicator.

## **PRACTICAL-C-2**

1. Determination method for surface tension, viscosity by different methods.
2. Preparation method for buffer solutions and pH metric titration.

## **SEMESTER -II**

### **ORGANIC CHEMISTRY (C-3)**

#### **Course Outcome**

1. Describe the different types of electron displacement in organic compounds.
2. Explain Electrophiles and Nucleophiles and stability of reaction intermediates.
3. Explain reaction mechanism of different types of basic organic reactions.
4. Different stereo chemical formulas are given along with geometrical (E/Z) and optical isomerism (D/L), (R/S) conventions and their resolution.
5. To understand aliphatic and aromatic, nucleophilic and electrophilic substitution with mechanism and kinetics.
6. To develop an ability to understand addition and elimination reactions with mechanism and stereo chemical aspect.

7. To understand the competition between substitution and elimination reactions according to the conditions of reagents and substrate.
8. Explain Bayer strain theory and conformational analysis and energy level diagrams
9. Explain aromatic electrophilic substitution reaction in arenes and their directing effect.
10. Explain Huckels rule with examples.

### **PRACTICAL-C-3**

1. Determination of M.P and B.P of different solids and liquids.
2. Paper chromatographic methods for mixture of organic compounds.

### **PHYSICAL CHEMISTRY(C-4)**

#### **Course Outcome**

1. Explain first law of thermodynamics and its application in different concepts like heat capacities, enthalpy of reactions.
2. Explanation of Kirchhoff's equation.
3. Discuss the second and third laws of thermodynamics and important concept of Gibbs Helmholtz equation, Joule- Thomson coefficient and Maxwell relations.
4. Explain partial molar quantities like chemical potential.
5. Explain Gibbs Duhem Equation and derive the relation between Gibbs free energy.
6. Give thermodynamic derivation of relation between equilibrium constants.
7. Introduce thermodynamic derivation of various colligative properties.
8. Discuss Raoult's law and Henry's law.

### **PRACTICAL-C-4**

1. Introduce Calorimeter experiments to determine enthalpy of different process.

## **SEMESTER-III**

### **INORGANIC CHEMISTRY (C-5)**

#### **Course Outcome**

1. Explain different general principle of Metallurgy with Ellingham diagrams.
2. Introduces concept of acid and bases, HSAB principle and their application.

3. Discuss the chemistry of s and p block element with special reference to oxidation state, allotropy, complex formation and hydride formation.
4. Discuss the chemistry of compounds of Boron, Silanes, oxides of Nitrogen, phosphorus and chlorine.
5. Discuss the chemistry of fluorides of xenon.
6. Explain VBT and MO treatment of  $\text{XeF}_2$ .
7. Explain the chemistry of Inorganic polymers their structure, applications.

### **PRACTICAL-C-5**

1. Iodo/Iodimetric estimation of Copper and chlorine.
2. Preparation of Manganese (III) Phosphate, Cuprous Chloride, Potash Alum.

### **ORGANIC CHEMISTRY-II(C-6)**

#### **Course Outcome**

1. Elaboration of chemistry of Alkyl and Aryl halide with respect to substitution nucleophilic reaction and their solvent effect, Elimination vs. substitution reaction.
2. Brief introduction to organometallic compounds of Mg and Li.
3. Discuss the general preparation of  $1^{\circ}, 2^{\circ}, 3^{\circ}$  alcohols.
4. Discuss the Chemistry of glycol, Pinacol-Pinacolone rearrangement.
5. Discuss some name reaction of Phenol, Reimer Tiemann Reaction, Kolbe's Schmidt Reaction, Fries and Claisen rearrangement and their mechanism.
6. Explain mechanism of important reaction of carbonyl compound and their mechanism.
7. Explain preparation, properties of monocarboxylic acids, dicarboxylic acids, acid chlorides, anhydrides, esters and amides.
8. Discuss mechanism of Dieckmann, Reformatsky, Hofmann –bromamide degradation and Curtius rearrangement.

### **PRACTICAL-C-6**

1. Give methods of organic preparation using conventional and green approach.
2. Bromination and Nitration of different organic compound.

### **PHYSICAL CHEMISTRY –III (C-7)**

#### **Course Outcome**

1. Discuss Gibbs phase rule for reactive and non reactive system.
2. Derivation Clsius Clapeyron equation.
3. Discussion on phase diagram water and sulphur system , solid-liquid equilibria, Pb-Ag system, desilverisation of lead.
4. Derivation of Gibbs-Duhem-Margules equation and its applications.
5. Derivation of Nernst Distribution law and its application.
6. Explain the kinetics of fast, second, complex, opposing, parallel, consecutive reactions
7. Explain Rice-Herzfeld mechanism and steady state approximation.
8. Explain temperature dependence of reaction, collision theory of reaction rate.
9. Explain Michaelis- Menten mechanism for enzyme catalysis.
10. Discuss different Isotherms (Langmuir, Freundlich, and Gibbs).

#### **PRACTICAL-C-7**

1. Determine distribution coefficient of mixture of two components.
2. Determination of rate constant of hydrolysis reaction and verification of isotherms by experimental method.

### **SEMESTER-IV**

#### **INORGANIC CHEMISTRY-III (C-8)**

#### **Course Outcome**

1. Detailed discussion on CBT and CFT of co ordination compounds.
2. Explain Jahn Teller distortion in octahedral and square planar geometry.
3. Discuss qualitative aspect of MO and Ligand field theory and stereochemistry of coordination compounds.
4. Review of chemistry of Transition metals and explanation on stability of transition state by Latimer and Bisworth diagrams.
5. Discuss the chemistry of Ti, V, Cr, Mn, Fe and Cr.
6. Discuss general chemistry of Lanthanides and Actinides and their separation.

7. Give an insight into biochemistry of different metals. Deficiency of metal ions leading to disease. Iron and its application in biological system.

### **PRACTICAL-C-8**

1. Give procedure for gravimetric estimation of Ni, Cu, Fe, Al and chromatographic separation of metal ions.

### **ORGANIC CHEMISTRY-III(C-9)**

#### **Course Outcome**

1. Discuss the chemistry of Nitrogen containing compounds such as amines, nitro compounds, nitriles.
2. Give mechanism of some important reaction Gabriel phthalimide synthesis, Carbylamines reaction, Mannich reaction, Hoffmann's exhaustive methylation, Hofmann-elimination reaction.
3. Give structure elucidation and derivative preparation of polynuclear hydrocarbon.
4. Give details of preparation of heterocyclic compounds by Paal-Knorr synthesis, Knorr pyrrole synthesis, Hantzsch synthesis, Fischer indole synthesis and Madelung synthesis.
5. Suggest structure elucidation of Nicotine and Hygrine and give medicinal importance of Hygrine, Quinine, Morphine, Nicotine, Cocaine and Reserpine.
6. Give structure elucidation of Citral, Neral and terpineol and isoprene rule.

### **PRACTICAL-C-9**

1. Give methods for detection of extra element and detection of functional group.

### **PHYSICAL CHEMISTRY –IV (C-10)**

#### **Course Outcome**

1. State Faradays laws, Kohlrausch's law and Ostwald's dilution law and explain Debye Huckel Onsagar equation.
2. Determination of transport number by Hittorf's moving boundary methods.
3. Describe conductometric and potentiometric titrations.
4. Explain reversible cell and different types of reversible electrodes.
5. Explain the applications of emf measurements.
6. Explain Clausius-Mosotti equation and Lorenz-Laurentz equation.

## PRACTICAL-C-10

1. Gives methods for conductometric titration and potentiometric titration of different acids vs. bases.

## SEMESTER-V

### Course Outcome

### ORGANIC CHEMISTRY-V(C-11)

1. Woodward Fischer rule for calculation of  $\lambda_{max}$  of different organic systems. (Aldehyde, ketone, carboxylic acid, esters, dienes, homoannular, heteroannular dienes system).
2. Give definition and example of Chromophore, Auxochrome, Bathochromic shift, Hypsochromic shift.
3. Application of IR spectrum in determination of functional group, H-bonding, Finger print region.
4. Discussed basic principle of NMR spectroscopy, chemical shift, spin-spin coupling, Anisotropic effect, determination of NMR of simple compound.
5. Discussed basic principle of mass spectroscopy, instrumentation and application.
6. Explain the biological importance of carbohydrates and their interconversion by Killiani Fischer synthesis, Ruff degradation.
7. Given synthesis and application of some important dyes Methyl orange, Congo red, Malachite green, crystal violet, and phenolphthalein, Fluorescein, Alizarin and Indigo.
8. Introduce classification of polymer, molecular weight determination and some application of polymer compounds.

### PRACTICAL C-14

1. Procedure given for preparation of polyacrylate, urea formaldehyde, analysis of carbohydrates.
2. Qualitative analysis of unknown organic compound.

### PHYSICAL CHEMISTRY –V (C-12)

#### Course Outcome

1. State the postulates of Quantum Mechanics

2. Apply Schrodinger wave equation to particle in 1 D box and 3 D box and H atom
3. Explain quantum numbers and its significance.
4. Apply Schrodinger equation for multi electron atoms.(spherical and polar coordinates)
5. Discuss LCAO-MO and VB treatment of H<sub>2</sub>, HF, LiF, BeH<sub>2</sub>, and H<sub>2</sub>O.
6. Discuss the principles Vibrational spectroscopy, Vibrational rotational spectroscopy, Electronic spectroscopy.
7. Discuss some important terms like Morse potential, overtones, P, Q, R branches, Stokes and Anti Stokes lines, Frank Condon Principle.
8. Discuss Laws of photochemistry and their significance, quantum yield, chemiluminiscence, photo stationary reaction.

### **PRACTICAL-C-12**

1. Determiation of concentration different solution spectrophotometric titration.

### **INORGANIC CHEMISTRY-III(C-13)**

#### **Course Outcome**

1. Discussion on organometallic compound with special reference to metal carbonyls.
2. Suggest methods of preparation and structural elucidation of mononuclear and binuclear carbonyl of transition metals with VBT.
3. Give structure of some simple organometallic compound of Li, Al, Mg.
4. Explain theoretical principle involved in group analysis and detection of unknown radicals using solubility product, common ion effect.
5. Explain the mechanism of reaction in sq planar complexes, substitution in octahedral complexes, Trans effect explained.
6. Thermodynamic and kinetic parameters are derived for reaction of metal complexes.

### **PRACTICAL-C-13**

1. Procedure for semi micro qualitative analysis of mixture of six radical is given.

### **ORGANIC CHEMISTRY –V (C-14)**

#### **Course Outcome**

1. Explain structure, synthesis and reaction of Adenine, Guanine, Cytosine, Uracil and Thiamine.

2. Give salient features of mechanism of enzyme action, coenzymes and co factors, enzyme inhibition and their biological role.
3. Give basic information about Amino acid, protein and peptides.
4. Fundamentals of hydrogenation of fats, oils and their saponification value and iodine number.
5. Give structure and importance of Paracetamol, Ibuprofen, Chloroquine, Chloroamphenicol, Vitamin – C, Ranitidine which are widely used pharmaceuticals.

#### **PRACTICAL-C-14**

1. Give preparation methods for Aspirin, Phenacetin, Divol, Aluminium hydroxide gel, Milk of magnesia.

### **SEMESTER-VI**

#### **POLYMER CHEMISTRY (DSE -1)**

##### **Course Outcome**

1. Discuss classification of polymers, functionality and its importance.
2. Discuss the mechanism of step growth, radical chain growth, ionic chain, coordination polymerization, copolymerization.
3. Procedure for crystalline M.P. determination, factors affecting is given.
4. Explain the procedures for determination of molecular weight, polydispersity index and glass transition temperatures.
5. Explain the thermodynamics of polymers solutions.
6. Properties simple polymers including preparation are explained.
7. A good knowledge about the Industrial Applications of Polymers
8. Identify the commercially important Polymers.

##### **PRACTICAL (DSE-1)**

1. Procedure given for preparation, purification, polymerisation of MMA, AA, Nylon 6, 6/6, IPC, acrylamide, Urea Formaldehyde, Novalac resin.
2. Determination of molecular weight by viscometry, end group analysis, and colorimetric method.

#### **GREEN CHEMISTRY (DSE -2)**

##### **Course Outcome**

1. Give detail information of twelve principle of green chemistry.

2. Explain the process of safer design for chemical synthesis to avoid Bhopal Gas Tragedy, Flixiborough accident.
3. Discuss the analytical technique to prevent, minimize the generation of Hazardous waste.
4. Designing some greener alternative to Strecker synthesis, Hoffmann Elimination, Diels Alder Reaction, Simmons Smith Reaction.
5. Designing some green synthesis of poly lactic acid, fats, oil, Tran's fat oils, Recyclable Carpet.
6. Give suggestion for future trends in green chemistry.

#### PRACTICAL (DSE- 2)

1. Methods given for green synthesis of Vitamin-c, preparation of biodiesel from vegetable oil.
2. Calculation of atom economy of some reaction.
3. Replacement of green solvent in some reaction, microwave synthesis.

#### INDUSTRIAL CHEMICALS AND ENVIRONMENT (DSE-3)

##### Course Outcome

1. Industrial preparation of oxygen, nitrogen, hydrogen, acetylene, carbon monoxide, chlorine, sulphur dioxide, argon, neon.
2. Given preparation and hazards in handling HCl, HNO<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub>, NaOH, H<sub>2</sub>O<sub>2</sub>, NaCl, Potash alum, K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub>, KMnO<sub>4</sub>.
3. Discuss the procedure for preparation of metals for semiconductor.
4. Elaborately discuss about biogeochemical cycles, source, and nature of air pollution.
5. Give notes of photochemical smog, green house effect, ozone layer depletion.
6. Elaborately explain Hydrological cycle, source and nature of water pollution and ways of treatment of polluted water.
7. Discuss the effluent treatment process in electroplating, textile, tannery, diary, petrochemical and fertilizer industry.
8. Explain water quality parameter.

#### PRACTICAL (DSE- 3)

1. Give experimental methods for determination of DO, BOD, COD, dissolve CO<sub>2</sub> in water and SPM in air.
2. Procedure for estimation of chlorine, chloride, sulphate and salinity of water by titration method.

## **(DSE-4) DISSERTATION WORK**

### **Course Outcome**

1. Students express their creativity and develop higher order thinking skills.
2. Team work gives more innovative ideas.
3. Learn to prepare power point presentation.
4. Develops an aptitude for doing research.
5. Gets preliminary ideas for writing a thesis.
6. For analysis and interpretation of data they will use more resources.

## Program Outcomes of BACHELOR OF COMMERCE (B.COM)

Students who have taken admission to this program of Bachelor of Commerce (B. Com) are expected to concentrate upon the following outcomes.

- ❖ Knowledge in the field of Accounting
- ❖ Communication Skills
- ❖ Professional Knowledge
- ❖ Computing Skills
- ❖ Commercial sense.
- ❖ Develop managerial skills.
- ❖ Entrepreneurial skill.
- ❖ Budgeting policy.
- ❖ Human Resources Management.
- ❖ Develop Numerical ability.

## Program Specific Outcomes (PSO's) of BACHELOR OF COMMERCE (B.COM)

|              |                                                                                                                                                                                                                                                                  |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PSO 1</b> | To understanding the basic concepts of accountancy, principles of accountancy and accounting cycle to maintain accounts of trading & non-trading organizations.                                                                                                  |
| <b>PSO 2</b> | Getting adequate knowledge and acquainted with the procedure of preparation of income statements, retained earnings, balance sheet and statement of cash flows which are required for external users and more useful to managers for managerial decision making. |
| <b>PSO 3</b> | Inculcating different skills for analysis and interpretation of financial data to understand financial health of an organization and ensure that resources are being used to achieve the organizations objectives.                                               |
| <b>PSO 4</b> | Getting working knowledge of generally accepted auditing procedure, techniques and skills.                                                                                                                                                                       |
| <b>PSO 5</b> | Developing knowledge about cost ascertainment and fixation of selling price and cost control.                                                                                                                                                                    |
| <b>PSO 6</b> | Obtaining the knowledge of various provisions of Income Tax Act and their applications in computations of taxable income of an individual under different heads of income                                                                                        |

## Course Outcomes (CO's) of BACHELOR OF COMMERCE (B.COM)

| <b>Semester I</b>                           |                                                                                                                                                                     |
|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>BCH-1.1 Environmental Science AECC-1</b> |                                                                                                                                                                     |
| <b>CO 1</b>                                 | Understanding environmental concerns by the students at the undergraduate level.                                                                                    |
| <b>CO 2</b>                                 | Cultivating attitudes to safeguard the environment built particularly with field experience.                                                                        |
| <b>CO 3</b>                                 | Getting information about Environment Protection Acts.                                                                                                              |
| <b>CO 4</b>                                 | Getting information about climate change, Global warming, Acid rain, Green house effect, Ozone, layer depletion.                                                    |
| <b>CO 5</b>                                 | Understanding the relationship of man with the environment and help them change his attitude for more positive, proactive, eco-friendly and sustainable lifestyles. |
| <b>CO 6</b>                                 | Realization of the impact of human actions on the immediate environment and the linkage with the larger issues.                                                     |
| <b>BCH-1.2 Financial Accounting Core -1</b> |                                                                                                                                                                     |
| <b>CO 1</b>                                 | To understand the concept of financial accounts.                                                                                                                    |
| <b>CO 2</b>                                 | To know accounting standard in India                                                                                                                                |
| <b>CO 3</b>                                 | Exposure the nature and advantage of accounting, Accounting concepts and conventions.                                                                               |
| <b>CO 4</b>                                 | Obtain the knowledge of computerize accounting.                                                                                                                     |
| <b>CO 5</b>                                 | To know about accounting procedure of partnership firm. Hire Purchase and Installment Systems and Accounting for Branch & Department                                |
| <b>BCH-1.3 Business Law Core -2</b>         |                                                                                                                                                                     |
| <b>CO 1</b>                                 | basic knowledge of the important business laws along with relevant case laws.                                                                                       |
| <b>CO 2</b>                                 | to deal with the legal aspect of different business situations.                                                                                                     |
| <b>CO 3</b>                                 | This help to understand basic legal terms and concepts used in law pertaining to business.                                                                          |
| <b>CO 4</b>                                 | This know applicability of legal principles to situations in Business world by Referring to few decided leading cases.                                              |
| <b>BCH-1.4 Micro Economics GE-1</b>         |                                                                                                                                                                     |
| <b>CO 1</b>                                 | It helps to understand students to basic micro economic concepts.                                                                                                   |

|                                             |                                                                                                                                       |
|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <b>CO 2</b>                                 | It applies economic analysis in the formulation of business policies.                                                                 |
| <b>CO 3</b>                                 | It uses economic reasoning to problems of business.                                                                                   |
| <b>CO 4</b>                                 | to acquaint the students with the concepts of microeconomics dealing with consumer behaviour                                          |
| <b>CO 5</b>                                 | to understand the supply side of the market through the production and cost behaviour of firms.                                       |
| <b>CO 6</b>                                 | to apply tools of consumer behaviour and firm theory to business situations.                                                          |
| <b>Semester II</b>                          |                                                                                                                                       |
| <b>BCH-2.1 English Communication AECC-2</b> |                                                                                                                                       |
| <b>CO 1</b>                                 | Spoken communication and written communication.                                                                                       |
| <b>CO 2</b>                                 | Writing of Resume, letters of application, business letters.                                                                          |
| <b>CO 3</b>                                 | Writing News-report, Essay, paragraph,, Review, etc.                                                                                  |
| <b>CO 4</b>                                 | Narration of experience, daily routine.                                                                                               |
| <b>CO 5</b>                                 | Understanding and interpretation of poem, prose, essay, short stories, etc.                                                           |
| <b>BCH-2.2 Corporate Accounting Core -3</b> |                                                                                                                                       |
| <b>CO 1</b>                                 | To know about shares and accounting entries regarding issue of shares                                                                 |
| <b>CO 2</b>                                 | To know the real position of assets and liabilities at the end of financial year.                                                     |
| <b>CO 3</b>                                 | Analyze the good will and shares valuation.                                                                                           |
| <b>CO 4</b>                                 | To know about companies amalgamation and absorption.                                                                                  |
| <b>CO 5</b>                                 | To know meaning of fund, fund flow and rules of fund flow statement.                                                                  |
| <b>BCH-2.3 Corporate Laws Core -4</b>       |                                                                                                                                       |
| <b>CO 1</b>                                 | to impart basic knowledge of the provisions of the Companies Act, 2013 and the Depositories Act, 199                                  |
| <b>CO 2</b>                                 | different Case studies involving issues in corporate laws are required to be discussed.                                               |
| <b>CO 3</b>                                 | knowledge about the legal framework and the ways and means to deal with the legal aspect of different situations of corporate sector. |
| <b>BCH-2.4 Macro Economics GE-2</b>         |                                                                                                                                       |
| <b>CO 1</b>                                 | Basic concepts of Macro Economics                                                                                                     |
| <b>CO 2</b>                                 | Identifying the basic concepts of Macroeconomics and nature & scope of macro economics.                                               |
| <b>CO 3</b>                                 | Identify difference between micro & macro economics.                                                                                  |
| <b>CO 4</b>                                 | Understanding various concepts such as : GDP, GNP, NNP, Personal Income, Disposable Income, Per Capita Income, and National Income.   |

