DEPARTMENT OF CHEMISTRY (UG & PG)

PROGRAMME OUTCOMES (POs) FOR CHEMISTRY (UG SECTION):

PO1: Students will develop a detailed knowledge for major fundamental concepts of various disciplines of Chemistry.

PO2: Students will acquire efficiency to prepare reagents, solutions, chemicals and will be accustomed to handle various laboratory apparatus and instruments and techniques to develop skill for further study, research and numerous practical fields.

PO3: Students will be able to solve different chemical problems and be able to follow scientific methods to design, carry out, record and analyse the result of chemical experiments

PO4: Students will be able to conceive and plan high quality research in multi-disciplinary context

PO5: Students will exhibit disciplined work habits to conduct rigorous scientific experiments

PO6: Students will be able to explore their knowledge to synthesize, modify and characterize diverse complex inorganic, organic and biological molecules, drug, polymers and other important materials those have huge societal and industrial impacts.

PO7: Students will exhibit enhanced awareness of applying concepts in chemistry to improve environment and daily life.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO1: Ability to explain structure and function of substance in the specific field of Chemistry.

PSO2: Enhanced capacity to design and execute experiments displaying sound knowledge of laboratory equipment and awareness regarding proper handling of chemicals, apparatus, instruments.

PSO3: Ability to apply chemistry in real life

PSO4: Better understanding of market for chemical industry, medical science, polymer, fuel cell and many other different fields

PSO5: Ability to develop critical or live-saving substances/cures/equipment for agricultural, environmental, medical and other uses

COURSE OUTCOMES

B.Sc., Honours in Chemistry

Semester	Course	Course Title	Course Outcome
1st	CC-1	**Organic Chemistry-I (Theory & Practical)** Basics of Organic Chemistry : Bonding and Physical Properties, General Treatment of Reaction Mechanism-1 & Stereochemistry-1	To enable the students to learn about chemical bonding, shape of molecule; thermodynamic, kinetic control of reaction mechanism, 3D arrangement of molecule, symmetry element and isomerism. Practical classes will provide on hand training and practice of separatingcompounds from binary mixtures of solid compounds, their purification from crystalization and determination melting pointsof pure organic compound. Determinationofboiling points of common organic liquid samples. Method of identification of few organic

			compounds be chemical tests.
1st	CC-2	**Physicl Chemistry-I (Theory & Practical)** Kinetic Theory and Gaseous State, Chemical Thermodynamics, Chemical Kinetics	To enable the students to learn about Kinetic theory and other various concepts of ideal gases and real gasses.Reasons behind deviation of real gases from ideal behaviour, different equation of real gases and critical phenomena. Intricate knowledge about first, second law of thermodynamics and thermochemistry. Theories onkinetics forvarious types of chemical reactions,temperature dependence of reaction rates, different aspects of catalytic reactions specially enzyme kinetics and its significance in biological systems. Several practicals will help students to learn about preparation of solutions, reagents, handling of numerous apparatus, method of different types of titrations like acid-base, precipitation etc, and estimation of pH of buffer solutions by colour matching method, to monitor rates of chemical reactions and also how it depends upon temperature and effect of catalysts. Estimation of solubility product by titrimetric method.
2nd	CC-3	**Inorganic Chemistry-I (Theory & Practical)** Atomic Structure, Chemical Periodicity, Acid-base Reaction, Redox reactions & Estimation of Metal Ions by Titrimetric Method	This course intends to familiarise students with the structure of atoms which are fundamental units of elements, the basicconstituents of the universe. Students will be able to identify varied natures displayed by elements (particle and wave) and their applicability to macro and micro molecules after completing the course. Knowledge of chemical periodicity which involves arrangement of existing elements based on atomic number will help students in recognising and associating properties of different elements. Study of acid-based reactions, pH buffer solutions, common ion effect, solubility product, HSAB principles will help students appreciate their practical applicability and relevance for critical biological systems. The practical experiments will equip students with useful tools of quantitative analysis such as Redox titrations after separating various metal ions from mixtutures.
2nd	CC-4	**Organic Chemistry-II (Theory & Practical)** Stereochemistry-2, General Treatment of Reaction	To enable the students to learn about the chirality arising out of stereoaxis, pro-chirality, conformational analysis of molecule and the mechanism of substitution and elimination reaction. Enable students to solve many critical

		Mechanism-2, Substitution and Elimination Reaction	organic problem related to course content. Practical course mainly trainstudents with practical knowledge of synthesis of different organic compounds by established methods, handling of several apparatus, reagents, techniques and checking of melting point.
3rd	CC-5	**Physicl Chemistry-II (Theory & Practical)** Transport Process, Application ofThermodynamics-1, Foundation of quantum mechanics	To enable the students to learn about the application ofthermodynamics, molar quantities, Nernst distribution law andits application, chemical equilibrium, specially shifting of equilibrium due to change in external parameters like temperature, Pressure, addition of inert gas etc, viscosity of liquid and its variation with temperature, electrolytic conductance, different terms , factors and application of conductance measurements, beginning of quantum mechanics, wave function, operator algebra and particle in one, two, three dimensional box model. Practicals will help students to conduct measurement of viscosities of unknown solutions with respect to water, determine partition coefficient of I_2 between water and organic solvent, equilibrium constant of KI $+I_2=KI_3$, acid-base titration conductometrically, verification of Ostwald dilution law and dissociation constant of weak acid.
3rd	CC-6	**Inorganic Chemistry-II (Theory & Practical)** Chemical bonding, Ionic bonding, covalent bonding, metallic bonding, weak chemical force, Radioactivity & Radio chemical methods Iodo/iodimetric titrations	The course provides students an in-depth knowledge of multipletypes of compounds (living, non-living), bonding between elements, theories of bonding mechanism such as valence bond theory and molecular orbital theory and the properties associated with different types of bonding. It will also introduce students to diverse aspects of Radioactivity and its practical uses. Students are expected to display sound knowledge of important real life uses of radioactivity such as nuclear medicine, diagnostic techniques, carbon dating etc The practical course equip students in using various techniques applicable to estimate vitamin C, arsenic, metal ions in a mixture like brass, steel etc
3rd	CC-7	**Organic Chemistry-III (Theory & Practical)** Chemistry of Alkenes &	To enable the students to learn about synthesis, stereochemistry and reaction of alkenes, alkyne and carbonyl compounds, Addition, Substitution reactions of aromatic compounds,

		Alkynes, Addition, Aromatic Substitution, Carbonyl and related compounds & Organometallics	Synthesis, reactions and uses of organometallic compounds. Practical course will provide practical insights into detection of elements and functional group in organic compounds and to synthesize various derivatives of those functional groups.
3rd	SEC-1	Either **IT skill in Chemistry** Or **Basic Analytical Chemistry** **(Theory)**	IT skill in Chemistry course provides knowledge on fundamental mathematics, essential topics related to IT and computer, fundamental computer programming for curve fitting, numerical differentiation, integration and finding roots. Provides skills to handle numerical data by training in Microsoft excel and other softwares for creating charts, tables and graphs. Basic Analytical Chemistry course enlightens on analytical techniques related to diverse topics of applied chemistry like soil chemistry, water cosmetics, food products, chromatography and ion exchange.
4th	CC-8	**Physical Chemistry-III (Theory & Practical)** Application of Thermodynamics-2, Electrical Properties of molecules, Quantum Chemistry	To enable the students to learn about the application of thermodynamics, colligative property of solution, binary solution, ionic equilibrium, ionic atmosphere model, electromotive force, different kinds of electrodes and their applications, quantum mechanical treatment of H atom and rigid rotor system. Practical experiments will enable students to learn about the solubility of a sparingly soluble salt in pure water, in electrolyte solution containing common ion, potentiometrically determination of solubility product, effect of ionic strength on the rate of persulphate-iodide reaction, phenol-water phase diagram.
4th	CC-9	**Inorganic Chemistry-III (Theory & Practical)** General Principle of Metallurgy, Chemical of s and p- block elements, novel gases, inorganic polymers and Coordination compounds	Students get theoretical insights into the production and purification of metals from ore through use of various methods. Part of the course imparts basic knowledge related to different aspects of s and p-block elements, polymers formed by inorganic compounds and coordination compounds. Practical classes will equip students with multiple methods of preparing different inorganic compounds and conducting complexometric titration of metal ions.
4th	CC-10	**Organic Chemistry-IV**	To enable the students to learn about various

		(Theory & Practical) Nitrogen Compounds, Rearrangement of organic molecules, the logic of organic synthesis & organic spectroscopy.	aspects and applications of rearrangement reactions. Fundamentals ofspectroscopic techniqueslike UV Spectroscopy, IR and NMR Spectroscopy to characterize organic compounds. The course also educates about reactions of Nitrogen containing organic compounds. The practical course will train students with different methods estimating organic molecules.
4th	SEC-2	**Pharmaceuticals Chemistry/Analytical Clinical Biochemistry (Theory)**	The Pharmaceuticals Chemistry course is designed for basic knowledge on some common drug and pharmaceuticals like analgesics agents, antipyretic agents, anti-inflammatory agents, antibiotics antibacterial and antifungal agents, antiviral agents, Central Nervous System agents, Cardiovascular, antilaprosy, HIV-AIDS related drugs etc. to enlighten their synthesis, use and side effects. Analytical Clinical Biochemistry course is designed for basic knowledge on important biological molecule class like Carbohydrates, Proteins, Enzymes, lipids, DNA and RNAs. The course also discusses on topics like Biochemistry of disease: A diagnostic approach to blood and urine.
5th	CC-11	**Inorganic Chemistry-IV (Theory & Practical)** Coordination chemistry II, transition elements, Lanthanoids, actinoids and separation technique involving chromatography, gravimetry and spectrophotometry	This course familiarises students with theories of bonding mechanism and magnetic properties of coordination compounds which are used in extensively in fields like complexometric titration, solvent extraction etc. The course also provides an Overview of transition and inner-transition elements. Students will be aware of important techniques of separation of compounds like chromatography, gravimetry etc upon Completing the course.
5th	CC-12	**Organic Chemistry-V (Theory and Practical)** Carbo cycles and Heterocycles, Cyclic stereochemistry, Pericyclic compounds, Carbohydrates, Biomolecules, Alkaloids and Terpenoids	To enable the student to learn about the synthesis, reaction of heterocyclic compounds, Carbohydrates and bio molecules like amino acids, peptides, nuclic acids, alkaloids, terpenoids and concept of pericyclic reaction. The practicalcourse will provide hands in training of TLC, Column and Paper chromatographic separation techniques. Conceptual knowledge of and structure determination by use of spectroscopic methods of several organic compounds.

5th	DSE-1	**Advanced Physical Chemistry (Theory and Practical)** Crystal structure, Statistical Thermodynamics and some selected topics like Specific heat of solid, 3rd law of thermodynamics Polymers, Dipole moment and polarizability	To enable the students to learn about the fundamentals of solid-state chemistry and crystallography, statistical thermodynamics, macro-molecules, dipole moments and polarization, specific heat of solid, third law of thermodynamics and understand their significance. The practical course illuminates on Computer Programming based on numerical methods for Roots of equations, Numerical differentiation, Numerical integration, Matrix operations
5th	DSE-2	**Analytical methods in Chemistry (Theory and Practical)** qualitative, quantitative aspects of analysis, Optical method of analysis, Thermal methods of analysis, Electroanalytical methods and Separation techniquesUV- Visible spectrophotometry, IR spectroscopy, Flame AtomicAbsorption and emission spectroscopy, electro analytical methods & chromatography solvent extraction and spectrophotometry	This course provides theoretical knowledge on techniques of optical spectroscopy related to UV Visible, IR, Flame AAS, emission and chromatography techniques such as TLC, HPLC, and its application. Also discusses topics on thermal methods like thermogravimetry, electro analytical methods like pH metry, potentiometry, conductometry.
6th	CC-13	**Inorganic Chemistry-V (Theory and Practical)** Bioinorganic Chemistry, Organometallic Chemistry, Catalysis by Organometallic Compound, Reaction Kinetics and Mechanism	This course will provide students in depth insights into Organometallic compounds, bio-inorganic chemistry and reaction kinetics. Study of Organometallic compounds such as Haemoglobin, chlorophyll, Vitamin B-12 and their preparation, properties and uses are central to understanding complex biological systems. Bio-inorganic studies help students appreciate the role played by metal ions in vital biological systems like enzymes whereas reaction kinetics enable better understanding of the rates of chemical reactions. Practical classes will equip students to undertake semi-micro qualitative analysis of inorganic samples.

6th	CC-14	**Physical Chemistry-IV (Theory and Practical)** Molecular Spectroscopy, photochemistry and surface phenomenon	This course encompasses theoretical aspects of rotational, vibrational, Raman, and NMR spectroscopy and basis of photochemistry, different photochemical and photo physical processes. Other part enables students to learn about the surface tension of liquid and its measurements, theories of different adsorptions processes, colloidal system, Practical experiments will enable students to learn about the measurement of surface tension of a liquid, CMC of surfactants, pH of buffer solution spectrophotometrically, and also the verification of Beer and Lambert's law.
6th	DSE-3	**Green Chemistry** Principles and Applications, Example of Green Synthesis/Reaction & some real-world reactions and future scope	This course familiarises students with use of green chemistry in modern chemical transformation and reducing pollution. It enables students to learn about composition and production of bio-degradable products and their application in the real world.
6th	DSE-4	**Inorganic materials of industrial importance** Silicate Industries, Fertilizers, Surface Coatings, Batteries, Alloys, Catalysis, Chemical explosives	First-hand training in research is provided through preparation of dissertation and to increase their interactive ability that dissertation need to present by power point presentation. The topics are mainly chosen from several industrially important materials those are used directly or indirectly in our daily life like various glass, fertilizers, surface coatings, batteries, alloys, catalysis, chemical explosives.

PROGRAMME OUTCOMES (POs) FOR CHEMISTRY (PG SECTION):

Semester	Course	CourseTitle	CourseOutcome
1st	MSCH101 Core	**Inorganic General-I (Theory)** Bonding and properties in chemical systems – a quantum chemical approach, Coordination chemistry –stereochemistry, bonding, geometric and electronic structures, Organometallic chemistry I,	To enable the students to learn about the advanced ideas of chemical bonding, Molecular Orbital Theory; Molecular term symbols, different diagrams, advanced topics on coordination chemistry. It also imparts knowledge onorganometallic chemistry with special attention on carbonyl ligand, pi-ligands: linear pi systems and cyclic pi systems, complexes containing M-C, M=C and M≡C bonds, hydride and dihydrogen complexes, phosphines and related

		Emulsion chemistry	ligands. The Emulsion chemistry part discusses on industrial applications of emulsions, thermodynamics of emulsion formation and breakdown and many other related important concepts.
1st	MSCH102 Core	**Nuclear Analytical General-I (Theory)** Nuclear properties and structure I Radioactive equilibrium Interaction of radiation with matter Statistical methods in analytical chemistry Thermal methods Environmental chemistry	This paper mainly focuses on fundamental topics of nuclear chemistry, ideas of radioactive equilibrium, different radiations, interactions of heavy charged particles, photons and other basic relations, Different thermal methods like thermogram, TGA, DTA, DSC and their applications related to nuclear-analytical measurements. The Environmental chemistry section illuminates on topics like hazardous and radioactive wastes, waste management, volatile organic compounds, corrosion and protection of metals, pollution control in Paper and pulp industries, Petroleum refineries and petrochemical units, Fertiliser industries, Tanning, Sugar, Alcohal, Electroplating & metal finishing etc.
1st	MSCH103 Core	**Organic General--I (Theory)** Conformation and reactivity of cyclic systems, Structure-reactivity relationship, Heterocycles, Proteins, Polymers : Principles and synthesis Green Chemistry I	This course intends to familiarise students with Conformation and reactivity of cyclic systems, principles of Structure-reactivity relationship. Students will be acquainted with synthesis, reactivity and uses of different heterocycles and their derivatives after completing the course. Knowledge of various aspects of proteins and their structures, Principles and reaction mechanisms in polymers and fundamental principles of green chemistry are other outcomes of the course.
1st	MSCH104 Core	**Physical General-I (Theory)** Symmetry and group theory I Quantum mechanics I Nanotechnology: principles and practices Thermodynamics and statistical mechanics Atomic spectra Principles of molecular	Knowledge of Symmetry and group theory has profound usefulness for understanding crystal structure, spectroscopy, molecular structure and many other branches of chemistry. The course enables students to determine point groups of various molecular structures, to construct group multiplication tables and many fundamental concepts of the area.

		spectroscopy	This part of the course provides concepts of theories on fundamental quantum mechaniques. Nanosciense& Nanotechnology is a newer interdisciplinary field that have vast applications in almost all branches of science. The course introduces the student with this new realm of modern science and clarify the students about introductory ideas on density of states – zero dimensional solid, one dimensional quantum wire, thin film and three dimensional box; some special nonmaterial's – fullerenes, carbon nanotubes and nanodiamonds; optical properties of metallic and semiconducting nanoparticles; nanolithography The course also intends to enlighten about the advanced facets of Thermodynamics,Statistical Mechanics and Atomic spectra. Principle of Molecular Spectroscopy clarifies the physical understandings about the theories of rotational, IR, Raman and NMR spectroscopies.
1st	MSCH105 Core	**Inorganic Practical**	Hands on experiments in this course will help students to analysis of selected ores, minerals and alloys, Synthesis and characterization of inorganic and coordination compounds and Identification of some less common ions
1st	MSCH106 Core	**Nuclear Analytical Practical**	Hands on experiments in this course will help students to Separation of ions involving ion exchange technique, Titrimetric estimation of different compounds, application of Beer's law in different chemical matrices
2nd	MSCH201 Core	**Inorganic General-II (Theory)**	This course familiarises students with theories of chemistry of elements and their compounds, structural versatility and related properties of elements, – design and syntheses, isolation, characterization, solution structure, molecular aggregate, crystalline architecture, spectral, magnetic and catalytic properties and application in chemistry of important compounds. The course also provides detailed knowledge on Non-transition and

			transition metal ion homoleptic/ heteroleptic and homonuclear/ heteronuclear complexes of different dimensions with varied mono- and polydentate blockers containing carbon, nitrogen, phosphorus, chalcogen, halogen donors, Chemistry of lanthanoids and actinoids, Cluster compounds, Structure and properties of solids.
2nd	MSCH202 Core	**Nuclear Analytical General-II (Theory)**	This Nuclear-Analytical Chemistry course enlightens on Nuclear properties and structure II, Cosmochemistry, Synthetic elements, Separation techniques specially using various chromatographic techniques, Ionic liquids: synthesis, properties and applications, green solvent, capillary electrophoresis and some Electroanalytical methods like current-voltage diagram, DC and AC polarography, stripping voltammetry, amperometric titration
2nd	MSCH203 Core	**Organic General-II (Theory)**	To enable the students to learn about reaction intermediates and their role in organic reactions, Carbohydrates and intricate details of some organic spectroscopic analysislike ^{1}H NMR spectroscopy, Mass Spectrometry and their use in structural elucidation cum Identification of organic compounds by these special spectroscopic techniques
2nd	MSCH204 Core	**Physical General-II (Theory)**	Students get theoretical insights of some advanced topics like Symmetry and group theory, Quantum mechanics, Electrochemistry, Chemical kinetics and Crystal structure.
2nd	MSCH205 Core	**Organic Practical**	The practical course will provide students hands on training on separation of binary mixtures of solid-solid/liquid-solid/liquid-liquid organic compounds and identification of individual components with different methods.
2nd	MSCH206 Core	**Physical Practical**	This practical course will provide students hands on training on some experiments in kinetics, Experiments in

			equilibrium, instrumental methods like potentiometry, polarimetry, colorimetry and conductometry and data processing and elementary numerical techniques.
3rd	MSCH301 Core	**Inorganic Advance General (Theory)**	This course will provide students in depth insights into inorganic reaction mechanisms and various industrially important synthetic procedures like Wacker-Smidt synthesis, Monsanto acetic acid process, and hydrogenation by Wilkinson's catalyst, water gas shift reaction (WGSR), Fischer-Tropsch synthesis, hydrosilation, hydrophosphilynation, hydroamination, hydrocyanation and hydroboration reactions. It also impartsknowledge on Metal ion promoted reactions, surfactants and polymers in aqueous solutions. The course also intends to be acquainted with ideas onAtomic spectrometry in inorganic analysis, Molecular magnetism and Supramolecular Chemistry
3rd	MSCH302 Core	**Nuclear Analytical Advance General (Theory)**	To enable the students to learn about the complexes in aqueous solution, some advanced spectroscopic methods like heteronuclear NMR spectroscopic techniques such as 11B, 14N, 17O, 19F and 31P-NMR, 195Pt, CD/ORD: molecular dissymmetry and chiroptical properties, magnetic circular dichroism (MCD), vibrational circular dichroism (VCD), applications. EPR and Mossbauer spectroscopy. The course also intends to be acquainted with ideas on nanomaterials, their different characterization techniques (XRD, TEM, SEM, AFM, XPS, Raman study etc) and application. This course also provides theoretical knowledge on Electroanalytical methods Cyclic voltammetry, differential pulse voltammetry, coulometry, electrogravimetry, LSV; methods, choice of solvent, supporting electrolyte, working electrode, switching potential, electrode potential, pathways of electron transfer: EEE, ECE; electro-induced reactions; conventional secondary batteries: Ni-Cd, Ni-Fe, Ag-Zn, ZEBRA system
3rd	MSCH303	**Organic Advance**	This course will provide students in depth

	Core	**General (Theory)**	insights into organic photochemistry, Pericyclic reactions, Reactions with cyclic intermediates or cyclic transition states, many oxidation and reduction reactions important in organic chemistry.
3rd	MSCH304-M* / MSCH304-I* General Elective	**Basics in Medicinal Chemistry / Basics in Industrial Chemistry (Theory)**	Its an elective course. The Medicinal Chemistry course enlighten students on basic ideas about Organic and Inorganic medicinal compounds and their mode of action, natural and synthetic organic compounds, Inorganic metal complexes, Organometallic compounds as medicines Radiopharmaceuticals: pharmaceuticals for diagnostic, pathological and clinical treatment. The Industrial Chemistry course enlighten about the fundamentals of Fuels and Combustion, polymers, Glass and ceramics, analytical tools and techniques having industrial importance.
3rd	MSCH305-I DE	**Inorganic Major-I (Theory)**	This advanced course intends to impart knowledge on Synthetic methodology for inorganic, coordination and organometallic compounds, further topics on organometallic chemistry and Spectral (IR, NMR, EPR, UV-Vis, Mossbauer, etc.) studies of inorganic, coordination and organometallic species.
3rd	MSCH305-O DE	**Organic Major-I (Theory)**	This course provides theoretical knowledge on organic spectroscopic analysis with special focus on ^{13}C NMR spectroscopy and applications of CD/ORD in structure elucidation. The course also discusses topics on Organometallics, Terpenes, Stereo selective reactions of carbonyl compounds and alkenes and controlling the geometry of double bonds
3rd	MSCH306-I	**Inorganic Major-I Practical**	This practical course intends to equip students to undertake quantitative analysis of major and minor components in ores and alloys by volumetric, complexometric, gravimetric and other instrumental methods after separation of the components by solvent extraction or chromatographic techniques. Visit to research institute/Industry will encourage and to grow interest among students to opt for research as career as

			well as to industry. It also demonstrates various up to date instruments, infrastructure setup and work culture maintained in R&D laboratories.
3rd	MSCH306-O	**Organic Major-I Practical**	This practical course provides training on different types of chromatographic techniques and methods of isolation of selected natural products. Visit to research institute/Industry will encourage and to grow interest among students to opt for research as career as well as to industry. It also demonstrates various up to date instruments, infrastructure set ups and work culture maintained in R&D laboratories.
3rd	MSCH307	**Social Outreach**	This course intends to enhance social responsibility among students through taking part in different social awareness program.
4th	MSCH401 Core	**Physical Advance General**	This course provides theoretical knowledge on some advanced topics of physical chemistry. It encompasses Surface chemistry, physical theories on Macromolecules, Non-ideal systems, Mathematics in Quantum Mechanics and Spectroscopy
4th	MSCH402 Core	Medicinal Chemistry	This course provides knowledge on some advanced topics of medicinal chemistry like supramolecular photochemistry, Drug Discovery, Radiopharmaceuticals, Medicinal Inorganic Chemistry, Pharmacokinetics, Photodynamic medicine and Drug Targets and Drug Delivery.
4th	MSCH403-I Floating	Inorganic Major-II	Electrochemical studies of redox non-innocent ligands and metal complexes, Redox reactions, Inorganic photochemistry, Inorganic reaction mechanism are taught in this special major paper.
4th	MSCH403-O Floating	Organic Major-II	Organic photochemistry II, Alkaloids, Heterocycles, Organic synthetic process, selected topics on spectroscopy and stereochemistryare taught in this special major paper.
4th	MSCH404-I DE	Inorganic Major-III	The course develop knowledge on Crystal Engineering, Art of synthesis of many Inorganic functional materials like conducting, superconducting, magnetic, non-linear, porous, luminous, liquid

			crystals, quantum dots, catalysts, molecular and electronic devices, biosensors, biomineralization, proteomics, dendrimers. Numerous advanced topics on Molecular magnetism are also taught in this paper.
4th	MSCH404-ODE	Organic Major-III	Advanced topics on Pericyclic reactions, Asymmetric synthesis, Green chemistry, Favoured and disfavoured ring-closure reactions, Steroids, Nucleic acids, Organo-main-group chemistry: sulfur, silicon and tin etc are elucidated in this paper.
4th	MSCH405-IDE	Inorganic Major-II Practical	Preparation of inorganic and coordination compounds, their characterization and Kinetic and mechanistic studies of some selected reactions (substitution and redox) are practised in this practical paper.
4th	MSCH405-ODE	Organic Major-II Practical	Preparation of organic compounds involving multiple step reactions and characterization of organic compoundsare practised in this practical paper.
4th	MSCH406-I	InorganicProject/ Term paper	First-hand training in research is provided through term paper writing or project work. This encourages students to work with research scholars, mentors through preparation of dissertation. Topics of dissertation are selected in consultation with responsible teacher. literature are searched from different reference books and using internet typed write-up with proper tables, structures, figures are submitted. To increase their interactive ability of students those dissertations need to present by power point presentation before experts.
4th	MSCH406-O	OrganicProject/ Term paper	

Course Outcome – Economics (Honours) – 3yr CBCS Degree Course

Course Title	Course Outcome
Semester-I	
Paper Code: CC1	**Paper Name:** Introductory Microeconomics
Total Teaching Hours for Semester: 70	**No of Lecture Hours/Week:** 6 hours
Max Marks: 75	**Credit:** 6
Content: (i) Basic Concept of Economics specially Micro Economics (ii) **The Consumer's behaviour Theory**- Cardinal and Ordinal approach to explain the behaviour of Consumers along with basic Concept of Elasticities of demand. And Revealed Preferences approach to explain consumers behavior (iii) **Theory of Production** – study of neo-classical production function, concepts of Iso-quant and Iso-cost line along with determination of producer's equilibrium (iv) **Theory of Cost**- different concepts of costs (Short run & long run) (v) **Concept of Revenue**- Average and Marginal Revenue and their relation with elasticity of demand (vi) Theory of Market- (**Perfect Competition**) Short run and long run equilibrium of a competitive firm and industry and derivation of supply curves, Elasticity of Supply **Student will be benefited from this paper** (a)The course introduces the students to the first course in economics from the perspective of individual decision making as consumers and producers. (b) The students learn some basic principles of microeconomics, interactions of supply and demand, and characteristics of perfect and imperfect markets.	
Paper Code: CC2	**Paper Name:** Statistics-I
Total Teaching Hours for Semester: 70	**No of Lecture Hours/Week:** 6 hours
Max Marks: 75	**Credit:** 6
Content: (i) How to Tabular and Diagrammatic Presentation of Data (ii) Measures of Central Tendency (iii) Measures of Dispersion (iv) Skewness and Kurtosis (v) Bivariate Data: Simple Correlation and Regression Analysis (vi) Multiple and Partial Correlation (vii) Index Numbers **Student will be benefited from this paper** At the end of the course, the student should understand the concept of random variables and be familiar with some commonly used discrete and continuous distributions of random variables.	
Semester-II	
Paper Code: CC3	**Paper Name:** Introductory Macroeconomics
Total Teaching Hours for Semester: 70	**No of Lecture Hours/Week:** 6 hours
Max Marks: 75	**Credit:** 6
Content: (i) Scope and nature of Macroeconomics with emphasis on macroeconomic problems and policies (ii) The National Income and products accounts, concepts and measurement of GNP, NNP, GDP, NDP, NI, DI, GNP (iii) Consumption function (iv) The Simple Keynesian model of income determination (v) Money market (vi) Interaction between commodity market and money market **Student will be benefited from this paper** This course aims to develop the broad conceptual frameworks which will enable students to understand and comment upon real economic issues like inflation, money supply, GDP and their interlinkages. It will also allow them to critically evaluate various macroeconomic policies in terms of a coherent logical structure.	
Paper Code: CC4	**Paper Name:** Mathematical Economics –I
Total Teaching Hours for Semester: 70	**No of Lecture Hours/Week:** 5 hours
Max Marks: 75	**Credit:** 6
Content: (i)Single and multivariable functions, Applications in Economics: Demand function (ii) Unconstrained Optimization (Concave and convex functions, their characterizations and applicationsin economic theory) (iii) Constrained Optimization (Quasi-concave functions, level curves, their chacterizations and applications in economic theory) (iv) Integration of Functions (Concept of Integration as a reverse process of differentiation) (v) Techniques of dynamic Analysis (Notion of stationary values and stability, First and Second order Differential) **Student will be benefited from this paper** (a)The course hones and upgrades the mathematical skills acquired and paves the way for the third	

semester course Mathematical Methods in Economics II. Collectively, the two papers provide the mathematical foundations necessary for further study of a variety of disciplines including economics, statistics, computer science, finance and data analytics. (b) The analytical tools introduced in this course have applications wherever optimisation techniques are used in business decision-making. (c) These tools are necessary for anyone seeking employment as an analyst in the corporate world. (d) The course additionally makes the student more logical in making or refuting arguments.	
Semester-III	
Paper Code: CC5	**Paper Name:** Intermediate Microeconomics
Total Teaching Hours for Semester: 70	**No of Lecture Hours/Week:** 5 hours
Max Marks: 75	**Credit:** 6
Content: Imperfect Competition; Theory of Oligopoly (Monopoly; pricing with market power; price discrimination; peak-load pricing; two-part tariff; monopolistic competition and oligopoly; game theory and competitive strategy), Theory of Factor Pricing General Equilibrium and Economic Welfare (Equilibrium and efficiency under pure exchange and production; overall efficiency and welfare economics) **Student will be benefited from this paper** (a)This course helps the students to understand efficiency of markets and the environment where the standard market mechanism fails to generate the desirable outcomes. (b) The issues of market imperfection and market failures are important building blocks of this course	
Paper Code: CC6	**Paper Name:** Intermediate Macroeconomics
Total Teaching Hours for Semester: 70	**No of Lecture Hours/Week:** 5 hours
Max Marks: 75	**Credit:** 6
Content: Keynesian theory of investment, The classical system, The Complete Keynesian model, Theory of inflation, Economic Growth, Role of expectation, Open economy **Student will be benefited from this paper** (a)This course will enable students to combine their knowledge of the working of the macroeconomy with long run economic phenomena like economic growth, technological progress, R&D and innovation. (b) It will also enable students to understand business cycles and the concomitant role of policies.	
Paper Code: CC7	**Paper Name:** Mathematical Economics –II
Total Teaching Hours for Semester: 70	**No of Lecture Hours/Week:** 5 hours
Max Marks: 75	**Credit:** 6
Content: Concepts of Scalar, Vector and Matrices (Geometric representations: graphs and level curves; differentiable functions: characterisations, properties with respect to various operations and applications; second order derivatives: properties and applications), Linear Programming Technique as a Tool of optimization (Introduction, graphical solution, matrix formulation, duality, economic interpretation), Input – Output Analysis, Basic Game Theory (The normal form; dominant and dominated strategies; dominance solvability; mixed strategies; Nash equilibrium; symmetric single population games; applications), Decisions under Uncertainty **Student will be benefited from this paper** The course provides the mathematical foundations necessary for further study of a variety of disciplines including postgraduate economics, statistics, computer science, finance and data analytics. The analytical tools introduced in this course have applications wherever optimization techniques are used in business decision-making for managers and entrepreneurs alike. These tools are necessary for anyone seeking employment as an analyst in the corporate world. The students will learn how to model multi-person decision making in an interactive setting.	
Paper Code: SEC-1	**Paper Name:** Managerial Economics
Total Teaching Hours for Semester: 30	**No of Lecture Hours/Week:** 2 hours
Max Marks:50	**Credit:** 2
Content: Meaning and Scope of Managerial Economics, Demand forecasting, Methods of demand forecasting, Price determination under different structures, Methods of price determination in practice, Distinction between real and financial assets, Needs of financial investment, Alternative financial instruments and investments. **Student will be benefited from this paper**	

At the end of the course, a student get the overview of basic economic model on behalf of a business man.	
Semester-IV	
Paper Code:CC-8	**Paper Name:** Selected Features of Indian Economy
Total Teaching Hours for Semester: 70	**No of Lecture Hours/Week:** 5 hours
Max Marks: 75	**Credit:** 6

Content: Economic Development since Independence, Evolution of India's development goals and strategies, Structural constraints and Indian development strategy, Debates between Growth and distribution, Public sector vs. Private sector, Consumer goods vs. Capital goods, Import substitution vs. Export promotion ; growth and development under different policy regimes, policy framework; an assessment of performance— sustainability and regional contrasts, saving-investment paradox Population and Human Development, Demographic trends and issues and impact on education & health, Trends and policies in poverty including Sen's Entitlement Analysis; inequality and unemployment, Objectives of Fiscal Policy. Centre – State financial relation. Composition of govt. revenue and expenditure. Tax reforms since 1991. Public debt. Objectives of RBI's monetary policy. Structure of Indian money market. Bank Nationalization and its achievements. Banking and insurance sector reforms since1991. Capital market and its reforms since1991, Labour regulations Fiscal Policy; trade and investment policy; Financial and Monetary Policies and Agriculture and Industrial Policy.

Student will be benefited from this paper

At the end of the course, a student should be able to understand the development paradigm adopted in India since independence and evaluate its impact on economic as well as social indicators of progress and well being and also understand the role of economic policies in shaping and improving economic performance in agriculture, manufacturing and services.

Paper Code: CC-9	**Paper Name:** Statistics-II
Total Teaching Hours for Semester: 70	**No of Lecture Hours/Week:** 5 hours
Max Marks: 75	**Credit:** 6

Content: Concept of different type of set and its uses in explaining consumer's behavior, Sample or Outcome Spaces (Discrete and Continuous case), Collectively Exhaustive Events, Theory of different type of probability, Defining random variables; probability distributions; expected values and functions of random variables; properties of commonly used discrete and continuous distributions, The distinction between populations and samples and between population parameters and sample statistics, Estimation of population parameters using methods of moments and maximum likelihood procedures; properties of estimator, Defining statistical hypotheses; distributions of test statistics; testing hypotheses related to population parameters; Type I and Type II errors

Student will be benefited from this paper

They will be able to estimate population parameters based on random samples and test hypotheses about these parameters. An important learning outcome of the course will be the capacity to analyse statistics in everyday 16 life to distinguish systematic differences among populations from those that result from random sampling

Paper Code: CC-10	**Paper Name:** Development Economics
Total Teaching Hours for Semester: 70	**No of Lecture Hours/Week:** 5 hours
Max Marks: 75	**Credit:** 6

Content: Different concepts of development and Indicators of Economic Development
Development and Underdevelopment as a Historical Process, Dependency theory of Baran – Frank's Theory of colonial exploitation – Merchant Capital in shaping underdevelopment (Kay) – Emmanuel's theory of unequal exchange, Characteristics of underdevelopment, Obstacles to underdevelopment, Vicious circle of poverty, Critical minimum effort thesis, Low level equilibrium trap, Concept of surplus labour, Economic development with unlimited supplies of labour, Capital intensive VsLabour intensive technique, Sustainable development, Migration and Development with the reference of Haris-Todaro Model, Concept of Absolute, Relative Poverty, poverty line and different methods of poverty measurement

Student will be benefited from this paper

This course introduces students to the basics of development economics, with indepth discussions

of the concepts of development, growth, poverty, inequality, as well as the underlying political institutions. It also helps to understand the important themes relating to the environment and sustainable development.

Paper Code: SEC-2	**Paper Name:** Basic Computer Applications
Total Teaching Hours for Semester: 30	**No of Lecture Hours/Week: 2 hours**
Max Marks:50	**Credit:** 2

Content: File Creation and Management System, Basic features of Text formatting; Creating documents; Heading Styles; Creating Reference Lists, Basic features of Spreadsheets; Data entry, Mathematical Functions, Financial functions, Statistical Functions, Creating simple Line, Bar and Pie charts, Creating Presentations; Pasting Charts etc in Presentations; Exporting Presentations as PDF

Student will be benefited from this paper

This course helps a student to be aware of the use of computers to assist them in studying mathematical functions and carrying out statistical tests

Semester-V

Paper Code: CC11	**Paper Name:** International Economics
Total Teaching Hours for Semester: 70	**No of Lecture Hours/Week:** 6hours
Max Marks: 75	**Credit:** 6

Content: (i) Ideas and Concepts of International Economics with special reference to international trade (ii) Pure Theory of Trade (Analysis of basis and pattern of international trade- Absolute and comparative advantage theory of trade in cases of two country – two commodity, two country many commodity and many country two commodity) (iii) Factor Endowment and Trade (H-O theorem of trade to explain the basis and pattern of international trade) (iv) International Equilibrium (Derivation of offer curve with the help of trade Indifference curve and determination of equilibrium with it) (v) Gains from Trade (different components of gains from international trade) (vi) Trade Policy (concept of free trade and protections, Effect of imposition of Tariff in partial equilibrium. Effect of tariff on terms of trade and domestic price and concept of optimum tariff; Quota as an instrument of protection and its comparison of tariff) (vii) Balance of Payment (Concept and accounting BoP of a country- autonomous and accommodating transactions to make BoP always balance; Foreign trade multiplier- Investment, Import and Export Multiplier) (viii) Exchange Rate (Determination of Exchange rate – Fixed and Flexible Exchange rate; International liquidity – the concept of Bretton Woods system and Post Bretton Wood; Devaluation- devaluation as an instrument of BoP'sdisequlibrium- the Absorptiion and elasticity approach.)

Student will be benefited from this paper

(a)The module aims to introduce students to the main theoretical and empirical concepts in international trade, equip students with a thorough analytical grasp of trade theory, ranging from Ricardian comparative advantage to modern theories of intra-industry trade, and familiarise students with the main issues in trade policy and with the basic features of the international trading regime. (b) At the end of the course, the students should be able to demonstrate their understanding of the economic concepts of trade theory. (c) In some models, the student will be required to deal with simple algebraic problems that will help them to better understand these concepts, use diagrammatic analysis to demonstrate and compare the economic welfare effects of free trade and protection, demonstrate their understanding of the usefulness and problems related to topics in international trade, and demonstrate their critical understanding of trade policies.

Paper Code: CC12	**Paper Name:** Money and Banking
Total Teaching Hours for Semester: 70	**No of Lecture Hours/Week:** 6hours
Max Marks: 75	**Credit:** 6

Content: (i) Relevance of study of Money & Banking (ii) Concept, Functions,Kinds,Measurement of Money,Theories of determination of Money supply (iii) Financial Institutions, Markets, Instruments and Financial Innovations (iv) Determination, Sources of interest rate (v) Banking System (vi) Central Banking & Monetary Policy

Student will be benefited from this paper

(a)This allows students to understand current monetary policies and financial market outcomes. (b)

It gives a narration about the banking structure and its functioning of an economy (c) It also enables them to critically evaluate policies.	
Paper Code: DSE-1	**Paper Name:** Rural Development
Total Teaching Hours for Semester: 70	**No of Lecture Hours/Week:** 5hours
Max Marks: 75	**Credit:** 6
Content: (i) Background and concept of Rural Development (ii) Policies and Programmes for Rural Development (IRDP RLEGP, NREP, MGNREGA, SGSY, IAY, PMGSY (iii) Resources and Livelihoods (Livelihood diversification, Resources. and Environment) (iv) Rural development and its Stakeholders (v) Rural Development Approaches In Other Selected Countries **Student will be benefited from this paper** (a) Students will have capability to understand government policies and will enable informed participation in economic decision making, thus improving Rural Economy in terms of rural employment prospects and Women empowerment.	
Paper Code: DSE-2	**Paper Name:** Environmental Economics or Public Economics
Total Teaching Hours for Semester: 70	**No of Lecture Hours/Week:** 5hours
Max Marks: 75	**Credit: 6**
Environmental Economics **Content:** (i) Interaction between man and nature, Key environmental issues and problems (ii) Pareto optimality and market failure in the presence of externalities (iii) Concept of property rights, the Coase theorem (iv) Environmental Policy (Pigouvian taxes and effluent fees) (v) Trans-boundary environmental problems (vi) Institutions (vii) Sustainable Development **Student will be benefited from this paper** (a) The module aims to introduce students to the main theoretical concepts in environmental economics, environmental policy theory, ranging from externalities to international environmental agreements, and familiarise students with the main issues in environmental valuation and with the basic features of the environmental policy tools. (b) At the end of the module the students should be able to demonstrate their understanding of the economic concepts of environmental policy. (c) In some models, the student will be required to deal with simple algebra problems that will help them to better understand these concepts, use diagrammatic analysis to demonstrate and compare the economic welfare effects of various environmental policy options, demonstrate their understanding of the usefulness and problems related to environmental valuation, and demonstrate their critical understanding of environmental policies.	
Semester-VI	
Paper Code: CC13	**Paper Name:** Basic Econometrics
Total Teaching Hours for Semester: 70	**No of Lecture Hours/Week:** 5 hours
Max Marks: 75	**Credit:** 6
Content (i) basic Nature and Scope of Econometrics (ii) Simple two and multivariable Linear Regression Model with OLS model (iii) Violations of Classical Assumptions specially focus on the Sources, Consequences, Detection methods and (iv) Specification Analysis of Omission of a relevant variable, Sources and simple indicator of specification problems **Student will be benefited from this paper** (a) Students will learn to estimate linear models using ordinary least squares and make inferences about population parameters. (b) They will also understand the biases created through mis-specified models, such as those that occur when variables are omitted. (c) To familiarize and understand the students with Econometrics tools and techniques. (d) To enable them to apply these tools in economics.	
Paper Code: CC14	**Paper Name:** Field Survey& Project Report
Total Teaching Hours for Semester: 30 (L) + 40 (P)	**No of Lecture Hours/Week:** 6hours
Max Marks: 75	**Credit:** 6
Content: This is a Project Paper where the Students will make a Field Visit to collect Primary information followed by analysis of data and writing a project report. The project report should ideally cover the following areas: Introduction – Motivations – Literature Review – Objectives –	

Methodology – Results– Policy Suggestion – Bibliography

Student will be benefited from this paper
(a) To develop exposure in research work among students. (b) The project work may be done on any economic problem relevant to the study of Economics.

Paper Code: DSE-3	**Paper Name:** Social Economics or Political Economy
Total Teaching Hours for Semester: 70	**No of Lecture Hours/Week:** 5hours
Max Marks: 75	**Credit:** 6

Social Economics
Content (i) Components of Social Economics (ii) Microeconomic Foundations of Health Economics (iii) Evaluation of Health Programs (iv) Investment in Human Capital and Indian experience (v) Meaning of gender inequality and major gender gap (vi) Women as decision making unit

Student will be benefited from this paper
(a)The students will learn the role of health and education in human development. (b) They will be able to apply economic theory to understand the demand for health care, market failure in health insurance, economic evaluation of health care programmes and the role of public policy in the healthcare industry. (c) They will also learn to analyse the returns to education, its role in labor market. (d) They will also be exposed to the theories of discrimination.

Or Political Economy
Content: Classical Economic Thoughts (Adam Smith, Ricardo, and Marx;) (ii) Political System (Physiocracy, Mercantilism, Feudalism, Capitalism and Socialism) (iii) Analysing the social changes (historical materialism, Marxian theory of value, Simple reproduction, Emergence of socialism) (iv) The state and the economy (contestation and mutual interdependence)

Student will be benefited from this paper
(a)This course prepares the students to develop critical thinking by exposing them to elements of economic thought, juxtaposing ideas and theoretical structures based largely on original texts and journal articles. (b) They also realities of the contemporary world economy and teaches them to develop critical analysis in an integrated and broader political economy framework. (c) It thus enables them to form a more informed view of the world we inhabit by analyzing some of the most contemporary trends and developments from different perspectives. (d) It also exposes the students to interdisciplinary skills and written argumentation, and prepares them for a more holistic research framework.

Paper Code: DSE-4	**Paper Name:** Entrepreneurship Development or Financial Economics
Total Teaching Hours for Semester: 70	**No of Lecture Hours/Week:** 5hours
Max Marks: 75	**Credit:** 6

Entrepreneurship Development
Content:
Evolution of the concept of Entrepreneur (Growth of entrepreneurship in India—Role of Entrepreneurship in Economic Development, Problem of Rural entrepreneurship in India) (ii) Entrepreneurship motivation theories (iii) Project identification and selection with the help of planning commission's guidelines (iv) Financial resources for new ventures (v) Growth strategies in small business (vi) Sickness in Small Business

Student will be benefited from this paper

or Financial Economics
Content: Evolution of limited companies, Time Value of money, Basic concepts of financial decision areas (ii) Corporate Finance (Concepts of Capital structure and Cost of capital) (iii) Investment Theory and Portfolio Analysis (Basic theory of interest; discounting and present value; internal rate of return; Random asset returns; portfolios of assets; portfolio mean and variance; The capital market line; the capital asset pricing model) (iv) Options and Derivatives (Introduction to derivatives, forward and futures contracts)

Student will be benefited from this paper

(a)Students acquire extensive theoretical knowledge in portfolio risk management, capital asset pricing, and the operation of financial derivatives. (b) The course familiarises students with the terms and concepts related to financial markets and helps them comprehend business news/articles better. (c) The course also helps to enhance a student's understanding of real life investment decisions. (d) The course has a strong employability quotient given the relatively high demand for skilled experts in the financial sector.

DEPARTMENT OF GEOGRAPHY

PROGRAMME OUTCOME

THREE-YEAR DEGREE COURSE BA/B.Sc. (CBCS) IN GEOGRAPHY (HONS& GEN) SEM-I TO SEM- VI

A: PROGRAMME OUTCOME [HONOURS & GENERAL]

As Geography is a Social science and space-based discipline, after completing graduation in Geography, students should be able to:

PO1. Assess the existing knowledge scientifically and also conceive the concepts, techniques, and methodology appropriate to the discipline;

PO2. Get interested in planning a high-quality research and/or creative capstone project in the appropriate disciplinary or multi-disciplinary context.

PO3. Learn to apply discipline-based and/or cross-discipline-based knowledge to design a problem-solving strategy.

PO4. Identify major space-related issues or approaches appropriate to the discipline.

PO5. Synthesize complex interrelated spatial phenomena appropriate to the discipline.

PO6. Select and organize credible evidence to support converging arguments and ideas.

PO7. Develop an argument in accordance with the methods of the discipline.

PO8. Employ writing conventions appropriate to the discipline.

PO9. Exhibit disciplined work habits as an individual.

B: PROGRAMME SPECIFIC OUTCOMES (PSOS)

GEOGRAPHY HONOURS& GENERAL COURSE (CBCS AND PART I+II+III SYSTEM)

Geography is a spatial science. It is mainly concerned with changes in spatial attributes in a temporal perspective. The Honours Programme in geography is tailored to meet the students' specific educational and professional goals in mind. It focuses on spatial studies, qualitative as well as quantitative, and emphasizes on human-environment inter-relationship. During the first and second year of the programme, the students are trained on advanced concepts of physical and human geography while the third year allows them to concentrate on specific areas of the subject, on which they complete their field reports. After completing the course, the students will be amply prepared for professional careers in geography and allied disciplines like GIS and Remote Sensing. They will also be able to pursue M.A. /M.Sc. Course in Geography. Basic Programme specific outcomes are:

PSO1.Acquiring Knowledge of Physical Geography:

Student will gain the knowledge of physical geography. Students will have a general understanding about the geomorphological and geotectonic processes and formation. They will be able to correlate the knowledge of physical geography with the human geography.

PSO2.Acquiring Knowledge of Human Geography:

They will be able to acquire the knowledge of Human Geography and will correlate it with their practical life.

PSO3. Ability of Problem Analysis:

Student will be able to analyze the problems of physical as well as cultural environments of both rural and urban areas. Moreover, they will try to find out the possible measures to solve those problems.

PSO4.Conduct Social Survey Project:

They will be eligible for conducting social survey project which is needed for measuring the status of development of a particular group or section of the society.

PSO5. Application of modern instruments:

Students will be able to learn the application of various modern instruments and by these they will be able to collect primary data.

PSO6. Application of GIS and modern Geographical Map Making Techniques:

They will learn how to prepare map based on GIS by using the modern geographical map making techniques.

PSO7. Development of Observation Power:

As a student of Geography Honours Course, they will be capable to develop their observation power through field experience and in future they will be able to identify the socio- environmental problems of a locality.

PSO8. Development of Communication Skill and Interaction Power:

After the completion of the project, they will be efficient in their communication skill as well as power of social interaction. Some of the students are being able to understand and write effective reports and design credentials, make effective demonstrations, and give and receive clear instructions.

PSO9.Enhancement of the ability of Management:

Demonstrate knowledge and understanding of the management principles and apply these to their own work, as a member and leader in a team, to manage projects. They will perform effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PSO10. Understand Environmental Ethics and Sustainability:

Understand the impact of the acquired knowledge in societal and environmental contexts, and demonstrate the knowledge of need for sustainable development.

PSO11. Life-long learning:

Identify the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of societal and environmental change.

C: COURSE OUTCOMES

(HONOURS)

SEM -1:

COURSE-1: GEOTECTONICS AND GEOMORPHOLOGY

CO1. Students will try to understand the theories and fundamental concepts of Geotectonic and Geomorphology. Students will be able to understand earth's tectonic and structural evolution, gain knowledge about earth's interior. They will develop an idea about concept of plate tectonics, and resultant landforms.

CO2. Students will also be capable of acquiring knowledge about types of folds and faults and earthquakes, volcanoes and associated landforms.

CO3. They will understand the crustal mobility and tectonics; with special emphasis on their role in landform development.

CO4. Overview and critical appraisal of landform development models will be easy to be understood by the students.

CO5. They will have an ability to record temperature, pressure, humidity and rainfall.

CO6. Development of the skills of identification of features and correlation between them will be accomplished by them.

CO7. Students will be able to identify rocks and minerals very precisely and accurately.

COURSE-2: CARTOGRAPHIC TECHNIQUES AND GEOLOGICAL MAP STUDY

CO1. Understanding and preparing of different kinds of maps and scale will be an easy task for the students of geography.

CO2. They will be able to recognize basic themes of map making very easily.

CO3. Envelopment of observation skills will be developed by them.

CO4. They will have wide knowledge about geology of earth and also develop interpretation skill.

SEM -2

COURSE-3: HUMAN GEOGRAPHY

CO1. Gaining knowledge about major themes of human Geography will be possible by the students.

CO2. They will acquire knowledge on the history and evolution of humans.

CO3. The students will be able to understand the approaches and processes of Human Geography as well as the diverse patterns of habitats and adaptations.

CO4. They will have an idea about space and society as well.

COURSE-4: CARTOGRAMS AND THEMATIC MAPPING

CO1. The skill of comprehending the concept of scales and representation of data through cartograms will be developed by the students.

CO2. They will be capable of interpreting geological and weather maps.

CO3. They will earn the usages of survey instruments.

CO4**.** They will be brought to the direct interaction of different types of surveying instruments like Dumpy level and Theodolite with environment.

CO5. Development of an idea about different types of thematic mapping techniques will be accomplished by the students.

SEM-3

COURSE- 5: CLIMATOLOGY

CO1. The students of Geography will be able to understand the elements of weather and climate, different atmospheric phenomena and climate change.

CO2. They will learn to associate climate with other environmental and human issues, like various approaches to climatic classification.

CO3. The students will have the skill of analyzing the dynamics of the Earth's atmosphere and global climate and also assessing the role of human in global climate change.

CO4. They will prepare various climatic maps and charts and capable to interpret them.

CO5. Learning of using the various meteorological instruments will be completed by them.

CO6. They will also learn about the processes of interaction between the atmosphere and the earth's surface and also the importance of the atmospheric pressure and winds.

CO7. The students will have an understanding of how atmospheric moisture works.

COURSE-6: STATISTICAL METHODS IN GEOGRAPHY

CO1. Learn the importance of statistical techniques in geography. Understand the importance of use of data in geography.

CO2. Recognize the importance and application of Statistics in Geography.

CO3. Interpret statistical data for a holistic understanding of geographical phenomena. Know about different types of sampling.

CO4. Develop an idea about theoretical distribution.

CO5. Learn to use classification and tabulation of data. Gain knowledge about association and correlation.

CO6.Students will acquire knowledge about chronological and spatial data analysis.

COURSE -7: GEOGRAPHY OF INDIA

CO1. Students will be able to acquire knowledge about the Geology and Structure with Special Reference to Himalayan Structure and Evolution of the Peninsular India.

CO2. Acquire idea about the Drainage Systems: Evolution and Characteristics of Peninsular and Extra-Peninsular Rivers.

CO3. Understand the Climatic Characteristics: Seasonality, Unevenness and Unreliability of Rainfall, Drought and Floods.

CO4. Understand and describe the Classification and Characteristics of Soils, Causes and Consequences of Deforestation.

CO5. They will acquire knowledge about the Agricultural Policy and Development since Independence and Industrial Policy and Development since Independence.