|                                                              |                                                                                                                                      |
|--------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| <b>CO 5</b>                                                  | To understand Role of Commercial banks – Credit control – Quantitative & qualitative.                                                |
| <b>Semester III</b>                                          |                                                                                                                                      |
| <b>BCH-3.1 Human Resource Management Core-5</b>              |                                                                                                                                      |
| <b>CO 1</b>                                                  | Acquaint the students with in-depth knowledge of HRM.                                                                                |
| <b>CO 2</b>                                                  | Inculcate among students various practices followed by HR managers.                                                                  |
| <b>CO 3</b>                                                  | Creating understanding about recent trends in HRM                                                                                    |
| <b>CO 4</b>                                                  | to acquaint students with the techniques and principles to manage human resource of an organization.                                 |
| <b>CO 5</b>                                                  | To enhance the capability of the students to manage the most important assets of organization                                        |
| <b>BCH-3.2 Income-tax Law and Practice Core -6</b>           |                                                                                                                                      |
| <b>CO 1</b>                                                  | To understand the basic concept of Income Tax.                                                                                       |
| <b>CO 2</b>                                                  | To know about assessment of income from different head.                                                                              |
| <b>CO 3</b>                                                  | Acquire knowledge about the Tax management and tax planning.                                                                         |
| <b>CO 4</b>                                                  | Knowing the procedure of calculation of income tax                                                                                   |
| <b>CO 5</b>                                                  | To acquire knowledge about the submission of Income Tax Return, Advance Tax, Tax deducted at Source, Tax Collection Authorities.     |
| <b>BCH-3.3 Management Principles and Application Core -7</b> |                                                                                                                                      |
| <b>CO 1</b>                                                  | understanding of basic management concepts, principles and practices.                                                                |
| <b>CO 2</b>                                                  | use of different management principles in the course of decision making in different forms of business organizations.                |
| <b>CO 3</b>                                                  | Demonstrate the roles, skills and functions of management.                                                                           |
| <b>CO 4</b>                                                  | To provide them tools and techniques to be used in the performance of the managerial job.                                            |
| <b>CO 5</b>                                                  | To help the students to develop cognizance of the importance of management principles.                                               |
| <b>BCH-3.4 Business Statistics GE-3</b>                      |                                                                                                                                      |
| <b>CO 1</b>                                                  | the basic statistical tools used for managerial decision-making.                                                                     |
| <b>CO 2</b>                                                  | Imparting the ability to collect present, analyze and interpret data.                                                                |
| <b>CO 3</b>                                                  | By using different statistical tools very much required in the decision making process in any business as well as business research. |
| <b>CO 4</b>                                                  | Making familiar with statistical tools which are relatively used in business.                                                        |
| <b>CO 5</b>                                                  | Ability to predict trend values by using list square methods in regression.                                                          |

| <b>BCH-3.5 E-Commerce(Compulsory) SEC-2</b>               |                                                                                                                                                                          |
|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CO 1</b>                                               | to become familiar with the mechanism for conducting business transactions through electronic means.                                                                     |
| <b>CO 2</b>                                               | Analyze the impact of E-commerce on business models and strategy                                                                                                         |
| <b>CO 3</b>                                               | discuss and explain theoretical and practical issues of conducting business over the internet and the Web                                                                |
| <b>CO 4</b>                                               | reflect on general principles revealed through practical exploration of specific tools, techniques and methods in e-business.                                            |
| <b>CO 5</b>                                               | Describe the infrastructure for E-commerce, legal issues and privacy in E-Commerce                                                                                       |
| <b>Semester IV</b>                                        |                                                                                                                                                                          |
| <b>BCH-4.1 Cost and Management Accounting Core -8</b>     |                                                                                                                                                                          |
| <b>CO 1</b>                                               | basic concepts used in cost accounting, various methods involved in cost ascertainment.                                                                                  |
| <b>CO 2</b>                                               | To know about accounting overheads. Material control, labour control etc                                                                                                 |
| <b>CO 3</b>                                               | To understand different method costing are used for cost control.                                                                                                        |
| <b>CO 4</b>                                               | To know about budget and budgetary control.                                                                                                                              |
| <b>CO 5</b>                                               | ability to managing cost issues and also to keep a check on cost control and taking managerial decisions.                                                                |
| <b>BCH-4.2 Business Mathematics Core -9</b>               |                                                                                                                                                                          |
| <b>CO 1</b>                                               | To familiarize with the basic mathematical tools with emphasis on applications to business and economic situations.                                                      |
| <b>CO 2</b>                                               | to understand basic concepts in the areas of business calculus and financial mathematics and to connect acquired knowledge with practical problems in economic practice. |
| <b>CO 3</b>                                               | learned basics of fundamental maths & Its Use.                                                                                                                           |
| <b>CO 4</b>                                               | business problems how it solves by use of maths.                                                                                                                         |
| <b>CO 5</b>                                               | Learned the concept of LPP and transportation problem.                                                                                                                   |
| <b>BCH-4.3 Computer Applications in Business Core -10</b> |                                                                                                                                                                          |
| <b>CO 1</b>                                               | understands of usefulness of information technology tools for business operations.                                                                                       |
| <b>CO 2</b>                                               | to enhance computer abilities and skills to compete with the present technology driven business market.                                                                  |
| <b>CO 3</b>                                               | to understand about how to prepare a presentation.                                                                                                                       |

|                                                               |                                                                                                                                                       |
|---------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CO 4</b>                                                   | to understand about how to prepare a Spreadsheet and Business Applications .                                                                          |
| <b>CO 5</b>                                                   | Gain familiarity with the concepts and terminology used in the development, implementation and operation of business in computer applications.        |
| <b>BCH-4.4 Indian Economy - Performance and Policies GE-4</b> |                                                                                                                                                       |
| <b>CO 1</b>                                                   | the student will able to identify the key performance indicators and policies of the present economic environment of the country.                     |
| <b>CO 2</b>                                                   | Understanding basic characteristics of Indian economy as an Emerging economy.                                                                         |
| <b>CO 3</b>                                                   | Comparison of Indian economy with developed economies to NI, PCI, Agri, Industry & Service sector.                                                    |
| <b>CO 4</b>                                                   | To understand Agricultural development in India since Independence.                                                                                   |
| <b>CO 5</b>                                                   | To understand importance, objectives, structure & functions of SAARC, IMF, IBRD, WTO & BRICS                                                          |
| <b>BCH-4.5 Entrepreneurship(Compulsory) SEC-3</b>             |                                                                                                                                                       |
| <b>CO 1</b>                                                   | Motivating to acquire the skill to be an Entrepreneur                                                                                                 |
| <b>CO 2</b>                                                   | Creating Entrepreneurial skill among the students.                                                                                                    |
| <b>CO 3</b>                                                   | Creating awareness among students about self employment/ own business.                                                                                |
| <b>CO 4</b>                                                   | Providing various innovative business ideas to the society.                                                                                           |
| <b>CO 5</b>                                                   | Developing a skill of stability in the business at critical situation.                                                                                |
| <b>Semester V</b>                                             |                                                                                                                                                       |
| <b>BCH-5.1 Principles of Marketing Core -11</b>               |                                                                                                                                                       |
| <b>CO 1</b>                                                   | Enhancing the skill of marketing among students.                                                                                                      |
| <b>CO 2</b>                                                   | Providing different techniques of marketing for increase of sales.                                                                                    |
| <b>CO 3</b>                                                   | Creating the sense how to behave in the market while buying or selling of product.                                                                    |
| <b>CO 4</b>                                                   | Providing information about buying pattern and different attitudes of consumers.                                                                      |
| <b>CO 5</b>                                                   | Understanding how to undertake crucial task such as competition analysis, production etc.                                                             |
| <b>BCH-5.2 Fundamentals of Financial Management Core -12</b>  |                                                                                                                                                       |
| <b>CO 1</b>                                                   | able to understand finance in a better way along with giving them insight to practical management of long and short finance for real business houses. |

|             |                                                                                                                                             |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CO 2</b> | Demonstrate the applicability of the concept of Financial Management to understand the managerial Decisions and Corporate Capital Structure |
| <b>CO 3</b> | Apply the Leverage and EBIT EPS Analysis associate with Financial Data in the corporate                                                     |
| <b>CO 4</b> | Analyse the complexities associated with management of cost of funds in the capital Structure                                               |
| <b>CO 5</b> | Basic knowledge of Fundamentals of Finance such as calculation of Present Value, Future Value etc.                                          |

**BCH-5.3  
Financial Markets , Institution and Services DSE-1**

|             |                                                                                                                                                                    |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CO 1</b> | the student will acquire financial literacy skill particularly by giving information about the financial system, markets, services and regulatory bodies in India. |
| <b>CO 2</b> | the student will know the different money market and its role in indian economic development                                                                       |
| <b>CO 3</b> | the students will know about the finanancial institution and what are the role of financial institution in india.                                                  |
| <b>CO 4</b> | Overview of financial services industry,framework relating to merchant banking in India                                                                            |

**BCH-5.4 Financial Statement Analysis and Reporting DSE-2**

|             |                                                                                                                                                                                   |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CO 1</b> | the students will be able to prepare the end result of a business houses by preparation through financial statement analysis and reporting.                                       |
| <b>CO 2</b> | Describe and apply the basic techniques of financial statement analysis;                                                                                                          |
| <b>CO 3</b> | Identify and utilise value-relevant information contained within financial statements;                                                                                            |
| <b>CO 4</b> | Understand the impact of financial reporting choices on the usefulness of reported earnings to predict future performance;                                                        |
| <b>CO 5</b> | Recognise and explain the fundamental role of accounting numbers in the valuation of entities and the key financial claims on these entities assets (equity and debt securities); |

**Semester V**

**BCH-6.1 Auditing and Corporate Governance Core -13**

|             |                                                                                                                                                               |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CO 1</b> | knowledge about principles and techniques of audit in accordance with current legal requirement and as per the guidelines of different statutory authorities. |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                  |                                                                                                                                                                                                                                       |
|------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CO 2</b>                                                      | knowledge of fundamental audit concepts                                                                                                                                                                                               |
| <b>CO 3</b>                                                      | able to know the role of the auditor.                                                                                                                                                                                                 |
| <b>CO 4</b>                                                      | right and duty of a auditor.                                                                                                                                                                                                          |
| <b>CO 5</b>                                                      | able to know the corporate social responsibilities of a company.                                                                                                                                                                      |
| <b>BCH-6.2 Indirect Tax Law Core-14</b>                          |                                                                                                                                                                                                                                       |
| <b>CO 1</b>                                                      | the students will have an insight to the taxation on production and distribution of goods and provision of services along taxation mechanism of international trade.                                                                  |
| <b>CO 2</b>                                                      | Student will able to Compute the assessable value of transactions related to goods and services for levy and determination of duty liability.                                                                                         |
| <b>CO 3</b>                                                      | Student will able to Identify and analyze the procedural aspects under different applicable statutes related to indirect taxation .                                                                                                   |
| <b>CO 4</b>                                                      | Student will able to Understand the basic principles underlying the Indirect Taxation Statutes (with reference to Central Excise Act, Customs Act, Service Tax, Value Added Tax, Central Sales Tax).                                  |
| <b>CO 5</b>                                                      | Student will able to understand Inflows and outflows related to VAT. Imposition of tax and tax base. Delivery of goods and services. Tax rates . Periodic tax returns. Place of delivery of goods and services and its impact on VAT. |
| <b>BCH-6.3 Corporate Tax Planning DSE-3</b>                      |                                                                                                                                                                                                                                       |
| <b>CO 1</b>                                                      | The students will be able to understand the taxation of the corporate house.                                                                                                                                                          |
| <b>CO 2</b>                                                      | Students who complete this course will be able identify the difference between tax evasion and tax planning.                                                                                                                          |
| <b>CO 3</b>                                                      | students will able to describe how the provisions in the corporate tax laws can be used for tax planning.                                                                                                                             |
| <b>CO 4</b>                                                      | Students will able to explain different types of incomes and their taxability and expenses and their deductibility.                                                                                                                   |
| <b>CO 5</b>                                                      | Students of the course will able to state the use of deductions of expenses to reduce the taxable income.                                                                                                                             |
| <b>BCH-6.4 Business Research Methods and Project Work* DSE-4</b> |                                                                                                                                                                                                                                       |
| <b>CO 1</b>                                                      | the students will be able to assess and apply a range of research method on a practical project.                                                                                                                                      |
| <b>CO 2</b>                                                      | Acquaint the students with the areas of Business Research Activities.                                                                                                                                                                 |

|             |                                                                                                          |
|-------------|----------------------------------------------------------------------------------------------------------|
| <b>CO 3</b> | Enhancing capabilities of students to conduct the research in the field of business and social sciences. |
| <b>CO 4</b> | Enabling students, in developing the most appropriate methodology for their research studies.            |
| <b>CO 5</b> | Making them familiar with the art of using different research methods and techniques.                    |

## Department of English

### PROGRAMME OUTCOME

After successfully completion of BA English the students shall be able to-

PO-1: Demonstrate knowledge of literary terms, major periods, authors, genres, and theories.

PO-2: Produce original insights about literature in a variety of forms, styles, structures and modes in scholarly practices with compelling explanatory power.

PO-3: Show knowledge of major literary works, periods, genres, and critical approaches to Indian, American, and World Literature.

PO-4: Articulate the relations among culture, history and texts.

PO-5: Be adept at teaching of English Language and Literature as a career option.

PO-6: Produce creative writing, rhetoric and composition for diverse needs of students and community nationally and internationally. Develop their critical thinking skills and creativity. Enhance their writing skills.

### PROGRAMME SPECIFIC OUTCOME

PSO1: Comprehend various forms of literature like prose, poetry, drama and fiction

PSO2: Apprehend different cultures and cultural sensibilities around the world

PSO3: Perspectives of literary movements that existed in different ages.

PSO4: Develop the knowledge of grammatical system of English language.

PSO5: Define literary theory and terms in criticism.

PSO6: Develop four language skills LSRW.

PSO7: Write analytically in different formats like essays, reviews, research papers etc.

PSO8: Scope of employability and entrepreneurship in the field of Media and Journalism, Teaching, Public Relations, Human Resource, Civil Service, Creative Writing etc.

## COURSE OUTCOME

### Semester I

#### Core I

##### **British Poetry and Drama: 14<sup>th</sup> to 17<sup>th</sup> Centuries**

1. This core seeks to introduce the students to British poetry and drama from the 14<sup>th</sup> century to the 17<sup>th</sup> century.
2. It offers students an exploration of certain seminal text like *The wife of Baths's Tale*, *Macbeth*, *The Jew of Malta*, “follow thy Fair sun”, “Go Lovely Rose”, “Song to Celia”, etc. that set the course of British poetry and Drama 14<sup>th</sup> century to 17<sup>th</sup> century.
3. Primary aim of the core is to let students learn major poet and dramatists of these centuries and their works.
4. It is base study of the beginners who for the first time studies English literature.
5. Learners will know the basics of poetic literary form and most importantly they will learn Elizabethan or renaissance dram which includes Christopher Marlowe and William Shakespeare.

#### Core II

##### **British Poetry and Drama: 17<sup>th</sup> to 18<sup>th</sup> Century**

#### **Course outcome:**

1. The objective of this paper is to acquaint students with Jacobean and the 18<sup>th</sup> century British poetry and Drama, the first a period of the acid satire and the

comedy of humors; and the second a period of supreme satiric poetry and comedy of manners.

2. It proposes students to read plays like *all For Love* and *The Volpone*. From this core students will know great literary figure this century like John Milton, Robert burn, Andrew Marvell, John Donne, Alexander Pope.

## **Semester II**

### **Core III**

#### **British Literature: 18<sup>th</sup> Century**

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

1. The objective of this paper is to acquaint the students with two remarkable forms of literature essay and novel.
2. This period is also known for its shift of emphasis from reason to emotion. The literary pieces like *Robinson Crusoe*, *Elegy Written in Country Churchyard* makes student aware of graveyard school of poetry and development of novel s in English literature. Essays of Addison and Steele are best text for the early learners of English literature.

### **Core IV**

#### **Indian Writing in English**

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

1. This paper attempts to introduce the students to the field of Indian Writing in English through some representative works like *Inheritance of Loss*, *Final Solution*, *Untouchable*, *The Bachelor of Arts*.

2. Poems of renowned Indian English poets make the learner to know about the various culture of Indian in different states, it also presents the multi dimensional approach of Indian English literature.
3. In whole this paper's objective is to let students know beginning of Indian English literature, the establishment of The Hindu College, and how English education is introduced in India.

## **Semester III**

### **Core V**

#### **British Romantic Literature**

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

1. The purpose of this paper is to acquaint students with the romantic period and some of its romantic representative poets like William Wordsworth, William Blake, John Keats, P B Shelley, and Samuel Taylor Coleridge.
2. At the same time one of the chief objective of paper is to give students with a broad idea of social as well as historical contexts that shape this unique upheaval.
3. Students also get to know about prime poems and texts of this age.
4. Preface to Lyrical Ballads makes student to know the definition of poetry by Wordsworth, and Wordsworth's concept of poetic diction and good poet.
5. Poems of John Keats and Shelley leads student to a thrilling journey into the romantic imagination.

### **Core VI**

#### **19<sup>th</sup> Century British Literature**

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

1. This paper proposes to examine the growth of the British literature of 19<sup>th</sup> Century.
2. In this paper students will learn a major socio political development in England like industrialization, technological advancements and a large scale of mobilization of people from the rural to the urban people, but the focus is mainly on prose (fictional and nonfictional) and criticism.
3. From Jane Austen's *Pride and Prejudice* student will learn domestic life of English society in 19<sup>th</sup> century, and Dickens' *Hard Times* will explore the impact of Industrialization in Britain.
4. Moreover the whole paper not only aims at the exploration of literary genius but also it explores socio –cultural life of Britain which is reflected in the literary works.

## **Core VII**

### **American Literature**

#### **Course Outcome:**

1. This paper explores various aspects of American literature to the students of English literature. In this paper students will learn genesis, evolution and myths of American literature.

2. Student will have sound knowledge on American Dream, the American themes of self-reliance, individualism, sin and redemption and multiculturalism.
3. Various units in this paper will give students a propounding knowledge on American literature.

## **Semester IV**

### **Core VIII**

#### **British Literature 20<sup>th</sup> Century**

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

1. The objective of this paper is to familiarize students with the new literature of Britain in the early decades of the 20<sup>th</sup> century.
2. Students will learn major crisis in Western society which is known as First World War, and impact of this war into the British literature.
3. From the poetry of Wilfred Owen and Siegfried Sassoon students will aware horror and terrific result of war.
4. This paper also aims at students learning of Marx's class struggle and Freud's theory of the unconscious.
5. After reading poets like T. S Eliot, W.B. Yeats, Ezra Pound, Louis MacNiece, Stephen Spender, etc. student's basics on modernism and post modernism will be stronger.

## **Core IX**

#### **European Classical Literature**

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

1. This paper will explore the growth and development of European Classical literature of 8<sup>th</sup> century BC. From this paper students can learn origin of tragedy and comedy in British literature.
2. Unit- 5 of this paper will aware people on Aristotle's concept of tragedy and its six chief elements along with catharsis.
3. Students will get to know various classical terms on Greek tragedy like *Hamartia*, *Catastrophe*, *Anagnorisis*, *Peripetia*, etc., this will help student to study other units of this paper such as *Oedipus the Kin*, *The Frogs*.
4. This course also proposes student to learn rise and decline of Roman Empire and geographical space of ancient Greek and Rome.
5. The study of the play *Oedipus the King* will help students to learn Psychoanalytical theory in future.

## **Core X**

### **Women's Writing**

#### **Course Outcome:**

1. The course aims to acquaint the students with the complex and multifaceted literature by women of the world, reflecting the diversity of women's experiences and their varied cultural moorings.
2. It embraces different forms of literature: poetry, fiction, and critical writings. In certain respects interlocks concerns of women's literary history, women's studies and feminist criticism.
3. This paper will develop student's knowledge on women and women's studies. After reading Simone de Beauvoir's *the Second Sex*, students not only learn the feminism but also develop their consciousness on women.

4. This will create some sorts of awareness among student on women empowerment.
5. Apart from these things from this chapter students will come familiar with the term like Patriarchy, Feminine, Masculine, Femininity, Masculinity, Stereotype, Three Waves of Feminism, etc.
6. This course which offers women's fiction that aims to familiarize women's problems in different nations among the student of English literature.
7. On the whole this paper's objective is to let student aware of women's issues in various culture of the world.

## **Semester IV**

### **Core XI**

#### **Modern European Drama**

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

1. The purpose of this course is to explore the growth of the modern European Drama to the students of British literature.
2. It also stresses the development of new genre plays in Europe and its impact on English drama.
3. The learning of the play *Ghosts* by Henrik Ibsen will let student to know the development of problem plays in Europe which had brought a drastic change in the field of drama.
4. The play, *Waiting for Godot*, will aware student the impact of world war on modern drama, and it aims to familiarize students about the concept of absurd or the theater of Absurd.
5. On the whole the aim of this paper is to introduce the students to the best of experimental and innovative dramatic literature of modern Europe.

## **Core XII**

### **Indian Classical Literature**

#### **Course Outcome:**

1. Students have already studied classical European literature in this programme of study, but this course is designed to create awareness among the students of the rich diverse literary culture of ancient India.
2. This course strengthens student's regarding rich culture and heritage of India.
3. They will have a sound knowledge of our age-old myths, legends and the glorious past of India with guru shishya relationship and the power of virtue and morality will enable students to be the good citizens of our country.
4. The morality of Karna and the story of Draupadi as a pious lady make a holy imprint among students.
5. The love affair of Vasantsena and Charudutta in *The Mrichchhakatika* makes student more rational and it will create a curiosity among the student to know interesting and high standards of India's ancient literature and culture.

## **DSE I**

### **Literary Theory**

#### **Course Outcome:**

1. The main purpose of this paper is to let students know the development of theory in the last half-century or more is a fact of critical importance in the academic study of literature.
2. Far from being seen as a parasite on the text, theory has been seen as a discourse that provides the conceptual framework for literature.
3. This course will help student to differentiate between literary theory and criticism. Student will know rise theory.
4. New criticism and its various aspects like intentional fallacy and pathetic fallacy will foreground their foundation on the study of literary theory and criticism and it will also help them in future learning of the various dimension in literary criticism.
5. The study of Structuralism and Poststructuralism will aware them about sign, symbol, signifier, signified, the death of the author, and more importantly it will help them to study Deconstruction in future studies.
6. On the whole this paper aims to give the students a firm grounding in a major methodological aspect of literary studies known as theory.

## **DSE II**

### **Reading World Literature**

#### **Course Outcome:**

1. The primary objective of this paper is to introduce the student to the study of world literature through a representative selection of texts from around the world.
2. 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.
3. This course offers canonical literary texts of world literature like *The Outsider* which will familiarize students on existentialism which is a modern movement and the text *The Outsider* is an expression of this movement.
4. Basically this course offers the text of noble laureate winning writers which will help students to broad their concept beyond the national boundary, and it will acquaint them with noble award winning texts as well as it will prepare them for future higher education examination.

## **Semester VI**

### **Core XIII**

#### **Postcolonial Literature**

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

1. This paper seeks to introduce the students to postcolonial literature-a body of literature that responds to the discourses of European colonialism and empire in Asia, Africa, Middle East, the Pacific and elsewhere.
2. By focusing on representative texts situated in a variety of locations, the paper aims to provide the students with the opportunity to think through and understand the layered response – compliance and resistance, mimicry and

subversion – that colonial power has provoked from the nations in their search for a literature of their own.

## **Core XIV**

### **Popular Literature**

#### **Course Outcome:**

1. This course is designed to introduce the students to genres such as romance, detective fiction, and campus fiction, fantasy/mythology which have a “mass” appeal and can help students to gain better understanding of the roots of popular literature.
2. Student will come to know about the difference between popular culture and high culture. Knowing popular literature will help students to develop a curiosity to read various popular fiction of the current era, and student can very well differentiate between genre fiction and literary fiction.

## **DSE III**

### **Research Methodology**

#### **Course Outcome:**

1. Research methodology is a discipline specific course pitched at a higher level than the generic academic preparatory courses.
2. Research is at the core of every university course starting from the UG the PhD level.
3. This course is designed to develop the fundamentals of research from creating a questioning mechanism in the students’ minds leading up to writing research papers and dissertations.

4. Students learn methodological issues imperative for conducting research and for research documentation.
5. The course also aims to train students in the essentials of academic and research writing skills.

The End

## DEPARTMENT OF HISTORY

### PROGRAMME OUTCOME

After the completion of BA, History scholars shall be able-

PO-1. To distinguish between primary and secondary sources and identify and evaluate evidence

PO-2. To demonstrate in discussion and written work their understanding of different peoples and cultures in past environments and of how those cultures changed over the centuries.

PO-3. Able to produce their own historical analysis of documents and develop the ability to think critically and historically when discussing the past

PO-4. Able to compare and contrast different processes, modes of thoughts and modes of expression from different historical time periods and in different geographical areas.

PO-5. Able to offer multi-causal explanations of major historical developments based on a contextualized analysis of interrelated political, social, economic, cultural and intellectual processes

PO-6. Able to write an original research paper that locates and synthesizes relevant primary and secondary sources and has a clear, coherent and plausible argument, logical structure, proper references.

PO-7. Present orally their research or a summary of another's research in an organized, coherent and compelling fashion.

### PROGRAMME SPECIFIC OUTCOME

PSO-1. Students will have the ability to apply historical methods to evaluate critically the past and how historians and others have interpreted it.

PSO-2. Students will be able to acquire basic historical research skills, including the effective use of libraries, archives and data bases.

PSO-3. Students will be able to organise and express their thoughts clearly and coherently both in writing and orally.

PSO-4. Students will be able to demonstrate broad knowledge of historical events and periods and their significance

PSO-5. Students will be able to recognise how different individuals, groups, organisations, societies, cultures, countries and nations have affected history. History gave the students wisdom and foresight for the future.

## **COURSE OUTCOME**

### **SEMESTER -1 HISTORY OF INDIA-1 (CORE-1)**

#### **In this programme the students know about:**

1. Basic concept on the reconstructing Ancient Indian History.
2. To know about Hunter gatherers and food production in pre- historic period.
3. To analyze the Importance of the Harappan civilization.
4. Develop Knowledge about cultures in transition of Ancient India.

#### **SOCIAL FORMATION AND CULTURAL PATTERNS OF ANCIENT WORLD(CORE-2)**

1. Basic concept on Evolution of Humankind.
2. Basic Information about the Paleolithic, Mesolithic and Neolithic cultures of the Ancient world.
3. Provides knowledge about Bronze Age civilization: Egypt and Mesopotamia.
4. How, “European Civilization developed in the body of Greek Society, like a child in the womb.”
5. Provides Information about the contribution of ancient Greeks to human civilization.

**SEMISTER-2**  
**HISTOTY OF INDIA-II(300 BCE -750 CE) (CORE-3)**

1. To know the expansion of agrarian economy and the production relations in the post Vedic society.
2. Provides knowledge about the administrative system of the Maura period.
3. To explain the different forms and patterns of urban centers developed in early medieval urban settlement of India.
4. Provides knowledge about the consolidation of the Brahman cal Tradition.

**SOCIAL FORMATION AND CULTURAL PATTERNS OF MEDIEVAL WORLD**  
**(CORE-4)**

1. Provides knowledge on Polity and economy in Ancient Rome.
- 2.To know about the Economic developments in Europe from 7<sup>th</sup> to14th centuries.
3. To develop skill on Religion and culture in medieval Europe.
- 4 .Provides information about the system of Societies in central Islamic lands.

**SEMISTER-3**  
**HISTORY OF INDIA-111 (C 750- 1206) (CORE-5 )**

1. Basic knowledge on early medieval India.
2. Political Structures during the early medieval period.
3. About Agrarian structure and Social change.
4. Informs about the methods of Trade and commerce during the period.
5. Create ideas on Religious and cultural developments in those period.

**RISE OF MODERN WEST -1 (CORE-6)**

1. To know about the period of transition from feudalism to capitalism.
2. Provides information about the early colonial expansion.
3. Provides knowledge about the period of Renaissance or Revival.
4. Provides knowledge about the period of reformation.
5. Imbibes to know about economic development of the 16<sup>th</sup> century.

#### **HISTORY OF INDIA-IV(1206-1526) (CORE- 7 )**

1. Interpreting the sources of Delhi Sultanate.
2. The political structures of the Sultanate Period.
3. The emergence of Regional Identities.
4. Society and Economy during the Sultanate Period.
5. Religion, Society and culture in time of the Sultanate regime.

#### **SEMISTER – 4 RISE OF THE MODERN WEST –II (CORE -8)**

1. European crisis in the 17<sup>th</sup> century on economic, social and political dimensions.
2. The British Revolution and European politics in the 18<sup>th</sup> century.
3. Development of Science from Renaissance to the 17<sup>th</sup> century.
4. Mercantilism and its impact on European economy.
5. The American war of independence, 1776 and its significance.

#### **HISTORY OF INDIA –V (1526-1750) (CORE-9)**

1. The sources and Historiography of India during the mentioned period.
2. The establishment of Mughal Rule In India.
3. The consolidation of Mughal Rule in India.
4. Knowledge about the Cultural Ideals of the Mughal regime.

5. Society and Economy system during the Mughals.

### **HISTORICAL THEORIES AND METHODS (CORE- 10)**

1. Provides Basic Concept on meaning and scope of History.
2. Imbibes to know the Historical writings of traditions.
3. Proves History as inter disciplinary practice.
4. The concept of Modern theories.
5. To acquire knowledge about the Historical Methods.

## **SEMISTER-5**

### **HISTORY OF MODERN EUROPE-1 (1789-1939) (CORE-11)**

1. The causes and effects of the French Revolution.
2. The Revolution and its European Repercussion.
3. The Restoration and Revolution during the period (1815-1848)
4. The capitalist Industrialization and Socioeconomic transformation during the late 18<sup>th</sup> century to 1914AD.
4. The varieties of Nationalism and the Remaking of States in the 19<sup>th</sup> and 20<sup>th</sup> centuries.

### **HISTORY OF INDIA-VII (1750-1857) (CORE -12)**

1. To throw light on Society, economy and polity of mid 18<sup>th</sup> century India.
2. To know about the expansion and consolidation of the colonial powers.
3. To analyze the Ideologies of the colonial states.
4. To know about society and economic status of the people of India in 18<sup>th</sup> and 19<sup>th</sup> century.
5. Provides knowledge about the causes and consequences of the popular resistance in India.

## **SEMISTER-5**

### **HISTORY OF THE UNITED STATES OF AMERICA (1776---1945) (D.S.E -1)**

1. To know about the settlement and colonialization by the Europeans in America.
2. To throw light on the causes and consequences of the American war of Independence.
3. To drive knowledge regarding the evolution of American Democracy.
4. Throw light on the beginning of Industrialization in America.
5. TO provide knowledge about slave society and culture of the United States of America.

### **HISTORY AND CULTURE OF ODISHA (D. S. E -2 )**

1. To know about the Socio- political life of early and medieval Odisha.
2. Provide knowledge about Religion, Art and Literature of early and medieval Odisha>
3. Knowledge about political and economic structure in medieval Odisha.
4. To know about colonialism in Odisha.
5. To know regarding the Socio- Cultural changes in Modern Odisha

### **SEMISTER—6**

#### **HISTORY OF INDIA—V111 (1857-1950 ) ( CORE-13 )**

1. To know about the cultural changes and Social and Religious Reformation Movement in India.
2. To know the trends of Nationalism in India upto 1919.
3. Provides knowledge about Gandhi an Nationalism after 1919.
4. To know communalism and partition in India>
5. Provides knowledge regarding the emergence of new State in India.

#### **HISTORY OF MODERN EUROPE—II (CORE---14 )**

1. To provide information about Liberal Democracy, Working class Movements and Socialism in Europe in the 19<sup>th</sup> and 20<sup>th</sup> centuries>
2. To know about the crisis of feudalism in Russia.
3. To get Information about the Rule of the Imperialists and war and crisis during the period (1889—1939 )
4. To gain knowledge on cultural transformation in Europe since 1850.
5. To get ideas about the Intellectual Developments in Europe since 1850

### **SEMISTER—6**

#### **H-ISTORY OF THE UNITED STATES OF AMERICA—II (1776—1945 ) (D.S.E -3 )**

1. To know about the political changes and economic transformation in America in 19<sup>th</sup> and



**PATTAMUNDAI COLLEGE, PATTAMUNDAI**  
**DIST - KENDRAPARA**  
**COURSE OUTCOME**  
**DEPARTMENT OF ODIA**  
**PROGRAMME OUT COME**

୧. ଓଡ଼ିଆ ସାହିତ୍ୟର ବିକାଶ କ୍ରମରେ କେହି ପାଠ୍ୟକ୍ରମ ଛାତ୍ର ଛାତ୍ରୀଙ୍କ କାର୍ଯ୍ୟରେ ଲାଗିବ ।
୨. ସାରଳା ଦାସଙ୍କଠାରୁ ଆରମ୍ଭ କରି ଆଧୁନିକ ଯୁଗର ସାହିତ୍ୟ ବିଷୟରେ ଛାତ୍ରଛାତ୍ରୀମାନେ ଅବଗତ ହେବେ ।
୩. ଆଦ୍ୟଯୁଗର ସାହିତ୍ୟ ଓ ଭାଷା ସଂପର୍କରେ ଛାତ୍ରଛାତ୍ରୀମାନେ ମଧ୍ୟ ଜାଣିପାରିବେ ।
୪. ପଂଚସଖା ସାହିତ୍ୟ ସଂପର୍କରେ ଛାତ୍ରଛାତ୍ରୀମାନେ ଜାଣିବ। ସହିତ ମଧ୍ୟଯୁଗୀୟ ସାହିତ୍ୟ ସଂପର୍କରେ ଛାତ୍ରଛାତ୍ରୀ ଅବଗତ ହେବେ ।
୫. ଓଡ଼ିଆ ଭାଷା ସାହିତ୍ୟ ସଂପର୍କରେ ଛାତ୍ରଛାତ୍ରୀମାନେ ଏହାଦ୍ୱାରା ସବିଶେଷ ଜ୍ଞାନ ଆହରଣ କରି ପରବର୍ତ୍ତୀ ସମୟରେ ଉଚ୍ଚ ଶିକ୍ଷା ଓ ବୃତ୍ତିଗତ କାର୍ଯ୍ୟରେ ନିଜକୁ ନିୟୋଜିତ କରିପାରିବେ ।

**PROGRAMME SPECIFIC OUT COME**

୧. ଓଡ଼ିଆ ଭାଷା ସାହିତ୍ୟର ଭାଷାକାଳରୁ ଅଦ୍ୟାବଧି ପ୍ରଚଳିତ ଥିବା ଓଡ଼ିଆ ଭାଷା ଓ ସାହିତ୍ୟ ସଂପର୍କରେ ଛାତ୍ରଛାତ୍ରୀମାନଙ୍କୁ ଧାରଣା ଦେବା
୨. ଓଡ଼ିଆ ଭାଷାର ଉନ୍ନେଷ ଓ ବିକାଶ ରୂପ ସଂପର୍କରେ ପିଲାମାନଙ୍କୁ ବୁଝାଇବା
୩. ଓଡ଼ିଆ ଭାଷାର ଶବ୍ଦ ଭଣ୍ଡାର ତଥା ବ୍ୟାକରଣ ବିଷୟରେ ଅବଗତ କରାଇବା
୪. ଓଡ଼ିଆ ସାହିତ୍ୟର ଆଦି ପୁଷ୍ପା ଓ ପୃଷ୍ଠି ସଂପର୍କରେ ସୂଚନା ଦେବା
୫. ଓଡ଼ିଆ ସାହିତ୍ୟରେ ପଂଚଶଖା ଯୁଗର ବିଶେଷତ୍ୱ ବିଷୟରେ ଅବଗତ ହେବା
୬. ଓଡ଼ିଆ ସାହିତ୍ୟରେ ମଧ୍ୟଯୁଗ ଏବଂ ତତ୍କାଳୀନ କାବ୍ୟ ପଦ୍ଧିକା ସଂପର୍କରେ ଜାଣିବା
୭. ଓଡ଼ିଆ ସାହିତ୍ୟରେ ସଂଗୀତ ଧାରାର ପୃଷ୍ଠାଙ୍କ ବିଷୟରେ ଅବଗତ ହେବା
୮. ଓଡ଼ିଆ ସାହିତ୍ୟର ଆଧୁନିକ ଯୁଗ ଓ ତାର ପୃଷ୍ଠା ପୁରୁଷଙ୍କୁ ଜାଣିବା
୯. ସାହିତ୍ୟର ବିଭିନ୍ନ ବିଭାଗ ଯଥା- ଗଳ୍ପ ନାଟକ ପ୍ରବନ୍ଧ, ସମାଲୋଚନା ଆଦି ବିଷୟରେ ଜାଣିବା
୧୦. ଓଡ଼ିଆ ଭାଷାର ପ୍ରାଚୀନତା ପ୍ରମାଣିତ କରି ଦେଖାଇବା
୧୧. ଅନ୍ୟମାନଙ୍କଠାରୁ ଓଡ଼ିଆ ଭାଷାର ଶ୍ରେଷ୍ଠତା ଦର୍ଶାଇବା
୧୨. ଭାଷାଭିତିକ ପ୍ରବେଶ ଗଠନରେ ପୃଷ୍ଠଭୂମିକା ଗ୍ରହଣ କରିଥିବା ଓଡ଼ିଆ ଭାଷାର ସଂପର୍କରେ ପିଲାମାନଙ୍କୁ ଶିକ୍ଷା ଦେବା
୧୩. ଓଡ଼ିଆ ସାହିତ୍ୟରେ ନୌବାଣିଜ୍ୟ ପ୍ରସଙ୍ଗ ଆଲୋଚନା କରିବା

- ୧୪. ସାରଳା ଦାସଙ୍କ କୃତି ସମ୍ବନ୍ଧରେ ପଢ଼ିବା
- ୧୫. ପଂଚ ଶଖା ସାହିତ୍ୟ ସଂପର୍କରେ ଜାଣିବା
- ୧୬. ଓଡ଼ିଆ ଭାଷାର କମ୍ପ୍ୟୁଟରୀକରଣ ସମ୍ବନ୍ଧରେ ଜାଣିବା
- ୧୭. ସ୍ଵାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ନାଟକ ସଂପର୍କରେ ଜାଣିବା

### **SEMESTER - 1**

- Core - 1** - ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସ
- ୧. ସାରଳା ଦାସଙ୍କ ସାହିତ୍ୟକୃତି ସଂପର୍କରେ ଆଲୋଚନା କରିବା
  - ୨. ଚର୍ଯ୍ୟା ଗିତାକା ସଂପର୍କରେ ଆଲୋଚନା କରିବା
  - ୩. ବଳରାମ ଦାସ ଓ ଜଗନ୍ନାଥ ଦାସଙ୍କ ସଂପର୍କରେ ତଥ୍ୟ ଉପସ୍ଥାପନ
  - ୪. ଅନନ୍ତ ଦାସ, ଯଶୋବନ୍ତ ଦାସ ଏବଂ ଅଚ୍ୟୁତାନନ୍ଦ ଦାସଙ୍କ ସାହିତ୍ୟକୃତି ପାଠ କରିବା
- Core - 2** - ମଧ୍ୟ ଯୁଗୀୟ ଓଡ଼ିଆ ସାହିତ୍ୟ
- ୧. ମଧ୍ୟଯୁଗୀୟ ଓଡ଼ିଆ ସାହିତ୍ୟର ପୃଷ୍ଠଭୂମି ବିଷୟରେ ଅବଗତ ହେବା
  - ୨. ମଧ୍ୟଯୁଗୀୟ କାବ୍ୟଧାରା ଆଙ୍ଗିକ ବୈଭବ୍ୟ ଗୁଡ଼ିକୁ ଜାଣିବା
  - ୩. ମଧ୍ୟଯୁଗୀୟ କାବ୍ୟର ଆତ୍ମିକ ବିଭବ ବିଷୟରେ ଆଲୋଚନା କରିବା
  - ୪. ମଧ୍ୟଯୁଗୀୟ ଓଡ଼ିଆ ଗୀତି ପରମ୍ପରା ଉପରେ ଆଲୋଚନା କରିବା