CO6. Understand the recent trends of Industrialization of India with Special Reference to SEZs.

CO7. Gaining of knowledge about the Agro-Climatic Regions in India and Impact of Green Revolution will be cultivated by students.

CO8. Understand the Population Growth and Human Development since Independence, Languages Groups: Characteristics and Spatial Distribution, Caste and Social Morphology in Rural India, Characteristics and Recent Trends of Urbanization.

CO9. Acquisition of knowledge about the Physiographic Region of West Bengal, Problems of Flood and Drought and their Management, Regional Problems of Darjeeling Hill Region and Sundarban, Population Growth and Human Development of the state.

CO10. Understand about the Bases and Schemes of Regionalization of India into Geographical Regions, Chotanagpur Plateau, West Bengal Delta, Malabar Coast.

SEC-1: COMPUTER BASICS AND COMPUTER APPLICATIONS

CO1. Acquire basic knowledge of computing fundamental themes.

CO2. Students will be able to develop algorithms for given problems.

CO3. Ability to develop C programs that uses arrays, functions, structures and unions.

CO4. Ability to develop basic C programs that uses pointers and files.

CO5. Gain idea about the measures of central tendency, dispersion and moments.

CO6. Try to understand knowledge of regression and correlation analysis.

CO7.Students will be well acquainted of the basics of probability theory. Understand mathematical expectations. Acquire discussions about the different types of probability distributions. Try to gain

knowledge on sampling and Theory of estimation. They will have to be acquainted about the different types of sampling distributions.

CO8.Students will be able to perform hypotheses testing.

SEC-1: OR REMOTE SENSING

CO1.They will try to understand concepts of Remote Sensing and Geographical Information Systems.

CO2. Understand practical knowledge of Geo-referencing of scanned maps.

CO3. Gain knowledge about image referencing schemes and techniques of data acquisition.

CO4. Prepare False Colour Composites from IRS LISS-3 and Landsat TM. Gain knowledge about image rectification and enhancement.

CO5. Extract features from various maps.

CO6. Learn techniques of preparation of landuse and land-cover maps from satellite images.

SEM-4

COURSE-8: REGIONAL PLANNING AND DEVELOPMENT

CO1. Understand and identify regions as an integral part of geographical study.

CO2. Appreciate the varied aspects of development and regional disparity, in order to formulate

measures of balanced development.

CO3. They will be acquainted with the concept of regions and regionalization.

CO4. Study typical physiographic, planning, arid and biotic regions of India. Understand the detailed geography of India.

CO5. Gain knowledge about definition of region, evolution and types of regional planning. Develop an idea about choice of a region for planning.

CO6. Build an idea about theories and models for regional planning. Know about measuring

development indices.

CO7. They can know about delineation of formal regions by weighted index method and also

delineation of functional regions by breaking point analysis.

CO8. Gain knowledge about measuring inequality by Location Quotient, and also measuring regional disparity by Sopher Index.

COURSE-9: ECONOMIC GEOGRAPHY

CO1. Understand the concept of economic activity, factors affecting location of economic activity. Gain knowledge about different types of Economic activities.

CO2. Assess the significance of Economic Geography, the concept of economic man, social man and theories of choice.

CO3. Analyze the factors of location of agricultural and industrial activities.

CO4. Understand the evolution of varied types of economic activities.

CO5.They will be able to map and interpret data on production, economic indices, transport network and flows.

COURSE-10: ENVIRONMENTAL GEOGRAPHY

CO1. Understand the fundamental concepts related to environment, meaning, Structure, components and man's interaction with environment.

CO2. To study about the nature, scope, basic concepts, interdisciplinary sciences &

Study methods.

CO3. Understand the role of environmental, legislation laws & act of environmental Protection & conservation.

CO4. Gain conceptual knowledge about biodiversity.

CO5. Develop ideas regarding environment perception changes.

SEC-I1: ADVANCED SPATIAL STATISTICAL TECHNIQUES OR FIELD WORK

CO1. Learn the significance of statistics in geography. Understand the importance of use of spatial and temporal data in geography

CO2. Recognize the importance and application of Statistical techniques in Geography.

CO3. Interpret statistical data for a holistic understanding of geographical phenomena. Acquire knowledge about different types of sampling procedures.

CO4. Develop an idea about theoretical distribution.

CO5. Learn to use tabulation of data. Gain knowledge about association and correlation of statistical data.

CO6. Learn the importance and significance of field work in geographical studies.

CO7. Understand the meaning of field and identifying the case study.

CO8. Know about different types of field techniques and tools.

CO4. Develop an idea about research problems.

SEM-5

COURSE-11: RESEARCH METHODOLOGY AND FIELDWORK

CO1. Have an expertise in identification of area of study, research problems, methodology, quantitative and quantitative analysis, and conclusions to be drawn about the area – fundamental to geographical research.

CO2. Handle logistics and other emergencies on field.

CO3. Develop skills in sketch drawing, photography, mapping and video recording.

CO4. Examine the introduction of Research, motivation in research, types of research, significance of research, research process and criteria of good research.

CO5. Understand hypothesis its type sources utility of hypothesis in scientific research.

CO6. Understand formulation of research design and sampling procedures and its basic types.

CO7. Understand interpretation and report-writing techniques and allied tasks like ethics of Report writing.

COURSE -12: REMOTE SENSING AND GIS

CO1. Have knowledge of the principles of remote sensing, sensor resolutions and image referencing schemes.

CO2. Interpretation of satellite imagery and understand the preparation of false color composites from them.

CO3.Students will develop skills of handling Geographic Information System (GIS) software for enrichment of contemporary mapping skills.

CO4. Analyzing and interpreting remotely sensed satellite images and aerial photographs in order to understand topographical and cultural variations on the Earth's surface.

CO5. Acquire knowledge of conduction of field excursions and preparation of field report on problematic areas of India.

CO6. Apply GIS to the preparation of thematic maps.

CO7. Use GNSS.

DSE-1: URBAN GEOGRAPHY

CO1. Understand the nature, scope, approaches and recent trends in Urban Geography.

CO2. Learn temporal analysis of urban growth using census data.

CO3.Trace the origin of urban places over time and analyze the factors, stages and characteristics of these places.

CO4. Analyze the theories of urban evolution and growth, Hierarchy of urban settlements.

CO5. Understand the various aspects of urban place location, site and situation; Rank-size rule and Law of primate city.

CO6. Understand the concept of urban hierarchies.

CO7. Understand the patterns of urbanization in developed and developing countries.

CO8. Understand the ecological processes of urban growth; urban fringe; city-region.

CO9. Analyze the models on city structure.

CO10. Identify and analyze the problems of housing, slums and civic amenities in urban areas.

CO11. Understand the patterns and trends of urbanization in India.

CO12. Assess the policies on urbanization in post-liberalized India.

CO13. Study the changing land use of Delhi, Kolkata and Chandigarh.

CO14. Learn the technique to plot Rank-Size Rule and establish a hierarchy of urban settlements.

CO15. Assess region-wise variation and trends of urbanization.

CO16. Learn to analyze census data to measure urban growth.

DSE-1 OR – CULTURAL AND SETTLEMENT GEOGRAPHY

CO1. Understand the nature, scope, approaches and recent trends in Cultural and Settlement Geography.

CO2. Well acquainted with the concepts of Cultural hearth, Culture realm and Cultural landscapes.

CO3. Understand the process of cultural innovation and cultural diffusions of the world's society.

CO4. Analyze major racial groups of the world.

CO5. Try to understand and differentiate race and ethnicity.

CO6. Understand the concept of cultural diversity, acculturation and cultural segregation.

CO7. Understand the site, situation and patterns of rural settlement.

CO8. Understand the ecological processes of urban growth; urban fringe; city-region.

CO9. Analyze the models on city structure.

CO10. Analyze process of urban growth.

CO11. Understand the patterns and trends of urbanization in India.

CO12. Try to understand urban morphology along with models of Burgess, Hoyt, Harris and Ullman.

CO13.Learn scales of settlement growth.

CO14. Learn the technique to plot Rank-Size Rule and establish a hierarchy of urban settlements.

CO15. Assess state-wise variation and trends of urbanization.

CO16. Learn to analyze census data to measure urban growth.

CO17. Try to understand models of Harris and Nelson regarding functional classification of towns and cities.

DSE-2 POPULATION GEOGRAPHY

CO1. Gain knowledge on different aspects of population geography.

CO2. Develop an idea about the concept of migration.

CO3. Develop knowledge about the nature of democracy in India or world.

CO4. Identify and analyze the problems of over and under population.

CO5. Try to understand population –resource inter-relations.

CO6. Compare population policies of Developed and Developing countries.

CO7. Understand status of health and unemployment of the peoples of India.

DSE-2 OR SOCIAL GEOGRAPHY

CO1. Try to understand the nature, scope and content of Social Geography.

CO2. Acquire knowledge about social groups, social structure and process.

CO3. Well acquainted with elements of Social Structure, like Caste, Class, Religion and Race.

CO4. Try to understand social stratification in India and its contemporary relevance.

CO5. Interpret contemporary social Issues in India, like issues of gender and old aged population.

CO6. Try to understand concepts of Social Well- being and Social Impact Assessment.

CO7. Delineate Social Area Analysis following models of Shevky and Bell.

CO8. Try to understand the implications of Sarva Shiksha Abhiyan and NRHM.

SEM-6

COURSE- 13: EVOLUTION OF GEOGRAPHICAL THOUGHTS

CO1. Perceive the evolution of the philosophy of Geography.

CO2. Appreciate the contribution of the thinkers in Geography.

CO3. Gain knowledge on different schools of geographical thought.

CO4. Acquisition of knowledge of the evolution of geographical thought from ancient to modern times.

CO5. Establishing relationship of Geography with other disciplines and human-environment

Inter- relationships.

CO 6. Analyze modern and contemporary principles of Empiricism, Positivism, Structuralism,

Humanistic and Behavioural Approaches in Geography.

COURSE -14: DISASTER MANAGEMENT

CO1. Understand the nature of hazards and disasters.

CO2. Assess risk, perception and vulnerability with respect to hazards.

CO3. Prepare hazard zonation maps.

CO4. Assessing the nature, impact and management of major natural and man-made hazards

affecting the Indian subcontinent.

DSE-3: FLUVIAL GEOGRAPHY

CO1. Gain advanced knowledge in fluvial geomorphology which deals with the action of the flow of water in channel in the development of landform. Different mechanisms and processes both traditional and contemporary have been included to cover up the important aspects of the subject.

CO2. Avail the ability to understand process and mechanism involved in fluvial action for landform development.

CO3.Use of this acquired knowledge in further academic development.

DSE-3 OR: RESOURCE GEOGRAPHY

CO1. Understand the concept and classification of resources.

CO2. Understand the approaches to resource utilization.

CO3. Appreciate the significance of resources.

CO4. Assess the pressure on resources. Analyze the problems of resource depletion with special

reference to land, forests, water and fossil fuels.

CO5. Understand the concept of Sustainable ways of Resource use, management and development.

CO6. Understand the distribution, utilization, problems and management of metallic and nonmetallic mineral resources.

CO7. Analyze the contemporary energy crisis and assess the future scenario.

CO8. Understand the concept of Limits to Growth, resource sharing and sustainable use of resources.

CO9. Develop the skill of mapping of forest cover from satellite Images.

CO10. Develop the skill of mapping of water bodies from satellite Images.

CO11. Develop the skill of mapping techniques of vulnerable physical landscapes.

DSE—4: SOIL AND BIO GIOHGRAPHY

CO1. Have knowledge about the character and profile of different types of soil.

CO2. Understand the impact of human as an active agent of soil transformation, erosion and degradation.

CO3. Recognize land capability and its classification.

CO 4. Try to explain the Pedological and Edaphological Approaches to Soil Studies - Processes of soil formation, types of soil, and principles of soil and land classification; and management.

CO5.Understand the varied types of ecosystems and bases of classifications.

CO6. Recognize the significance of bio-geo-chemical cycles and biodiversity.

CO7. Comprehend the devastating impact of deforestation.

CO8.Identify soil types and derive their pH.

CO9.Try to identify causes of soil erosion.

DSE-4 OR AGRICULTURAL GEOGRAPHY

CO1. They will learn ancient agricultural Practices & Its relevancy to modern agriculture practices.

CO2. They will be well acquainted with the Traditional Technical Knowledge of agriculture.

CO3. Well acquainted with journey (Developments) in Agriculture and Vision for the Future.

CO4. To understand roles of agro meteorology in agriculture and its relation to other areas of

agriculture to acquaint with recent developments in agro meteorology with historical Development of climate change.

CO5. Agricultural meteorology studies meteorological and hydrological factors in relation to

agriculture.

CO6. Study the behaviour of the weather elements that have direct relevance to agriculture and their effect on crop production.

CO7. They will learn that the weather and climate are the factors determining the success or failure of agriculture.

C (II): COURSE OUTCOMES

[GENERAL & GENERIC]

SEM -1: DISCIPLINE -1

CC-1-A: GEOTECTONICS AND GEOMORPHOLOGY

CO1. Understand the theories and fundamental concepts of Geotectonic and Geomorphology.

Understand earth's tectonic and structural evolution. Gain knowledge about earth's interior. Develop an idea about concept of plate tectonics, and resultant landforms.

CO2. Acquire knowledge about different types of folds and faults and earthquakes, volcanoes and associated landforms.

CO3. Get an overview and critical appraisal of landform development models.

CO4. Acquire ability to record temperature, pressure, humidity and rainfall.

PRACTICAL: SCALE AND CARTOGRAPHY

CO1. Understand and prepare different kinds of maps and scale.

CO2. Recognize basic themes of map making.

CO3. Try to develop observation skills.

SEM-2: DISCIPLINE -1

CC-1B: CLIMATOLOGY, SOIL AND BIOGEOGRAPHY

CO1. Understand the elements of weather and climate, different atmospheric phenomena and climate change.

CO2. Learn to associate climate with other environmental and human issues. Acquire knowledge about various approaches to climate classification.

CO3. Try to analyze the dynamics of the Earth's atmosphere and global climate. Assess the role of human in global climate change.

CO4. Prepare various climatic maps and charts and interpret them. Have knowledge about the character and profile of different types of soil.

CO5. Understand the impact of man as an active agent of soil transformation, erosion and degradation.

CO6. Recognize land capability zones on the basis of various criteria.

CO7. Students will try to explain the Pedological and Edaphological Approaches to Soil Studies - Processes of soil formation, types of soil, and principles of soil and land classification; and management.

PRACTICAL: SURVEYING AND LEVELLING

CO1. Comprehend the concept of scales and representation of data through cartograms.

CO2. Interpret geological and weather maps.

CO3. Learn the usages of survey instruments.

CO4. Well acquainted with the different types of surveying instruments like Dumpy level and Theodolite and their use.

CO5. Develop an idea about different types of thematic mapping techniques.

SEM-3: DISCIPLINE-1

CC-1C: HUMAN GEOGRAPHY

CO1. Gain knowledge about major themes of human Geography.

CO2. Acquire knowledge on the history and evolution of humans.

CO3. Understand the approaches and processes of Human Geography as well as the diverse patterns of habitat and adaptations.

CO4. Develop an idea about space, place and society.

PRACTICAL: MAP PROJECTION AND MAP INTERPRETATION

CO1. Acquire knowledge on the earth's geometry.

CO2. Develop knowledge about parallels of latitude and meridians of longitude.

SEC-1: COMPUTER BASICS AND COMPUTER APPLICATIONS

CO1. Students will learn to know about numbering systems.

CO2. They will be acquainted with data computation systems, storing and learn to prepare spreadsheets.

CO3. They will learn techniques of drawing of annoted diagrams.

CO4. They will learn techniques of internet surfing.

SEM-4: DISCIPLINE -1

CC-1D: ENVIRONMENTAL GEOGRAPHY

CO1. Understand the fundamental concepts related to human environment, meaning, Structure, components and human's interaction with environment.

CO2. To study about the nature, scope, basic concepts, interdisciplinary sciences &

Study methods.

CO3. Understand the role of environmental, legislation laws & act of environmental

protection & conservation.

CO4. Gain conceptual knowledge about biodiversity.

PRACTICAL: FIELD WORK

CO1. Learn the importance of field work in geographical studies.

CO2. Understand the meaning of field and identifying the case study.

CO3. Try to understand about different types of tools and techniques of field work.

CO4. Develop an idea about framing of research problems.

SEC-2: REGIONAL PLANNING AND DEVELOPMENT

CO1. Student will understand concept of region and its importance in geographical study.

CO2. They will be acquainted with the process of regional planning.

CO3.They will gain knowledge about agricultural and industrial development since independence.

CO4. They will learn how to prepare questionnaire schedule for socio-economic survey.

SEM-5: DISCIPLINE -1

DSE-1A: GEOGRAPHY OF INDIA

CO1. Describe the Geology and Structure with Special Reference to Himalayan Structure and Evolution of the Peninsular India.

CO2. Develop idea about the Drainage Systems: Evolution and Characteristics of Peninsular and Extra-Peninsular Rivers.

CO3. Know about the Climatic Characteristics: Seasonality, Unevenness and Unreliability of Rainfall, Drought and Floods.

CO4. Understand and describe the Classification and Characteristics of Soils, Causes and Consequences of soil erosion and Deforestation.

PRACTICAL: FIELD WORK

CO1. Learn the significance of field work in geographical studies.

CO2. Understand the meaning of field and identifying the case study.

CO3. Know about different types of techniques and tools of field work.

CO4. Develop an idea about research problems.

SEC-3: OR COLLECTION, MAPPING AND INTERPRETATION OF CLIMATIC DATA

CO1. Students will learn to record climatic data directly in the laboratory.

CO2.They will learn to prepare various maps and graphs. Map interpretation skills will also develop among them.

CO3. They will learn to interpret daily Indian Weather Maps.

SEM-6: DISCIPLINE -1

DSE-1B: DISASTER MANAGEMENT:

CO1. Understand the nature of hazards and disasters.

CO2. Assess risk, perception and vulnerability with respect to hazards.

CO3. Prepare hazard zonation maps.

CO4. Try to assess the nature, impact and management of major natural and man-made hazards affecting the Indian subcontinent.

PRACTICAL: FIELD WORK

CO1. Learn the significance of field work in geographical studies.

CO2. Understand the meaning of field and identifying the case study.

CO3. Know about different types of field techniques and tools.

CO4. Develop an idea about framing of research problems.

SEC-4: OR ROCKS AND MINERALS AND THEIR MEGASCOPIC IDENTIFICATION

CO1. Students will gain knowledge about rocks and minerals.

CO2. They will learn how to collect rocks and minerals, know the areas where such elements are found and also learn how to preserve them.

CO3. Skills of megascopic identification of Rocks and Minerals will develop among the students.

Programme Outcome of Mass Communication and Journalism Honours

After completion of the programme a student learns:

- Ability to apply the techniques of reporting, writing and designing skills in print media, Broadcast and Digital media.
- Work on the various editing software and hardware used in the media organisation and journalism field
- Ability to apply different research techniques and strategies on a wide cross section of their specific emphasis.
- Prepared in the managerial aspects of Broadcast and New Media as required by the industry. Trained in Marketing management and Brand Management of various media products.
- Communicate effectively across various platforms of Media. At the end of the course will be having hands on experience with extensive training and media exposure through formal internships.

COURSE OUTCOMES

Sem	Course	Title	Outcomes
I	CC1	INTRODUCTION TO JOURNALISM	Understanding the structures of news writing style, language of newspaper, sourcing, interviews and quotations.
	CC2	INTRODUCTION TO MEDIA AND COMMUNICATION	Understanding the process of communication, including different forms, levels and barriers.
II	CC3	REPORTING AND EDITING FOR PRINT	Understanding Newspaper consumption, readership business and importance of editorial policies. Learning about the Specialised and exclusive areas of reporting. .
	CC4	DEVELOPMENT OF MEDIA IN INDIA AND BENGAL	Provides concept of the emergence and growth of press in the Indian sub-continent.
III	CC5	INTRODUCTION TO BROADCAST MEDIA – RADIO	Concepts of radio as a medium of mass communication, radio broadcasting technicalities, AM and FM radio
	CC6	INTRODUCTION TO BROADCAST MEDIA – TELEVISION	Concept of evolution of television in India, Analysis of TV program formats, news formats. Concept of television news room structure
	CC7	ADVERTISING AND PUBLIC RELATIONS	Understanding-of-fundamentals of advertising Knowledge-about advertisingUnderstanding Publicrelationsconcepts, importance, functions and elements.

	SEC1	DEVELOPMENT JOURNALISM	Development communication policy, development and social change, gender, public health, family welfare, water sanitation, Rural Development.
IV	CC8	INTRODUCTION TO NEW MEDIA	Understanding the notion of Online communication and Internet Concept about Internet architecture such as networking, types of web sites, video conferencing, web casting Knowledge
	CC9	DEVELOPMENT COMMUNICATION	Understanding different approaches to development, its problems and issues knowledge about characteristics of developing societies eveloping societies
	CC10	MEDIA ETHICS AND LAW	Press laws, working journalists act, press council act, role of PCIand other acts. Media ethics, principles, role and importance, Models of Code ofconduct, challenges for Indian Journalism.
	SEC2	DOCUMENTARY PRODUCTION	Application of theoretical knowledge of research, scripting, budgeting into practically making a short film Knowledge of on location shooting
V	CC11	GLOBAL MEDIA AND POLITICS	Exposure to concepts of international communication dynamics Understanding the role of international bodies to securing access to communication Democratization of international communication
	CC12	INTRODUCTION TO FILM STUDIES	Understandingearly development and evolution of cinema in USA and India Explore the celebrated works of renowned national and international film makers Inculcate film making techniques using practical tools
	DSE1	COMMUNICATION RESEARCH AND METHODS	Exposure to communication research areas Understanding theoretical, conceptual and operational framework of research. Designing research methodology and literature review Tools of data collection and data interpretation
	DSE2	CORPORATE SOCIAL RESPONSIBILITY	Gain knowledge of corporate identity and image, corporate social responsibility and crisis management with the help of case studies.
VI	CC13	RURAL COMMUNICATION	Understanding the role of developmental and rural extension agencies in development
	CC14	MEDIA INDUSTRY AND MANAGEMENT	Understanding roles and functions of a public service broadcaster. All India

			Radio as a public service broadcaster. Concept of public service broadcasting global case studies.
	DSE3	DISSERTATION	Planning communication research Finding research problems Developing research methodology Practical use of data collection tools and interpretation
	DSE4	COMMUNITY OUTREACH PROGRAMME	Opportunity to connect with the community and work with them. Innovate ideas, plan organise and budgetkill building exercise, leadership and teamwork qualities

Department of Zoology
B.Sc. (Honours) Degree Program Outcome:

1. PO1 - Achieve knowledge about the diversity of animal and basis of their classification.

2. PO2 – Understands complex interactions among the different animals of various phylum, their distribution and their relationship with the environment.

3. PO3 – Achieve knowledge of internal structure of cell and various biochemical processes.

4. PO4 – Get clear knowledge about the evolutionary processes and different type of behaviour of animals.

5. PO5 – Gain knowledge of animal physiology, comparative anatomy and developmental biology of vertebrates.

6. PO6 – Achieve knowledge about wildlife conservation and management, its significance and pollution control.

7. PO7 – Understands about various concepts of genetics, development biology and immunology, its relationship with human health and diseases.

8. PO8 – Gain knowledge and develop skill in apiculture, sericulture, medical diagnostics andaquarium fish farming.

9. PO9 – Get knowledge about advance technique of animal biotechnology, different pathogenic organisms and its related diseases and their control.

10. PO10 – Apply the knowledge and understanding of Zoology to one's own life and works.

11. PO11 – Develops sympathy and love towards the animals.

B.Sc. Zoology (General) Degree Program Outcome:

1. PO1 - Gain knowledge about the diversity of animal and basis of their classification.

2. PO2 – Get knowledge about the genetics and evolutionary biology.

3. PO3 – Achieve knowledge of comparative anatomy and developmental biology of vertebrate.

4. PO4 – Understands about various physiological and biochemical process.

5. PO5 – Gain knowledge and develop skill in apiculture, sericulture, medical diagnostics, fishfarming and poultry farming.