### **SEMESTER - 2**

- Core - 3** - ୧. ଆଧୁନିକ ଓଡ଼ିଆ ସାହିତ୍ୟର ପୃଷ୍ଠଭୂମି ପାଠ କରାଯିବ
- ୨. ରାଧାନାଥ ରାୟ, ଗଙ୍ଗାଧର ମେହେର, ମଧୁସୂଦନ ରାଓଙ୍କ କବିତା ସମୂହ ପାଠ କରିବା
  - ୩. ଓଡ଼ିଆ କାବ୍ୟ କବିତାରେ ସତ୍ୟବାଦୀ ଧାରା ସଂପର୍କରେ ଆଲୋଚନା କରିବା
  - ୪. ଓଡ଼ିଆ ସାହିତ୍ୟରେ ପ୍ରଗତି ଓ ସବୁଜ ଧାରା ସଂପର୍କରେ ପାଠ କରାଯିବ
- Core - 4** - ସ୍ଵାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ସାହିତ୍ୟ
- ୧. ସ୍ଵାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ କବିତା ସମ୍ବନ୍ଧରେ ଅବଗତ ହେବା
  - ୨. ସ୍ଵାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ଗଳ୍ପ ସଂପର୍କରେ ଆଲୋଚନା କରିବା
  - ୩. ସ୍ଵାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ନାଟକ ସଂପର୍କରେ ଜାଣିବା
  - ୪. ସ୍ଵାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ଏକାଙ୍କିକା ବିଷୟରେ ଆଲୋଚନା କରିବା
  - ୫. ସ୍ଵାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ପ୍ରବନ୍ଧ ସଂପର୍କରେ ଆଲୋଚନା କରିବା
  - ୬. ସ୍ଵାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ସାହିତ୍ୟରେ ଜୀବନୀ ଓ ଆତ୍ମ ଜୀବନୀ ସମ୍ବନ୍ଧରେ ଅବଗତ ହେବା

|                     |   |                                                                                                                                                                                                                                                                                                                            |
|---------------------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SEMESTER - 3</b> | - | ଓଡ଼ିଆ ଭାଷାର ଉତ୍ପତ୍ତିକ୍ରମ                                                                                                                                                                                                                                                                                                   |
| <b>Core - 5</b>     | - | ୧. ଓଡ଼ିଆ ଭାଷାର ଉତ୍ପତ୍ତି ଓ ଓଡ଼ିଆ ଲିପିର ଐତିହାସିକ ବିବର୍ତ୍ତନ ପାଠ<br>୨. ଓଡ଼ିଆ ଶିଳାଲେଖର ଭାଷା ପାଠ<br>୩. ଚର୍ଯ୍ୟାପଦ ଓ ସାରଳା ସାହିତ୍ୟର ଭାଷା ପାଠ<br>୪. ଓଡ଼ିଆ ଭାଷା ସହିତ ଅନ୍ୟ ଭାଷାର ପ୍ରଭାବ ପାଠ                                                                                                                                           |
| <b>Core - 6</b>     | - | ଓଡ଼ିଆ ଭାଷାର ସ୍ୱରୂପ<br>୧. ଓଡ଼ିଆ ଭାଷାର ଶାସ୍ତ୍ରୀୟ ଲକ୍ଷଣ ଓ ବୈଶିଷ୍ଟ୍ୟ ଗୁଡ଼ିକୁ ଜାଣିବା<br>୨. ଓଡ଼ିଆ ଆଂଚଳିକ ଭାଷା ଓ ବୋଲି ସଂପର୍କରେ ଅବଗତ ହେବା<br>୩. ଓଡ଼ିଆ ମାନକ ଭାଷା ଓ କଥିତ ଭାଷା ମଧ୍ୟରେ ପାର୍ଥକ୍ୟ ଗୁଡ଼ିକୁ ଜାଣିବା<br>୪. ଗଦ୍ୟ ଭାଷାର ସୃଷ୍ଟି ସମୟରେ ଓଡ଼ିଆ ଗଦ୍ୟ ଭାଷାର ବିବର୍ତ୍ତନ ଉପରେ ଆଲୋଚନା କରିବା<br>୫. ଓଡ଼ିଆ ଗଳ୍ପ ଓ ବିଭବ ଗୁଡ଼ିକୁ ଜାଣିବା       |
| <b>Core - 7</b>     | - | ଓଡ଼ିଆ ଭାଷାର ପ୍ରୟୋଗ ଓ ବ୍ୟବହାରୀକ ବ୍ୟାକରଣ<br>୧. ଓଡ଼ିଆ ସାମାଜିକ ଧାରାରେ ସୁଭାଷଣର ଗୁରୁତ୍ୱ ବିଷୟରେ ଜାଣିବା<br>୨. ଓଡ଼ିଆ ଲୋକାଚାର ମୂଳକ ଶବ୍ଦ ଓ ପ୍ରୟୋଗ କିପରି ହୁଏ ଜାଣିବା<br>୩. ଓଡ଼ିଆ ବର୍ଣ୍ଣ ପରିଚୟ ଓ ଶୁଦ୍ଧ ଲିଖନ ପ୍ରଣାଳୀ ବିଷୟରେ ଅବଗତ ହେବା<br>୪. ଓଡ଼ିଆ ବାକ୍ୟର ଗଠନ ଓ ବ୍ୟବହାର ବିଷୟରେ ଅବଗତ ହେବା                                                   |
| <b>SEMESTER - 4</b> | - | ଓଡ଼ିଆ ଲୋକ ସାହିତ୍ୟଧାରା/ ଓଡ଼ିଆ ଭାଷାର ମୌଖିକ ପରମ୍ପରା                                                                                                                                                                                                                                                                           |
| <b>Core - 8</b>     | - | ୧. ଲୋକ ସଂସ୍କୃତି ଓ ଲୋକ ସାହିତ୍ୟର ପୃଷ୍ଠଭୂମି ସଂଜ୍ଞା ସ୍ୱରୂପ ସଂପର୍କରେ ଅବଗତ ହେବା<br>୨. ଓଡ଼ିଆ ଲୋକ ଗୀତର ବୈଶିଷ୍ଟ୍ୟ ଓ ପ୍ରକାରଭେଦ ସଂପର୍କରେ ଜାଣିବା<br>୩. ଓଡ଼ିଆ ଲୋକକାହାଣୀ ଓ ଜନଶ୍ରୁତି ସମ୍ବନ୍ଧରେ ଆଲୋଚନା କରିବା<br>୪. ଓଡ଼ିଆ ଲୋକକବିତା ପୃଷ୍ଠଭୂମି, ପ୍ରକାରଭେଦ ସଂପର୍କରେ ଆଲୋଚନା କରିବା<br>୫. ଓଡ଼ିଆ ଲୋକନାଟକର ସ୍ୱରୂପ ଓ ପ୍ରକାରଭେଦ ସଂପର୍କରେ ଆଲୋଚନା କରିବା |
| <b>Core - 9</b>     | - | ଓଡ଼ିଆ ସାହିତ୍ୟର ସ୍ୱରୂପ ଓ ତତ୍ତ୍ୱ<br>୧. କବିତା, ଉପନ୍ୟାସ ଓ ଆତ୍ମଜୀବନୀ ପାଠ<br>୨. ରସରୀତି ଓ ଅଳଙ୍କାର ପାଠ<br>୩. କ୍ଲସିଫିକେସନ୍, ରୋମାଂଟିଫିକେସନ୍, ବାସ୍ତବବାଦ ପାଠ<br>୪. ପ୍ରବନ୍ଧ, ସମାଲୋଚନା, ଅନୁବାଦତତ୍ତ୍ୱ ପାଠ କରାଯିବ                                                                                                                          |

- Core - 10 - ଓଡ଼ିଆ ସାହିତ୍ୟ ପୃଷ୍ଠା : ବିଶେଷ ଅଧ୍ୟୟନ
୧. ଜଗନ୍ନାଥ ଦାସ ଏବଂ ଉପେନ୍ଦ୍ର ଭଞ୍ଜଙ୍କ କାବ୍ୟକୃତି ବିଷୟରେ ଜାଣିବା
  ୨. ଭୀମଭୋଇ ସଚ୍ଚିଦାନନ୍ଦ ରାଉତରାୟଙ୍କ ସୃଷ୍ଟି ବିଷୟରେ ଅବଗତ ହେବା
  ୩. ଗୋପିନାଥ ମହାନ୍ତି, ବାଣୀପାଣି ମହାନ୍ତିଙ୍କ ଓଡ଼ିଆ ସାହିତ୍ୟକୁ ଅବଦାନ କଣ ଜାଣିବା
  ୪. ଜଗମୋହନ ଲାଲା ଏବଂ ଗୋପାଳ ଛୋଟରାୟଙ୍କ ନାଟକ ବିଷୟରେ ଅବଗତ ହେବା
  ୫. ଚିତରଂଜନଙ୍କ ପ୍ରବନ୍ଧ ଏବଂ ନଟବର ସାମନ୍ତରାୟଙ୍କ ସମାଲୋଚନା ସାହିତ୍ୟ ବିଷୟରେ ଆଲୋଚନା କରିବା

SEMESTER - 5 - ଓଡ଼ିଆ ସାହିତ୍ୟର ସବିଶେଷ ଅଧ୍ୟୟନ

- Core - 11 -
୧. ମହାଭାରତ (ଗଦାପର୍ବ)
  ୨. କିଶୋର ଚନ୍ଦ୍ରାନନ୍ଦ ଚମ୍ପୂ (କ, ଘ, ଅନୁପ୍ରାସ)
  ୩. ଚିଲିକା
  ୪. ଶ୍ରୀରାମ କୋଇଲି, ମହାବାହୁ, ଆଦ୍ୟ ମାର୍ଗଶିର, ମନବୋଧ ଚଉତିଶାପାଠ ଓ ଅମୃତମୟ, ନମସ୍କାର, ଗାନ୍ଧାରୀର ଆଶୀର୍ବାଦ, ଝରକା କଡର ଗୋଲାପ ଓ ଚିତ୍ର ପ୍ରତିମା ପାଠ

Core - 12 - ଓଡ଼ିଆ ସାହିତ୍ୟର ଅଧ୍ୟୟନ - କଥା ସାହିତ୍ୟ / ନାଟ୍ୟ ସାହିତ୍ୟ

୧. ଆକାଶର ଇସାରା (ଉପନ୍ୟାସ) ବିଷୟରେ ଅବଗତ ହେବା
୨. ଅମାବାସ୍ୟର ଚନ୍ଦ୍ର (ଉପନ୍ୟାସ) ବିଷୟରେ ଜାଣିବାକୁ ପାଇବା
୩. ରାଣ୍ଡି ପୁଅ ଅନନ୍ତା, ନୀଳ ମାଷରାଣୀ, ଶ୍ରୀକୃଷ୍ଣଙ୍କ ଶେଷ ଦୁଃଖ, ମୋକ୍ଷ ଆଦି  
୪ ଗୋଟି କ୍ଷୁଦ୍ର ଗଳ୍ପ ସଂପର୍କରେ ଆଲୋଚନା କରିବା
୪. ଅମଙ୍ଗଳ, ବିଲ୍ୱମଙ୍ଗଳ (ନାଟକ) ସଂପର୍କରେ ଆଲୋଚନା କରିବା
୫. ସଂକ୍ଷ୍ୟା ଆସରର ଭୂତ, ଆବିଷ୍କାର, ଛଦ୍ମବେଶୀ ଆଦି ଚିନିଗୋଟି ଏକାଙ୍କିକା ସଂକଳନ ସମ୍ବନ୍ଧରେ ଜାଣିବା

SEMESTER - 6 - ଜୀବନୀ ଓ ଭ୍ରମଣ କାହାଣୀ

- Core - 13 -
୧. ମୋ ସମୟର ଓଡ଼ିଶା ଏବଂ ଲକ୍ଷ୍ମଣ ଚିଠି ବିଷୟରେ ଅବଗତ ହେବା
  ୨. କାବ୍ୟ ସମ୍ବାଦ ଓ ରଥ ସପ୍ତକ ବିଷୟରେ ଅବଗତ ହେବା
  ୩. ଆଧୁନିକ ଓଡ଼ିଶା ପ୍ରବନ୍ଧ ଓ କେତୋଟି ବିଷୟରେ ଜାଣିବା

Core - 14 -

ବ୍ୟବହାରୀକ ଲିଖନ କଳା

୧. ବ୍ୟବହାରୀକ ଲିଖନ କଳା କଣ ସେ ବିଷୟରେ ପିଲାଙ୍କୁ ବୁଝାଇବା
୨. କାର୍ଯ୍ୟାଳୟ ଲିଖନ ବିଧି ବିଷୟରେ ଅବଗତ ହେବା
୩. ସାହିତ୍ୟ ଓ ମୁଦ୍ରିତ ଗଣମାଧ୍ୟମ ସଂପର୍କରେ ପିଲାମାନଙ୍କୁ ଜଣାଇବା
୪. ପୁସ୍ତକ ରଚନା କୌଶଳ ଓ ସଂପାଦନା କଳା ବିଷୟରେ ଜାଣିବା

DSE - 1 ଓଡ଼ିଶାର ସଂସ୍କୃତି ଓ ଇତିହାସ ଓ ଓଡ଼ିଆ ସାହିତ୍ୟ

୧. ଓଡ଼ିଶାର ଇତିହାସ ଓ ଉତ୍ତ ଜାତିର ଐତିହ୍ୟ ସଂପର୍କରେ ଅବଗତ ହେବା
୨. ଓଡ଼ିଶାର ସଂସ୍କୃତି ଓ କଳା ତଥା ଶ୍ରୀ ଜଗନ୍ନାଥଙ୍କ ସମ୍ବନ୍ଧରେ ଜାଣିବା
୩. ଓଡ଼ିଶାରେ ବିଭିନ୍ନ ଧର୍ମର ବିକାଶ ଓ ତାର ସାହିତ୍ୟିକ ପ୍ରତିଫଳନ ଆଲୋଚନା କରିବା
୪. ବୌଦ୍ଧ ସଂସ୍କୃତି ଓ ଚର୍ଯ୍ୟା ସମେତ ଓଡ଼ିଶାର ସାମାଜିକ ଓ ସଂସ୍କୃତିକ ଇତିହାସରେ ସୁଯ୍ୟବଂଶର ଭୂମିକା ସଂପର୍କରେ ପାଠ କରାଯିବ
୫. ଓଡ଼ିଆ ସାହିତ୍ୟରେ ଦୌବାଣିଜ୍ୟ ଓ ପରମ୍ପରା ସଂପର୍କରେ ଆଲୋଚନା କରିବା

DSE - 2 ଓଡ଼ିଆ ଭାଷାରେ କମ୍ପ୍ୟୁଟରର ବ୍ୟବହାର

୧. କମ୍ପ୍ୟୁଟରର ପରିଭାଷା ସଂପର୍କରେ ଅବଗତ ହେବା
୨. କମ୍ପ୍ୟୁଟରର ହାର୍ଡୱେୟାର ଓ ସଫ୍ଟୱେୟାରର ପ୍ରଭାବ ସଂପର୍କରେ ଆଲୋଚନା କରିବା
୩. ଓଡ଼ିଆ ଭାଷାର କମ୍ପ୍ୟୁଟରୀକରଣ ସମ୍ବନ୍ଧରେ ଆଲୋଚନା କରିବା
୪. ଇଂଟରନେଟ୍ ବ୍ୟବହାରର ବିଭିନ୍ନ ଦିଗ ଉପରେ ଜାଣିବା
୫. ଓଡ଼ିଆ ସାମାଜିକ ଷ୍ଟେସ୍‌ସାଇଟ୍ ସଂପର୍କରେ ଆଲୋଚନା କରିବା

DSE - 3 ଓଡ଼ିଆ ସାହିତ୍ୟ ଅଧ୍ୟୟନ

୧. ଛବିର ମଣିଷ (ଉପନ୍ୟାସ) ପାଠ କରାଯିବ
୨. ମଶାଣୀର ଫୁଲ, ତିମିରି ଫୁଲ, ମୁଖା, ରତ୍ନାକର ଆଦି ଗଳ୍ପ ସଂକଳନ ପାଠ କରାଯିବ
୩. ବନପୁସ୍ତ (ନାଟକ)
୪. କଂରୁକାର ଭାବନା, ବନ୍ଦୀର ଭାବ୍ୟ ଅନୁଚିନ୍ତା, ଯାତ୍ରା ସଂଗୀତ, ପ୍ରଭା ଅବକାଶ, ସମୁଦ୍ର ଓ ମୁଁ ପାଠ କରାଯିବ
୫. ଓଡ଼ିଆ ସାମାଜିକ ଷ୍ଟେସ୍‌ସାଇଟ୍ ସଂପର୍କରେ ଆଲୋଚନା କରିବା

## Project

୧. ଓଡ଼ିଆ ଲୋକ ସାହିତ୍ୟର ସଂଜ୍ଞା ସ୍ୱରୂପ ବିଷୟରେ ଜାଣିବା
୨. ଓଡ଼ିଆ ଲୋକଗୀତ ବିଷୟରେ ଅବଗତ କରାଇବା
୩. ଓଡ଼ିଆ ଲୋକ ନାଟକ ବିଷୟରେ ଅବଗତ ହେବା
୪. ଓଡ଼ିଆ ଲୋକ କାହାଣୀ ବିଷୟରେ ଜାଣିବା
୫. ପ୍ରବାଦ, ପ୍ରବଚନ, ନାଁ ବିଦ୍ୟା, ଇତି ଆଦି ସଂପର୍କରେ ଆଲୋଚନା

## DEPARTMENT OF PHYSICS

### PROGRAMME OUTCOME

After successful completion of three-year degree program in Physics a student shall be able to-

PO-1. Demonstrate, solve and an understanding of major concepts in all disciplines of physics.

PO-2. Solve the problem and also think methodically, independently and draw a logical conclusion.

PO-3. Employ critical thinking and the scientific knowledge to design, carry out, record and analyze the results of Physics experiments.

PO-4. Create an awareness of the impact of Physics on the society, and development outside the scientific community.

PO-5. To inculcate the scientific temperament in the students and outside the scientific community.

PO-6. Use modern techniques and recent equipments.

### PROGRAMME SPECIFIC OUTCOME

PSO-1. Gain the knowledge of Physics through theory and practicals.

PSO-2. Understand good laboratory practices and safety.

PSO-3. Develop research oriented skills.

PSO-4. Make aware and handle the sophisticated instruments/equipments.

## **COURSE OUTCOME**

### **Semester-1**

#### **MATHEMATICAL PHYSICS -1(CORE-1)**

1. Calculus which gives idea about plotting of functions or curves.
2. Partial derivatives, differentials, integrating factors etc.
3. Vector algebra, vector differentiation and vector integration.
4. Orthogonal curvilinear co-ordinates.
5. Dirac delta functions and its properties.

#### **MECHANICS: (CORE-II)**

##### **COURSE OUTCOME**

1. Rotational dynamics, centre of mass, angular momentum. Theorems to calculate moment of inertia  
of different bodies. Non-inertial frames, centrifugal and coriolis force.
2. Properties of matter like elasticity. Fluid in motion and viscosity.
3. Law of gravitation, gravitational field and potential along with central force motion. Geo-stationary  
satellites and global positioning system (GPS).
4. Simple harmonic motion, damped and undamped vibration. Forced vibration and resonance.
5. Special theory of relativity and Einstein's mass energy relation  $E=mc^2$  and Relativistic Doppler's effect.

### **Semeter-2**

#### **ELECTRICITY AND MAGNETISM (CORE-III)**

### **COURSE OUTCOME**

1. Electric field, potential, Gauss's law and its application, electrostatic energy etc.
2. Magnetic effect of electric current, Biot-Savart's law and Ampere's circuital law and their applications.
3. Faraday's law of electro-magnetic induction.
4. A.C circuits, transient current and its growth and decay.
5. Network theorems with current and voltage sources.

### **WAVES AND OPTICS (CORE-IV)**

#### **COURSE OUTCOME**

1. Matrix formulation of geometrical optics. Cardinal points. Formation of in tin thick lenses. Eye piece  
and dispersion.
2. Huygen's principle, Types of waves and their velocities, S.H.M. and Lissajous figures.
3. Interference , Newton's ring, colour in thin films . Michelson and Fabry-perrot Interferometer.
4. Diffraction through single slit, double slit and plane transmission grating.
5. Theory of zone plate. Resolving power of telescope and microscope.

### **Semeter-3**

### **MATHEMATICAL PHYSICS II (CORE-V)**

#### **COURSE OUTCOME**

1. Fourier series, even and odd function. Differentiation and integration of Fourier series.
2. Frobenius method and its application to solve Legendre and Hermite differential equations.

3. Legendre and Hermite polynomials and their properties.
4. beta and Gamma functions and their properties.
5. Solutions of partial differential equations.
6. Laplace equations and solving different problems using it.

### **THERMAL PHYSICS(CORE-VI)**

#### **COURSE OUTCOME**

1. 1<sup>st</sup> and 2<sup>nd</sup> law of thermodynamics.
2. Thermodynamic scales of temperature.
3. Entropy and T-S diagram for Carnot's and third law of thermodynamics.
4. Thermodynamics potentials, Maxwell's thermodynamic relation and its application.
5. Kinetic theory of gases. Maxwell-Boltzmann' law of distribution of velocities.
6. Mean free path and transport phenomena in ideal gases.
7. Real gases and its deviation from ideal gas equation. Vander wall gas equation and Joule's Porous plug experiment.

### **ANALOG SYSTEM AND APPLICATION(CORE-VII)**

#### **COURSE OUTCOME**

1. P and n type semiconductor, P-N junction diode, forward biasing and reverse biasing.

2. P-N junction diode as full wave and half wave rectifier.
3. Concept of Zener diode, LED, photo diode and solar cells.
4. N-P-N and P-N-P transistors and its use as an amplifier and hybrid models.
5. R-C coupled amplifier, Heartley and Coulpit's oscillators.
6. Operational amplifiers and their applications.

#### **Semester-4**

#### **MATHEMATICAL PHYSICS-III(CORE-III)**

#### **COURSE OUTCOME**

1. Complex analysis.
2. Cauchy-Reimann condition.
3. De-moivres theorem.
4. Cauchy integral formula and Laurent and Taylor expansion. Residue theorems.
5. Fourier transforms and its applications .
6. Dirac-delta functions, inverse Fourier transform and convolution theorems.
7. Laplace transform and its properties.
8. Application of LT to solve different equations.

#### **ELEMENTS OF MODERN PHYSICS(CORE-IX)**

#### **COURSE OUTCOME**

- 1 Inadequacy of classical physics, photoelectric effect, Compton Effect. Dual nature of radiation.

2. Rutherford's model of atom. Bohr's model of hydrogen atom. Somerfield's modification of Bohr's

theory.

3. de-Broglie hypothesis, wave-particle duality, wave packet representation. Heisenberg's Uncertainty principle.

4. Characteristics of nucleus, nuclear force, liquid drop model, semi-empirical mass formula and binding energy.

5. Radio activity, alpha decay and beta decay.

6. Nuclear fission and nuclear fusion. Nuclear reactors .

### **DIGITAL SYSTEM AND APPLICATIONS(CORE-X)**

#### **COURSE OUTCOME**

1. Active and passive components of integrated circuits and its classification.

2. Difference between analog and digital circuits.

3. Gates, Boolean algebra and De-Morgan's theorems.

4. CRO and its applications.

5. Data processing circuits, arithmetic circuits and timers.

6. Introduction to computer organizations.

7. Shift registers and counters.

#### **Semeter-5**

### **QUANTUM MECHANICS AND APPLICATIONS (CORE-XI)**

1. Schrodinger time dependent equation, properties of wave function and uncertainty principle.
2. Operators and commutation algebra.
3. Time independent Schrodinger equation and its applications.
4. Atoms in electric and magnetic fields. Vector atom model, Zeeman effect, Paschen back effect and Stark effect.

### **SOLID STATE PHYSICS(CORE-XII)**

#### **COURSE OUTCOME**

1. Crystal structure lattice with basis. Unit cell, types of lattice.
2. Diffraction of X-rays by crystals and Bragg's law.
3. Lattice vibrations and phonons. Dulong and Petit's law.
4. Einstein and Debye theories of specific heat of solids.
5. Magnetic properties of matter. Langevin's theory of dia and paramagnetism.
6. Curie's law and Weiss's theory of ferromagnetism.
7. Dielectric properties of matter. Clausius and Mossotti equation.
8. Lasers. Spontaneous and stimulated emission.
9. Kronig- Penny model of band gap. Hall effect.
10. Super conductivity. London's equation, BCS theory.

### **CLASSICAL DYNAMICS(DSE-I)**

### **COURSE OUTCOME**

1. Lagrange's equation of motion from de-Alembert's principle.
2. Lagrangian and its application.
3. Hamilton's principle and derivation of Lagrange's equations from Hamilton's principle.
4. The equation of motion and first integrals, classification of orbits.
5. Special theory of relativity and Lorentz transformation and mass-energy relation.
6. Four vectors, Doppler's effect from a four vector.
7. Conservation of four momentums.

### **NUCLEAR AND PARTICLE PHYSICS(DSE -II)**

#### **COURSE OUTCOME**

1. Characteristics of nucleus, binding energy, angular momentum, parity and magnetic moments.
2. Alpha decay, beta decay, neutrino hypothesis and gamma decay.
3. Liquid drop model, semi empirical mass formula, nuclear magic number and shell model.
4. GM and detectors for nuclear radiation.
5. Parabolic accelerator, cyclotron.
6. Particle physics.
7. Parity, Baryon number, strangeness and charm.
8. Elementary ideas of quarks and gluons.

#### **Semester-6**

### **ELECTROMAGNETIC THEORY(CORE-XIII)**

#### **COURSE OUTCOME**

1. Maxwell's equation, Lorentz and Coulomb gauge, Poynting theorems and Poynting vectors.
2. EM wave propagation in unbounded media, propagation through conducting media, skin depth and relaxation time.
3. EM in bounded media, Fresnel's formulae for perpendicular and parallel polarization.
4. Polarization of EM waves, double refraction and Nicol prism.
5. Phase retardation plates, Babinet's compensator and its uses.
6. Biot's law for rotator polarization. Fresnel's theory of optical polarization.

### **STATISTICAL MECHANICS(CORE-XIV)**

#### **COURSE OUTCOME**

1. Macro state and microstate, concept of ensemble, Maxwell-Boltzmann's distribution law of energies.
2. Gibbs's paradox, Sackur-Tetrode equation, law of equipartition of energy. Specific heat and its limitations.
3. Quantum statistics, Bose-Einstein and Fermi-Dirac distribution function. Bose-Einstein condensation.
4. Black body radiation, Kirchoff's law, Stefan Boltzmann's law, Wien displacement law and Rayleigh Jeans law.
5. Planck's law of black body radiation.

## **NANO-MATERIALS AND APPLICATION (DSE-III)**

### **COURSE OUTCOME**

1. Nano scale system, nano structure, quantum confinement of carriers in 3D, 2D, 1D nano structure.
2. Synthesis of nano structure materials, physical vapor deposition. Sol-gel electro deposition.
3. X-ray diffraction optical microscopy, scanning electron microscopy, scanning tunneling microscopy.
4. Applications of nano particle, photonic devices, quantum dots, magnetic quantum well, micro-electro mechanical systems, nano electro mechanical systems.

## Department of Political Science

### PROGRAMME OUTCOME

#### **On Completion of the BA (Political Science) students shall be able to:**

PO-1. To develop academic proficiency in the subfields of Indian Government and Politics, Comparative Government, International Relations, Public Administration, Political Theory, and Political Ideology.

PO-2. To enable them to develop and be able to demonstrate skills in conducting as well as presenting research in political science.

PO-3. To analyze political and policy problems and formulate policy options.

PO-4. To discuss the major theories and concepts of political science and its subfields, and also deliver thoughtful and well-articulated presentations of research findings.

### PROGRAMME SPECIFIC OUTCOME

PSO-1. To enable the students to grasp the knowledge of political ideals and social & political philosophy, fosters knowledge about constitutionalism and comparative constitutional system.

PSO-2. To know about the politics of India along with constitutional structures and institutions. Enriches the knowledge of students about western political thinkers of the ancient and medieval period.

PSO-3. To appraise the global and regional politics along with the interstate relationship. They are acquainted with the Indian political thought and movement from ancient to the medieval period. Become aware of the sociological and political issues including institutions and process. They are taught about the organization and theories of public administration with their application in India.

## **COURSE OUTCOME**

### **Semester -1**

#### **Understanding political theory (Core-1)**

##### **Course outcome**

- 1- To introduces about the concept political theory, politics, political and theory?
- 2- To determine the various traditions of political theory such as liberal, Marxist, anarchist and conservative?
- 3- To understand the various approach to political theory such as Normative and empirical?
- 4- To Teach about Feminism, modernism and post modernism?
- 5- To comprehend about Democracy and various theories such as liberal, Marxist, procedural and substantive.
- 6- Define the Grammar of democracy? Discuss about deliberative democracy, participatory democracy, participation and representation?
- 7- To analyze about Election, types and modes of election?

#### **Constitutional Government and Democracy in India**

##### **(Core-2)**

##### **Course outcome**

- 1- Discuss about philosophy of the constitution, the preamble and features of the constitution?
- 2- To discuss about Fundamental Rights and directive principle of state policy?
- 3- To know about the Various organs of the Government such as Legislative, Executive and Judiciary?
- 4- To explain about Power and function of President, Prime minister and the Supreme Court?
- 5- Describe about Federalism, Centre- state relation and recent trends in federalism?
- 6- Analyze about Decentralization which include Panchayat Raj institution and Municipalities?
- 7- Explain about Composition, power and function of Gram Panchayat, panchayat samiti and Zilla Parishad?
- 8- Explain about Composition, power and function of Municipal Corporation, Municipal Council and Notified Area Council?

## Semester-2

### Political theory – concepts and debates (Core-3)

- 1- Define the importance of Freedom, Negative liberty and positive liberty and various kinds of liberty?
- 2- Discuss about Meaning and types of equality and Egalitarianism?
- 3- To justify about Social exclusion and Affirmative action?
- 4- Explain the Indispensability of justice, Such as procedural justice, distributive justice and Global justice?
- 5- To discuss about Universality of Rights. It includes Rights, Three generation of Human Rights and universal Declaration of Human Rights?
- 6- To explain about Political obligation, cultural Relativism and Multiculturalism?

### Political Process in India (Core – 4)

- 1- Discuss about Indian party system and its features and trends?
- 2- What is voting Behaviour and discuss its determinants?
- 3- What is Election Commission and Discuss its function?
- 4- Discuss about electoral Reforms?
- 5- To elaborate Regionalism, religion and politics?
- 6- Explain about Regionalism- its causes and trends, secularism and communalism?
- 7- What is Caste and politics and discuss about Politicization of caste?
- 8- Explain the concept Affirmative action?
- 9- Explain about the Changing nature of the Indian State. Such as Developmental and welfare Dimension and Coercive dimension?

## Semester-3

### Introduction to comparative Government and Politics (Core – 5)

- 1- Describe the Nature and scope of Comparative Politics?
- 2- Explain the development of the concept of Eurocentrism and how Multiculturalism is a step beyond Eurocentrism?
- 3- Analyze the historical context of modern government, such as meaning and development of capitalism, Globalization and socialism?
- 4- Discussion about Colonialism, Anticolonialism and decolonization?
- 5- To discuss about Comparative study of constitutional development and political economy of Britain and China.?

- 6- To discuss about Comparative study of constitutional development and political economy of Nigeria and China?

### **Perspectives on Public Administration (Core- 6)**

- 1- Discussion about meaning, dimension and significance of Public Administration, Public and private Administration and Evolution of Public Administration?
- 2- To analyze about Theoretical Perspectives. In classical theories it includes scientific management, Administrative Management and ideal type Bureaucracy?
- 3- Discussion about Neo classical theories, it includes Human Relation theory and rational decision - making theory?
- 4- Discussion about Contemporary theories, it includes Ecological approach and Innovation and Entrepreneurship?
- 5- Explain the Concept, relevance and approaches, formulation, implementation and evaluation of Public Policy?
- 6- To describe the Major Approaches in public administration which include New Public Administration, New Public management, New Public service Approach, Good Governance and Feminist perspectives?

### **Perspective on International Relation and World History (Core – 7)**

- 1- Studying about International Relation and how do you understand international Relation?
- 2- Discussion about Emergence of International state system?
- 3- Explain the concept Theoretical Perspectives. Such as classical Realism and Neo-Realism, Liberalism, Neo liberalism and Marxist Approaches?
- 4- Explain the concept Theoretical Perspective and Over view of twentieth Century IR History- i, Feminist Perspectives, Eurocentricism and Perspectives from the Global South?
- 5- To define the Causes and consequences of World War-1, significance of the Bolshevik Revolution, Rise of Fascism and cause and consequences of World War-II?
- 6- To explain an overview of Twentieth century IR History-II. phases of Cold war, emergence of Cold war?
- 7- Discussion about Collapse of USSR and the End of the Cold war, Post- Cold war Development and Emergence of other power centers of power.?

## Semester-4

### Political Process and Institutions in Comparative Perspective (Core-8)

- 1- To have a basic understanding and perspectives on approaches to studying Comparative Politics?  
A- Political Culture  
B- New institutionalism.
- 2- Define the definition, procedure and types of election system?
- 3- To explain the historical contexts of emergence of the party system and types of parties?
- 4- What is Nation-state? Describe the historical evolution in Western Europe and post colonial context Nation and state debate?
- 5- To discuss about democratization and federalism?
- 6- To discuss about the Process of Democratization in post- colonial, post-authoritarian and post-communist countries?
- 7- Explain the historical context of Federation and confederation: debate around territorial division of power?

### Public Policy and Administration in India (Core-9)

- 1- What is Public Policy? Explain the definitions, characteristics and Models?
- 2- Define the Public Process in India?
- 3- Define the concept decentralization? Discuss Its meaning, significance and approaches and types?
- 4- To explain about Local Self-Governance: Rural and Urban?
- 5- Explain the concept and significance of Budget and Budget cycle in India, Discuss its Various Approaches and types of Budgeting?
- 6- Discussion about Citizen and Administration.  
a- Public Service Delivery.  
b- Redressal of Public Grievance, it includes RTI, Lok pal, Citizens Charter and E- Governance.
- 7- To analyze the concept and approaches of Social welfare Administration and various social welfare Policies such as Right to Education, National Health Mission, Right to Food security and MNREGA etc?

### Global Politics (Core- 10)

- 1- To define the conception and perspectives of Globalization. Discuss about Understanding Globalization and its Alternative Perspectives?

- 2- To define the debates on Sovereignty and Territoriality?
- 3- To discuss about the Significance of Global Economy and Anchor of Global Political Economy, such as IMF, World Bank, WTO, TNCS?
- 4- Explain the Conceptions and Perspectives of Globalization and Contemporary Global issues?
- 5- To discuss about Cultural and Technological Dimension of Globalization and Global resistance?
- 6- What is Contemporary Global issue and discuss about ecological issues, international environment Agreement and climate change?
- 7- What are Contemporary Global issues-II and discuss about Proliferation of Nuclear Weapons, International Terrorism, Migration and Human Security?
- 8- To define the concept Global Shift: Power and Governance?

## **Semester-5**

### **Classical Political Philosophy (Core- 11)**

- 1- Discussion about works and philosophy of Plato. It includes Philosopher king, justice, communism of wives and property?
- 2- Discussion about works and philosophy of Aristotle. It includes justice, virtue, citizenship and classification of Government etc.?
- 3- Discussion about works and philosophy of Machiavelli. It includes virtue, Religion, Republicanism, Morality and state Craft?
- 4- Discussion about works and philosophy Hobbes and Locke?
- 5- To explain the Human nature, state of nature and social contract of Hobbes?
- 6- To explain the Human nature, state of nature and social contract of Locke?

### **Indian Political Thought – 1 (Core- 12)**

- 1- Discussion about Tradition of Pre- colonial Indian Political Thought. It includes a - Brahmanic and Shramanic, b- Islamic and Syncretic, c- Ved Vyasa?
- 2- Discussion about Social Laws of Manu and theory of state of Kautilya?
- 3- Discussion about Theory of Kingship of Aggannasutta and ideal polity of Barani?
- 4- Discussion about Monarchy of Abul Fazal and Syncretism of Kabir?

## Semester-6

### Modern Political Philosophy (Core- 13)

- 1- Define the concept modernity and its discourses?
- 2- To describe the work and philosophy of Jean Jacques Rousseau, his concept of General wills local or direct democracy, self government and origin of inequality?
- 3- To describe the works and philosophy of Mary Wollstone Craft. Her concept about Women and paternalism, critique of Rousseau's idea of education, and legal rights?
- 4- To describe the work and philosophy of John Stuart Mill. His concept of liberty, suffrage and subjugation of women, right of minorities and utility principle etc.?
- 5- To describe about work and philosophy of Karl Marx. His concept about Dialectical Materialism, Historical Materialism, Alienation, Class struggle and surplus value etc?

### Indian Political Thought (Core- 14)

- 1- Discussion about rights of Rajarammohan Roy and gender of Pandita Rambai?
- 2- Describe the Vivekananda's concept of Ideal society?
- 3- Describe the Gandhi's idea on Swaraj?
- 4- Discussion about Social justice of Amedkar and Nationalism of Tagore?
- 5- Discussion about Total revolution of Jaya Prakash Narayan?
- 6- Discussion about Hindutva of Savarkar, secularism of Nehru and socialism of Lohia?

### Human Rights in a Comparative Perspective (DSE-1)

- 1- To describe about the institutionalization and understanding of Human Rights, three generation of Human Rights and institutionalization of Universal Declaration of Human Rights?
- 2- Analysis about the Rights in National Constitution: South Africa and India?
- 3- Analysis about Various issue. Such as
  - a- torture: USA and India
  - b- surveillance and Censorship: China and India
  - c- terrorism and insecurity of Minorities: USA and India
  - d- Caste and Race: South Africa and India
- 4- Discussion about structural violence, such as Gender and violence: India and Pakistan?
- 5- To discuss about Adivasis\ Aborigines and the Land question: Australia and India

## **Development Process and Social Movement in Contemporary India (DSE-2)**

- 1- Explain about the developmental process since independence.
  - A- state and planning
  - B- Liberalization and reforms
- 2- Explain about the Industrial development strategy and its impact on the social structure.
  - A- Mixed economy, Privatization, the impact on organized and unorganized labour.
  - B- Emergence of the new middle class
- 3- Explain about the Agrarian Development strategy and its impact on the social structure.
  - A- Land reforms, Green Revolution
  - B- Agrarian crisis since the 1990s and its impact on farmers.
- 4- Explain about the Various social Movement.
  - A- Tribal, Peasant, Dalit and Women Movement
  - B- Maoist challenge
  - C- Civil rights movement.

## **India's Foreign Policy in a globalizing World (DSE-3)**

- 1- Debates on India's Foreign Policy: from a Postcolonial state to an Aspiring Global Power?
- 2- Discussion about India's relations with USA and USSR?
- 3- To explain the India's Engagement with China?
- 4- India in South Asia: Debating Regional Strategies?
- 5- Discussion about India's Negotiating Style and strategies?
- 6- To have a basic understanding about India in the Contemporary Multipolar World?

## **Women, power and politics (DSE-4)**

- 1- Define the concept patriarchy. Discussion about difference between sex and gender?
- 2- Discussion about Feminism?
- 3- Discussion about Family, Community and state?
- 4- To describe the history of the women's Movement in India?
- 5- Discussion about Movement and issues, such as violence against Women?
- 6- Notes on Work and Labour
  - a- Visible and invisible work
  - b- Reproductive and care work
  - c- Sex work

# **PATTAMNDAI COLLEGE, PATTAMUNDAI** **DEPARTMENT OF SOCIOLOGY (UG COURSE)**

## **PROGRAMME OUTCOME**

Sociology is a subject which originated in 1839 by the great French sociologist Isidore Auguste Marie Francois Xavier Comte, has gone a long distance today and established itself as an important subject.

1. This subject provides a deep knowledge to the students about origin and growth of society, Indian society, rural society, urban society, industrial society, population growth, research methods, environment, political life etc.
2. The student is enriched about the overall nature and functioning of society.
3. As this paper emphasizes on research methodology and field work, so the students get an insight study of the society.
4. This subject is very much useful for academicians, researchers and social planners.
5. The social planners and policy makers can make the help of sociologists for proper planning and policy making.
6. The students of sociology are also engaged in different social work programme.

## **PROGRAMME SPECIFIC OUTCOME**

1. This specific programme is expected to clarify and broaden the student's notion about the subject.
2. This specific programme helps students to know some ideas about the nature, forms and patterns of social change.
3. It helps to understand the ideas and sensitivity about gender in a student which he/she can put in to practice in daily life.

## **COURSE OUTCOME**

### **Semester -1**

#### **INTRODUCTION TO SOCIOLOGY-1 (CORE-01)**

1. The subject matter, nature of scope of sociology.
2. The relationship of sociology with other subject like economics, political science, history, anthropology and psychology.
3. Develop the knowledge about the history of sociology.
4. Can be acquainted with the basic concepts used in sociology.
5. Can learn ideas about the associative and dissociative social processes.
6. Can learn about the social institutions.
7. Can learn about the stratification system in the society like caste, class, gender etc.

#### **INTRODUCTION TO SOCIOLOGY-2 (CORE-2)**

1. This paper intends to educate the students about the sociology as a distinctive discipline, having vital scope in present context. It attempts to acquaint the students with the basic concepts and tries to clarify the student's notion about the subject.

2. It attempts to educate the students about the structure & types of society, how culture influences personality.
3. It teaches us about the process of socialization and the important role, it plays in human life.
4. It attempts to aware the students about the various processes that builds and endangers the social relationships.