6. PO6 – Get knowledge about different insect vector and its related diseases and their control.

7. PO7 – Gain knowledge of immunology, community nutrition and health statistics.

8. PO8 – Apply the knowledge and understanding of Zoology to one's own life and works.

9. PO9 – Develops sympathy and love towards the animals.

Course outcome: Zoology Honours

Course	Course details	Outcomes
CT 1 - Theory	Non chordates I	1. Familiar with the non-Chordate world around us. 2. To understand the concept of taxonomic hierarchy, taxonomic types, codes of zoological nomenclature.
CP 1 - Practical	Non chordates I Lab	1. Identify the invertebrates and classify them up to certain level with the basis of systematic 2. Able to prepare whole mount preparation of different protozoans 3. Able to isolate and identify gut parasites
CT 2 - Theory	Ecology	Able to acquire knowledge on different laws of limiting factors, population, community, different types of ecosystem, conservation and management strategies.
CP 2 - Practical	Ecology Lab	1. Able to measure population density 2. Able to determine pH, free co2, diversity indices 3. Gain knowledge on ecosystem by visiting that area (study tour)
CT 3 — Theory	Non chordates II	1. Able to know evolution of invertebrates 2. Understand the social life of specific insects, general characteristics &classification of invertebrates
CP 3 - Practical	Non chordates II Lab	1. Able to indentify invertebrates based on specimen characters 2. Make study on different systems of invertebrates either by model study or by histological slides study
CC 4 - Theory	Cell biology	1. Describe cell membrane structure and function,fine structure and function of different cell organelles 2. Able to gain knowledge on cell signaling 3. Acquire knowledge on cell division, cell cycle, cancer, chromatin materials
CP 4 — Lab	Cell biology Lab	1. Able to study the mitotic stages from onion and meiosis stages from grasshopper testis, 2. Observe Barr body
CC 5 — Theory	Chordates	1. Explain the diversity in form, structure and habits of chordates 2. Describe general characteristics and classification of different classes of chordates 3. Describe zoogeographical realms, distribution of birds and mammals in different realms
CP 5 — Lab	Chordates Lab	1. Identify different chordate specimens and classify them upto certain level. 2. Identify poisonous and nonpoisonous snakes. 3. Able to mount pectin from fowl head 4. Able to deliver speech by power point

		presentation on animals
CC 6 - Theory	Animal physiology controlling and coordinating system	1. Describe histology, ultrastructure, physiology of different types of organs (bones, cartilages, nerves, muscles, testis, ovary) 2. Study of endocrine glands, hormones
CP 6 - Lab	Animal physiology controlling and coordinating system Lab	1. Perform muscle twitch experiment by electrical stimulation, unconditioned reflex action 2. Preparation (both temporary and permanent) and study of histological slides and tissues
CC 7 — Theory	Fundamentals of biochemistry	1. Description of variations, structure and functions of carbohydrate, protein, fat, nucleic acids and enzymes. 2. Describe the role of glycolysis, pentose phosphate pathway and gluconeogenesis in carbohydrate metabolism. 3. Describe protein metabolism considering transamination, deamination, urea cycle . 4. Describe beta oxidation and biosynthesis of fatty acid.
CP 7 - Lab	Fundamentals of biochemistry Lab	1. Quantitative estimation of total carbohydrates and total proteins. 2. Action of salivary amylase 3. Study of paper chromatography, SDS- PAGE
CC 8 - Theory	Comparative anatomy	Comparative study of the evolution, structure and functioning of organ systems of vertebrates like digestive, skeletal, respiratory nervous system
CP 8 - Lab	Comparative anatomy	1. Identification of skull of mammals, skeleton of toad, pigeon, guineapig. 2. Study of afferent arterial system, brain, pituitary in carp. 3. Mounting of cycloid, ctenoid scales.
CC 9 — Theory	Animal physiology:	1. Study of physiology of digestion, respiration, circulation,heart, osmoregulation, kidney.
CP 9 — Lab	Animal physiology:	1. Determination of ABO blood group 2. Use of haemocytometer to enumerate RBC and WBC 3. Use of spyagmomanometer to record blood pressure 4. Useof Sahl's haemoglobinometer to estimate haemoglobin 5. Preparation of haemin crystals
CC 10 — Theory	Immunology	1. Appreciation of the contribution of immunologists 2. Basic concepts of health and diseases 3. Acquire knowledge regarding antigens, antibodies, hypersensitivity, immunology of diseases, cytokines and vaccines.
CC 10 - Lab	Immunology Lab	1. Know how to perform TC, DC of WBC, blood cells'study, ELISA test by teaching kit. 2. Demonstration of lymphoid organs.
CC 11 — Theory	Molecular biology	Understanding of different aspects of nucleic acids, replication, transcription, translation, gene regulation, different molecular techniques like PCR, western blot, northern blot, southern blot,

		Sanger DNA sequencing.
CC 11 — Lab	Molecular biology Lab	1. Developing skill in preparation of polytene chromosome from diptera, isolation and quantification of genomicDNA by spectrophotometer, agarose gel electrophoresis, bacterial culture media
CC 12 - Theory	Genetics	1. Understand the laws of mendelian inheritance, linkage, crossing over chromosomal mapping, sex detewrmination, extra chromosomal inheritance, bacterial and viral recombination
CC 12 — Lab	Genetics Lab	1. Develop skills on techniques of chi square test, linkage map, pedigree analysis 2. Familiar with the study of human normal and abnormal karyotype, chromosomal aberrations in *Drosophila*
CC 13 - Theory	Developmental biology	1. Understand the early embryonic development, late embryonic development, post embryonic development 2. Familiar with teratogenesis, in vitro fertilization, stem cells, amniocentesis
CC 13 — Lab	Developmental biology Lab	1. Learn about different types of Placenta 2. Develop skill in observing life cycle of placenta, different developmental stages 3. Learn how to write project report on Drossophila/chick embryo development
CC 14 — Theory	Evolutionary biology	1. Define Geological Time Scale 2. Theory of Evolution considering Darwinism and Modern Synthetic Theory 3. Hardy-Weinberg equilibrium and factors affecting it 4. Species concept, genetic drift.
CC 14 - Lab	Evolutionary biology Lab	1. Skill in graphical representation and interpretation of data of height/ weight of sample of 100 humans in relation to age and sex, verification of Hardy Weinberg's law by chi — square analysis 2. Learn how to study fossils from models/pictures, homology and analogy
SEC — 1	Apiculture	1. Understand biology of bees, rearing of bees, diseases and enemies of bees, bee economy, entrepreneurship in apiculture
SEC - 2	Aquarium fish keeping	1. Understand the scope of aquarium fish keeping, biology of aquarium fishes, food & feeding of aquarium fishes, fish transportation, and maintenance of aquarium.
DSE 1 - Theory	Animal biotechnology	Learn about molecular techniques in gene manipulation, genetically modified organism, culture techniques and applications
DSE 1 - Lab	Animal biotechnology	1. Develop skill in construction of linear map, calculation of transformation efficiency 2. Study of southern, northern, western blotting; sanger's DNA sequencing,
DSE 3 - Theory	Parasitology	Learn about parasitic protists, parasitic platyhelminthes, parasitic nematodes, parasitic arthropods, parasitic vertebrates

DSE 3 - Lab	Parasitology	1. Skill in identification of protozoan, helminth parasites, arthropod parasites, plant parasite 2. Skill in isolation and fixation of nematode and cestode parasites from hen's inteestine
DSE 5 - Theory	Animal behaviour	1. Learn about patterns of behavior, social and sexual behavior, biological rhythm, chronobiology
DSE 5 - Lab	Animal behaviour	1. Understand nests and nesting behavior of birds and social insects 2. Understand behavioural changes of woodlice in different climatic conditions 3. Study of geotaxis behavior of earthworm and phototaxis behavior in insect larvae 4. Able to construct actogram 5. Study tour in forest/wildlife sanctuary/ biodiversity park with submission of report
DSE 7 - Theory	Endocrinology	1. Understand epiphysis, hypothalamo-hypophysial axis, peripheral endocrine glands, regulation of hormone action
DSE 7 - Lab	Endocrinology	1. Able to dissect endocrine glands in rat 2. Understand histology of endocrine glands by observing histological slides. 3. Able to prepare permanent histological slides of endocrine glands by going through different stage of microtomy. 4. Able to demonstrate hormone assay through ELISA by using kit.

Course outcome: Zoology general

Course	Course details	Outcomes
CC 1A Theory	Animal Diversity	1. Familiar with the non-chordate world around us. 2. Explain the diversity in form, structure and habits of chordates
CC 1A - Lab	Animal Diversity	1. Identify the invertebrates as well as vertebrates and classify them up to certain level with the basis of systematic 2. Learn to prepare animal album with photographs
CC1B- Theory	Comparative anatomy and developmental biology of vertebrates	1. Comparative study of the evolution, structure and functioning of organ systems of vertebrates 2. Understand the early embryonic development, late embryonic development, control of development
CC1B - Lab	Comparative anatomy and developmental biology of vertebrates	1. Identification of skull, limb bones of pigeonand guineapig. 2. Learn to study developmental stages of frog. 3. Learn to study placental types 4. Understand how to examine sperm/ova of frogs and rats.
CC1 C- Theory	Physiology and biochemistry	1. Study of physiology of digestion, respiration, circulation, reproduction

		2. Understand about carbohydrate, protein, fat, enzymes structure, function, and metabolism
CC 1 C -Lab	Physiology biochemistry	1. Acquire knowledge about qualitative and quantitative study of carbohydrate and protein. 2. Learn how to study activity of salivary amylase. 3. Learn how to study permanent histological slides of different organs.
CC1D- Theory	Genetics and evolutionary biology	1. Understand the laws of mendelian inheritance, linkage, crossing over ,chromosomal mapping, sex detewrmination, extra chromosomal inheritance, mutations 2. Understand the theory of Evolutionconsidering Darwinism and Modern Synthetic Theory; lamarckism, isolating mechanisms, species concept, macroevolution, extinction
CC 1D - Lab	Genetics and evolutionary biology	1. Develop skills on study of Mendelianinheritance and gene interaction 2. Understand how to study linkage, recombination, gene mapping 3. Learn how to study homology and analogy 4. Learn how to study Darwinian finches 5. Learn to write report after visiting zoological museum
DSE lA- Theory	Applied zoology	1. Understand host parasite relationship, epidemiology of diseases, parasitic protozoa, parasitic helminthes, insects of medical, economic importance, poultry farming, fish technology
DSE lA- Lab	Applied zoology	1. Learn how to study and identify arthropod vectors, insects causing plant damage, pests of plants, protozoan as well as helminth parasites 2. Learn how to maintain freshwater aquarium 3. Learn to write report after visiting poultry farm/animal breeding centre/vector biology/parasitology centre.
DSE 1B - Theory	Immunology	1. Acquire knowledge regarding cells and organs of immune system, antigens, antibodies, immune system in health and diseases, vaccine
DSE 1B - Lab	Immunology	1. Demonstration of lymphoid organs in human through photographs/models 2. Determine ABO blood group 3. Study different types of blood cells by preparing stained blood film 4. Histological study of different organs
SEC I	Apiculture	1. Understand biology of bees, rearing of bees, diseases and enemies of bees, bee economy, entrepreneurship in apiculture
SEC II	Medical diagnostics	1. Understand differential count, platelet count, ESR, for analysis of blood 2. Study the complications, diagnosis and prevention of diabetes, hypertension.

		3. Understanding the different medical laboratory technology like X-ray, MRI, CT scan etc.
SEC III	Sericulture	1. Understand the types, biology of silkworms, rearing of silkworms, pests and diseases of silkworms, entrepreneurship in sericulture.
SEC-IV	Community nutrition and health statistics	1. To understand the clinical findings, nutritional anthropometry for nutritional assessment of human. 2. To understand the different concept of diseases like endemic, epidemic, pandemic, zoonosis and other communicable diseases. 3. To understand and presentation of data like mean, median, standard deviation, regression and ANOVA

Department of Philosophy

Course OutcomeSem- I, CC-I

Outlines of Indian Philosophy –I

This paper / course acts like a stepping stone in the field of philosophical discussion in Indian Philosophical context. This paper provides an outline of some important schools of IndianPhilosophy, like Carvaka, Bauddha, Jaina, Nyaya and Vaisesika. It focuses on some epistemological and metaphysical issues of the said systems. The paper enriches students with the knowledge of different approaches of Indian Philosophy. They can have the proper understanding of Carvaka Jadavada, Jaina Syadvada and Anekantavada, Momentariness of Buddhism, Nyaya epistemology, Vaisesika metaphysics through this paper.

Sem- I, CC- II

Outlines of Western Philosophy- I

This paper provides an outline of Western Philosophy, starting from the Pre-Socratic Period to Leibnitz. The pre-socratic period focuses on Parmenides, Heraclitus and Zeno. The paper also introduces the philosophies of Plato and Aristotle. The main issues are, the theory of knowledge and Ideas of Plato and theory of substance, causation, refutation of Plato's theory ofIdeas of Aristotle. The paper also deals with the rationalist thinkers like Descartes, Spinoza and Leibnitz, focusing on some major aspects of their philosophy. So students can have a comprehensive idea of history of Western Philosophy (up to Leibnitz) from this paper.

Sem-I, GE –I
Indian Philosophy

This paper is interdisciplinary and starts its discussion with the general features of Indian Philosophy. It gives an overall idea of orthodox and heterodox schools and some of their major issues in a nutshell. So, this paper gives the students an opportunity to enter the domain of Indian philosophy and have the treasure in a very easy manner.

Sem-II, CC-3

Outlines of Indian Philosophy –II

This part focuses on the four renowned astika schools like Samkhya, Yoga, Mimaksa and Vedanta. This paper also deals with one of the complex issues like the theory of error (khyativada)- of Bhattas and Advaita Vedanta and Visistadvaita Vedanta which inspire to apprehend the theories properly. So, this paper give the students a chance to enter the domain of deeper philosophical thoughts. And to grasp it.

Sem-II, CC-4
Outlines of Western Philosophy –II

This is actually the remaining part of History of Western Philosophy starting from Locke to Hegel. This course embraces the philosophical thoughts of Locke, Berkeley, Hume, Kant and Hegel. Issues are like theory of knowledge, substance of Locke; rejection of Lockean notion of substance, Esse Est Percipi of Berkeley; origin of knowledge, notion of causality, skepticism of Hume; idea of critical Philosophy, possibility of metaphysics, Copernican Revolution, space and time of Kant and dialectical method and Absolute of Hegel. So, as the paper deals with a broad phase of history of western philosophy. Students can enrich themselves with a all inclusive idea of Western Philosophers.

Sem-II, GE-2

Western Philosophy

This course focuses on some main aspects of Western Philosophy such as metaphysics, realism, idealism, theories of causation, substance, relation between mind and body, theories of evolution, critical theory of Kant etc. so, the students may have a clear idea and proper understanding of main features of Western Philosophy.

Sem-III, CC-V
Indian Ethics

This paper deals with one of the most prestigious section of Indian Philosophy, i.e. Indian Ethics. This paper intends to make the students acquainted with some fundamental concepts of Indian Ethics such as Purusartha, the Vedic concept of rta, rna etc. It also throws light on some main aspect of Buddhist, Jaina and Yoga Ethics. The most notable part of the paper is the ethics of Srimadbhagavatgita. So, this paper enriches students not only with the concept of moral value and moral life but also our heritage and culture.

Sem-III, CC-VI
Western Ethics

This paper covers up a broad area of western ethics. The paper not only deals with some primary aspect of western ethics but also focuses on some major issues of applied ethics suchas suicide, euthanasia, gender equality etc. It also adds some important theories like hedonism, utilitarianism, Kant's moral theory and so on. So, students may have a proper understanding of the fundamental aspects of Western Ethics, critical analysis of some ethical theories and awareness of some contemporary ethical issues.

Sem –III, CC-7
Annambhatta : Tarkasamgraha with Dipika

This is one of the original texts of Nyaya School of Indian Philosophy. Though the text deals with both epistemological and metaphysical issues but according to the syllabus students only learn the epistemological part. It includes the different Pramanas as the subject of discussion such as pratyaksa, anumana, upamana and sabda. So, the students get introduces with the core theories of Indian epistemology through this paper and also get acquainted with the terms sutra, bhasya, tika, tippani etc.

Sem-III, GE-3
Logic

The paper starts with the basic concepts of Logic and further includes types of argument, opposition of propositions, different types of immediate inferences, categorical syllogisms, science and hypothesis etc. So, the students may have the basic concept of logic, they learnhow to detect an argument as valid or invalid, the difference between deductive and inductive argument and the role of a hypothesis in scientific knowledge.

Sem-III, SEC-I
Philosophy in Practice

This paper primarily focuses on common and differentiating characteristics of philosophy and Darsana and then goes on to nature of inquiry and types of inquiry in philosophy and Darsana. It also discusses about few world-views and corresponding paths leading to the perfection and methods of philosophical discourse from Indian philosophical perspectives. First of all, students may have the test of comparative discussion between Philosophy and Darsana and as a result they can recharge their debating ability, next they come to know about various methods of inquiry in Indian and Western philosophy. The paper also clears the concept of certain world- views and paths leading to perfection.

Sem-IV, CC-8
Western Logic- I

This course basically deals with deductive logic. It includes propositional logic and first Order Predicate Logic (upto singly general proposition). It improves the logical thinking of the students. Students learn how to detect and argument as valid or invalid one and also learn to how to solve the logical problems by using different rules.

Sem-IV, CC-9
Psychology

This paper is very interesting one for opens the close door of mind. Students enjoy very much to go through this paper. Students get introduced with research methods in psychology, conditions of attention, theories of learning, levels of consciousness, measurement of intelligence, factors of memory etc. Most notable part of this section is that students can relate their personal experiences with the subject matter especially in case of memory, attention, dreams etc.

Sem IV, CC-10

Philosophy of Religion

The paper gives a proper idea of religion, dharma, theology etc. Then it discusses about origin and development of Religion, arguments for and against the existence of God, the problem of evil which enriches students with the knowledge of the developments in the field of religion, thinking of an object from various perspectives. The paper also acquaints students with the fundamental features of major religions like, Hinduism, Christianity, Islam and Buddhism which represent the two essence of religions. The discussion on problem of evil inspires students to seek practical solution of the problem

Sem-IV, GE-4

Contemporary Indian Philosophy

This section represents a broad area of contemporary Indian philosophical thoughts. The paper includes philosophical thoughts of Rabindranath Tagore, Swami Vivekananda, Sri Aurobindo, Sarvepalli Radhakrishnan, Md. Iqbal and Mahatma Gandhi. Covering a wide range of topics, thispaper aims at giving the students an understanding of the nature of man, nature of reality, human evolution and its different stages, nature of the world, nature of self, nature of God etc. Students may inspire themselves to follow the path of Swami Vivekananda and MahatmaGandhi.

Sem –IV, Sec-2
Philosophy of Human Rights

The paper deals with such topics that anybody must know in a civil society. This course providesthe idea of human rights, its definition and nature; natural right, fundamental right and human right; fundamental rights and duties as stated in the Indian Constitution. So, students can understand what are their fundamental rights and what are their duties as well as a good citizen of the country and act accordingly.

Sem-V, CC-11
Socio-Political Philosophy

This paper gives an idea of nature and scope of Social Philosophy and Political Philosophy. Students may have a clear understanding of basic concept of social philosophy such as society, social groups, community, association, institution, customs etc. They can also have information regarding social class and caste system in India, about the Dalit movement and B. R. Ambedkar. Students may gain knowledge about Democracy, socialism and radical humanism as political ideals. The notable aspects of this part is the opinion of Rabinrdanath Tagore regarding nation, nationalism and inter-nationalism.

SEM V, CC-12

Western Logic-II

This paper deals with Inductive logic and Philosophy of Logic and Language. Students can learn the basic laws and principles of inductive logic and they acquire the ability to understand the fallacies arising out opt wrong steps in inductive reasoning. They also come to know the theory of probability and the role of hypothesis in gaining scientific knowledge. They also learn about different theories of meaning and different types of definition here.

Sem V, DSE- 1
Kathopanisad (1st chapter: vallis- I, II and III)

This portion is an excellent part of the whole program. kathopanisad is regarded as one of the primary upanisads. Students get important teachings of life going through the text. They come to know what is eternal in this world and how to reach it. The course enhances the power of abstract thinking and uplifts the students towards the deeper thought.

SEM-V, DSE-II

B. Russell: The Problem of Philosophy (chapter 1 to 6)
This course gives the students a proper and clear idea of appearance and reality. They come to know how a priori knowledge is possible. They also may have the knowledge of universal and may find out the limits of philosophical knowledge.

Sem VI, CC-13

Philosophy in the Twentieth Century: Indian
Indian Philosophy gets an impetus in the 20th century with some great thikers like Rabindranath Tagorte, Swami Vivekananda, Sri Aurobindo, Sarvepalli Radhakrishnan, Md. Iqbal and Mahatma Gandhi. After completion of this course, students learn the basic themes of the philosophical.

thoughts of these great men. They also learn how to relate Philosophical thoughts and principles in solving mundane issues too. Gandhiji's non-violence and Swamiji's Practical Vedanta inspire our students.

Sem VI, CC-14
Philosophy in the Twentieth Century: Western

Students come in touch with some globally acclaimed philosophers of 20th century like G. E. Moore, B. Russell, L. Wittgenstein, A. J. Ayer, M. Heidegger and J. P. Sartre. They can acquainted themselves with Moore's common sense philosophy. They get a glimpse of Analytic Philosophy, which may help them in further studies. They also have the test of Existentialism after reading Sartre's and Heidegger's philosophy.

Sem VI, DSE- 3
Rabindranath Tagore: Sadhana (lectures 1 to 5)

This is another wonderful piece of this program. The text broadens the mind of the students from 'I' to 'we'. They can realize the meaning of life. The text may opens up their spiritual consciousness. They can feel that, no negative aspect is permanent and they have to transcend all evil things or limitations in order to achieve perfection. The students may build an idea of the creator of this universe following the text.

Sem –VI, DSE- 4

Hume: An Enquiry Concerning Human Understanding
After reading the text (some specific chapters), students come to know about human nature and they may have the ability to make an accurate scrutiny of the powers and faculties of human nature. Apart from that they can grow the idea of necessary conditions, origin of ideas and association of ideas too.

Programme Outcome

The programme is designed in such a manner that primarily aims at expanding the mental horizon of the students and finally builds a balanced and good human being as well as a dutiful citizen of the country. After completion of the programme a student learns;

P.O. 1. To demonstrate his/her understanding of major issues in philosophy

P.O. 2. To assess any concept, idea or theory

P.O. 3. To establish proper arguments and take right decisions

P.O. 4. To solve different issues that we face in our daily life

P.O. 5. To synthesize newly gathered information's with the existing knowledge of the discipline of Philosophy

P.O. 6. To think about higher studies and establish oneself in a desired position

P.O. 7. To cope with the society as a balanced person.

Department of Political Science
Undergraduate Programme B.A. Honours and B.A. General Course: 2021 Programme Outcome, Programme Specific Outcome & Course Outcome for B.A.

The Department of **Political Science**, Vivekananda Mahavidyalaya (Burdwan) offers B.A. Honours and B.A. General Programme in Political Science. The course programme designed by the University of Burdwan emphasizes on the study of Political Theory, Western Political Thought, Comparative Politics, International Relations and Indian Politics and Government, Local Government in India and current political issues in India. Objectives of the course programme is to i) acquaint the students with the theoretical foundations of, and the basic idea in the main branches of political science and to ii) enable the students to relate their analytical understanding of the subject and to interpret the socio-political crisis. Details course wise outreach has been given below.

A. Honours Programme

SEMESTER-I

CC-1 Western Political Thought

After going through this core course, students would be able to :

- know the Greek political tradition, specifically to the ideas of Plato and Aristotle;
- explain the ideas of medieval and early modern political thinkers like St. Augustine and Machiavelli;
- familiarize the students with the exponents of the Social Contract Theory- Hobbes, Locke and Rousseau;
- develop and elaborate understanding of Marxian political thought.

CC -2 Political Theory

After going through this core course, students would be able to:

- understand the nature, scope and significance of political theory;
- appreciate the procedure of different theoretical ideas in political theory;
- understand the various traditional and modern theories of political science;
- evaluate the theories of origin of the state.

SEMESTER II

CC 3 Indian Political Thought

After going through this core course, students would be able to:

- tracing the evolution of Indian political thought from ancient India to modern India;
- analyses the nationalist thought of Raja Rammohun Roy;
- assess the nationalist thought of Bankim, Vivekananda and Tagore;
- understand the concept of Satyagraha and trusteeship of Gandhi;
- describe the movements against caste and untouchability, Ambedkar's views on Social Justice and the depressed classes.

CC 4 Indian Government and Politics

After going through this core course, students would be able to

- acquaint about the basic understanding of the political system in India through the study ofConstitution and government at different levels;
- develop an understanding of Constitution of India and the political system that exists in India;
- have a general understanding about the relation of Constitution as a guiding document with thefunctioning of various governance institutions at central, state and local level.

SEMESTER III

CC-5 Comparative Politics

After going through this core course, students would be able to

- develop a detailed understanding of theory and methods of comparative politics;
- familiar with different models of political system.

CC-6 Public Administration

After going through this core course, students would be able to

- clear understanding of traditional and emerging theories and principles of public administration;
- acquaint them with changing management practices in the light of expanding public works andthe need for greater collaboration with non-state agencies;

CC -7 Local Governments in India

After going through this core course, students would be able to

- explain the concept of rural local government urban local government;
- conceptualize the rural and urban local government;
- analyze the impact of globalization on public administration;
- make highlight the emerging challenges of public administration in the globalization era; and
- examine the reshaping of globalization in the context of growing concern for global justice andaccountability.

SEC -1 Legislative Support

After going through this skill enhancement course, students would be able to

- understand the power and functions of people's representatives at different tiers of governance;
- know law making procedure and role of committee; budgetary procedure, role of parliament in reviewing the Union Budget;
- understand the process of examination of demands for grants of ministries.

SEMESTER IV

CC-8 International Relations

After going through this core course, students would be able to:

- understand the history of international relational;
- know the impact of first world war and second world war and its causes and consequences;
- criticizes the various ideologies which lead to the destruction of world;
- appreciates the post war developments through the emergence of third world;
- understand the concept of power, national, regional ,global and peace security;
- acquaint with the international organizations and their modules nations;
- understand the international political economy;
- identify various issues and challenges towards international relations;
- learn about issues of diversity and internationalism.

CC-9 Sociology and Politics

After going through this core course, students would be able to:

- understand the concepts of political culture, political socialization, Power, Authority andLegitimacy in the context of society and politics;
- evaluate the different agents of Political Socialization and their interrelationships
- evaluate the impact of religion on society and politics;
- relate gender and Politics;
- create awareness on the role of civil society, media on politics;
- establish State –society interrelationship;
- understand the concept and types of Political Participation.

CC-10 International Organizations

After going through this core course, students would be able to:

- know the evolution process of international organizations;
- understand the different organs of United Nations and its emergence;
- conceptualize the peace-keeping and peace building role of the UN;
- acquaint the role of the APEC, OPEC, NATO, ARF, SAARC, ASEAN and BRICS in internationalpolitics and international economy.

SEC -2 Public Opinion and Survey Research

After going through this skill enhancement course, students would be able to

- understand the concept and characteristics of public opinion;
- acquaint the different techniques of public opinion and survey research;
- predict the result of the election based on data applying the techniques of election data.

SEMESTER-V

CC 11: Social Movements in India

After going through this core course, students would be able to

- differentiate between old and new social movements;
- understand the origin, evolution and the key issues of social movements in India;
- conceptualize the basic features of different social movements in India.

CC 12: Elementary Research Methods in Political Science

After going through this core course, students would be able to

- understand the meaning and objectives of social science research;
- acquaint the different techniques of data collection for social science research;
- make a conceptual framework about the social science research.

DSE 1: Select Comparative Political Thought

After going through this discipline specific elective, students would be able to

- distinguish between the Indian and Western political thoughts;
- understand the select concepts of Indian political thinkers- Kautilya's state, Tilak Gandhi's Swaraj, Amebedkar's social justice, Nehru and Jayaprakash Narayan's democracy;
- understand the select concepts of Western political thinkers—Aristotle's citizenship, Locke'srights, Rousseau's inequality, J.S.Mill's liberty and democracy.

DSE 2: Understanding Good Governance

After going through this discipline specific elective, students would be able to:

- make a conceptual differentiation between the government and governance;
- understand the meaning and evolution of the concepts of governance, good governance;
- conceptualize the basic features democratic governance, e-governance and corporate governance, global governance and green governance;

SEMESTER VI

CC 13 Indian Foreign Policy

After going through this core course, students would be able to:

- make a sound grasp of the key elements of Indian traditions of thought about international relations and foreign policy;
- understand the fundamentals of foreign policy-making in India;
- known the challenges of Indian foreign policy;
- identify the recent trends in India's foreign policy.

CC 14 Contemporary Issues in India

After going through this core course, students would be able to

- make a conceptual framework of caste system in India;

- understand the secularism and communalism in Indian perspective;
- acquaint the rights of persons with disabilities in India;
- assess the backwardness and protective discrimination;

known the overall disaster risk reduction and development planning.

DSE 3 Local Government in West Bengal

After going through this discipline specific elective course, students would be able to

- acquire the knowledge about rural and urban local government in India;
- assess the empowerment of women, SCs, STs through local government;
- understand state-municipal relation and state panchayat relation in West Bengal.

DSE 4: Understanding Globalization

After going through this discipline specific elective course, students would be able to

- make a conceptual framework about the globalization;
- assess the impact of globalization on Indian economy;
- relate between globalization and terrorism;
- understand the dimensions of cultural change in the globalization and localization era.

GENERAL PROGRAMME

SEMESTER-I

CC-1/GE 1 Western Political Thought

After going through this core course, students would be able to :

- know the Greek political tradition, specifically to the ideas of Plato and Aristotle;
- explain the ideas of medieval and early modern political thinkers like St. Augustine andMachiavelli;
- familiarize the students with the exponents of the Social Contract Theory- Hobbes, Locke andRousseau.
- develop and elaborate understanding of Marxian political thought

SEMESTER II

CC -2/ GE 2 Political Theory

After going through this core course, students would be able to:

- understand the nature, scope and significance of political theory;
- appreciate the procedure of different theoretical ideas in political theory;
- understand the various traditional and modern theories of political science;
- evaluate the theories of origin of the state.

SEMESTER III

CC-3/ GE 3 Indian Political Thought

After going through this core course, students would be able to

- tracing the evolution of Indian political thought from ancient India to modern India;
- analyses the nationalist thought of Raja Rammohun Roy;
- assess the nationalist thought of Bankim, Vivekananda and Tagore;
- understand the concept of Satyagraha and trusteeship of Gandhi;
- describe the movements against caste and untouchability, Ambedkar's views on Social Justiceand the depressed classes.

SEC 1 Electoral Practice and Procedures

After going through this Skill Enhancement Course, students would be able to

- understand the electoral process in India;
- known the composition, structure and functions of the election commission;
- assess the role of chief election commission in India;
- analyze the electoral reform in India.

SEMESTER IV

CC 4/GE 4 Indian Government and Politics

After going through this core course, students would be able to

- acquaint about the basic understanding of the political system in India through the study ofConstitution and government at different levels.
- develop an understanding of Constitution of India and the political system that exists in India.
- have a general understanding about the relation of Constitution as a guiding document with thefunctioning of various governance institutions at central, state and local level.

SEC 2: Public Opinion and Survey Research

After going through this skill enhancement course, students would be able to

- understand the concept and characteristics of public opinion;
- acquaint the different techniques of public opinion and survey research;
- predict the result of the election based on data applying the techniques of election data.

SEMESTER V

DSE 1A Select Comparative Political Theories

After going through this discipline specific elective, students would be able to:

- distinguish between the Indian and Western political thoughts;
- understand the select concepts of Indian political thinkers- Kautilya's state, Tilak Gandhi's Swaraj, Amebedkar's social justice, Nehru and Jayaprakash Narayan's democracy;
- understand the select concepts of Western political thinkers—Aristotle's citizenship, Locke'srights, Rousseau's inequality, J.S.Mill's liberty and democracy.

SEC 3 Democratic Awareness through Legal Literacy

After going through this skill enhance course, students would be able to

- aware about the fundamental rights, fundamental duties, other constitutional rights;
- acquaint laws against the difference crimes-dowry, sexual harassment and violence againstwomen;
- know the jurisdiction and functions of different courts –criminal and civil court, juvenile court,mahila court.

GE 1: Indian Political Thought

After going through this generic elective course, students would be able to

- tracing the evolution of Indian political thought from ancient India to modern India;
- analyses the nationalist thought of Raja Rammohun Roy;
- assess the nationalist thought of Bankim, Vivekananda and Tagore;
- understand the concept of Satyagraha and trusteeship of Gandhi;
- describe the movements against caste and untouchability, Ambedkar's views on Social Justiceand the depressed classes.

SEMESTER VI

DSE 1B: Understanding Globalization

After going through this discipline specific elective course, students would be able to

- make a conceptual framework about the globalization;
- assess the impact of globalization on Indian economy;
- relate between globalization and terrorism;
- understand the dimensions of cultural change in the globalization and localization era.
-

SEC 4 Human Rights Education

After going through this skill enhance course, students would be able to

- know the meaning and history of human rights;
- make an understanding of terrorism in context of human rights;
- acquaint the composition and functions of National Human Rights commission;
- assess the nature of human rights movement in India.

GE- 2 Indian Government and Politics

After going through this generic elective course, students would be able to

- acquaint about the basic understanding of the political system in India through the study ofConstitution and government at different levels.
- develop an understanding of Constitution of India and the political system that exists in India.
- have a general understanding about the relation of Constitution as a guiding document with thefunctioning of various governance institutions at central, state and local level.

Department of Physics

1. Programme Specific Outcomes for B.Sc. (Honors) Physics

The Bachelor of Science Physics (Honors) requires three years of full time study consisting of six semesters. The outcomes of the program enable the students to critically think and understand the subject and inculcating scientific temper.The program will help in developing scientific intuition and ability to solve scientific problems using theoretical or experimental concepts and techniques. Following are the major outcomes of the programme.

PSO1: Students will acquire knowledge of all the major branches of physics (e.g. mathematical physics, quantum mechanics, statistical mechanics, thermodynamics, electrodynamics, solid state physics, atomic and nuclear physics, electronics etc.) and be able to apply this knowledge to analyze a variety of physical phenomena.

PSO2: Students will gain proficiency in mathematics and the mathematical concepts required for a proper understanding of physics.

PSO3: Students will exhibit disciplined work habits and laboratory skills to conduct scientific experiments and analyze the experimental data to draw valid conclusions.

PSO4: Students will be capable of oral and written communication with scientific community.

PO5: Students will showproper awareness of applying the concepts of physics to improve our society and environment.

2. Course Outcomes for B.Sc. (Honors) Physics

Sem	Course	Title	Outcomes
I	CC-1	Mathematical Physics-I	is course enables the students to learn about **Basic Calculus**, **Vector Calculus**, **Orthogonal Curvilinear Co-ordinates, Probability Theory** and **Dirac-delta Function**. After the completion of the course, students will learn about various mathematical tools required to handle problems in physics. The practical classes of the course emphasize the use of **computational methods** and **numerical techniques** to solve physical problems. Students are introduced tothe fundamental programming concepts and methodologies using **C/C++ programming language** as an aid to solving mathematical and scientific problems. At the end of the course students learn about **Branching statement**, **Loop**, **Numerical Differentiation** (Finite difference method), **Numerical Integration** (Trapezoidal and Simpson rules), **Solution of Ordinary Differential Equations** (Euler, modified Euler and Runge-Kutta methods) etc.
I	CC-II	Mechanics	In this course the students acquire dept insight on **Newtonian Mechanics**, **Fluid Mechanics**, **General Properties of Matter** and **Special Theory to Relativity**. After the completion of the course, students will build-up the theoretical aspects of various practical incidents and the motion of different objects in our day-to-day life. In the practical classes the students become familiar with various measuring instruments *e.g.*, **Vernier Caliper**, **Screw Gauge**, **Travelling Microscope***etc*. After learning these instruments students perform several hands-on experiments to determine somemechanical parameters that are important for engineering applications.
II	CC-III	Electricity and Magnetism	This course provides the students to learn about **Electric Field**, **Magnetic Field**, **Electro-magnetic Properties of matter** and **Network Theorem**. After the completion of the course, Students

			will be able to understand the physic behind many electromagnetic phenomena. In the practical classes the students become familiar with various electromagnetic measuring instruments *e.g.*, **Multimeter**, **Galvanometer** *etc*. After learning these instruments students carry out various laboratory experiments to study **Potentiometer**, **Carey Foster's Bridge**, **De'Sauty's Bridge**, **Anderson‟s Bridge**, **Thevenin**and **Norton Theorems**, **Maximum Power Transfer Theorems** etc. that are important for electrical engineering. It also teaches the students how to make electrical network and circuit connection.
II	CC-IV	Waves and Optics	This course deals with the study of **Waves** and **Optics**. After the completion of the course, students obtain the basic ideas about **Waves** and become familiar with the phenomena that results from **Superposition of Waves.** Students also learn the physical insight behind several optical phenomena *e.g*. **Interference**, **Diffractions etc.** In practical classes students learn levelling and performing experiments with **Optical Spectrum Analyser**. They also learn to handle many optical components and light source e.g. **Grating**, **Prism**, **Laser**etc. During this course, students accomplish a variety of experiments to study **Interference**, **Diffraction**, **Dispersion**etc. that are important for communication engineering.
III	CC-V	Mathematical Physics-II	This course deals with the detail study of **Fourier Series Expansion** including Dirichlet condition, various types of function expanding in Fourier series, complex representation of Fourier series, its application , term-by-term differentiation , integration. Also the course provides ability to solve different **partial differential equations** using standard methods like separation of variables. Students can also learn about **Gamma and Beta Function** as well as **Theory of Errors** from this course. **Frobenius Methods** and its application, **Legendre Polynomial, Besel Function, Hermite and Leaguerredifferential Equation** are also the part of the course. After the completion of the course students will be able to learn various practical problems related to application of mathematics. In practical classes students will be able to understand various physical problems related to applications of mathematical physics using **computational methods**. Students are Introduced with the numerical computation software, **SCILAB** as a programming language to solve mathematical and scientific problems.In this course students revise all the techniques and methodologies using SCILAB that they already implemented using C/C++ in sem-I. Besides they also learn about **Curve Fitting Technique**, Calculation of **Eigen Value**, **Eigen Vector**, **X-cos** etc.
III	CC-VI	Thermal Physics	This course provides the concept of **thermodynamics and three laws, Entropy, thermo-dynamical functions and their relations, Kinetic Theory** of gas and real gas, deviation of real gas from ideal behaviour, different form of real gas and critical phenomena, the relationship between the pressure and the average kinetic energy of gas molecules in the form of equation, **Molecular Collisions**. Upon successful completion of this course it is obvious that a student will be able to understand the concept of thermodynamics, heat engines and the relation between different thermodynamic functions.

			Practical classes of this course will provide the information to the students about the conductivity of different conductor, knowledge of thermo couple.
III	CC-VII	Digital Systems and applications	Students will learn about **CRO**, **Integrated Circuits**, the fundamentals of **codes and number system, the binary arithmetic**, **logics and Boolean functions**, the functions and working of **flipflop circuits**, **registers** and **counters**, the applications into **memory circuits**, **synchronous sequential circuits**, and **multiplexed-multiplexer** in this section. Students will also get the knowledge about the computer evolution and performance of micro programmed control and 8085 microprocessor and its ability to program. After the completion of the course, Students will be able to learn: 1. How to use IC in different applications like, to verify laws and theorems of Boolean algebra, to study basic combinational circuits etc. 2.How to use the microprocessor kit.
III	SEC-1	Renewable Energy and Energy Harvesting	This course provide the knowledge of different types of renewable energy like **Solar energy**, **Wind energy**, **Ocean energy**, **Hydro energy** etc. and their harvesting , applications and their environmental impact. Practical classes provide information about the conversion of vibration and thermal energy to voltage using piezoelectric materials and thermoelectric modules respectively.
III	SEC	Weather Forecasting	In this course students will learn about the **atmosphere**, measuring the **weather**, **climate** and its change and basics of **weather forecasting**. Practical classes will provide information about synoptic charts, weather station, processing of weather data and formats of weather forecasting.
IV	CC-VIII	Mathematical Physics-III	This course emphasis on application in solving problems interest to physicists. The course develops the understanding on **Complex Analysis**, **Integrals Transforms** and **Laplace Transforms**. After the completion of the course, Students will be able to solve various practical problems related to applications of mathematical tools to solve the problems in physics. The practical classes of the course emphasize the use of **computational methods** and **numerical techniques** to solve mathematical physical problems.
IV	CC-IX	Elements of Modern Physics	This course intends to familiarise students with the **structure of atom** and **atomic nucleus** which are fundamental constituents of the universe. After completing the course, students will be able to understand the roadmap of development of the most advanced branches of physics e.g., **Quantum Physics and Photonics**. They will also be familiar with the famous **wave-particle duality**in this course. The practical course will equip students with acquaintance of several advanced-level famous experiments *e.g.* **Franck-Hertz Experiment, Millikan Oil Drop Experiment**, Determine the **Planck‟s Constant**, Study of **Photoelectric Effect** etc.
IV	CC-X	Analog System and Applications	This course appraises the students about the understanding of **Semiconductor Physics** and the basic **Electronics**. After the completion of the course, students will be able to learn about the underlying theories of **Semiconductor Diodes**, **Transistor,**

			Amplifiers and their applications. The practical classes of the course provides the students to work with several basic electronic components like, **Junction Diode**, **LED**, **Junction Transistor**, **BJT**, **Capacitor** etc.
V	CC-XI	Quantum Mechanics and applications	This course enables the students to learn about the **basic principles** of quantum mechanics, the **operator formulation** of quantum mechanics, the concept of **wave function**, **Schrodinger equation** and their applications, role of **uncertainty** in quantum physics. After the completion of the course, Students will be able to learn1. Pinpoint the historical aspectsof development of quantum mechanics. 2. Understand and explain the differences between classical and quantum mechanics. 3. Understand the idea of wave function. 4. Understand the uncertainty relations. 5. Solve Schrödinger equation for simple potentials. Different computational methods are used for understanding the problems based on quantum mechanics in the practical classes.
V	CC-XII	Solid State Physics	This Course enables the students to learn the difference between **crystalline** and **amorphous** materials, the arrangement of atoms and ions in **crystalline** structures, face-centered cubic, body-centred cubic and hexagonal closed packed unit cells, the lattice parameter relationships for all seven crystal systems--i.e., cubic, hexagonal,tetragonal, rhombohedral, orthorhombic, monoclinic, and triclinic, the use of X-ray diffraction measurements in determining crystalline structures. This course also provides knowledge about the **magnetic properties** of matter, different types of magnetic materials (dia, para, ferri, and ferromagnetic), **dielectric and ferroelectric** properties of materials, **Band theory** of solids and **Superconductivity** behaviour of the materials. Upon successful completion of the course it is obvious that a student will be able to 1.demonstrate an understanding of the crystal lattice and how the main lattice types are described,2. Formulate the theory of the Xray diffraction in the reciprocal lattice formalism and apply this knowledge to generalize the formulation for matter waves.3. To perform structure determination of simple structures 4. To learn The lattice specific heat of solid varies T3 at very low temperature.5. To understand that Dulong- Petit law is valid only at high temperature. Practical classes of this course provide practical knowledge for the determination of the dielectric constant, band gap, and hall co-efficient of materials using different methods. Also students will be able to learn how to draw PE hysteresis loop, BH loop practically in this section.
V	DSE-1	1-Advanced Mathematical Physics	This course enables the students to learn about Linear **Vector Spaces**, **Matrices,** determinants and basic of **Tensors.** After the completion of the course, Students will be able to learn Various practical problems related to applications of mathematical tools to solve the problems in physics. The practical classes of the course emphasize the use of computational methods and numerical techniques to perform **simulations** based experiments related to advanced Mathematical Physics problems.
V		2-Medical Physics	This course enables the students to learn the physics of the body, physics of **diagnostic and therapeutic systems**, X-rays, **radiation physics, medical imaging physics, radiation oncology**

			physics, radiation and radiation protection. After successful completion of the course students will be aware of the details of radio physics. The practical classes of the course are able to provide knowledge for measuring the blood pressure, testing the eyes etc.
V	DSE-2	3-Nano Materials and Applications	This course enables the students to learn the **nanoscale systems**, **synthesis of nano structured materials** which includes top-down and bottom up approaches, different characterization techniques of nano materials. Students can also acquire knowledge about the **optical properties**, **electron transport properties** and **applications** of nano materials in this section. Students will be able to aware the current advances of nano material physics. In the practical classes the students will be able to learn synthesis procedure of metal, semiconductor nano particles and thin film. XRD pattern analysis, surface plasmon study, V-I characteristic study of nano materials based devices is also included in this course.
V		4- Communication Systems	This course includes **Electronic communication**, **Analog modulation**, **Analog Pulse Modulation**, **Digital Pulse modulation**, **Navigation systems** like GPS and **mobile telephony systems.**
V		5-Classical Dynamics	This course enables the students to understand the fundamental concepts of **analytical mechanics** such as generalised coordinates and moment, the **Lagrange and Hamilton** functions, the action, **cyclic coordinates** and the relation between **symmetries** and **conserved quantities**, as well as the use of **Poisson brackets**, the fundamental concepts of **special relativity** and their physical consequences, such as the **Lorentz transformation**, invariant quantities, the metric, and four-vectors and more general tensors, as well as their use in covariant formulations of physical laws. The course helps in understanding of the field formulation of the Lagrange-Hamilton formalism. Upon successful completion of this course a student will be able touse the Lagrange and Hamilton equations to solve complex mechanical problems, and to use phase space based arguments to achieve a qualitative understanding of the existing solutions, as well as to apply variational calculus to more general problems. Also they will be able to use Maxwell's equations in calculations featuring: free and stationary electromagnetic waves, polarization, problems with stationary sources, use of the multipole expansion,and time-dependent sources with electromagnetic radiation, including radiation from a dipole. They will be able to perform calculations using relativistic mechanics and conservation laws, including Newton's second law on covariant form.
VI	CC-XIII	Electromagnetic Theory	This course familiarises the students with **Electromagnetic Theory** which is base of today's communication technology. The course provides a detail understanding about **Maxwell's Equations, Propagation of Electromagnetic Waves** and their **Polarization** phenomena. Students also get the primary ideas about **Optical Fiber**in this course. Therefore, upon completing the course students learn the nature of electromagnetic wave propagation through bounded media as well as through unbound media. The laboratory experiments in this course will enable the students to learn about **Polarimeter**, **Babinet's Compensator** etc. to study the polarization property of electromagnetic waves.

VI	CC-XIV:	Statistical Mechanics	This course enables the students to learn the insight of the postulates of **Statistical Mechanics**. By completing the course, students learn aboutthe three basic types of statistics distribution laws e.g. **Maxwell-Boltzmann Distribution Law**, **Bose-Einstein Distribution Law** and **Fermi-Dirac Distribution Law**. In the practical classes students perform the **Computational Analysis** to study the statistical behaviour of a collection of particles to acquire the physical insight of the above distribution laws.
VI	DSE-3	Nuclear Physics	This is a basic course in Physics which deals with the phenomena taking place in the nuclear domain. The students will learn about **General Properties of Nuclei**, different types of **Nuclear Models** to understand the nuclear structure, concept of nuclear force, **Radioactivity** etc. This course also leads the students to understand various types of **Nuclear Radiation**, their interaction with matter and their detection procedure.
VI	DSE-4	Astronomyand Astrophysics	After successfully completion the course, student will be able to: 1. Describe the basic concepts in astronomy and astrophysics. 2. Acquire knowledge of the Physical universe and its evolution 3. Describe the working principle of astronomical tools. 4. Attain the knowledge of evolution, classification, formation of, stars, planets, satellites, and theory of interstellar medium 5. Explain the structure and dynamics of galaxies. 6. Understand the evolution of the universe. 7. Familiarize with the structure and population of the Milky Way galaxy, properties of galaxies and its classifications. 8. Learn theoretical and practical aspects of modern observational astronomy. Photometry, spectroscopy, stellar classification, detectors, and basic information of telescopes.

Department of Statistics

Learning in descriptive statistics

Descriptive analysis characterizes the world or a phenomenon—answering questions about who, what, where, when, and to what extent. Whether the goal is to identify and describe trends and variation in populations, create new measures of key phenomena, or describe samples in studies aimed at identifying causal effects, description plays a critical role in the scientific pro- cess in general and education research in particular.

Descriptive analysis stands on its own as a research product, such as when it identifies socially important phenomena that have not previously been recognized. In many instances, description can also point toward causal under- standing and to the mechanisms behind causal relationships.

No matter how significant a researcher's findings might be, they contribute to knowledge and practice only when others read and understand the conclusions. Part of the researcher's job and expertise is to use appropriate analytical, communication, and data visualization methods to translate rawdata into reported findings in a format that is useful for each intended audience.

Learning in Probability in Statistics

Probability theory has been applied in many disciplines such as business, life sciences, humanities, education, agriculture, and the social sciences. Currently, basic probability concepts are taught at the secondary level in the Additional Mathematics subject for the Sijil Pelajaran Malaysia (SPM) examination. However, the focus is more on the computational aspect rather than on building the underlying principles of probability and probability distributions. Furthermore, since examination questions on this topic are not compulsory, very often they are neglected by both students and teachers. As a result, students are not able to build their reasoning and judgment skills acquired through the principles of probability at an early age. In order to enhance the interest in learning probability, new approach need to be introduced. Many studies have found that the use of simulation, animation and graphics visualization are effective for teaching difficult and abstract concepts commonly found in mathematics and statistics, such as probability. This paper presents the use of computer graphics to enhance the teaching of basic probability and probability distribution concepts. These graphics can be developed from widely available open source software. The teaching materials proposed can be extended to enhance the teaching of other abstract mathematical concepts such as functions, differentiation and integration.

Learning in Real Analysis

The study of real analysis is indispensable for a prospective graduate student of pure or applied mathematics & statistics also. It also has great value for any student who wishes to go beyond the routine manipulations of formulas because it develops the ability to think deductively, analyze mathematical situations and extend ideas to new contexts.

Learning in Vital Statistics

As a scientific discipline, Vital Statistics is a subfield of demography and the study & research of characteristics of the civilized population. The term "vital statistics" is deployed to the individual determination of some vital events. The birth rate is an example of vital statistics and an investigation of trends in birth rates is an example of an application in the domain of vital statistics. There are various examples of vital statistics such as death rates, or the number of marriages, human population, etc.

Learning in Database Management System in Statistics

A Database management system is a computerized record-keeping system. It is a repository or a container for collection of computerized data files. The overall purpose of DBMS is **to allow the users to define, store, retrieve and update the information contained in the database on demand**.

Learning in Survey Sampling

Survey sampling is **a statistical process that involves selecting and surveying individuals from a particular population**.

By asking survey questions and collecting data on a subset of your target population (a "sample"), you can make inferences about the whole population.

Learning in Indian Official Statistics

Official statistics provide a picture of a country or different phenomena through data, and images such as graph and maps.

Official statistics are statistics published by government agencies or other public bodies such as international organizations as a public good. They provide quantitative or qualitative information on all major areas of citizens' lives, such as economic and social development, living conditions, health, education and the environment.

During the 15th and 16th centuries, statistics were a method for counting and listing populations and State resources. The term *statistics* comes from the New Latin *statisticum collegium* (council of state) and refers to *science of the state*. According to the Organisation for Economic Co-operation and Development, official statistics are statistics disseminated by the national statistical system, excepting those that are explicitly not to be official".

Official statistics can be presented in different ways. Analytical texts and tables are the most traditional ways. **Graphs** and **charts** summarize data highlighting information content visually. They can be extremely effective in expressing key results, or illustrating a presentation. Sometimes a picture is worth a thousand words. Graphs and charts usually have a heading describing the topic.

Learning in Statistical Inference

Statistical inference is the process of using data analysis to infer properties of an underlying distribution of probability. Inferential statistical analysis infers properties of a population, for example by **testing hypotheses** and deriving estimates. It is assumed that the observed data set is sampled from a larger population.

Statistical inference makes propositions about a population, using data drawn from the population with some form of sampling. Given a hypothesis about a population, for which we wish to draw inferences, statistical inference consists of (first) selecting a statistical model of the process that generates the data and (second) deducing propositions from the model.

Learning in Sampling Distribution in Statistics

In statistics, a **sampling distribution** or **finite-sample distribution** is the probability distribution of a given random-sample-based statistic. If an arbitrarily large number of samples, each involving multiple observations (data points), were separately used in order to compute one value of a statistic (such as, for example, the sample mean or sample variance) for each sample, then the sampling distribution is the probability distribution of the values that the statistic takes on. In many contexts, only one sample is observed, but the sampling distribution can be found theoretically.

Sampling distributions are important in statistics because they provide a major simplification en route to statistical inference. More specifically, they allow analytical considerations to be based on the probability distribution of a statistic, rather than on the joint probability distribution of all the individual sample values.

Learning in Time series Analysis in Statistics

A time series is **a sequence of observations taken sequentially in time**. Time series forecasting involves taking models then fit them on historical data then using them to predict future observations. Therefore, for example, min(s), day(s), month(s), ago of the measurement is used as an input to predict the.

In mathematics, a **time series** is a series of data points indexed (or listed or graphed) in time order. Most commonly, a time series is a sequence taken at successive equally spaced points in time. Thus it is a sequence of discrete-time data. Examples of time series are heights of ocean tides, counts of sunspots, and the daily closing value of the Dow Jones Industrial Average.

Learning in Research Methodology in Statistics

Research in common parlance refers to a search for knowledge. Once can also define research as a scientific and systematic search for pertinent information on a specific topic. In fact, research is an art of scientific investigation.

Research Methodology is a critical component of any research exercise as it can make the difference between a completely irrelevant and a completely relevant exercise. Frequently, the research methodology underlying a multimillion dollar research project can make the difference between completely accurate and completely inaccurate results, although the underlying methods or processes may have been done accurately.

Research methodology is thus the foundation or general rules that determine the accuracy and validity of any research activity. It's important to understand the difference between the terms 'methodology' and 'method', as the former refers to the general rules and guidelines pertaining to a set of methods, and explains why a specific strategy to address a specific research question is to be applied. Research methodology can cover the following three key areas of research:

In research methodology we will learn:

i) Some of the reasons for doing research
ii) How research can be used to gather evidence to inform your practice
iii) The applications of research
iv) Characteristics and requirements of the research process
v) Types of research from the perspective of applications, objectives and enquiry modes
vi) Research paradigms

Learning in Monto Karlo Method in Statistics

The Monte Carlo method basically refers to the **kind of method that the researcher estimates in order to obtain the solution**, which in turn helps the researcher to address a variety of problems related to mathematics, which also involves several kinds of statistical sampling experiments.

Monte Carlo methods are defined as the set of different types of procedures that perform the same operations. Monte Carlo methods are evaluated with the help of a deterministic model, which utilizes the theory of randomly generated numbers and the theory of probability for getting an accurate answer to the problem.

Learning in Linear Model in Statistics

What is linear model of learning?

The term linear model implies that the **model is specified as a linear combination of features**. Based on training data, the learning process computes one weight for each feature to form a model that can predict or estimate the target value.

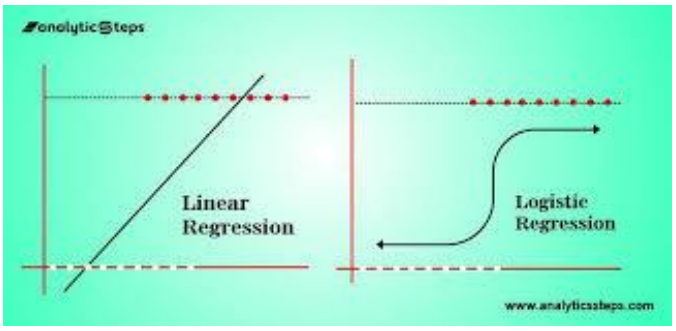
What is a linear model in statistics?

Linear models describe **a continuous response variable as a function of one or more predictor variables**. They can help you understand and predict the behavior of complex systems or analyze experimental, financial, and biological data. Linear regression is a statistical method used to create a linear model.

Linear regression is one of the easiest and most popular Machine Learning algorithms. It is a statistical method that is used for predictive analysis. ... Linear regression algorithm shows a linear relationship between a dependent (y) and one or more independent (y) variables, hence called as linear regression.