### Semester -2

#### **INDIAN SOCIETY (CORE-03)**

1. Get deep knowledge about the basic composition of indian society.
2. Learn the historical moorings and basic philosophical foundation of the society.
3. Learn about social institutions like marriage and family etc.
4. Learn about the changes in the institutions and agents of change.
5. Learn about features, functions and distinction of caste system.
6. Learn about the factors which affect caste.
7. Learn about the changes which are found in caste system today.

#### **SOCIOLOGY OF SOCIAL ENVIRONMENT (CORE-04)**

Environment and society are in constant introduction with each other's. It is the environment which sustains the life in society and hence. It is the society that is responsible for the preservation and the degradation of the environment.

1. This paper attempts the acquaint the students about the relationship between society and environment. The knowledge about the ecology ecosystem and the sustainable development.
2. It also attempts to educate the students about the various movements relations to the protection of the environment.
3. It helps the students to be aware about the various movements to protect the environments.
4. This paper helps the students to know what are the preventive reasons are to be undertaken by the govt. Society, civil society and corporate sector etc. To protect the environment

### Semester -3

#### **RESEARCH METHODOLOGY (CORE-05)**

1. Understand the nature of scientific method and the nature of social phenomena.
2. Know the basic steps involved in social research.
3. Know the type of social research and their applications.
4. Develop an insight into the needs and types of research design.
5. Know the use of sampling method.
6. Learn about case study, content analysis etc.
7. Know about mean, median and mode.

#### **GENDER AND SOCIETY (CORE-06)**

1. This paper helps the students to conceptualize what is 'gender' and 'sex' and draw a line i distinction between the two.
2. It aware us about the gender roles, responsibilities, rights and relations.

3. This paper is expected to generate ideas and sensitivity about gender in a student which he/she can put in to practice in daily life.
4. This will lead to change the prevalent biases and gender practices and will help to create a gender-neutral social world.

#### **RURAL SOCIOLOGY (CORE-07)**

1. Ideas about the emergence of rural sociology and forces contributing for its origin.
2. About its subject matter and significance.
3. Collect knowledge about rural sociology in the indian context.
4. Develop idea about the different institutions operating in rural india.
5. Derive idea about different rural problems in india.
6. Know about different rural development programs undertaken by government of india.

#### **Semester - 4**

#### **GLOBALIZATION AND SOCIETY (CORE-08)**

1. Globalization is the important process of social change in the contemporary world.
2. By going through this paper, the students will be aware of its dimensions, distinct features and its impact on indian society.
3. This will help the students to collect information about the reasons and nature of this process and its historical background.
4. After all, this paper is expected to acquaint the students with an ongoing social process bringing tremendous changes in the nation.

#### **MARRIAGE, FAMILY AND KINSHIP (CORE-09)**

1. This paper attempts to acquaint the students to understand three major social institutions that are foundations of the society.
2. It provides a brief account of the classical approaches to the study of family and kinship.
3. It gets to know the rules governing these institutions.
4. It is expected, this paper estimates the changes coming over these institutions with the process of social change.

#### **SOCIAL DISORGANIZATION AND DEVIANCE (CORE-10)**

1. Be able to understand the meaning, causes and consequences of different forms of social disorganization.
2. Learn about different theories related to social disorganization.
3. Know about crime and different theories of punishment.
4. Know about different social problems.
5. Learn about domestic violence, dowry and divorce etc.
6. Learn about the deviant behavior and normative order of the society.

#### **Semester – 5**

#### **POLITICAL SOCIOLOGY (CORE-11)**

1. This paper will help in the system of governance.
2. This paper highlights the close nexus between and polity.
3. It helps the students to acquaint with the existing forms of states and their merits and demerits.

4. It helps to aware the students the difference between power, authority and influence which guide and govern the political processes.

### **ENVIRONMENT AND SOCIETY (CORE-12)**

1. This course helps the students to disseminate knowledge about the significance of environment for society.
2. It acquaints students about the close interaction between society and environment.
3. It accumulates ideas about the ideological currents, issues that drive environment movements.
4. It helps the students to be aware of the global and national efforts to conserve environment.

## **Semester – 6**

### **URBAN SOCIOLOGY (CORE-13)**

1. Understand the specific knowledge about urban society, its historical pattern of growth.
2. Develop knowledge about urban social institutions and problems.
3. Gain a knowledge about different theories about the development of cities.
4. Gain a deep knowledge about urban development, plans and programs etc.
5. Know about social institution and urban economy.
6. Know about urban politics and urban economy.
7. Gain knowledge about urban social problems.

### **SOCIOLOGY OF SOCIAL INSTITUTIONS(CORE-14)**

1. This course is expected to aware the students about the significant role of the social institutions in the functioning of a society by regulation the activities of the individuals.
2. It helps to understand the basic social institutions of our society.
3. It educates about the variations in the structure and functioning of these institutions across time and societies.
4. It provides an idea about the emerging features of these institutions.

### **SOCIOLOGY OF SOCIAL MOVEMENTS(DSE-1)**

1. This paper tries to provide rudimentary impression to the students about the concept nature and types of movements.
2. It educates the students with the concept of social movements and their dynamics.
3. It introduces the students to the role of social movements in social transformation.
4. To help them understand the various approaches to the study of social movements.

### **INDUSTRIAL SOCIOLOGY (DSE-2)**

1. Understand the nature and scope of industrial sociology.
2. Know the significance of industrial sociology in india.
3. Know the developmental stages of industry.
4. Learn about the employer- employee relations in industry.
5. Know about the formal and informal organizations in industry.
6. Know about the views of different thinkers on industry.
7. Know about the need of workers participation in management.

**POPULATION STUDIES (DSE-3)**

1. Understand the various facts of population studies.
2. Can know about different population theories.
3. Develop idea on indian population structure, policies adopted and programs launched in the country to check population.
4. Know about population policies in india.
5. Know about the role of different agencies for population control.
6. Know about the population composition in india.

**FIELD WORK AND DISSERTATION (DSE-4)**

1. Apply research methods in the field.
2. Can know about the real problems of the respondents.
3. Can conduct an empirical research work.
4. Can study or evaluate social problems or social institutions.
5. Can have a basic exposure to the field.
6. They can be acquainted with the research process.
7. Can be able to capture the right type of data and put them into documentation format.

## DEPARTMENT OF ZOOLOGY

### PROGRAMME OUTCOME

**After successful completion of three-year degree program in Zoology a student shall be able to-**

PO-1. Demonstrate, solve and have an understanding of major concepts in all disciplines of Zoology.

PO-2. Solve the problem and also think methodically, independently and draw a logical conclusion.

PO-3. Understand the evolution, history of phylum.

PO-4. Create an awareness of the impact of Zoology on the environment, society, and development outside the scientific community.

PO-5. To study and understand the classification of whole phyla includes in Non chordates with the help of charts/models/pictures.

PO-6. To inculcate the scientific temperament in the students and outside the scientific community.

### PROGRAMME SPECIFIC OUTCOME

PSO-1. Gain the knowledge of Zoology through theory and practical's.

PSO-2. Study and understand the DNA Recombinant technology.

PSO-3. Understand the testing of hypothesis.

PSO-4. Use modern Zoological tools, Models, Charts and Equipments.

PSO-5. Know structure-activity relationship.

PSO-6. Understand good laboratory practices and safety.

PSO-7. Develop research oriented skills.

PSO-8. Make aware and handle the sophisticated instruments/equipments.

## **COURSE OUTCOME**

### **Semester-I**

#### **Core -1 (Diversity and Evolution of Non-Chordates)**

1. Provide knowledge about different kinds of invertebrates.
2. Provide knowledge about gradual complexity in the body organization.
3. Differentiation of unicellular and multicellular animals.
4. Structural peculiarities of different non-chordates.
5. Provide knowledge of significance of non-chordate organisms.

#### **Core- 2 (Principles of Ecology and biostatistics)**

##### **Course Outcome**

1. Ecosystem, food chain, food web, energy flow, ecological pyramids.
2. Basic concepts of population.
3. Provide knowledge about characters of community, diversity and species richness.
4. Support the students to enhance their knowledge about nutrient and biogeochemical cycles.
5. Provide knowledge for conservation of biodiversity.
6. It provides the basic knowledge of biostatistical calculation and application with analysis.

### **Semester-II**

#### **Core- 3 (Diversity and Evolution of Non-Chordates)**

##### **Course outcome**

1. The students will study different types of non-chordates like Annelida, Arthropoda, Onychophora, Mollusca and Echinodermata.
2. They will study their classification along with ecology and life cycle.
3. Role of Onychophora in evolutionary significance.
4. It provides the types of coelom and metamerism in Annelida.
5. Give idea about the respiratory system of Mollusca and the special feature of Echinodermata.

### **Core- 4 (Physiology : Life Sustaining System)**

#### **Course Outcome**

1. It is an important core for the students which provide the firm knowledge about human physiology.
2. It is easy to understand the process and mechanism of digestion.
3. To increase the basic knowledge of respiration and its system.
4. Provide knowledge about the physiological knowledge of excretion and regulation of acid-base balance.
5. Provide knowledge about composition, coagulation and disorder of blood.
6. This core gives elaborate knowledge about the structure, function, disorder and regulation of heart.

### **Core- 5 (Diversity and Distribution of Chordata)**

#### **Course Outcome**

1. Knowledge of protochordates and their origin.
2. Information about structural peculiarities of various protochordates.
3. Gaining knowledge of Petromyzon and Myxine.
4. It supports to increase the knowledge of fishes and amphibia.
5. It makes to understand the migration of birds and different adaptations in reptiles.
6. It provides information to increase the knowledge about mammals and zoogeographical distribution of animals.

### **Semester-III**

### **Core- 6 (Physiology: Control and Coordination)**

#### **Course outcome**

1. In acquiring knowledge about functions of different parts of our body.
2. In gaining knowledge about different types of animal tissues, their location, structure and functions.
3. Understanding about the detail mechanism of transmission of nerve impulse through the nerve cell.
4. Information about mechanism of muscle contraction.
5. It provides detailed knowledge about the reproductive system of humans.
6. Knowledge about various glands present in our body.

## **Core - 7 (Comparative Anatomy of Vertebrates)**

### **Course Outcome**

1. It provides knowledge to study the integumentary and skeletal system of vertebrates.
2. It gives a clear cut idea about the gills, lungs, air sacs and alimentary system of vertebrates.
3. It provides knowledge about general plan of circulation and evolution of heart.
4. Evolution of kidney, genital system and types of mammalian uteri is clearly understood.
5. Sense organs and the nervous system is clearly understood from this core.

## **Semester-IV**

## **Core- 8 (Biochemistry of Metabolic Processes)**

### **Course Outcome**

1. It gives information about the biomolecules.
2. Learning of carbohydrate metabolism.
3. Provides knowledge about protein metabolism.
4. Provides knowledge about lipid metabolism.
5. Provides knowledge to increase mechanism of enzyme action, respiratory chain, enzyme kinetics and oxidative phosphorylation.

## **Core- 9 (Cell Biology)**

### **Course Outcome**

1. Knowledge of prokaryotes and eukaryotes, mycoplasma, virus, prions etc.
2. Transport across cell membrane, cell junctions, and structure and function of ER, mitochondria.
3. Knowledge of cytoskeleton, aging and nucleus.
4. Process of cell death clearly understood.
5. Provides knowledge of cell cycle.
6. Information about cell signaling.

## **Core- 10 (Principles of Genetics)**

### **Course Outcome**

1. Learn the methods of Mendelian principles.
2. Knowledge of linkage and crossing over.

3. Provide knowledge about the chromosomal and gene mutation.
4. Information about quantitative genetics and sex determination process.
5. Provide knowledge about extra chromosomal inheritance and antibiotic resistance.

### **Semester-V**

#### **Core- 11 (Developmental Biology)**

##### **Course Outcome**

1. Support to increase the concept of cell-cell interaction and gene expression.
2. Provide knowledge about gametogenesis, cleavage and fate map.
3. Gives information about implantation of the embryo and placenta.
4. Provide knowledge of hormonal regulation in post embryonic development.
5. Process and cause of teratogenesis.
6. Gives an idea about stem cell culture and amniocentesis.

#### **Core- 12 (Molecular Biology)**

##### **Course Outcome**

1. It provides detail knowledge of DNA structure and replication.
2. Give information about translation and transcription process.
3. Provide knowledge of split gene, splicing mechanism etc.
4. Acquiring knowledge about gene regulation.
5. Support to increase the knowledge of lack operon, trip-operon.

### **Semester-VI**

#### **Core- 13 (Immunology)**

##### **Course Outcome**

1. Provide great opportunity to know historical background of immunology.
2. Provide information about antigen structure, types and function of antigen.
3. Provide information about antibody structure, types and function of antibody.
4. The knowledge of histocompatibility.
5. The knowledge of hypersensitivity.

## **Core - 14 (Evolutionary Biology)**

### **Course Outcome**

1. It provide an idea about history of life
2. Provide information about evidences of evolution.
3. To learn about isolation mechanism, natural selection with sexual and artificial selection.
4. It supports to increase the knowledge of population genetics.
5. Information about species concept.

## **DSE- 1 (Animal Behavior)**

### **Course Outcome**

1. Provide knowledge about mechanism of behavior.
2. It gives an idea about reflex action, reflex path etc.
3. Provide knowledge about the social behavior of animals.
4. Sexual behavior of the animals is clearly understood.
5. Learn about biological clock.

## **DSE- 2 (Economic Zoology)**

### **Course Outcome**

1. Knowledge about bee-keeping and bee-economy.
2. It provides knowledge about rearing of silkworm and importance of silkworm.
3. It gives information about fish management, breeding, nursing and stocking.
4. Information about aquaculture like prawn farming and pearl culture.
5. Provide idea about dairy and poultry farming to increase the economic condition.

## **DSE- 3 (Microbiology)**

### **Course Outcome**

1. Scope and importance of microbiology.
2. Knowledge of gram positive and gram negative bacteria.
3. Provide knowledge of bacterial classification.
4. Knowledge of economic importance of fungi and Protista.
5. Structure of virus and different bacterial, viral, fungal and protozoan disease.
6. It provides knowledge about the interaction of immuno response and antibiotics.

## **DSE- 4 (project)**

### **Course Outcome**

1. To select the topic.
2. Literature survey for the topic of the project.
3. Skill in practical work, experiments, use of biological tool and techniques.
4. Handle instruments for analysis and discuss their experimental results.
5. To prepare project reports and present it using power point presentation.
6. Work within a small team to achieve a common research goal.

# DEPARTMENT OF ECONOMICS

## **PROGRAMME OUTCOME**

1. To provide students a well-founded education in Economics;
2. To provide structured curricula which support the academic development of students;
3. To provide and adapt curricula that prepare our graduates for employment and further study as economists;
4. To provide the students with the opportunity to pursue courses that emphasize quantitative and theoretical aspects of Economics;
5. To provide students with the opportunity to focus on applied and policy issues in Economics;
6. To provide programmes that allow the students to choose from a wide range of economic specialization;
7. To provide a well-resourced learning environment for Economics.
8. To understand how different degrees of competition in a market affect pricing and output.
9. To understand the efficiency and equity implications of market interference, including government policy.
10. To develop research knowledge in economics.
11. To develop the skill of data collection & use of sampling techniques in research.
12. To develop the knowledge about theories of economic growth & Development and issues of economic planning.
13. To create awareness about changing macro-economic policies and theories.

## Programme Specific outcome

This course is designed

1. To expose the students to the basic principles of micro economic theory.
2. To provide knowledge on applications of mathematical methods in economics.
3. To transmit the body of basic mathematics that enables the study of economic theory, specifically the courses on Micro Economics, Macro Economics, Statistics and Econometrics.
4. To introduce the students to the basic concepts of Macro Economics.
5. To provide a sound training in micro economic theory to formally analyse the behaviour of individual agents.
6. To discuss various alternative theories of output and employment determination in a closed economy.
7. To discuss various theoretical issues related to an open economy.
8. To provide some basic concepts and terminology that are fundamental to statistical analysis and inference.
9. To discuss the study and measure of relationship between variables, which are the core of economic analysis.
10. This paper also includes a basic discussion index number and time series.
11. To develop the notion of probability, random variable and the most frequently used theoretical distribution, Normal Distribution.
12. To provide a sound training in micro economic theory to formally analyse the behaviour of competitive firms, general equilibrium and welfare, imperfect markets and topics under information economics.
13. To deal with the nature of government intervention and its implications for allocation, distribution and stabilization.
14. To involve a formal analysis of government taxation and expenditures, public goods, market failures and externalities.
15. To discuss major trends in economic indicators and policy debates in India in the post-Independence period, with particular emphasis on paradigm shifts and turning points.

16. To discuss alternative conceptions of development and their justification and the models of growth and cross-national comparisons of the growth experience that can help to evaluate these models.
17. The students about the significance of agriculture in the Indian economy and helps to understand the role agriculture in economic development.
18. To develop insights into changing agricultural practices in India and to assess the significance of agriculture in the era of liberalisation.
19. To investigate the place of the Indian economy in the wider colonial context, and the mechanisms that linked economic development in India to the compulsions of colonial rule.
20. To reviews major trends in economic indicators and policy debates in Odisha in pre- and post-Independence period and to analyse the problem and prospects of primary, Secondary, Tertiary sector of Odisha.
21. To introducing the students about the basic concepts used in research to scientific social research methods and their approach.

## **Course Outcome**

### **Introductory Micro Economics (Core-1)**

This course will help the students to access knowledge on the followings:

1. Exploring the subject matter of economics.
2. The ten principles of Economics
3. The scientific method and observation
4. The role of assumptions and the Economic model
5. Basic concepts of microeconomics such as demand and supply and elasticity etc.
6. Concepts of consumer surplus, producer surplus, market efficiency and market failure.
7. Concepts of consumer behaviour like cardinal utility and ordinal utility analysis.
8. Application of Indifference curve analysis in deriving demand curves, price effect, income effect and substitution effect.
9. Theory of production- iso-quants, laws of returns to scale, law of variable proportion.
10. Traditional theory of cost.

11. The firm and market structure: Competitive market and monopoly.
12. The input market: the demand for labour, supply of labour, trade-off between work and leisure.

## **Mathematical Methods for Economics (Core-2)**

This paper will provide knowledge on applications of mathematical methods in economics such as

1. Set and set operations.
2. Relations. Functions and Number systems.
3. Functions of one real variable.
4. Limit and continuity of functions & limit theorems.
5. Derivative of a function of one variable.
6. Application of simple differentiation in Economics.
7. Partial differentiation techniques, Geometric interpretation.
8. Application of Partial differentiation in Economics.
9. Elements of matrix algebra, Transpose, inverse, rank etc.
10. Concept of Determinants, its properties and applications in Economics.

## **Introductory Macro Economics (Core-3)**

This course will help the students to access knowledge on the followings:

1. Basic concepts of Macro Economics
2. Concepts and Methods of National income accounting.
3. Measurement of Macro Economic variables.
4. Circular flow, National Income and Economic Welfare, and Green accounting.
5. Evolution and Functions of Money, and Theories of Money.
6. Value of Money and index number of prices.
7. Inflation, Deflation, Depression and Stagflation.

8. Theory of determination of income and Employment.
9. Theory of Effective Demand and Concepts of Multipliers.

## **Mathematical Methods for Economics-II (Core-4)**

This paper will provide knowledge on applications of mathematical methods in economics such as

1. Basic concepts and structure of input-output Model.
2. Solution of equilibrium output in three sector model.
3. Second and higher order derivatives.
4. Application of second order differentiation and curvature of a function.
5. Differentials and total derivatives, and Derivatives of implicit functions.
6. Rules and techniques of Integration.
7. Definite integral and its applications.
8. Single and multivariable optimisation.
9. Economic application of Multivariable optimisation.
10. Optimisation with equality constraints.
11. Lagrange multiplier method and border-Hessian determinants.

## **Micro Economics-I (core-5)**

This course will help the students to access knowledge on the followings:

1. Concepts of consumer behaviour like cardinal utility and ordinal utility analysis.
2. Theory of Indifference curve, Budget line and Consumer Equilibrium.
3. Construction of Model, Optimisation and Equilibrium.
4. Income, price and substitution effects.
5. Compensated demand curve, Consumer surplus and Producer Surplus.
6. Production with one variable input (Law of variable Proportion) and with two variable inputs (Law of Return to scale).

7. CD, CES, Linear and Fixed Proportion Production Function.
8. Short run and long run cost functions.
9. Profit maximisation of Competitive Firm.
10. Profit function and its Properties.

## **Macro Economics-I (core-6)**

This course will help the students to access knowledge on the followings:

1. Theories of Consumption Function.
2. Theories of Investment Functions.
3. Types of investments, MEC and MEI.
4. Theories of Demand for Money: Classical, Neoclassical and Keynesian approach.
5. Theories money supply determination and money multiplier.
6. Analysis of Aggregate demand and Aggregate supply.
7. Is-LM curve and their implication for equilibrium.
8. Inflation- Unemployment trade-off and the Phillips curve.
9. Characteristics and theories of Trade Cycle.