Logistic regression is the appropriate regression analysis to conduct when the dependent variable is dichotomous (binary). Like all regression analyses, the logistic regression is a predictive analysis. Logistic regression is used to describe data and to explain the relationship between one dependent binary variable and one or more nominal, ordinal, interval or ratio-level independent variables.

Sometimes logistic regressions are difficult to interpret; the Intellectus Statistics tool easily allows you to conduct the analysis, then in plain English interprets the output.



Learning in SQC in Statistics

Statistical Quality Control (SQC) is the use of statistical methods in the monitoring and maintaining of the quality of products and services. One method, referred to as acceptance sampling, can be used when a decision must be made to accept or reject a group of parts or items based on the quality found in a sample. A second method, referred to as statistical process control, uses graphical displays known as control charts to determine whether a process should be continued or should be adjusted to achieve the desired quality.

Statistical quality control (SQC) is **the use of statistical tools and techniques to monitor and maintain product quality in industries such as food, pharmaceuticals and many manufacturing environments**.

Learning in Econometrics in Statistics

What do you learn in econometrics?

Econometrics **explores the relationship between statistical analysis and empirical content**. It analyzes economic variables using mathematical models to make predictions and forecasts and to explain consistently occurring incidents. ... Economic models are a good match for statistical methods.

Learning econometrics can be something easy as long as you have the right tools.

Econometrics deals with the measurement of economic relationships. It is an integration of economics, mathematical economics and statistics with an objective to provide numerical values to the parameters of

economic relationships. The relationships of economic theories are usually expressed in mathematical forms and combined with empirical economics.

Econometrics assumes that students have a background in multivariate calculus, probability theory, linear algebra, and mathematical statistics. A prior course in undergraduate econometrics would be helpful but not required.

Learning in Operations Research in Statistics

The subject OPERATIONS RESEARCH is a branch of mathematics - specially applied mathematics, used to provide a scientific base for management to take timely and effective decisions to their problems. It tries to avoid the dangers from taking decisions merely by guessing or by using thumb rules.

The general approach is to analyse the problem in economic terms and then implement the solution if it does not aggressive or violent to other aspects like human, social and political constraints.

Operations Research tools are not from any one discipline. Operations Research takes tools from different discipline such as mathematics, statistics, economics, psychology, engineering etc. and combines these tools to make a new set of knowledge for decision making.

Operations Research can also be treated as science in the sense it describing, understanding andpredicting the systems behaviour, especially man-machine system. Thus O.R. specialists are involved inthree classical aspect of science, they are as follows:

i) Determining the systems behaviour

ii) Analyzing the systems behaviour by developing appropriate models

iii) Predict the future behaviour using these models

Learning in Financial Statistics

The use of data science and artificial intelligence for economics and finance is providing benefits for scientists, professionals, and policy-makers by improving the available data analysis methodologies for economic forecasting and therefore making our societies better prepared for the challenges of tomorrow.

Students are assumed to have had a prior course in statistics, but no background in finance or economics.

Statistics is a term that is derived from the Latin word “status,” which means a group of figures that are used to represent information about a human interest. It refers to the technique that is developed for the purpose of collecting, reviewing, analyzing, and drawing conclusions from quantified data. The data obtained is then used in the decision-making process.

Financial Analysts use statistical methods to analyze, evaluate, and summarize large volumes of data into a mathematical form that is useful. Statistics is applied in numerous disciplines such as business, social sciences, manufacturing, psychology, etc.

Learning in Design of Experiments in Statistics

Design of Experiments is a method of experimenting with complex processes with the objective of optimizing the process.

Design of experiments seeks to:

– Determine which variables affect the system.

– Determine how the magnitude of the variables affects the system.

– Determine the optimum levels for the variables.

– Determine how to manipulate the variables to control the response.

Treatments, units, and assignment method specify the experimental design.

Some authors make a distinction between the selection of treatments to be used, called "treatment design," and the selection of units and assignment of treatments, called "experiment design."

A good experimental design must

• Avoid systematic error

• Be precise

• Allow estimation of error

• Have broad validity.

Learning Multivariate Analysis in Statistics

Multivariate means involving multiple dependent variables resulting in one outcome. This explains that the majority of the problems in the real world are Multivariate. For example, we cannot predict the weather of any year based on the season. There are multiple factors like pollution, humidity, precipitation, etc. Here, we will introduce you to multivariate analysis, its history, and its application in different fields.

Multivariate analysis (MVA) is a **Statistical procedure for analysis of data involving more than** one type of measurement or observation. It may also mean solving problems where more than one dependent variable is analyzed simultaneously with other variables.

Learning Non-parametric Methods in Statistics

What are nonparametric statistical methods?

Nonparametric statistics refers to **a statistical method in which the data are not assumed to come from prescribed models that are determined by a small number of parameters**; examples of such models include the normal distribution model and the linear regression model.

Why do we need non-parametric statistical methods?

In the case of ordinal or interval data, nonparametric statistics are the only type of statistics that can be used. For real-valued data, nonparametric statistical methods are required **in applied machine learning when you are trying to make claims on data that does not fit the familiar Gaussian distribution**.
When should non-parametric statistical methods be used?

Non-parametric methods are widely used for **studying populations that take on a ranked order** (such as movie reviews receiving one to four stars). The use of non-parametric methods may be necessary when data have a ranking but no clear numerical interpretation, such as when assessing prefer

Learning in Survival Analysis in Statistics

Survival analysis is a statistical method that **aims to predict the time to an event**, such as death, the diagnosis of a disease or the failure of a mechanical part. A key aspect of survival analysis is the presence of censored data, indicating that the event of interest has not occurred during the study period.

How do you calculate survival analysis?

For each time interval, survival probability is calculated as **the number of subjects surviving divided by the number of patients at risk**. Subjects who have died, dropped out, or move out are not counted as "at risk" i.e., subjects who are lost are considered "censored" and are not counted in the denominator.

What survival analysis tells us?

Survival Analysis is **used to estimate the lifespan of a particular population under study**. This time estimate is the duration between birth and death events[1]. Survival Analysis was originally developed and used by Medical Researchers and Data Analysts to measure the lifetimes of a certain population

Learning in Stochastic Process in Statistics

a stochastic process is a family of random variables that describes the evolution through time of some (physical) process. Stochastic process or random process is a collection of random variables ordered by an index set.

What is the Stochastic Process Meaning With Real-Life Examples?

A bacterial population growing, an electrical current fluctuating due to thermal noise, or the movement of a gas molecule are all common examples. Stochastic processes are commonly used as mathematical models of systems and phenomena that appear to vary randomly. The focus will especially be on applications of stochastic processes as key technologies in various research areas, such as Markov chains, renewal theory, control theory, nonlinear theory, queuing theory, risk theory, communication theory engineering and traffic engineering.

Learning in Queuing Theory in Statistics

What is meant by queuing theory?

Queuing theory **examines every component of waiting in line**, including the arrival process, service process, number of servers, number of system places, and the number of customers—which might be people, data packets, cars, or anything else. Some queuing is acceptable in business.

What Is Queuing Theory?

Queuing theory is a branch of mathematics that studies how lines form, how they function, and why they malfunction. Queuing theory examines every component of waiting in line, including the arrival process, service process, number of servers, number of system places, and the number of customers—which might be people, data packets, cars, or anything else.

Real-life applications of queuing theory cover a wide range of businesses. Its findings may be used to provide faster customer service, increase traffic flow, improve order shipments from a warehouse, or design data networks and call centers.

As a branch of operations research, queuing theory can help inform business decisions on how to build more efficient and cost-effective workflow systems.

- Queuing theory is the study of the movement of people, objects, or information through a line.
- Studying congestion and its causes in a process is used to help create more efficient and cost-effective services and systems.
- Often used as an operations management tool, queuing theory can address staffing, scheduling, and customer service shortfalls.
- Some queuing is acceptable in business. If there's never a queue, it's a sign of overcapacity.
- Queuing theory aims to achieve a balance that is efficient and affordable.

How Queuing Theory Works

Queues can occur whenever resources are limited. Some queuing is tolerable in any business since a total absence of a queue would suggest a costly overcapacity.

"First come, first served" redirects here.

Queueing theory is the mathematical study of waiting lines, or queues A queueing model is constructed so that queue lengths and waiting time can be predicted. Queueing theory is generally considered a branch of operations research because the results are often used when making business decisions about the resources needed to provide a service.

Learning in Actuarial Statistics in Statistics

Financial and actuarial modelling is an ever-changing field with an increased reliance on statistical techniques. This is seen in the changing of competency exams, especially at the upper levels, where topics include more statistical concepts and techniques.

Actuarial science assesses financial risks in the insurance and finance fields, using mathematical and statistical methods. Actuarial science applies **probability analysis and statistics to define, analyze**, and solve the financial impact of uncertain future events.Actuarial science spans several interrelated subjects, including mathematics, probability theory, statistics, and finance, economics, and computer science.

KEY TAKEAWAYS

- Actuarial science assesses financial risks in the insurance and finance fields, using mathematical and statistical methods.
- Actuarial science applies probability analysis and statistics to define, analyze, and solve the financial impact of uncertain future events.
- Actuarial science helps insurance companies forecast the probability of an event occurring to determine the funds needed to pay claims.

Learning in Project Work

Analyzing Social Change in Historical Perspective Objective:

The aim of the course is to initiate students to write and present a statistical report, under the supervision of a faculty, on some area of human interest. The project work will provide hands on training to the students to deal with data emanating from some real life situation and propel them to dwell on some theory or relate it to some theoretical concepts.

Course Previews

Our course previews are meant to give prospective learners the opportunity to get a taste of the content and exercise that will be covered in each course. If you are new to these subjects, or eager to refresh your memory, each course preview also includes some available resources. These resources may also be useful to refer to over the course of the semester.A score of 60% or above in the course previews indicates that you are ready to take the course, while a score below 60% indicates that you should further review the concepts covered before beginning the course.

What you'll learn

- Intuition behind probability and statistical analysis
- How to summarize and describe data
- A basic understanding of various methods of evaluating social programs
- How to present results in a compelling and truthful way
- Skills and tools for using R for data analysis

Prerequisites

No prior preparation in probability and statistics is required, but familiarity with algebra and calculus is assumed.

DEPARTMENT OF SANSKRIT

PROGRAMME OUTCOME PO) OF SANSKRIT HONOURS AND GENERAL:

After completion of theprogramme a student learns with help of our departmental teachers:-

P.O.1.-This programme is providing very effective for teaching-learning process and leading to get many opportunities for a rewarding career. Students are able to develop many critical thinking with their analytical mind, fruitful communication, more creativity, self-judgment versatility through this in different perspective. They can achieve their target after completion through this programme proper way.

P.O.2.-This programme is essential to identify and solve different issues with face in our daily classes with related their life, particularly the questions regarding our existence, values structure and meaningof life. How we can sustained our daily life and to improve our health with possible various way.

P.O.3.- The Following programme can solve the various aspects and forms of ancient Indian knowledge tradition in modern perspective and aspirations.

P.O.4. - The programme aims at equipping and enabling future respective of different knowledge domains like Vedas, Grammar, Poetics, Philosophy, Inscriptions etc.

P.O.5.- To empower the students with modern and scientific tools and interdisciplinary approach and to design such modules to help them in becoming good citizen according this programme.

P.O.6.- To develop definite argument patterns must be plays leading role guided by this programme.

Programme / Course-specific outcome:-

P.S.O.1.-Sanskrit is to highlight and denoted as Indian culture and heritage which are preserved in Sanskrit texts.Various matter of Sanskrit text or subject which is provided to us moral knowledge that is most essentitial in our daily life and which can help us to motivate and fullfill the social values for our students.

P.S.O.2.-Our students are able to read,speak and understand the Sanskrit text and obviously Sanskrit language of their books.

P.S.O.3.-A basic familiarity of the history of Sanskrit literature is good pathfinder.This text helps of our students to be enriched and to be a good researcher which is connected with the ancient historical sourcesor modern aspects etc.

P.S.O.4.-An increased knowledge and understanding of Sanskrit Grammar,Philosophy and Philology/linguistics.

P.S.O.5.- An increased knowledge and understanding of Ayurveda and Environmental Awarness in Sanskrit literature that is included in the B.U. syllabus.

P.S.O.6.-Ability for gradually developing critical thinking processes.

P.S.O.7.-Through these programme students are able to get the basic knowledge of Sanskrit language.

P.S.O.8.-After completion of these programme students are eligible for admission in further Master degree courses and higher studies also.

B.A. COURSE OUTCOME

HONOURS:- SEMESTER-1: CC-1, CC-2:

C.O.1.: The two topic are Classical Sanskrit Literature (Poetry) and Critical Sanskrit Literature in this semester.`Raghuvamsam'Mahakavyam(canto-14),`Kiratarjuniyam'Mahakavyam(canto-1),Ramayana,Mahabharata,Vaidika Sahitya,Purana,The History Of Sanskrit Literature,The History Of Sanskrit Grammar,The History Of Indian Philosophy are included in the syllabus.We taught our studentswith right way and properly.

SEMESTER-2: CC-3, CC-4:

C.O.2.: We taught our students Kadambari,Dasakumaracharita,The History of Sanskrit Literature(Prose&Fables) according to the allotted syllabus.Beside this `Self Management in the Gita' this topic is very motivational and scientific subject which is given our studens the actual way in our life.

SEMESTER-3: CC-5,CC-6, CC-7, SEC-1:

C.O.3.: In the 3rd SEMESTER The `Abhijnanasakuntalam'(I-V),Kavyalankarasutravirttti(1ST Adhikarana,capter-1,2&3) of Vamana,Metrics,Sahityadarpana(chapter-X),Indian Social Institution and Polity specially in this context is related with the book Manusamhita and other part of Basic Sanskrit,`Hitopadesha',`Panchatantra' are included in our syllabus.We are teaching all this topic very carefully for our students.

SEMESTER-4: CC-8,CC-9,CC-10, SEC-2:

C.O.4.: In the 4th SEMESTER Indian Epigraphy and Chronology, Modern Sanskrit Literature specially included Survey of Modern Sanskrit Literature in Bengal, Sanskrit and World Literature specially selected some writer works are included.

SEMESTER-5: CC-11,CC-12,DSE-1, DSE-2

C.O.5.:Vedic Literature, karaka Prkarana,Samasa Prakarana,Sanskrit Grammar (The Concept Of The Following Samjnas),Dramaturgy-Sahitydarpna(Chapter-VI),Elements of Linguistics are incuded in the 5th SEMESTER.All these are topic very effective for our students to make their good knowledge and to coonect their basic conception of Sanskrit grammar, literature & vaidikasahitya also SEMESTER-6: CC-13,CC-14,DSE-3,DSE-4:

C.O.6.: In the 6th SEMESTER Indian Ontology and Epigraphy specially included Tarkasangraha',Vedantasara,Sanskrit Composition and Communication, Translation and Comprehension, Reporting, Fundamentals Of Ayurveda,Taittriyopanisad-Bhrguballi,Environmental Awarness in Sanskrit specially included some topic of Manusamhita, Selected slokas of Varahapurana, some slokas Yajnavalkyasamhita, Art of Balanced Living specially accepted Yogasutra and Indian system of Logic are included.We teach all of the allotted topic with very carefully as exam purpose and obviously to acquire their proper knowledge.

GENERAL:-

SEMESTER-1: GE-1/CC-1

C.O.7: In the 1st Semester.`Raghuvamsam'Mahakavyam(canto-14),` Kiratarjuniyam'Mahakavyam(canto- 1),some topic of The History of Sanskrit Literature are included.We taught our students properly as exam purpose and their appropriate knowledge.

SEMESTER-2: GE-2/CC-2

O.8.: Dvijoprakiti of Dasakumaracharita, some topics namely Subandhu, Dandin, Banabhatta, Panchatantra, Hitopadesa etc. are included in this semester.

SEMESTER-3: GE-3/CC-3, SEC-1

C.O.9.: In the 3RD SEMESTER `Abhijnanasakuntalam'(I-V),Selected topics of The History of Sanskrit Literature(Prose,Fables&Kavyas),Basic Elements of AYURVEDA,Yogasutra of Patanjali are comprised in our syllabus. All these are very relevant in this contemporary society.

SEMESTER-4: GE-4/CC-4, SEC-2

C.O.10.: In the 4th SEMESTER Sanskrit Grammar, Dramaturgy-Sahitydarpna(Chapter-VI),Basic

Sanskrit- Part-I are included in our syllabus. All of the topics are very effective for all students to acquire their proper knowledge.

SEMESTER-5: DSE-1, SEC-3, GE-1

C.O.11.: Epigraphy,Philosophy,Religion and Culture in Sanskrit Tradition specially included The History of Vedic Literature, The Social, Religious and cultural Aspects as reflected in the puranas, Indian Social Institution and Polity specially in this context is comprised with the book Manusamhita,Arthasastra(Dutapranidhi),Sanskrit Composition, Basic Sanskrit-Part-II are included in the 5th SEMESTER syllabus.

SEMESTER-6: DSE-2, SEC-4, GE-2

C.O.12.: In the 6th SEMESTER Vedic Literature, Moral Values In Sanskrit Literature, Ethical Issues in Sanskrit Literature included Hitopadesa, Panchatantra, Sanskrit Metre and Composition and Translation are included. All these are very effective for our students as learning process.

At last it is very much significant that we give all of the study material or necessary written documents for our students through their classes or through the help of college website specially denoted with departmental virtual notice board. We have given the departmental notice and all study material for our students(Honours & General) through the help of online mode(College Website/Departmental Virtual Notice Board &Departmental Whatsapps Group) during this lockdown period. We arranged the departmental seminar as treated the way of smooth connection of the Teaching-Learning method that actually helps our students in present or future studies.

DEPARTMENT OF ENGLISH
COURSE SPECIFIC OUTCOME

Semester-I

CC – 1 Indian Classical Literature

Students will be able to:

1. Understand succinctly the literary and cultural heritage and tradition of India.
2. Have a close understanding of the classical Indian Literary tradition promoting them to analyze andappreciate its departure from the western counterpart.
3. Develop an insight into the Indian Epic tradition through a thorough reading of the select excerpt fromThe Mahabharata.
4. Develop a working knowledge about the Indian classical Drama.
5. Form a critical knowledge of the structure and the recurrent themes dwelling on the notions of Dharmaand the Heroic in classical Indian literature.
6. Learn to identify the relevance and scope of these thematic concerns in contemporary everyday lifestretching beyond the world of texts.
7. Understand rich legends and myths of India and identify their relevance in contemporary everydaylife beyond the world of the texts.

CC – II European Classical Drama

Students will be able to:

1. Understand the conceptual nuances of the European Classical Literature – the major genre, the structureand the themes.
2. Form an in-depth knowledge about the development of the genres of the Epic, the Comedy, and theTragedy in classical Greek and Roman literary tradition.
3. Elucidate concepts and usage of mimetic realism and its lasting influence on later stages of Europeanliterary development.
4. Glean the essential elements of the social milieu of the Athenian city states and the Classical Romancivilization through the detailed study of the select texts.
5. Correlate and synthesize the ideas developed in these classical literary traditions and locate points ofrelevance in contemporary literature and social life.
6. Have a brief survey of the world order as depicted in the classical texts and thereby having a fair anddecent understanding of the zeitgeist, milieu or contemporaneity of a text

Semester II

CC III – Indian Writing in English

Students will be able to:

1. Describe the broad outlines of Indian literature written in English, the challenges, the social and thecreative stimulus behind Indian literature in English and its readership.
2. Explain the persistent themes and historical context of Indian English novel for instance the history of partition and its aftermath, the historical and cultural discourse of nationalism.
3. Elucidate about the aesthetic and social consciousness of Indian English poetry and drama.
4. Critically analyze the emergence, development and scope of modernist consciousness in Indian EnglishLiterature.
5. Understand certain modern technicalities like commercialization of writing as is manifestly relevant inhaving an in depth evaluation of Indian Writing in English.
6. Examine the very relevant aspect of the post-colonial and power politics element that has breathing, livingpresence in all Indian writings in English.

7. To understand the subaltern in Indian subcontinent with its vividness, sectional and marginal identities, along with their fight against the domination of majority for exerting the same.

CC IV – British Poetry, Drama (16-17th centuries) & Rhetoric and Prosody

Students will be able to:

1. State the basic tenets of Renaissance Humanism as both a social discourse and a literary foundation.
2. Assess the role of the stage, court, and city in the social and the literary domain.
3. Analyze the major themes and contexts in the plays and poetry of the time.
4. Have an idea of a clear construct of the working structure of drama.
5. Develop the form of drama from church liturgy to theatres.
6. Develop Sonnet as a form from Italian structure and themes to English.
7. To examine the metaphysical poetry with its new-fangled vigor and refreshing outlook provides asparkling existence to poetry.
8. Explain the salient features of major Rhetorical figures of speech
9. Explain the major elements of prosody in poetry.
10. Enable the prosodic understanding in poetry
11. Have a foundation of knowledge in rhetoric..
12. Enhance the finer instincts and sensitivities by an ample exposure to a rich array of emotion andimagination recorded and registered in the poems.

MIL – AECC-2 Communicative English

Students will be able to:

Remembering

1. Recall basic concepts of communicative English. 2. Improve LSRW-listening, speaking, reading and writing skills and the related sub-skills.

Understanding

Describe characteristics of communicative English. Explain theory of communication. Discuss types and mode of communication.

Applying

Apply specific speaking, reading and understanding, writing skill. Speak with more confidence andlisten carefully to build rapport. Demonstrate positive group communication exchanges. Carry out effective communication.

Analyzing

Compare and contrast different situation to avoid barriers to communication. Organize content of communication to retain interest of the listeners.

Evaluating

Assess barriers to communication. Predict nature and motive of listener/s to avoid miscommunication. Creating Manage individual, group and public speech. Prepare analysis and interpretation, summary, paraphrasing.Write document, report, note and letter.

Semester III

CC – V

American

Literature

Students will be

able to:

1. Understand the distinct traits of American Literature and its social mooring;

2. Explain the dominant forms in American plays, poetry and prose fiction.
3. Correlate social realism and the role of American fiction.
4. Assess the integration and usage of Folklore in American novel.
5. Assess the historical and social importance of Black women's writing.
6. Analyzing the representation of subaltern life fighting back.
7. Understand Racism as a pertinent subject in American Literature.

CC – VI Popular Literature

Students will be able to:

1. Discern the growing importance of popular literature and its dominant forms, e.g., the graphicnovel.
2. Understand the distinction between the canonical and the popular.
3. Assess the approach to issues of gender and identity in popular literature.
4. Elucidate the notion of ethics and education in children's literature.
5. Comprehend how the social tribulations of the contemporary world are represented through popularliterature.
6. Examine the inner meanings of life are projected through the gaze of popular literature.
7. Assess the condition of women and the world.
8. Analyze the synthesis of sense and the nonsense in popular literature.
6. Understand the cultural significance of popular literature.

CC – VII British Poetry and Drama

Students will be able to:

1. Describe the key features of religious and secular thought in the 17th Century and its relevance inliterature.
2. Elucidate the role of the stage and the state in 17th century.
3. Analyze the epic as a genre.
4. Understand the mock-epic as a genre.
5. Elaborate on the form and themes of the epic, mock epic and prose fiction.
6. Elaborate on the role of women in literature of the time
7. Glean the role of women writers of the time and its lasting historical significance.

SEC – 1 Translation Studies Students will be able to:

Remembering

1. Recall a brief history of translation studies

Understanding

2. Explain the significance of translation in multi-linguistic and multi-cultural society.
3. Describe the basic concepts of translation.
4. Discuss issues related to gender and translation.

SEC – 2 English Language Teaching

Students will be able to:

Remembering: Recall basic concepts of English language teaching.

Understanding Describe nuances of language usage. Explain the language structure.

Applying

Plan language test. Design lesson plan. Use various teaching methods and materials.

Demonstrate topics using technology.

Analyzing

LSRW skills and providing appropriate medium for their development. Examine individual language-learner's needs.Evaluating: Predict the learner.

Creating: Implement language test.

SEC-2 **Film Studies**

Students will be ableto:

Remembering: Describe basic concepts of film studies.

Understanding: Explain the evolution of cinema from silent film to 3D. Describe and distinguish various cinematographic techniques.

Applying: Demonstrate camera operating and light setting.

Analyzing:Compare and contrast various cinematographic techniques in relation to the content of the film.

Evaluating

Critique film adaptation.

Recommend appropriation.Creating

Review film shows.

Create short films.

Semester V

CC – XI: Women's Writing

Students will be able to:

1. Critically assess the importance and evolution of women's writing as a distinct domain.
2. Elaborate on the approach to race, caste and gender in women's writing across cultures.
3. Critically assess the relevance of the confessional mode in Women's Writing.
4. Describe the synthesis of social reform and Women's rights in Women's Writing.
5. Critically enumerate the distinction between Women authorship in Euro-American and IndianContext.
6. Critically assess the relevance of the autobiographical element present in women's writing
7. Elaborate on the "Personal is political" issue.
8. Critically assess the role of "Women's Body" in the domain of "Sexual Politics".

CC – XII: British Literature (Early 20th Century)

Students will be able to:

1. Describe the dominant principles of Modernism and Postmodernism as an epochal paradigm shift insociety and culture.
2. Critically assess the women's movement in the early 20th century and its relevance in literaryModernism.
3. Elaborate on the importance of the psychoanalysis and the mode of stream of consciousness as adominant modernist trait in Literature.
4. Elaborate on the use of myth as a trope of understanding the condition of Modernity.
5. Describe the broad principles of the Avant Garde movement and its key figures in literary Modernism.
6. Experience impact of World Wars on the survivors.
7. Examine this particular era experimenting with the discoveries of Freud and its huge impact on almostevery aspect in the contemporary time.

DSE 1: Modern Indian writing in English Translation

Students will be able to:

1. Analyze the importance of translation of literary works in a cross-cultural country like India.
2. Familiarize themselves with the form, the style and thematic concern of 20th Century IndianLiterature.
3. Assess the emergence of modernity in Indian Literature and identify its relevance in Indian socialfabric.
4. Assess the approach to class and gender in Modern Indian Writing.
5. Assess the significance of Modern Indian Writing as a language of protest.
6. Examine the position of marginal people in Modern India
7. Understand basic premises of Dalit Literature.

DSE 1: Travel Writing

Students will be able to:

1. Critically analyze the emergence and evolution of Travel Writing as a distinct form of literatureand cross-cultural dialogue.
2. Describe the relation between Travel Writing and Ethnography.

3. Elaborate on the close co-relation between Orientalism and Travel Writing.
4. Assess how the role of gender and globalization impact travel and travel writing.
5. Describe the role and relevance of religion in Travel Writing.
6. Elaborate on the role Travel Writings plays in rereading History.
7.

DSE 2: Partition Literature Students will be able to

1. Critically analyze partition of India as a major historical, social phenomenon and assess itsreflection in Literature
2. Elaborate on communalism, violence, its impact on partition and its treatment in literature.
3. Evaluate the role of nationalism, colonialism in partition and its reflection in literature.
4. Assess the reality of exile and homelessness in partition.
5. Elucidate the condition of women during and after partition.
6. Discover the role humanity played even at this crucial time
7. Comprehend the role of the contemporary Indian Politics and its Practitioners
8. Understand the role bureaucracy played at the time of partition to shape the future of the countryand its inhabitants.
9. Compare the position of present day India in the light of the History of Partition.
10. Examine the role of these pieces of literature in documenting History.