## **Statistical Methods for Economics (core-7)**

This course will help the students to access knowledge on the followings:

1. Basic concepts of statistics, methods of data collection.
2. Presentation of data: Frequency distribution, Graph and Diagram.
3. Methods of central tendency and dispersion.
4. Measures of skewness and kurtosis.
5. Correlation analysis: Karl Pearson and Spearman Rank Correlation.
6. Regression Analysis: Two variable linear regression and standard error.
7. Time Series analysis: Component and Measurement.
8. Analysis of Index Number.

9. Analysis of Probability and Random Variable.
10. Theory of Sampling.

## **Micro Economics-II (core-8)**

This course will help the students to access knowledge on the followings:

1. Firms supply and Equilibrium: Supply decision of a competitive firm and Exceptions; Profits and Producer's Surplus; Long Run Supply Curve of a Firm.
2. Short Run and Long Run Industry Supply; Industry Equilibrium in Short and Long Run; Meaning of Zero Profits; Economic Rent.
3. General equilibrium, efficiency and welfare.
4. Theorems and their implications; The Firm: Production and the Welfare Theorems.
5. Monopoly: Barriers to Entry, Profit Maximization and Output Choice, Monopoly and resource Allocation, Monopoly, Product Quality and Durability.
6. Price Discrimination, Second Degree Price Discrimination through Price Schedules, Regulation of Monopoly.
7. Oligopoly – Choosing a strategy; Quantity leadership – Problems of the follower and the leader; Price leadership.
8. Simultaneous Quantity Setting; Example of Cournot Equilibrium; Simultaneous Price Setting; Collusion.
9. Game Theory the Payoff Matrix of a Game; Nash Equilibrium; Mixed Strategies; The Prisoner's Dilemma.

## **Macro Economics-II (core-9)**

This course will help the students to access knowledge on the followings:

1. Features of Financial Markets, Functions of Financial Markets, Banks and Financial Markets.
2. Financial Repression and Major Financial Sector Reforms in India.
3. Open Economy Macroeconomics Balance of payments- Concept, Equilibrium and Disequilibrium, Measures to Correct Disequilibrium.

4. Determination of Foreign Exchange Rate- the PPP Theory and its Implications, The Short-run open economy Model, the basic Mundell-Fleming Model.
5. Modelling Economic Growth, The Basic Harrod- Domar Model, Joan Robinson and the Golden Rule of Capital Accumulation.
6. The Basic Solow Model, Theory of Endogenous Growth – the Rudimentary A-K Model.
7. Macroeconomic Policy: The Goals of Macroeconomic Policy and of Policy Makers, The Budget and Automatic Fiscal Stabilisers.
8. Fiscal Policy: Objectives and Limits to Discretionary Policy, The Crowding –Out Meaning, Scope and Objectives of Monetary Policy, Instruments of Monetary Policy, the Transmission Mechanism of Monetary Policy.
9. Schools of Macroeconomic Thought and the Fundamentals of Macroeconomic Theory and Policy.

## **Research Methodology (core-10)**

This paper explores the ideas about

1. Meaning, Objectives, Motivation, Types, Approaches and Significance of Research.
2. Criteria of Good Research; Qualities of a Good Researcher, Research as a Career.
3. Research Problem, Selecting the Problem, Necessity of Defining the Problem.
4. Technique Involved in Defining a Problem; Research Design: Meaning, Need, Features of a Good Design.
5. Measurement in Research, Measurement Scales, Sources of Error in Measurement.
6. Tests of Sound Measurement, Techniques of Measurement Tools, Scaling and Important Scaling Technique.
7. Research Ethics: codes and ethics, permissions to research, responsibilities, confidentiality, feedback.
8. Research Proposal and literature review and plagiarism.
9. English in report writing: words, sentences, paragraph, writing style.
10. Evaluation checklists, persistence; Common Citation Styles.

## **INDIAN ECONOMY I (Core-11)**

This paper explores the ideas about

1. Indian Economy in the Pre-British Period; The Structure and Organisation of Villages and Towns.
2. Industries and Handicrafts in Pre-British India; Colonialism; Economic Consequences of British Rule.
3. The Land System and Commercialisation of Agriculture; Industrial Transition; Colonial Exploitation and Impacts.
4. Colonisation and Modernisation; State Policies and Economic Underdevelopment.
5. Population Growth and Economic Development – size, growth and future of population; Causes of rapid population growth; Population and economic development.
6. Population policy; Demographic issues – Sex and Age Composition of population; Demographic Dividend.
7. Human Resource Development – Indicators and importance of Human Resource Development.
8. Trends in national and per capita income; Changes in sectoral composition of national income.
9. Regional disparities in Growth and Income; Savings and Investment.
10. Rationale, Features, Objectives, Strategies, Achievements and Assessment of Planning in India.
11. Eleventh Five Year Plan – Objectives, Targets and Achievements; Twelfth Five Year Plan – Vision and Strategy.
12. Poverty – Estimation and Trends, Poverty Alleviation Programs – MGNREGA, NRLM, SJSRY.
13. Inequality – Measures and trends in India.
14. Unemployment – Nature, Estimates, Trends, Causes and Employment Policy.

## **DEVELOPMENT ECONOMICS I (Core-12)**

This paper explores the ideas about

1. Economic growth and economic development; characteristics of underdeveloped countries.
2. Vicious cycle of poverty and cumulative causation; obstacles to economic development; measures of economic development.

3. National and per capita income, basic needs approach, capabilities approach.
4. Three core values of development, PQLI, HDI, HPI, MDPI, GDI; capital formation and economic development.
5. Theories of Economic Growth and Development- Classical theory, Marxian theory; Schumpeterian theory; Rostow' s stages of economic growth; Solow model.
6. Concepts of poverty and inequality; Measuring poverty; Measuring Inequality – Lorenz curve and Kuznets' inverted U hypothesis.
7. Growth, poverty and inequality; Economic characteristics of poverty groups (rural poverty, women and poverty, indigenous population and poverty).
8. Role of institutions in economic development; Characteristics of good institutions and quality of institutions.
9. The role of democracy in economic development; Role of state; Role of markets and market failure.
10. Corruption and economic development – tackling the problem of corruption.
11. Role of agriculture; Transforming traditional agriculture; Barriers to agricultural development.
12. Role of industrialization; Interdependence between agriculture and industries – A model of complementarities between agriculture and industry.

## **INDIAN ECONOMY II (CORE-13)**

This paper explores idea about

1. Nature, importance, trends in Indian agricultural production and productivity.
2. Factors determining production, land reforms, new agricultural strategies and green revolution.
3. Rural credit; Agricultural marketing and warehousing.
4. Trends in industrial output and productivities; Industrial Policies of 1948, 1956, 1977 and 1991.
5. Industrial Licensing Policies – MRTP Act, FERA and FEMA.

6. Growth and problems of SSI, Industrial sickness; Industrial finance; Industrial labour.
7. Tertiary Sector: growth and contribution of service sector to GDP of India.
8. Share of services in employment; Human development – concept, evolution, measurement, HRD.
9. Indian educational policy; Health and Nutrition.
10. Foreign Trade: role, composition and direction of India's foreign trade.
11. Trends of export and import in India, export promotion versus import substitution.
12. Balance of Payments of India; India's Trade Policies; Foreign Capital – FDI, Aid and MNCs.

## **DEVELOPMENT OF ECONOMICS II (CORE-14)**

This paper explores the ideas about

1. The demographic concept like birth and death rates, age structure, fertility and its determinants.
2. Different theories on population like Malthus theory of population growth, Theory Optimum population.
3. The negative consequence of population growth and theory on migration.
4. Dualism and its different types like social dualism, technological dualism and geographical dualism etc.
5. The economic inequalities, the inverted U relationship, international inequalities.
6. The center periphery thesis, exploitation and unequal exchange, the dualistic development thesis.
7. Basic issues of environment and development.
8. Simple model of environment and economic activity, environmental degradation and externalities, common property resources.
9. Public goods and free-rider problem, renewable and non-renewable resources.
10. Financial inclusion and economic development, taxation, public borrowing and economic development.
11. Investment and aid controversies and opportunities,

12. Globalization, international trade and economic development.
13. The Prebisch Singer Hypothesis.

## **Economic History of India 1857-1947 (DSE-1)**

This course will help the students to access knowledge on the followings:

1. Colonial India: Background and Introduction, Overview of colonial economy.
2. Macro Trends of National Income; population and occupational structure.
3. Agriculture during British rule: Agrarian structure and land relations.
4. Agricultural markets and institutions – credit, commerce and technology; trends in performance and productivity; famines.
5. Railways; the de-industrialisation debate; evolution of entrepreneurial and industrial structure.
6. Nature of industrialisation in the interwar period; constraints to industrial breakthrough; labour relations.
7. The imperial priorities and the Indian economy; drain of wealth; international trade.
8. Capital flows and the colonial economy – changes and continuities; government and fiscal policy.

## **Odisha Economy (DSE-2)**

This course will help the students to access knowledge on the followings:

1. Odisha Economy before 1947, Orissa's Economy in the Nineteenth Century: Benevolence or Exploitation, Forces of Nature, Animal Power, The Company Steps in, Public Works and Public Health, Education, Disintegration of Village Economy.
2. The Borrowers, Money-flows from Village to Metropolis, Pauperization of Peasantry, The Wage Earners, Demographic Changes.

3. A macro glance of Odisha economy: aggregate income, broad sectoral decomposition, performance of districts, employment, child labour and bonded labour.
4. Employment programmes, consumption expenditure, cost of living; Odisha State public finances.
5. Agriculture Sector Development in Odisha, Agriculture: land ownership and land tenure, agricultural wages and rural unemployment.
6. Production and productivity of major crops, agricultural inputs, agricultural policy; Animal Husbandry; Fisheries.
7. Industry: Investment, industrial policy, and the growth of large industries, mining and quarrying.
8. Construction; tertiary sector: tourism, transport and power; Water Resources, Forest Resources.
9. Social Sector in Odisha, Poverty: income poverty and inequality; health sector: outcomes, infrastructure, finance, public health, NRHM.
10. Education: Literacy, Primary education, secondary education, higher education, SSA; human development.

### **Economics of Agriculture (DSE-3)**

This paper explores the ideas about

1. Role of Agriculture in Economic Development, Economic growth – sectoral changes and agriculture.
2. Inter-linkages between agriculture and industry; empirical evidence of inter-dependence between agriculture and industry.
3. Mechanization of Indian Agriculture, Case for and against farm mechanization.
4. Green revolution and trends of mechanization in India.
5. Agricultural price policy for a developing economy – objectives and effectiveness of agricultural price policy, features of an ideal agricultural price policy.

6. Agricultural price policy in India and public distribution system.
7. Agricultural marketing – need and criteria for assessing efficiency, agricultural marketing system in India, development of a national agricultural marketing platform.
8. Rural credit in India, importance and estimates, agencies for rural credit, review of progress of institutional finance in rural India since independence.
9. WTO and India's trade in agricultural commodities.
10. Agriculture in Indian Planning, Globalization and Indian agriculture.

## **Project (DSE-4)**

This paper explores the ideas about

11. Meaning, Objectives, Motivation, Types, Approaches and Significance of Research.
12. Criteria of Good Research; Qualities of a Good Researcher, Research as a Career.
13. Research Problem, Selecting the Problem, Necessity of Defining the Problem.
14. Technique Involved in Defining a Problem; Research Design: Meaning, Need, Features of a Good Design.
15. Measurement in Research, Measurement Scales, Sources of Error in Measurement.
16. Tests of Sound Measurement, Techniques of Measurement Tools, Scaling and Important Scaling Technique.
17. Research Ethics: codes and ethics, permissions to research, responsibilities, confidentiality, feedback.
18. Research Proposal and literature review and plagiarism.
19. English in report writing: words, sentences, paragraph, writing style.
20. Evaluation checklists, persistence; Common Citation Styles.

## DEPARTMENT OF EDUCATION

### B.A. EDUCATION

#### PROGRAMME OUTCOME-

After successful completion of three-year degree program in Education a student shall be able to-

- To understand basic concept and ideas of educational theory.
- To have a basic understanding and perspective on the nature of the learner, diversity and learning.
- To comprehend the role of the systems of governance and structural – functional provisions that support school education.
- To develop understanding about teaching, pedagogy, school management and community involvement.
- Build skills and abilities of communication, reflection, art, aesthetics, theatre, self-expression and ICT.

#### PROGRAMME SPECIFIC OUTCOME-

PSO-1: Recall and recognize some educational terminology, educationists, psychologists, some basic concepts, definitions of education, learning, teaching etc.

PSO-2: Synthesize new methods, strategies, theories on the basis of the knowledge gained during the programme.

PSO-3: Appreciates the contributions of philosophers, educationists and sociologists for the development of educational theory and practice.

PSO-4: Appreciates the role of ICT in making the educational more reachable, making the concepts easy, catering to the needs of the individual learning at their own pace

PSO 5: Applies the knowledge in the course of teaching in the schools.

PSO 6: Uses the ICT widely in all spheres of educational theory and practice

## **COURSE OUTCOME**

**After completion of these courses students should be able to-**

## **1<sup>st</sup> SEMESTER**

### **CORE-1: BASIC IN EDUCATION**

**On completion of the paper, student shall be able to:**

- Explain the concept of education and its relationship with philosophy
- List areas of philosophy and narrate their educational implications
- Describe the contribution of Philosophy to the field of education
- Appreciate the contribution of Philosophy of various Indian Schools of Philosophy to the field of education
- Evaluate the impact of Western Philosophies on Indian Education
- Narrate the contribution of the Great Indian Thinkers.

### **CORE-2: EDUCATION AND SOCIETY**

**On completion of the paper, student shall be able to:**

- To justify education as a social process and explain its function.
- To list various agencies of education and their function.
- To describe the aims of education from sociological perspective.

- To justify education as a sub-system of society and how other sub systems affect education
- To appreciate the importance of education for social change.

## **2<sup>nd</sup> SEMESTER**

### **CORE-3: LEARNER AND LEARNING**

**On completion of the paper, student shall be able to:**

- To establish relationship between education and psychology.
- To understand various methods used to study individual behavior.
- To explain the application of educational psychology in teaching learning process.
- To reflect the contribution of various learning theories in teaching learning process.
- To explain different category of people from different personality type and the type of adjustment.

### **CORE-4: PEDAGOGICAL SKILLS**

- Explain the concept of pedagogy.
- Differentiate pedagogy from other allied concepts.
- Explain different teaching task with example.
- List out different approaches and methods of teaching.
- Prepare a lesson plan following different designs.
- Establish relationship between teaching and learning.

## **3rd SEMESTER**

### **CORE-5: TECHNOLOGY AND INNOVATION IN EDUCATION**

**On completion of the paper, student shall be able to:**

- Explain the concept nature and scope of technology and innovations in educations.
- Explore technology resoures for teaching and learning.
- Develop the ability to use various tools connect the world.
- Explain the content by using various subjects tools.
- Explore the tools and techniques in education.

## **CORE-6: PEDAGOGY OF SCHOOL SUBJECTS ()**

### **METHODS OF TEACHING ODIA**

- To describe the concept of Mother tongue.
- To explain the semantic peculiarity of Odia language.
- To justify the importance and objectives of teaching Mother Tongue at Secondary Stage.
- To prepare subject specific lesson plan for improvement of language skills.
- To plan and construct test to assess language skills and content areas.

### **METHODS OF TEACHING ENGLISH**

- To State the place of English language in India.
- To describe English as a second language in the multi-lingual syllabus India.
- To list out different techniques of teaching learning materials in teaching English.

### **METHODS OF TEACHING MATHEMATICS**

- To explain the nature and scope of mathematics.
- To identify different types of proof in mathematics and their application to solving mathematical problems.
- To develop mathematics achievement test and acquire of the scoring procedure.
- To relate the mathematical concepts with other school subjects.

## **CORE-7: STATISTICS IN EDUCATION**

**On completion of the paper, student shall be able to:**

- To describe the importance of Statistics in field of education.
- To convey the essential characteristics of a set of data by representing in tabular and graphical forms.
- To compute the relevant measures of average and measures of dispersion.
- To spell out the characteristics of normal probability curve.

## **4<sup>th</sup> SEMESTER**

### **CORE-8: CURRICULUM DEVELOPMENT & EDUCATIONAL GUIDANCE**

**On completion of the paper, student shall be able to:**

- To define and explain the concept of curriculum.
- To list out different types of curriculum with examples.
- To describe different considerations for curriculum planning.
- To elucidate different process of curriculum development.
- To list out different type of counseling services and the role of teacher in organizing those services.

### **CORE-9: EDUCATIONAL ASSESSMENT AND EVALUATION**

**On completion of the paper, student shall be able to:**

- To describe the role of assessment in education.
- To differentiate and establish relationship between measurement, assessment and evaluation.
- To prepare a good achievement test on any school subject.
- To list out different type of assessment techniques.
- To explain the characteristics of good measuring instruments.
- To identify major issues and trends in curriculum.

### **CORE-10: INTRODUCTION TO EDUCATIONAL RESEARCH**

**On completion of the paper, student shall be able to:**

- To describe the nature, purpose, scope of research in education.
- To identify types of research in education.

- To explain the characteristics of qualitative, quantitative and mixed research.
- To select appropriate tools and techniques for the data collection.
- To describe the procedure of preparation of research report.

## 5<sup>th</sup> SEMESTER

### **CORE-11: HISTORY OF INDIAN EDUCATION**

**On completion of the paper, student shall be able to:**

- To narrate the concept of education in the context of the Indian Heritage.
- To describe education in ancient India particularly in Vedic Education, Upanishadic Education and Buddhist Education.
- To critically examine the education system in Medieval India.
- To evaluate the education system during British period with special emphasis on commissions and committees.
- To elaborate the status of education during post-independence period with special emphasis on the commissions and committees.

### **CORE-12: COMPARATIVE EDUCATION**

**On completion of the paper, student shall be able to:**

- To explain the scope of comparative education.
- To list out the factors of comparative education.
- To compare the structure, curriculum and evaluation system of India with that of China, Japan, U.K. and U.S.A.

### **DSE-1: INFORMATION AND COMMUNICATION TECHNOLOGY IN EDUCATION**

**On completion of the paper, student shall be able to:**

- Explain the concept , nature and scope of ICT in Education.

- Explore ICT resources for teaching and learning.
- Differentiate between Web 1.0 and Web 2.0.
- Demonstrate the use of various applications software in Education .
- Describe the importance of free and open source software in Education .
- Explore tools and techniques of ICT for evaluation .
- Explain the content by using various subject tools.

## **DSE-2: SPECIAL EDUCATION**

**On completion of the paper, student shall be able to:**

**On completion of the paper, student shall be able to:**

- To know about the concept, nature, objectives, types and historical perspective of special education.
- To explain the innovations and issues of special education.
- To elaborate the policies and programmes of special education.
- To able to identify different type of special category children.
- To explain the role of resource teacher and special teacher.

## **6<sup>th</sup> SEMESTER**

### **CORE-13: EDUCATIONAL ADMINISTRATION AND MANAGEMENT**

**On completion of the paper, student shall be able to:**

- Describe the concept and types of Educational planning, administration and management.
- Spell out the structure of educational management in different levels from national to institution level.
- Develop and apply appropriate techniques and tools for the design and analyse the system.
- Demonstrate knowledge of professional skills and ethical practices.

### **CORE-14: CONTEMPORARY CONCERNS IN EDUCATION**

**On completion of the paper, student shall be able to:**

- Understand the importance of pre-school and elementary school education. Analyse various problems and issues for ensuring quality education.
- State the importance of secondary education and analyse various problems and issues for ensuring quality in secondary education.
- Enumerate the importance of higher education and analyse various problems and issues for ensuring quality in higher education.
- Justify the importance of teacher education and analyse various problems and issues for ensuring quality in teacher Education.
- Analyse emerging concerns in Indian Education.

**DSE-3: DISTANCE EDUCATION**

**On completion of the paper, student shall be able to:**

- To describe the historical perspective of distance education.
- To elaborate the curricular process of distance education.
- To understand various modes of student support services.

**DSE-4: PROJECT**

**On completion of the paper, student shall be able to:**

- To learn and practice the literature survey aspects of projects.
- To enable students to design and execute projects.
- To equip the technicalities of report writing.

## Programme Outcome, Programme Specific Outcome & Course outcome

### Department of Mathematics, Pattamundai College

#### **PROGRAMME OUTCOME-**

After successful completion of three-year degree program in Mathematics a student shall be able to-

PO-1. Demonstrate an understanding of the basic concepts in mathematics, statistics, operations research and their importance in the solution of some real- world problems.

PO-2. Analyse and solve the well-defined problems in mathematics, statistics, and applied research.

PO-3. Demonstrate the ability to manipulate and visualize data and to compute standard statistical summaries.

PO-4. Learn, select, and apply appropriate methods and procedures, resources and computing tool such as Excel, MATLAB, MATHEMATICA etc with an understanding of the limitations.

PO-5. Ability to think rationally, analyze situations and solve problems adequately.

#### **PROGRAMME SPECIFIC OUTCOME**

PSO-1. Understand the mathematical concepts and application in the field of algebra / analysis, statistic, manifolds, relativity & astrophysics.

PSO-2. Acquire knowledge in Calculus & Geometry.

PSO-3. Apply mathematical theories and principles accurately, precisely and effectively.

PSO-4. Analyze and solve real world problems applying mathematical models.

## **CORE PAPER-1 CALCULUS**

### **Course Outcome:**

1. The main emphasis of this course is to equip the student with necessary analytic and technical skills to handle problems of mathematical nature as well as practical problems.
2. Main target of this course is to explore the different tools for higher order derivatives.
3. They plot the various curves
4. They solve the problems associated with differentiation and integration of vector functions.
5. After completing the course, students are expected to be able to use Leibnitz's rule to evaluate derivatives of higher order.
6. They are able to study the geometry of various types of functions.
7. Evaluate the area, volume using the techniques of integrations.
8. They are able to identify the difference between scalar and vector, acquired knowledge on some the basic properties of vector functions.

## **CORE PAPER-II DISCRETE MATHEMATICS**

### **Course Outcome:**

1. This is a preliminary course for the basic courses in mathematics and all its applications.
2. The objective is to acquaint students with basic counting principles,
3. The objective is to acquaint students with set theory and logic,
4. To accrue knowledge of matrix theory and graph theory.
5. The acquired knowledge will help students in simple mathematical modeling.
6. They can study advance courses in mathematical modeling.
7. They can study computer science, statistics, physics, chemistry etc.

## **CORE PAPER-III REAL ANALYSIS**

### **Course Outcome:**

1. The objective of the course is to have the knowledge on basic properties of the field of real numbers.

2. Studying Bolzano-Weierstrass Theorem , sequences and convergence of sequences,
  3. Series of real numbers and its convergence etc.
  4. This is one of the core courses essential to start doing mathematics.
- 5..On successful completion of this course, students will be able to handle fundamental properties of the real numbers that lead to the formal development of real analysis
- 6.Understand limits and their use in sequences, series, differentiation and integration.
- 7.Students will appreciate how abstract ideas and rigorous methods in mathematical analysis can be applied to important practical problems.

## **CORE PAPER-IV DIFFERENTIAL EQUATIONS**

### **Course Outcome:**

1. Differential Equations introduced by Leibnitz in 1676 models almost all Physical, Biological, Chemical systems in nature.
  2. The objective of this course is to familiarize the students with various methods of solving differential equations and to have a qualitative applications through models.
  3. The students have to solve problems to understand the methods.
- 4..A student completing the course is able to solve differential equations and is able to model problems in nature using Ordinary Differential Equations.
- 5.This is also prerequisite for studying the course in Partial Differential Equations and models dealing with Partial Differential Equations.

## **CORE PAPER-V THEORY OF REAL FUNCTIONS**

### **Course Outcome:**

1. The objective of the course is to have knowledge on limit theorems on functions.
2. Limits of functions, continuity of functions and its properties
3. uniform continuity, differentiability of functions, algebra of functions and Taylor's theorem and, its applications.
4. The student how to deal with real functions and understands uniform continuity, mean value theorems.

5. On the completion of the course, students will have working knowledge on the concepts and theorems of the elementary calculus of functions of one real variable.

6. They will work out problems involving derivatives of function and their applications.

7. They can use derivatives to analyze and sketch the graph of a function of one variable,

8. They can also obtain absolute value and relative extrema of functions.

9. This knowledge is basic and students can take all other analysis courses after learning this course.

## **CORE PAPER-VI GROUP THEORY-I**

### **Course Outcome:**

1. Group theory is one of the building blocks of modern algebra.
2. Objective of this course is to introduce students to basic concepts of group theory and examples of groups and their properties.
3. This course will lead to future basic courses in advanced mathematics, such as Group theory-II and ring theory.
4. A student learning this course gets idea on concept and examples of groups and their properties.
5. He understands cyclic groups, permutation groups, normal subgroups and related results.
6. After this course he can opt for courses in ring theory, field theory, commutative algebras, linear classical groups etc.
7. They can be apply this knowledge to problems in physics, computer science, economics and engineering.

## **CORE PAPER-VII**

### **PARTIAL DIFFERENTIAL EQUATIONS AND SYSTEM OF ODES**

#### **Course Outcome:**

1. The objective of this course is to understand basic methods for solving Partial Differential Equations of first order and second order.

2. In the process, students will be exposed to Charpit's Method, Jacobi Method and solve wave equation, heat equation, Laplace Equation etc.

3.They will also learn classification of Partial Differential Equations and system of ordinary differential equations.

4.After completing this course, a student will be able to take more courses on wave equation, heat equation, diffusion equation, gas dynamics, non linear evolution equations etc.

5..All these courses are important in engineering and industrial applications for solving boundary value problem.

## **CORE PAPER-VIII**

### **NUMERICAL METHODS AND SCIENTIFIC COMPUTING**

#### **Course Outcome:**

1. Calculation of error and approximation is a necessity in all real life, industrial and scientific computing.
2. The objective of this course is to acquaint students with various numerical methods of finding solution of different type of problems, which arises in different branches of science such as locating roots of equations.
3. The objective of this course is to finding solution of systems of linear equations and differential equations, interpolation, differentiation, evaluating integration.
- 4..Students can handle physical problems to find an approximate solution.
5. After getting trained a student can opt for advance courses in numerical analysis in higher mathematics.
- 6..Use of good mathematical software will help in getting the accuracy one need from the computer and can assess the reliability of the numerical results, and determine the effect of round off error or loss of significance.

## **CORE PAPER-IX TOPOLOGY OF METRIC SPACES**

#### **Course Outcome:**

1. This is an introductory course in topology of metric spaces.
2. The objective of this course is to impart knowledge on open sets, closed sets.
3. The objective also includes continuous functions, connectedness and compactness in metric spaces.
- 4..On successful completion of the course students will learn to work with abstract topological

spaces.

5..This is a foundation course for all analysis courses in future.

### **CORE PAPER-X RING THEORY**

#### **Course Outcome:**

1. This is a second course in modern algebra which deals with ring theory.
2. Some basics of ring theory like rings, subrings, ideals, ring homomorphisms and their properties.
3. This course is an integral part of any course on Modern algebra the others being Group theory and Field Theory.
- 4..After completing this course, this will help students to continue more courses in advanced Ring theory modules,
5. This will help students Galois groups.

### **CORE PAPER - XI MULTIVARIATE CALCULUS**

#### **Course Outcome:**

1. The objective of this course to introduce functions of several variable to a student after he has taken a course in one variable calculus.
2. The course will introduce partial derivatives and several of its consequences .
3. It will introduce double and triple integrals along with line integrals which are fundamental to all streams where calculus can be used.
- 4.After reading this course a student will be able to calculate partial derivatives, directional derivatives, extreme values and can calculate double, triple and line integrals.
5. He will have idea of basic vector calculus including green's theorem, divergence theorem.and stokes theorem.
- 6.He can take courses in calculus on manifolds, Differential geometry and can help in numerical computations involving several variables.

### **CORE PAPER –XII LINEAR ALGEBRA**

#### **Course Outcome:**

1. Linear algebra is a basic course in almost all branches of science.
2. A full course in undergraduate program will help students in finding real life applications later..

3. The objective of this course is to introduce a student the basics of linear algebra and some of its application
- 4.The student will use this knowledge wherever he/She goes after undergraduate program.
- 5.It has applications in computer science, finance mathematics,
- 6.More applications in industrial mathematics, bio mathematics and what not.

### **CORE PAPER-XIII COMPLEX ANALYSIS**

#### **Course Outcome:**

- 1.The objective of the course is aimed to provide an introduction to the theories for functions of a complex variable.
2. The concepts of analyticity and complex integration are presented.
3. The Cauchy's theorem and its applications, the calculus of residues and its applications are discussed in detail.
- 4.Students will be able to handle certain integrals not evaluated earlier.
- 5.They will know a technique for counting the zeros of polynomials.
- 6.This course is prerequisite to many other advance analysis courses.

### **CORE PAPER-XIV GROUP-THEORY-II**

#### **Course Outcome:**

1. The objective of this course is to be exposed to more advanced results in group theory after completing a basic course.
2. The course introduces results on automorphism, commutator subgroup, group action Sylow theorems etc.
- 3.The knowledge of automorphism helps to study more on field theory.
4. Students learn on direct products, group actions, class equations and their applications with proof of all results .
- 5.This course helps to opt for more advanced courses in algebra and linear classical groups.

**Discipline Specific Elective Paper-1 LINEAR  
PROGRAMMING**

**Course Outcome:**

1. The objective of this course is to familiarize industrial problems to students with various methods of solving Linear Programming Problems.
2. Transportation Problems, Assignment Problems and their applications.
3. Students will know the application of linear Programming method in Game Theory.
- 4..More knowledge on this topic in higher studies will help students to deal industrial models.
- 5.This is also prerequisite for studying advanced courses in Nonlinear Programming Problems, Inventory Control Problem and Queuing Theory etc.

## **Discipline Specific Elective Paper-II**

### **Probability and Statistics**

#### **Course Outcome:**

1. The objective of the course is to expertise the student to the extensive role of statistics in everyday life
2. To learn computation, which has made this course a core course in all branches of mathematical and engineering sciences.
3. The students shall learn probability and statistics for various random variables, multivariate distributions, correlations and relations.
4. He shall learn law of large numbers and shall be able to do basic numerical calculations.

## **Discipline Specific Elective Paper-III**

### **DIFFERENTIAL GEOMETRY**

#### **Course Outcome:**

1. After learning methods on curve tracing and Analytic Geometry.
2. The objective of this course is to teach Differential geometry of curves and surfaces which trains a student using tools in calculus to derive intrinsic properties of plain curves and space curves.
3. After completing this course a student will learn on serret-Frenet formulae.
4. They also learn relation between tangent, normal and binormals, first and second fundamental forms and ideas on various curvatures.
5. He has scope to take more advanced courses in surface theory and geometry.

## **Discipline Specific Elective Paper-IV PROJECT**

#### **Course Outcome:**

1. The student is expected to devote about 100 hours.
2. The project will be evaluated by a committee of faculty members at the end of the sixth semester.
3. The committee will be constituted by the Under Graduate (B.A./B.Sc.) Mathematics (Honours) Project committee of the college keeping in mind the areas of project they will cover

**Department of Philosophy**  
**Pattamundai College, Pattamundai**

**Programme Outcome:**

1. After successfully completing this programme the students can pursue their Post Graduation in Philosophy in various recognized universities of India and abroad.
2. Apart from that students can go for Bed in English in Odisha universities or in other NCETE approved universities of India but they have to study a course from school subjects of social sciences such as History or Geography as their generic elective or soft core.
3. Students can opt for Master Programme in Journalism and Miscommunication.
4. They can also go for Master of Arts in Women Studies.
5. Besides these doing these programmes the students also can pursue Master of Arts in Translation Studies.
6. The students can also go for Master of Arts in Linguistic.
7. 1<sup>st</sup> Paper – General Philosophy benefits students intellectually, spiritually and morally also.
8. Logic and Scientific Method is remarkable intellectual connection of inference and argument which is very helpful for students.
9. Systems of Indian Philosophy get a great many benefits from doing so.
10. History of Greek Philosophy Exposes the student to critical debates on important and deep questions while teaching critical thinking skills that last a lifetime.
11. Systems of Indian Philosophy for graduate students are the subject necessary for the actual research and writing a dissertation.
12. Contemporary Indian Philosophy usually build successful careers in private business or in state- owned companies, in education, journalism, psychology, sociology, linguistics, economics, or the exact sciences.
13. Philosophy of language is very helpful for student's higher studies.
14. Social & Political philosophy has the opportunity to choose a specialization in the field of historical or modern philosophy.
15. Philosophy of Bhagvad Gita is one of the great scripts for meditation.
16. Philosophy of religion is the philosophical study of the meaning and nature of religion. It includes the benefits of moral perfection.

17. Symbolic logic is a way to represent logical expressions by using symbols and variables in place of natural language.
18. Gandhian studies create a method of social action and industrial civilization.
19. Western philosophy refers to the philosophical thought and work of the western world.
20. Modern European philosophy is a traditional focus of the department of philosophy.
21. Ethics seeks to resolve questions of human morality by defining concepts such as good and evil, right and wrong, justice and crime.
22. Project paper (Optional)-Vedanta philosophy will be more useful and valuable for students.

Programme Specific Outcome:

1. This field explains the ultimate nature of existence, reality, knowledge and goodness as discoverable by human reasoning.
2. This area concerned with the questions of how one should live (ethics); what sorts of things exist and what are their essential nature (metaphysics); what counts as genuine knowledge (epistemology).
3. This module will help the beginners of philosophy which is designed to understand the basic concepts and problems in philosophy which will definitely improve the interest of the students.
4. Medical ethics explains the application of the principles in social life.
5. The theory of euthanasia talks about talking human life is justified or not. It deals with argument and support of euthanasia.
6. This area also contains abortion is justified or not. There are also arguments in support and against of abortion. This will help students to develop their argument skills.
7. These are the social issues which are very useful for the students to know, how to apply ethical rules and principles.

**Semester I**  
**Core 1**  
***General Philosophy:***  
**Course Outcome:**

1. This paper is designed to expose the students to the general philosophy, which explains the basic concepts and problems of philosophy.
2. This unit concerned with the questions of how one should live (ethics): what sorts of things exist and what are their essential natures (metaphysics); what counts as genuine knowledge (epistemology).
3. This is an introductory module for philosophy. This field explains the ultimate nature of existence, reality, knowledge and goodness, as discoverable by human reasoning.
4. The problem of metaphysics is important problem in philosophy. It emphasizes the problem of substance, universal, mind and body.
5. This module will help the beginners of philosophy which designed to understand the basic concepts and problems in philosophical ethics which will definitely improve the interest of the students.

**Core-2**  
**Logic and Scientific method**  
**Course Outcome**

1. Definition of Logic and laws of thought.
2. Distinction of Terms, Square of appositions.
3. Existential Import of propositions.
4. Interpretation of Categorical proposition.
5. Inductive reasoning and scientific Enquiry.
6. Syllogistic rules of syllogism.
7. Mills Experimental Method.

**Semester II**  
**Core-3**  
**System of Indian Philosophy**  
**Course outcome:**

1. This paper is concerned with the different views of traditional Indian philosophical school.
2. It is concerned with the orthodox and heterodox school, the theory of causation, liberation, law of karma, epistemology, metaphysics, and soul theory.
3. The fundamental of this course is to enhance the knowledge of classical Indian philosophy.
4. There is a division between the two philosophy system astika and nastika. According to this, the school of Indian philosophy is differed.
5. The metaphysical, epistemological concept and its problem are discussed here.
6. The theory of causation and theory of elevation provides the knowledge to the student about the classical Indian philosophical understanding and the creation of the world.

**Core-4**  
**Symbolic Logic**  
**Course Outcome**

1. Explain Ideogram & Phonogram.
2. Truth-Table & Truth-Function.
3. Tautology, Contingent, Contradiction.
4. Positive and negative method of proposition.
5. Conjunctive normal form.
6. Derivation by substitution.
7. Boolean-Algebra.

### **Semester III**

#### **Core- 5**

#### ***System of Indian philosophy***

#### **Course outcome:**

1. This paper introduces the Indian philosophical theory of Brahman, atman, jiva, isvara and Brahman and liberation.
2. This paper discusses pramans of nyaya philosophy, the seven catagoies of vaisasika. It also provides the concept of Upanisadic view.
3. The unit explains the upanisadic philosophy in Indian concept. Upanisad is considered as the last phase of the vedic period because they reveal the final aim of the veda.
4. Out of the eleven important Upanisad Isabhasya upanisad is one of them.
5. The aim of this course is to improve the Upanisadic ideas among the students.
6. It is designed to enhance the knowledge of the student on the Indian philosophy tradition.

### **Semester III**

#### **Core-6**

#### ***Ethics***

#### **Course outcome:**

1. This course introduces ethical principles and concepts which will develop moral thinking.
2. It also provides the relation of sociology and ethic politics, and the relation of ethics with sociology, politics and religion.
3. The aim of this paper is to improve the oral thinking among students.
4. This paper provides the moral principles and concepts which will help students to change behavior and action in social sphere.
5. The moral, non-moral, actions and factual judgments are also present in course.

**Core-7**  
**History of Greek Philosophy**  
**Course Outcome**

1. Origin and development of Greek philosophy .
2. Philosophical thought.
3. Dialectical method of Socrates.
4. Epistemology and Ethics of Socrates.
5. Plato Theory of Idea.
6. Plato Theory of soul.
7. Aristotle Theory of Form and Matter.

**Semester- IV**

**Core-VIII**

***Contemporary Indian philosophy***

**Course outcome:**

1. This course is emphasizing on the modern Indian Philosophical concepts.
2. This fundamental of this unit is to develop the idea regarding Gandhian philosophy.
3. The Gandhian concept of truth, god, non-violence satyagrah and sarvodaya.  
The aim of this course is to motivate them towards the non-violence action.
4. This will help learners to change their behavior towards others.
5. The advantages of this course are to provide the concept of god, man, nature of the world, religion, reality, Maya and etc.

**Semester-IV**

**Core-IX**

***History of modern European Philosophy***

**Course outcome:**

1. This course introduces some basic concepts of the western philosophy.
2. This paper explains the Spinozas theory on substance, attribute and modes psychophysical parallelism.

3. The substance is the conception which does not require the conception of another thing in order to make its formation.
4. This course is designed to develop the philosophical knowledge and trend them to develop philosophical thought.
5. This emphasizes on the theory of substance, the sources of knowledge, reconciliation between empiricism and rationalism, space and time ad etc.

### **Core-10**

### **Philosophy of language**

#### **Course outcome**

1. Meaning of the word- Meaning.
2. Simulative and Reportive definition.
3. Ostensive forms.
4. Inference, Argument & Judgement.
5. Non-Sensual and Sensitive words.

### **Semester-V**

### **Core-XI**

#### ***Study of western classic (meditations of Rene Descartes)***

#### **Course outcome:**

1. This course is completely based on Rene Descartes's six meditations.
2. This paper deals with descarts third meditation which discusses the clear and distinct perception, theory of ideas, and existence of god.
3. This course gives scope to student that how we can get clear and distinct perception which cannot be doubted.
4. This is the base on the concepts of mind and body, primary and secondary quality, existence of god, will, intellect, theory of ideas, clear and distinct perception and etc.

**Core- 12**  
**Is'a Upanisad**

**Course outcome**

1. Nature of Is' a Upanisad.
2. Nature of the physical world.
3. Mantra regarding our action.
4. Mantra regarding our meditation.
5. Salvation of Soul.

**Core – 13**

**Social & Political Philosophy**

**Course outcome**

1. Mechanical, organic & Idealistic view.
2. Justice, Liberty & Equality.
3. Humanism, Secularism, Feminism.
4. Democratic Government.
5. Human Rights.

**Semester-VI**

**Core- XIV**

***Applied ethics***

**Course outcome:**

1. The objective of the course is the application of ethical rules and principles which can apply for well being of the society.
2. This course designed for the theory of animal rights, abortion, euthanasia, ecology, economic justice, doctor-patient relationship, business ethics and etc.

3. This course aims at introducing students to the ethical debates on the topics such as these, and preparing students to analyze the topics through a philosophical lens.

### **DSE-I**

#### **Philosophy of Bhagabat Gita**

##### **Course outcome**

1. Niskama Karma of Bhagabat Gita.
2. Karma- Yoga & Jnana Yoga.
3. Jnana & Vijnana.
4. Sattva-Raja-Tama Gunas.
5. Nature of Raja Yoga.

### **DSE-2**

#### **Gandhian Studies**

##### **Course outcome**

1. Non- Violence & human Freedom.
2. Gandhi's idea of social Engineering.
3. Upliftment of women.
4. Grama-Swaraj & Trusteeship.
5. Method of Satyagraha.
6. Method of Education.
7. World peace (Peaceful Society).

### **Semester-VI**

#### **DSE-3**

##### ***Philosophy of mind***

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

1. This course is completely based on nature and scope of philosophy of mind, mind and soul, nature or mental phenomena consciousness.

2. This course discusses some theories of mind- dualism, materialism, identity theory, double aspect theory.

**Project Paper**  
**Indian Philosophy (Vedanta)**

**Course outcome**

1. Non-dualism of Advaita-Vedanta.
2. Sankar's-Theory of knowledge.
3. Indescribable Brahman.
4. Sankar's Theory of Maya.
5. Criticism of Ramanuja.