DSE 2: British Literature: Post-WWII

Students will be able to:

1. Critically understand the reality of World War II on its impact on British society and culture.
2. Describe the key features of British postmodernity during the 1960's and its impact on the formand structure of novel and poetry.
3. Critically understand the conceptual notions of intertextuality and fragmentation as a major literaryexperimental device in prose fiction.
4. Assess post-WWII poetry as a point of departure from Modernist poetry.
5. Analyze postmodern writing as an important extension of a subversive counterculture.
6. Examine themes such as **race, power, democracy, and human behavior** under conditions of stress.
7. **Critically understand that not only did a new generation come out of the war, but its ethnic, regional, and social character was quite different from that of the preceding one.**
8. Comprehend the impact of certain theme like "disillusionment that grew out of the war" onliterature.

Semester VI

CC – XIII: Modern European Drama

Students will be able to:

1. Describe the social changes in 20th Century Europe and its impact on drama.
2. Critically assess the principal features of realism and anti-realism in Modern European Drama.
3. Evaluate the contributions of Major 20th Century Dramatists.
4. Elaborate and illustrate the reformulation of the traditional notions of Tragedy and Heroism inModern European Drama.
5. Explain the key features of Existentialism and the Theater of the Absurd in Modern EuropeanDrama.

CC – XIV: Postcolonial Literatures

Students will be able to:

1. Understand the basic concepts of Colonialism and Post colonialism and its consequences and can put questions relating to the political and cultural

independence of formerly subjugated people, and themes such as racialism and colonialism.

2. Familiarize themselves with the broad principles of post colonialism and its correlation withpostcolonial elements in literature across culture.
3. Identify the elements of resistance in literature from the earlier colony to dominant Eurocentricthinking and writing.
4. Analyze the distinctive features of postcolonial writings from various parts of the British colony likeAfrica and India.
5. Critically appreciate the different strands of Indian Postcolonial literature both prose and poetry.
6. Read Indian Postcolonial literature as a representation of the voice of the marginal section ofsociety.

DSE 3: Literary Theory

Students will be able to:

1. Form a foundational knowledge about literary theory in general and its relevance in understandingsociety and literature.
2. Elucidate the major principles of Marxism, important thinkers and a Marxist reading strategy.
3. Understand the contours of structuralism and post structuralism and identify the intricate linkagebetween language and power – across culture.
4. Understand discursive territory of feminism, feminist writing and the process of feminist readingof patrilineal literature.
5. Critically understand the concepts of the East and the West, the genealogy of post colonialism, theconcept of orientalism and nationalism along with postcolonial reading mechanism.

DSE 3: Research Methodology

Students will be able to;

1. Discuss different methodologies and techniques used in research work
2. Understand the process of writing a term paper.
3. Conceptualize and draft a research proposal.
4. Use style manuals.
5. Draft notes, references, and bibliography in keeping with research guidelines.
6. Demonstrate the ability to choose methods appropriate to research aims and objectives

DSE 4: Literary Criticism and History of the

English Language Students will be able to:

1. Understand the history and evolution of English Language.
2. Describe and elaborate the impact of Christianization on English language and Scandinavian, Latin,and French influences on English language.
3. Understand the expansion of Vocabulary & Branching off in Indian English & American English.
4. Discuss the history and relevance of English criticism.
5. Assess the critical views on culture and literature.
6. Describe the critical views on Shakespeare and English drama.
7. Elaborate on the notions of imitation, correctness and classical notions of originality.
8. Apply literary criticism as a tool for

interpreting literature.Or

DSE 4: Literature of the Indian Diaspora

Students will be able to:

1. Explain the concept of diaspora and the broad contours of diasporic literature.
2. Discern the relevance of nostalgia in diasporic literature.
3. Identify alienation and lost homeland as a major literary trope in diasporic literature.

4. Assess the importance of diasporic literature as a site for cross cultural dialogue.
5. Analyze a wide range of views and opinions on India as a country and cultural space

B. A. General Program under CBCS – General and Generic

Program Specific Outcome

Students will be able to:

1. Conceptualize the importance of literature as a yardstick to social consciousness and the artisticappeal to the senses.
2. Comprehensive understanding of the important dimensions in literature and their proliferation.
3. Examine how Indian literature plays an integral and significant contribution to the literatureworld.
4. Discern the relevance of how literary writings from across India mirrors the voice of the marginalized, the unrepresented.
5. Examine the Courses that offer a foundation for understanding cinema-and its relation to culture, history, technology and aesthetics-Film Studies teaches students to create and analyze moving images, to produce research, and to make art.
6. Learn to adapt the conventions of academic writing and be professionally equipped to draft and edit documents.
7. Be professionally skilled to perform reading, content writing and editing in various professional sectors including electronic and print media.
8. Gain and in-depth knowledge about professional communication both written and verbal as a means of enhancing performance.

Course Specific Outcome:Semester 1

CC – IA/ GE1: Poetry &
Short Story Students will
be able to:

1. Examine poetry and short story as forms of expression. Writing it lets us get out our feelings and thoughts on a subject while reading it encourages us to connect and find meaning in our experiences
2. Develop the idea of the contribution of major writers of the Elizabethan, Romantic andModernist period.
3. Develop on the ideas of distinctive era of literature and their characteristics
4. Evaluate the importance of poetry and short story in reflecting the social currents of the time.

Core Course: (L1- 1) Language, Variety and
Stylistics Sem IStudents will be able to;

1. Understand human language that is unique because it is generative, recursive, and has displacement. Learn the distinctness of human language and its importance.
2. Apply the conventions of phoneme, morpheme, register, formal and informal language.
3. Identify the distinction between declarative and expressive forms.
4. Identify features of collocation and style.
5. Evaluate the barriers of effective communication
6. Develop the idea of dialect and idiolect
7. Develop the idea of formal and informal register

Semester II

CC – 1B/GE 2: Essay Drama and Novel

Students will be able to:

1. Chief characteristics of essay, drama and novel.
2. Introduce themselves with some of the major essayists, dramatists, and novelist of EnglishLiterature.
3. Develop the idea of individuals from each cultural context internalize cultural values with age.
4. Evaluate the importance of these forms in addressing potent social and ethical concerns.

Semester III

CC – 1C/GE 3: Contemporary India (Women and

Empowerment)Students will be able to:

1. Develop on the idea of gender discrimination. It is any unequal treatment, including privilegeand priority, on the basis of gender.
2. Describe the history of women's rights movement, also called women's liberation movement,diverse social movement, and women's movement in India.
3. Learn about the safeguards offered to women in Indian Constitution against domestic violence.
4. Generate an aware about the participation and empowerment of women in Indian societyand culture.

Core language (L1-2) Sem III

Students will be able to:

1. Identify that literal and figurative are two words that we often see in relation to language andwriting.
2. Identify the features different figures of speech.
3. Learn foregrounding devices and identify the relevance of ambiguity.
4. Develop the idea of parallelism
5. Develop the idea of foregrounding
6. Discern the expression of different types of sentences and their application

SEC – 1 Translation Studies

Students will beable to: Remembering

1. Recall a brief history of translationstudies Understanding
2. Explain the significance of translation in multi-linguistic and multi-cultural society.
3. Describe the basic concepts of translation.
4. Discuss issues related to gender andtranslation. Applying
5. Use tools of technology (machine, mobile, software) fortranslation. Analyzing
6. Compare and contrast different culture andlanguages. Evaluating
7. Appreciate and critique subtitles of films andadvertisement. Creating:
8. Prepare sub-title of films and advertisement.
9. Write books in translation.

SEC – 1 Creative Writing

Students will be able to: Remembering:

1. Recall basic concepts of creative writing.Understanding

2. Locate various themes and distinguish different genres.
3. Identify individual writing style.Applying:
4. Using technology for writing and publishing.Analyzing:
5. Analyse and interpret critical ideas, themes, values that consist of literary texts.Evaluating
6. Appreciate and critique the quality of literary journals as well as the work of particular writers.Creating
7. Write for the media.
8. Prepare for publication.

SEM IV

CC – 1D/GE 4: Academic Writing and CompositionStudents will be able to:

1. Understand the importance that comes with academic writing. Understand and identify themethods of summation and paraphrasing.
2. Structure a cogent argument.
3. Do basic editing, proof reading, and referencing

SEC – 2 English Language Teaching
Students will be able to:
Remembering:

1. Discern that English is the language of science, ofUnderstanding
2. Find out about the nuances of the English language, including information on vocabulary, modality,synonyms and more. Perfect for primary educators.

Explain the language structure.

Applying

3. Plan language test.
4. Design lesson plan.
5. Use various teaching methods and materials.
6. Demonstrate topics using technology.Analyzing
7. Examine individual language-learner's needs.Evaluating
8. Predict the learner.

Creating

9. Implement language test.

SEC-2

Film

Studies

Students

will be

ableto:

Remem

bering

1. Describe basic concepts of

film studies.Understanding

2. Understand Today's 3D films are technologically impressive and, in many cases, incredibly lucrative forthe studios that distribute them.
3. Describe and distinguish various

cinematographic techniques.Applying

4. Demonstrate camera operating and

light setting.Analyzing

5. Compare and contrast various cinematographic techniques in relation to the

content of the film.Evaluating

6. Critique film adaptation.
7. Recommend

appropriation.Creating

8. Review film shows.
9. Create short films.

Sem V

Discipline

Specific Courses

DSE 1: British

Literature

Students will be

able to:

1. Describe some of the main features of British literature.
2. Assess the contribution of some of the key writers.
3. Critically understand the theme and structure of British Novel.
4. Discern the themes and structure of British Drama.

OR

DSE 1: Environment and Literature

Students will be able to:

1. Understand that literature and the arts have been drawn to portrayals of physical environments andhuman-environment interactions.
2. Ecocriticism concurs with other branches of the environmental humanities—ethics, history, religiousstudies, anthropology, humanistic geography
3. Describe the major concerns of third world environmentalism.
4. Elucidate the main features of ecofeminism.

GE 1: Gender and Human Rights

Students will be able to:

1. Discern that discrimination based on sex is prohibited under almost every human rights treaty,including the International Covenant on Civil and Political Rights
2. Understand people of diverse gender identities requires, first, a comprehensive understanding of thesocial structures, social norms and stereotyping, and power relations that frame not only laws and politics but also the economy, social dynamics, family life and community life
3. Evaluate the evolution of women's rights movement.
4. Understand the difference between Western and non-western forms of gender inequality andwomen's movement

SEC -3 Technical Writing

Students will be able to:

1. Develop that technical writing in English serves as an essential tool in communicating or conveyingone's ideas, views, observations
2. Know the characteristics of technical writing is very important
3. Identify differences between speech and writing.
4. Develop specific writing skills- descriptive, narrative, argumentative.
5. Compose technical writing- handbook, manual, minutes.
6. Assess formal and informal writing style.
7. Locate common errors to avoid.

SEC -3 Business Communications

Students will be able to:

1. Develop that Business communication is the process of sharing information between people within andoutside a company.
2. Comprehend Critical Thinking and Creative Problem-Solving
3. Understand The Art and Science of Evaluating Programs
4. Perform citation, use bibliographical and research tools efficiently.
5. Prepare minutes of meetings and e-correspondence.
6. Make oral presentation diligently.
7. Communicate through spoken English in business setting.

SEMESTER- VI

DSE 2: Indian Literature in Translation

Students will be able to:

1. Discusses issues of resistance and representation with reference to Indian texts and their Englishtranslations.
2. Familiarize themselves with some iconic writers across India.
3. Evaluate the social consciousness represented in these writings.
4. Read these texts as a site for the voice of the marginalized.

OR

DSE 2: Literary Cross-Currents

Students will be able to:

1. Gain a deeper knowledge about Indian Literature written in various languages.
2. Discern some of the main thematic concern in Rabindranath Tagore's novel.
3. Acquaint themselves with Urdu literature.

Generic Electives (GE)

Semester VI

GE 2: Environment and Literature

Students will be able to:

1. Understand how Environmental science enlightens us on how to conserve our environment in theface of increasing human population growth and anthropogenic activities that degrade natural resources and ecosystems
2. Evaluate the importance of Nature in Oriental and Western thought.
3. Describe the major concerns of third world environmentalism.
4. Develop idea that ecofeminist analysis explores the connections between women andnature in culture, economy, religion, politics, literature and iconography.

Skill Enhancement Course:

Semester VI

SEC 4: Soft Skills

Students will be able to:

1. Understand Skill Enhancement Course means a course that enables the students to enhance their practical skills and ability to pursue a vocation in their subject of specialization.
2. Learn to adapt to teamwork.
3. Learn basic leadership qualities.
4. Learn the tools for problem solving in professional space.

OR

Semester VI: SEC 4: Spoken English

Students will be able to:

1. Engage in Spoken interaction in English with people from other cultures that instills social skills inkids during their growing years
2. Improve oral communication skills through the use of stress, intonation, voice modulation.
3. Learn the etiquette of telephonic conversation.
4. Understand English is the language of business. Globalization made it a necessity for every companyto hire English known employ.

Programme Outcome: Department of Botany

Programme Outcome & Programme Specific Outcome (PSO) – BOTANY (Honors, Generic & General) – 3yr CBCS Degree Course

Program Outcomes (PO)

PO 1: Undergraduate students are engaged in day-to-day academics imparting the knowledge related to the programme they have enrolled and also to understand the basic concepts of the programme.

PO 2: Undergraduate students are trained to be competent in their respective field and discipline of Botany.

PO 3: Undergraduate students exposed to technical, analytical and creative skills to develop their confidence so that they can become entrepreneurs and also as a strategy to motivate them in being a responsible citizen of the country.

PO 4: Through SEC programme they are motivated to apply the knowledge acquired in the field of plant sciences and work for the overall benefit of the society

PO 5: Through DSE programme they are given exposure to modern concepts and research happening around the world for enriching the knowledge in the field of plant science. Students are also motivated by this curriculam

Programme Specific Outcome (PSO)

PSO 1: Through this program students get basic knowledge and Understand concepts of Classical Botany, Microbes, Physiology of Plants, Cell biology, Biochemistry, , Biostatistics, Genetics, Plant Taxonomy, Plant Pathology and Ecology.

PSO 2: Student Perform practical work procedures as per laboratory standards in the areas of Phycology, Microbiology ,Biochemistry, Physiology, Embryology, Taxonomy, Economic Botany and Ecology.

PSO 3: Through field trips they become familiar with different habitats of plant development and also could understand the present day challenges for plant kingdom to survive and sustain in this challenging context.

PSO 4: Completion of these program students is eligible for various jobs in Government and private sector. They also selected as Government employee like in Teacher, Post master, various laboratory assistant, pharmaceutical companies directly.

PSO 5: After completion of this program students are eligible for admission in Master degree program/Forest
Research Programme/ Various administrative jobs & various environmental programmes or related courses.

Course Outcome – BOTANY (Honours) – 3yr CBCS Degree Course

Course Title	Course Outcome
SEM-1	
CC-: Microbiology and Phycology	☐ To understand the structure, reproduction, culture, classification and economic importance ☐ of bacteria and viruses ☐ To study the classification, ecology, distribution, morphology, life-cycle and economic ☐ importance of Algae and Fungi. ☐ To impart knowledge on distribution, classification, structure, physiology, reproduction and function of lichens and significance of ectomycorrhiza and endomycorrhiza

CC-2: Archegoniate	□ To understand the salient features of □ Bryophytes, Pteridophytes and Gymnosperms. □ To study the structure and reproduction of various genera mentioned in the syllabus. □ To understand the salient features and importance of fossils and fossilization
SEM-2	
CC-3: Mycology & Phytopathology	□ To understand plant pathogenesis, classification and host-parasite interaction. □ To study plant diseases in crops and their management, significant contributions of plant pathologists and usage of various techniques in plant protection.
CC-4: Morphology & Anatomy of Angiosperms	□ To inculcate the basics of tissues and anatomical features of plants. □ To impart the knowledge about the various aspects of morphogenesis. □ To understand the key aspects of embryology of Angiosperms

SEM-3	
CC-5: Plant Ecology & Phytogeography	□ To enable the students to realize the values of plants and animals of the ecosystem □ To know about the hazards of pollution and the importance of keeping his/her environment clean □ To know in detail on various types of vegetation □ To know about his/her environment and mould the students to become managers of various ecological systems
CC-6: Plant Systematics	□ To enable the students to study morphological features of vegetative, inflorescence, fruits and □ Seed characters. □ To impart knowledge on botanical nomenclature, classifications, merits and demerits of various systemsof Classifications. □ To understand the systematic of the selected families of the flowering plants with their economic importance. □ To have knowledge on the economically important plants with their systematic Treatment.
CC-7: Economic Botany	□ To know, identify theplants thatare beneficial for human kind in economic way. □ To Know the parts of the plants that could be used for economic reasons. □ To enable students, earn their livelihood by acquiring adequate knowledge about plants.
SEC-1: Ethnobotany	□ To provide students a chance to apply their knowledge about medicinal plants. □ To identify the plants and concern about the uses. □ To familiarize with modern technologies for he same □ To develop entrepreneurs in this sector as this may immerge as a potential source to be used as a medicine for future.
SEM-4	

CC-8: Palaeobotany & Palynology	▯ To study the structure of various fossil genera mentioned in the syllabus. ▯ To understand the salient features and importance of fossils and fossilization process in tracing evolution. ▯ To understand pollen structure and it's

	application in the field of medical industry and forensic study.
CC-9: Biomolecules & Cell Biology	▯ To enable the students to study microscopy, cell organelles of Prokaryotic and Eukaryotic cells, chromosomes, cell divisions, DNA and RNA. ▯ To understand gene regulation and chloroplast and mitochondria genome organization
CC-10: Molecular Biology	▯ To enlighten the details of Nucleic Acid structure along with different aspects associated with this. ▯ To illuminate developing student mind with various aspects, necessary for the complete knowledge about modern techniques associated with the study of molecular biology.
SEC-2: Biofertilizers	▯ To understand the basics of biofertilizers and their cultivation ▯ To study about mycorrhiza and their isolation and production ▯ To impart knowledge on pesticides and their control by biopesticides, including their production and commercialization ▯ To develop entrepreneurs in this sector as this may immerge as a potential industry that may provide a perfect balance between nature and need.
SEM-5	
CC-11: Plant Physiology	▯ To enable the students to understand the metabolic activities of plants ▯ To understand the role of enzymes in various metabolic activities of plants ▯ To know the application of the laws of physics in biological
CC-12: Plant Metabolism	▯ To teach students about different physiological phenomena happening within plants. ▯ To know the factors affecting various physiological processes. ▯ To study different biochemical processes necessary for the survival of plants in various challenging environmental conditions.
DSE-1: Reproductive Biology of Angiosperms	▯ To inculcate the basics of tissues and anatomical features of plants. ▯ To impart the knowledge about the various aspects of morphogenesis. ▯ To understand the key aspects of embryology of
DSE-2: Natural Resource Management	▯ To upgrade the knowledge about modern way of Natural resources

	▯ To equip students in handling different data bases providing information about plants. ▯ To bridge the gap between different fields of science. ▯ To prepare students about the Biological resources
SEM-6	

CC-13: Genetics & Plant Breeding	To study Mendelian genetics, recombination of chromosomes, structure and function of genes and their various units. To educate on mutation. To impart knowledge on biostatistics and its applications biological experiments. To understand the mechanism of evolution and study of population genetics.
CC-14: Plant Biotechnology	To comprehend the advances made in the field of plant biotechnology; and bioinformatics To understand how mere jumbling of genes
DSE-3: Plant Evolution & Biodiversity	To bridge between different plants groups and traces of evolution. To distinguish diversity and biodiversity. To identify the process of plant evolution
DSE-4: Horticulture Prct. and PHT	To impart knowledge about application of knowledge about Horticulture commercially. To enable students, know and identify important plant and in overall improvement of environment we thrive in. To enable students about job market.

Course Outcome – BOTANY (Generic & General) – 3yr CBCS Degree Course

Course Title	Course Outcome
SEM-1	
CC-1A: Biodiversity (Microbes, Algae, Fungi & Archegonate)	To understand the structure, reproduction, culture, classification and economic importance of bacteria and viruses To study the classification, ecology, distribution, morphology, life-cycle and economic importance of Algae and Fungi. To impart knowledge on distribution, classification, structure, physiology,
	reproduction and function of lichens and significance of ectomycorrhiza and endomycorrhiza. To understand the salient features of Bryophytes, Pteridophytes and Gymnosperms. To study the structure and reproduction of various genera mentioned in the syllabus. To understand the salient features and importance of fossils and fossilization process in tracing evolution
SEM-2	

	▯ To enable the students to realize the values of plants and animals of the ecosystem ▯ To know about the hazards of pollution and the importance of keeping his/her environment clean ▯ To know in detail on various types of vegetation ▯ To know about his/her environment and mould the students to become managers of various ecological systems
SEM-4	
CC-1D: Plant Physiology & Metabolism	▯ To enable the students to study morphological features of vegetative, inflorescence, fruits and ▯ seed characters. ▯ To impart knowledge on botanical nomenclature, classifications, merits and demerits of various systems of classifications. ▯ To understand the systematics of the selected families of the flowering plants with their economic importance. ▯ To have knowledge on the economically important plants with their systematic Treatment.
SEM-3	
CC-1C: Plant Anatomy & Embryology	▯ To inculcate the basics of tissues and anatomical features of plants. ▯ To impart the knowledge about the various aspects of morphogenesis. ▯ To understand the key aspects of embryology of Angiosperms ▯ To enable the students in study of plant anatomy with application of different techniques
SEC-1: Biofertilizer	▯ To understand the basics of biofertilizers and their cultivation ▯ To study about mycorrhiza and their

	demerits of various systems of classifications. • To understand the systematics of the selected families of the flowering plants with their economic importance. • To have knowledge on the economically important plants with their systematic treatment.
SEM-6	
DSE-1B: Cell Biology, Genetics & Molecular Biology	• To enable the students to study microscopy, cell organelles of Prokaryotic and Eukaryotic cells, chromosomes, cell divisions, DNA and RNA. • To understand gene regulation and chloroplast and mitochondria genome organization • To study Mendelian genetics, recombination of chromosomes, structure and function of genes and their various units. • To educate on mutation. • To impart knowledge on biostatistics and its applications biological experiments. • To understand the mechanism of evolution and study of population genetics. • To enlighten the details of Nucleic Acid structure along with different aspects associated with this. • To illuminate developing student mind with various aspects, necessary for the complete knowledge about modern techniques associated with the study of molecular biology.
SEC-4: Ethnobotany	To provide students a chance to apply their knowledge about medicinal plants. • To identify the plants and concern about their uses. • To familiarize with modern technologies for the same • To develop entrepreneurs in this sector as this may immerge as a potential source to be used as a medicine for future.

Department of History

Course Outcome

Semester I- CC I (Hons.)

History of India- I: From Earliest Time to 600 AD

Enriching students with the knowledge of the earliest landmark of historical developments of India spanning through a wide range starting from the Paleolithic age till the formation of society, economy and culture in early India. This paper embarks on an enriching journey of mining through the earliest blocks which defined the course of future developments like the advent of food production under the Mehergarh civilization, settlement patterns and town planning under the Harappan Civilization, Vedic religion, society and philosophy, Sixteen Mahajanapadas to the rise of the Magadha, to name a few. Apart from this it also discusses the changing political formations right from the Mauryan empire till the times of the Guptas. Engaging with these various issues help students in understanding the concepts of agrarian expansion, major societal changes in the form of social stratification, trade and urban settlements.

Semester I- CC II (Hons.)

Social Formations and Cultural Patterns of the Ancient World

This paper primarily deals with the fundamental transitions which the human society was experiencing as a whole. While engaging with various time periods like the Bronze Age, early Greek society, etc. it talks about the various inventions both material and political and their effect on the larger societal fabric. This includes the evolution of human society, state structure, advent of iron, etc. This paper gives the students an opportunity to understand the earliest and most notable developments in the fields of political stratagem, warfare, empire formation and also the establishment of ancient political thought. In this context the major themes which the paper touches upon include polis in ancient Greece, Peloponnesian War and Greek culture and religion.

Semester I- GE I/Gen CC IA

History of India (From Earliest Times up to 300 CE)

Enriching students with the knowledge of the earliest landmark of historical developments of India spanning through a wide range starting from the Paleolithic age till the formation of society, economy and culture in early India. This paper embarks on an enriching journey of mining through the earliest blocks which defined the course of future developments like the advent of food production under the Mehergarh civilization, settlement patterns and town planning under the Harappan Civilization, Vedic religion,

society and philosophy, the rise and decline of Jainism and Buddhism, Sixteen Mahajanapadas to the rise of the Magadha, to name a few. Apart from this it also discusses the changing political formations right from the Mauryan empire till the times of the Sakas and Kushanas. Engaging with these various issues help students in understanding the concepts of polity, arts and crafts, coins, etc.

Semester II- CC III (Hons.)

History of India II (600-1206 AD)

As the time period suggests, this paper discusses the early medieval period of India where it provides the students to get a sneak peek into a time period which is witness to wide-ranging changes in every possible field possible of human existence right from politics to society to economy to statecraft. With multiple enriching topics in its kitty the paper offers an enriching experience to students to know in depth about Feudalism in India, evolution of political structures in different dynasties both in northern and southern India. The other landmark development which the paper discusses is the arrival of Islam in India which reconfigured the socio-political dynamics to a large extent and set the dice of history rolling in an altogether new direction. In this context the paper talks about the significant changes in the field of commerce, culture and religion in India.

Semester II- Paper IV (Hons.)

Social Formation and Cultural Pattern of the Medieval World

As the title suggest the paper primarily concerns itself with the momentous socio-cultural developments of the medieval world. There are three primary blocks with which the paper engages and they are the Roman Republic, 7th to 14th century Europe and Central Islamic Lands. Under these three broad spectrums, students get to know about the developments in the field of culture, literature, religion and administration happening within them. The paper tries to convey the knowledge regarding both the micro and macro level transitions within these fields which have had a tremendous influence on the future course of developments.

Semester II- GE2/Gen CC IB
History of India (300 to 1206 AD)

The most notable aspect of this paper which deserves a mention at the very outset is that it acts as a bridge between the ancient and medieval worlds of India. Ranging from the times of the Gupta empire and stretching till the arrival of Islam in India, this paper introduces students to a world of wide-ranging changes in every possible field possible of human existence right from politics to society to economy to statecraft. The paper offers an enriching experience to students to know in depth about Feudalism in

India, evolution of political structures in different dynasties both in northern and southern India. It also discusses the major changes in the field of commerce, culture and religion in India which helps students to get a holistic understanding of the way in which India was experiencing a transition.

Semester III- CC V (Hons.)
History of India III (1206 to 1525 AD)

This paper acts as the umbilical cord between the early medieval and the medieval period traversing the long and inclusive history of the Sultanate period, starting with the Delhi Sultanate and gradually moving on to the co-existing provincial dynasties of Bahamanis, Vijayanagar and Bengal. In addition to the political developments, the paper also discusses the developments in the field of religion with many new sects and movements emerging at that time and also the notable changes taking place in the field of commerce, trade and agriculture. Apart from this the paper also offers the students to have a firm grasp on the changing modalities and nature of the very notion of historical sources and their method of writing, one prominent among them being the Persian Tarik tradition.

Semester III- CC VI (Hons.)
Rise of the Modern West- I (15th and 16th Centuries)

The important changes in the psychological universe of mankind constitute the core essence of this paper. This paper helps students to deal with certain fundamental issues like the manner in which economics and economic transactions were perceived, the advent of expansionist policies, the ushering of Renaissance, the spread of Humanism and Art in Italy in particular and Europe in general, European Reformation in the 16th century, Commercial and Price revolution and the emergence of European state system. Through the study of these important topics, the paper makes the students understand as to how modernity as a thought process and idea navigated through the European continent and helped Europe become the torch-bearer of modernity in the future.

Semester III- CC VII (Hons.)
History of India IV (1526-1757 CE)

This paper deals with one of the most crucial phases in India's history where one witnesses the rise, consolidation and decline of the Mughal empire till the rise of the English East India Company as the new de facto ruler of the subcontinent. Kickstarting the journey with a discourse on Persian literary culture and other regional languages, the paper moves on to discuss the nitty-gritties behind the formation of a new socio-cultural, political, administrative and military system (one being the Mansab and Jagir) which India witnessed during this period led by the Mughals. In order to give the students a holistic perspective of the developments of the said period, the paper also discusses the composition, patterns and nature of the regional powers like the Marathas, Rajputs, Nawabs of Bengal, etc.

Semester III- SEC I (Hons.) and SEC 1 (Gen)
Archives and Museums in India

This paper is dedicated to giving an organic taste of history and to fulfil this goal it takes a two-fold approach. Where on the one hand students are trained in the art of deciphering the details of historical materials in any form available, on the other hand the effort is to execute this training by periodic visits to the depositories of historical materials and records. Through the collection, documentation and exhibition of such historical materials, the students are encouraged to transgress the boundaries of the four walls of the classroom and venture out in the field where they can be up, close and personal with the very notion of history. In this direction they are encouraged to undertake regular visits to the National Archives, State Archives, National Museum, Indian Museum and other places of historical importance.

Semester III- GE III/ Gen 1C
History of India from 1206-1707

This paper deals with the enriching and inclusive history of the Medieval period, starting with the Delhi Sultanate and gradually moving on to the co-existing provincial dynasties of Bahamanis, Vijayanagar and Bengal. Alongside it also deals with one of the most crucial phases in India's history where one witnesses the rise, consolidation and decline of the Mughal Empire. Beginning with a discourse on Persian literary culture and other regional languages, the paper moves on to discuss the nitty-gritties behind the formation of a new sociocultural, political, administrative and military system (some notables being Iqta, Mansab and Jagir) which India witnessed during this period led by the Mughals. In addition to the political developments, the paper also acquaints the students with the developments in the field of religion with many new sects and movements emerging at that time Sufism and Bhakti Movement and also the notable changes taking place in the field of commerce, trade and agriculture.

Semester IV- CC VIII (Hons.)
Rise of the Modern West II (17th and 18th centuries)

This paper primarily focuses on the major changes and developments which were taking place in the 17th and 18th century Europe. Starting from the English revolution the paper moves on to discuss the landmark development of the rise of modern science and scientific temperament within the European society. It also gives the students an in depth understanding of the increasing trade within the region and also the changing dynamics within the larger political and administrative system like the increasing importance of the system of parliamentary monarchy. The paper in the final leg touches upon the crucial background socio-political reasons which led to the Industrial Revolution in Europe.

Semester IV- CC IX (Hons.)
History of India V (1757-1857 AD)

This paper covers a long time period in history which beyond any doubt is one of the most crucial phases in the history of modern India. At the very outset the paper focusses on the early tussles and skirmishes

between the various European powers to get a firm hold on India and how finally it was the English who emerged victorious in this power struggle. It then moves on discuss in details the various political and administrative steps taken by the colonial power to further strengthen their grip on the subcontinent and how this had a profound impact on the relationship between the English and the various indigenous power centres like the Marathas, Sikhs, etc. In the latter part the paper acquaints the students with the various changes which were being brought about within the Indian society by the Indian intelligentsia and the social reformers who aimed at a structural overhauling of the Indian society based on the rational aspects of Indian society coupled with the scientific temperament borrowed from the West. In the final leg the paper ventures into the various regional uprisings and also the revolt of 1857 which changed the dynamics of power in India with the end of the rule of the English East India Company and the shift of power to the Queen, to give the students a holistic understanding of the political scenario of India during those times.

Semester IV- CC X (Hons.)
History of India VI (1858-1964)

In the aftermath of the Revolt of 1857 the power dynamics and administrative structure underwent a significant change. It is this transformation which the paper tries to encapsulate. Moving forward the paper discusses the various struggles for freedom happening within the country which got a makeover with the arrival of Gandhi. It also familiarizes the students with the layered character of the Indian freedom struggle where multiple groups and personalities were trying to execute their version of struggle aimed towards obtaining freedom. The post-independence period also forms a crucial part of the paper where the various religious and political formations are discussed in depth coupled with the nature of nation formation and post-independence development and administrative trajectory.

Semester IV- SEC II (Hons.)
Art Appreciation: An Understanding to Indian Art

The paper aims to make the students understand the field of Indian Art from the ancient times to the contemporary times. The students are acquainted with the enormity and richness of Indian art and are made to appreciate its role as a medium of cultural expression. The students are given direct exposure to Indian art through the application of audio-visual mediums and regular field visits to museums and historical sites.

Semester IV- GE 4/Gen CC ID

History of India (1707-1950)

The paper aims to explain the students India's history right from the consolidation of the English rule till the birth of the independent Indian republic. In this journey the paper touches upon the crucial milestones which defined the course of history in this subcontinent. It discusses in details the various political and

administrative steps taken by the colonial power to further strengthen their grip on the subcontinent and how this had a profound impact on the relationship between the English and the various indigenous power centres. The paper ventures into the various regional uprisings and also the revolt of 1857 which changed the dynamics of power in India with the end of the rule of the English East India Company and the shift of power to the Queen, to give the students a holistic understanding of the political scenario of India during those times. It tries to encapsulate the overwhelming changed post the revolt of 1857. It also acquaints the students with the indigenous reformation movements on the societal level and also the changing dynamics within politics especially with the arrival of Gandhi. The students are also given a taste of the political conditions which acted as the precursor to the birth of an independent Indian republic.

Semester IV- SEC (Gen.)

Understanding Heritage

This paper intends to make the students aware of the importance of heritage and its layered existence. It aims to discuss the various legal and administrative steps undertaken for the preservation of heritage. In addition to this it also aims to make students aware of the enormous challenges which the society and the nation face in this endeavour of heritage protection. Being a field-oriented paper student are encouraged to have a field-based approach wherein they need to undertake visits to museums, sites and also base their projects based on the information derived through these visits.

Semester V- CC XI (Hons.)

History of Modern Europe II (1789-1870)

The political history of Europe forms the core of this paper wherein the various changes it underwent is discussed in details. The paper aims to make the students understand the reasons which led to a massive structural overhauling in the larger part of the European continent. Starting with the French Revolution the paper covers multiple happenings of those times right up to the days of modern nationalism. Students are given a taste of wide-ranging issues right from the thematic underpinnings of revolution to the monarchical administrative setup to working class question to the fructification of modern nationalism and trans-nationalism which witnessed political developments which transgressed national boundaries.

Semester V- CC XII (Hons.)

Studying History Writing: Indian and Western

That history is not a mere elaboration of past events but is instead a tussle of opinions is aptly exemplified by this paper which focusses on the crucial aspect of as to how history is to be written. This paper familiarizes students both with the technical aspects behind this crucial exercise of history writing and also helps them in understanding the philosophy of history. Mentioning the various schools of thought which are involved in this task the paper exhibits the multiple routes through which one can try and interpret history. Combining both the technical and philosophical quotients, this paper makes students understand the gravity in the exercise of doing historical research.

Semester V- DSE I (Hons.)

Life and Culture in Pre-Colonial Bengal: Pre-Historic Times to mid-18th Century

This paper intends to make the students understand the history of the making of modern Bengal and the multiple trajectories it followed to reach this present stage. The paper discusses the demography and ethnology of early Bengal and the various developments it underwent in the field of culture, politics, religion, economy, literature and architecture. Touching upon the major happenings like the rise of Calcutta and Murshidabad, spread of Brahmanism and Islam in Bengal, development of Bengali language and literature, etc. the paper gives the students both a compartmentalised as well as a holistic understanding of the development of the entity called Bengal.

Semester V- DSE II (Hons.)

Life and Culture in Colonial Bengal: 1757-1947

Spanning a journey of three centuries right from the 18th to the 20th, this paper intends to make the students understand the fundamental changes which took place in the Bengal region. With the advent of the East India Company's rule the changes which took place both on the political and mental horizon of the region form a core part of the paper. Students, in this paper are also made to know the stratification and layered existence of the Bengali society. In addition to this the paper aims to present the massive overhauling in the fields of culture, politics and economy during this enormous span of time, starting role of the missionaries to the influence of the nationalist struggle to the impact of the indigenous reformation movement to the partition of 1947 and many more, which changed the dynamics of the Bengali society to a considerable extent.

Semester V- DSE IA (Gen.)

Some Aspects of Society and Economy of Modern Europe: 15th – 18th Century

Covering a wide range of issues and topics, this paper aims to give the students an understanding of the Herculean changes which were taking place in Europe more specifically modern Europe. With a brief history of feudalism, the paper discusses the ideas of Renaissance and Reformation within the European society which ushered a completely new era of human existence where religious dominance was largely replaced by a growing sense of scientific temperament. The critical questions surrounding the concept of labour is also discussed wherein the transition to Capitalism is discussed in details coupled with the landmark Industrial Revolution in England which changed the face of working-class movement.

Semester V- GE1 (Gen.)
Women's Studies in India

As the title suggests the paper deals with a comparatively new and specialized zone of Women's Studies which have in the due course of time gradually carved out a space for itself within the India academia. Focussing on the various socio-cultural and legal aspects which bore direct relationship to the existence of women, this paper aims to offer the students a deep and comprehensive understanding regarding the complex matrix which define women both as an individual and as a member of the larger society in India. Talking about the institutional mechanisms which are at place to give women a dignified existence, this paper also discusses the complex relationship which women share with these structures and how this struggle has been a continuous one starting from the pre-independence times.

Semester V- SEC (Gen.)
An Introduction to Archaeology

Unearthing the hidden secrets has been the larger aim of the field of Archaeology since the very beginning and to accomplish this purpose, this paper aims to train the students in this art. With providing a strong theoretical base combined with hands-on-training, the paper gives a holistic understanding of this field of Archaeology which has the potential of changing the course of viewing and conceptualising history and historical facts.

Semester VI- CC XIII (Hons.)
History of Modern Europe II (1871-1945)

As the title indicates this paper deals with that phase of Europe's history which has defined the course of events for many years to come in human history. Students in this paper are taught about the political developments in Europe which largely has been defined by the ideas of expansionism, national identity, national honour, etc. This time period of Europe which largely reeled under the shadow of war and destruction as witnessed with the rise of notorious political beliefs and ideologies and regimes, changed the entire course of history for millions. It is this sense of gravity which this paper aims to convey to the

students and as to how mankind emerged from this destructive phase once again to rebuild both trust and peaceful coexistence as exemplified in the setting up of institutions like the United Nations Organization.

Semester VI- CC XIV (Hons.)
Making of the Contemporary World (1946-2000)

This paper deals with a crucial phase in world history when multiple political developments were taking place. It introduces students to a time frame when the world was still overcoming the horrors of the Second World War. The paper delves deep into the post-war world order where there was the ushering of the Cold war between the power blocks, which recalibrated the order of international politics and relations. Taking a clue from major happenings around the world during those times like the Korean War, Cuban Missile Crisis, etc. the paper discusses the various churnings which were going on in the underbelly of world politics. This paper also intends to make the students aware of the developments like information revolution, globalization, growth of international terrorism, etc. in the cotemporary world which has brought about fundamental changes both in the manner and content in which politics and more particularly international politics is being perceived and conducted.

Semester VI- DSE III (Hons.)
History of Modern East Asia- I (1840-1919)

There are primarily two broad thematic divisions of this paper wherein in the first part it deals with the history of pre-colonial and post-colonial Chinese society and economy. In this part the paper firstly discusses the precolonial socio-economic system prevalent within China and then it makes an organic progression to explain to the students the changing scenario with the advent of the colonial powers in China and how this reconfigured the very idea of nationalism in the country and how this was deployed at various times by various leaders in the country. In the second thematic part of the paper, it talks about the historical progression of Japan as a nation starting from the Pre-Meiji period till the its involvement in the first world war.

Semester VI- DSE IV (Hons.)
History of China and Japan (1919-1939)

Primarily divided into two thematic divisions, with the first part dealing with China and the second part with Japan, this paper traces the development of the notions of nationalism and republic in both the countries. Taking a clue from the major historical developments, the paper familiarizes the students with the transition which both these countries went through both in terms of their emerging into sovereign nations and also their engagement with the outside world. This paper gives the students a good idea regarding the journey which both these nations traversed to reach their present form.

Semester VI- DSE I B (Gen.)
Some Aspects of European History (1789-1945)

This paper discusses the landmark developments in the history of Europe which transformed it into a whole new entity in terms of political consciousness, societal value-system, etc. Starting with the French Revolution the paper covers multiple happenings of those times right up to the days of modern nationalism. Students are given a taste of wide-ranging issues right from the thematic underpinnings of revolution to the monarchical administrative setup to working class question to the fructification of modern nationalism and trans-nationalism which witnessed political developments which transgressed national boundaries. Further this paper deals with that phase of Europe which largely reeled under the shadow of war and destruction as witnessed with the rise of notorious political beliefs and ideologies and regimes which changed the entire course of history for millions in Europe and world over. It is this sense of gravity which this paper aims to convey to the students and as to how mankind emerged from this destructive phase once again to rebuild both trust and peaceful coexistence as exemplified in the setting up of institutions like the United Nations Organization.

Semester VI- GE 2 (Gen.)
Gender and Education in India

As the title indicates this paper aims to make the students understand the complete trajectory of the crucial link between the concepts of gender and education in India. Staring from the pre-colonial period and finally touching upon the post-colonial period, the paper takes the students on an enriching journey of how women as a group engaged with the larger societal values through different times periods and how they navigated through the difficult roadblocks in their path to acquiring education for themselves. In addition, this paper also discusses the dichotomies and underlying tensions within the larger societal fabric as far as this topic of women's education is concerned and how it still remains an ongoing challenge.

Semester VI- SEC IV (Gen.)
Art Appreciation: An Understanding to Indian Art

The paper aims to make the students understand the field of Indian Art from the ancient times to the contemporary times. The students are acquainted with the enormity and richness of Indian art and are made to appreciate its role as a medium of cultural expression. The students are given direct exposure to Indian art through the application of audio-visual mediums and regular field visits to museums and historical sites.

Programme Outcome

The programme is structured in a manner which primarily aims at expanding the mental horizon of the students. The underlying philosophy is to make them engage with the topics not in a mechanical fashion but instead try and identify the forces which has been crucial behind the making of history. There are Core Disciplinary papers that provide the fundamental knowledge in the filed of History of India and the

World. There are multiple options offered to the students during the course of their study so that they choose the papers of their interest. For this reason, the papers at various stages have been tailor-made to suit the needs of each and every student. Apart from this the course has an inter-disciplinary flavour whereby students get to combine papers catering to various tastes which ultimately help them to build up a comprehensive knowledge capital. This is primarily done with the introduction of elective papers and skill enhancement courses.

Programme Specific Outcome

The programme at the very fundamental level helps the students gain a certain set of skills to understand both the discipline and society at large in a more critical manner. Interpretation and critical assessment are two primary intended outcomes of this programme whereby the students develop their own parameters to judge a historical happening instead of relying on pre-conceived and dominant ideas. This programme also tries and equip the students in the art of imbibing the core philosophy of history which is to build a thematic relationship between the past and the present. It intends the students not to be simple record keepers but also active interpreters of the past along with having a keen eye for the present. In order to develop these intellectual bases, the programme concentrates on developing certain very specific skill sets and abilities within the students. Some of these skill sets include how to use bibliographical tools for advanced research in history, developing the art of collecting and deciphering visual evidence, reading documents and historical maps, visiting archaeological and historical sites, etc.

PROGRAMME OUTCOME: DEPARTMENT OF MICROBIOLOGY

Programme Outcome:

Microorganisms play diverse role, modern microbiology has a great impact on different fields such as medicine, agricultural and food sciences, genetics, biochemistry and molecular biology. Upon graduation, the students will be able to acquire knowledge relevant to plethora of microbiological field. They will also acquire knowledge in laboratory safety and in routine and specialized microbiological skills applicable to clinical research, including accurately reporting observations and analysis. The course will help them to impart the knowledge of the basic principles of bacteriology, virology, mycology and immunology including the nature of pathogenic microorganisms, pathogenesis, laboratory diagnosis, transmission, prevention and control of diseases common in the country. They will acquire the ability to function effectively on teams to accomplish a common goal. The students will be able to communicate scientific concepts, experimental results and analytical arguments clearly and concisely, both verbally and in writing. The course is reasoning and application based, making the students eligible for higher studies, jobs in various pharmaceutical industry, food and beverage company and water treatment plants.

Introduction to microbiology and microbial diversity:

As an introductory part of Microbiology, students will get the basic ideas and practices from the contribution of several Microbiologists in the field of microbiology. They will have to know the diversity of microbial world like algae, fungi, protozoa. They will be understood various laboratory practices, biosafety and also know the applications of important instruments like biological safety cabinets, autoclave, incubator, hot air oven, light microscope, pH meter.

Bacteriology:

Students will have to identify the bacteria by using different bacterial staining methods. They will be able to learn bacterial systematic, microscopy and techniques of isolation and preservation of different bacterial cultures.

Biochemistry:

Students will have to know the Properties of water, Concept of pH and buffers. Students will have to acquire knowledge regarding the properties, functions, structures of different bio-molecule like Carbohydrates, Lipids, Proteins, Enzymes and Vitamins. Students will be able to run various biochemical tests like qualitative or quantitative tests for carbohydrates, reducing sugars, non reducing sugar, Lipids, and proteins. They will have to study the protein secondary, tertiary structures, enzyme kinetics – calculation of Vmax, Km, and effect of temperature, pH and heavy metals on enzyme activity.

Virology:

Students will be able to learn the nature, structure, general properties and their importance of different animal and plant viruses. They will also know about features of viral nucleic acids, Replication and also several disease caused by viruses.

Cell Biology:

To studying this course students get benefited by knowing the structure and function of various cell organelles of the eukaryotic cells. They will also get the thorough knowledge about cell cycle, cell signaling pathways. They will be able to get the practical knowledge of cell division, polyploidy by studying different stages of Mitosis and meiosis.

Molecular Biology:

Molecular Biology will allow students to learn central dogma of life which includes DNA replication, translation posttranscriptional processing. Students will be able to isolate genomic DNA from E. coli. They will have to know the practical knowledge and technique about Agarose Gel Electrophoresis and Polyacrylamide Gel Electrophoresis (SDS-PAGE).

Food & Diary Microbiology:

Food & diary microbiology study will allow the students to know the principles and methods of food preservation, production of fermented foods, different food borne diseases: their causative agents and preventive measures.

Immunology:

Immunology study will help the students to aware of antigens, antibodies, complement system, major histocompatibility Complex, different immune cells and organs. By practically they will capable to perform different immunological techniques like - , Immunodiffusion, ELISA, Western blotting etc.

Industrial Microbiology:

Students will have the knowledge about the fermentation processes, bio-reactors and measurement of fermentation parameters. They will also be able to know about microbial production of amylase, alcohol and glutamic acid.

Department of Mathematics

Program out Come for BSc Mathematics (Honors/General/Generic)

PROGRAMME OUTCOMES (PO)

Our main mission for B.Sc. Degree in Mathematics Program is to equip our students with analytic and problem solving skills and thereby develop the abilities and aptitude to apply Mathematical approach to not only Mathematical problems but in other fields of science and technology.
So listed below are the program outcomes, the students will be able to acquire after the completion of the program.

PO1: The students will be able to understand the basic underlying structure of Mathematics and will be able to relate not only to mathematical problems but also to the problems of real world.

PO2: They will be able to disseminate the value of Mathematics to the coming generation both orally and Practically in writing.

PO3: They will gain exposure to a wide variety of fields of Mathematics and related fields such as Computer science, statistics, computer science and in IT industries.

PO4: The students will be able to develop the ability to read and learn Mathematics on their own. Such maturity is a much a function of how Mathematics is learned as it is of what Mathematics is learned. They will also understand the historical and contemporary role of mathematics and be able to place the discipline properly in the context of other human intellectual achievement.

PO5: Think students to design real life specific problem such that calculation in real life and actual life facts and they know how to defeat such labyrinths.

PO6: At the completion of the program students get better chance to acquire their future planning via career counselling, so that they can involve in higher studies or any secure placed, even they also involve in business

PO8: The students will become social organization and will be able to develop the connections with experienced individual which will be helpful to their future employment and becoming a part of future Mathematical society.

PROGRAMME SPECIFIC OUTCOMES

PSO1: Technical competence: In our degree course the students will get wide variety of ideas of manipulating technical ideas in a mathematical way for solving many problems. They will also be able to combine the problems of other subjects such as Physics, Chemistry and other technical subjects.

PSO2: Professional Idea: The teachers will give them full guidance not only for Mathematical problems but also ideas related to various competitive examinations and for their higher education, thus the students will benefit even more for their future endeavours.

PSO3: Management and Business Mathematics: With proper infrastructure and ability of teachers help students to make the relation between Management mathematics and the Business mathematics by using the correct consciousness of mathematics.

B.Sc. Honours Programme in Mathematics- Course Learning Outcome

Semester	Course Type	Course Code	Course Title	Course Learning Outcome
Sem-I	CoreCourse (CC)	BMH1CC01	Calculus, Geometry & Differential Equations	• Define Hyperbolic functions and higher order derivatives. • Leibnitz rule and its application to problems type of concavity and inflection points, envelopes, and asymptotes. • Reduction formulae, derivations and illustrations of reduction formulae for the integration of different functions. • Differential equations and mathematical models. General, particular, explicit, implicit and singular solutions of a differential equation.
		BMH1CC02	Algebra	• Derivation of De Moivre's theorem for rational indices and its applications. • The inequality involving AM≥GM≥HM, Cauchy-Schwartz inequality. • Well-ordering property of positive integers, Division algorithm, Divisibility and Euclidean algorithm. Congruence relation between integers. • Principles of Mathematical Induction, statement of Fundamental Theorem of Arithmetic.
	Core Course (CC)	BMH2CC03	Real Analysis	• Review of AlgebraicandOrder Properties of $\mathbb{R}$, ε-neighborhood of a pointing. Idea of countable sets, uncountable sets and un- count ability of $\mathbb{R}$. • Sequences, Bounded sequence, Convergent sequence, Limit of a sequence, lim inf, lim sup. Limit Theorems. • Tests for convergence: Comparison test, Limit Comparisontest,RatioTest, Cauchy's nth root test, Integral test. Alternating series, • Leibniz test. Absolute and Conditional convergence.
		BMH2CC04	Differential Equations andVectorCalculus	• **Systems** of linear differential equations, types of linear systems, differential operators, an operator method for linear systems with constant coefficients. • Equilibrium points, Interpretation of the phase plane Power series solution of a differential equation about an ordinary point. • Define Triple product, introduction to vector functions, operations with vector-valued functions, limits and continuity of vector functions.

Sem-III	CoreCourse (CC)	BMH3CC05	Theory of R & Introduction t	• Define Limits of functions (ε - δ approach), sequential criterion for limits, divergence criteria. Limit theorems, one sided limits. Infinite limits and limits at infinity. • Formulation of Relative extrema, interior extremum, Rolle's theorem.Mean value theorem, intermediate value property ofderivatives, Darboux's theorem. • Applications of mean value theorem to inequalities and approximation of polynomials, Application of differential calculus: Curvature.
		BMH3CC06	Group Theory I	• Define Symmetries of a square, Dihedral groups, definition and examples of groups including permutation groups and quaternion groups. • Properties of cyclic groups, classification of subgroups of cyclic groups, Cycle notation for permutations. • Formulation of External direct product of a finite number of groups, normal subgroups, factor groups.
		BMH3CC07	Numerical Methods & NumericalMethodsLab	• Define the Algorithms, Convergence, Errors: Relative, Absolute. Round off, Truncation. • System of linear algebraic equations: Gaussian Elimination and Gauss Jordan methods. • Interpolation: Lagrange and Newton's methods, Error bounds, Finite difference operators. Gregory forward and backward difference interpolations.
	Choose any one from the following courses			
	Skill Enhancement Courses (SEC)	BMH3SEC11	Logic and Sets	• Propositional equivalence: Logical equivalences. Predicates and quantifiers: Introduction, Quantifiers, Binding variables and Negations. • Operation of Standard set, Classes of sets, Power setof a set. • Set identities, Generalized union and intersections. Relation: Productset.
				Composition of relations, Types of relations, Partitions, Equivalence Relations with example.
		BMH3SEC12	Computer Graphics	• Development of Computer Graphics: Raster Scan and Random Scan graphics storages, displays processors and character generators. • Points, lines and curves: Scan conversion, line-drawing algorithms, circle and ellipse. Generation, conic section generation. • Two-dimensional viewing: Coordinate systems, linear transformations, line and polygon clipping algorithms.

		BMH3SEC13	Object Oriented Programmingin C++	• Programming paradigms, characteristics of object oriented programming languages, brief history of C++, structure of C++ program, differences between C andC++. • Objects, classes, constructor and destructors, friend function, inline function, encapsulation, data abstraction, inheritance, polymorphism, dynamic binding, operator overloading. • Template class in C++,copy constructor, subscript and function call operator, concept of namespace and exception handling.
	Core Course (CC)	BMH4CC08	Riemann Integration and Series of Functions	• Riemann condition of integrability, Darbaux sum, Darbaux theorem, properties of Riemann integral as monotone and continuousfunctions. • Improper integralsand convergence of beta and gamma function.

Sem-IV				• Pointwise convergence, theorems on the continuity and derivability of the sum function of a series of functions, Cauchy criterion for uniform convergence and WeierstrassM-test. • Riemann-Lebesgue lemma, study of Bessel'sinequality. • Knowledge of radius of convergence, Cauchy-Hadamard theorem, short description of Weierstrass Approximation theorem.
		BMH4CC09	Multivariate Calculus	• Limit and continuity of functions of several variables, chain rule of one and two independent parameters, then study Jacobian, we discuss Lagrange multipliers method. • Double integral over a rectangular region, volume bytripleintegrals,changein variable of double and triple integrals. • Vector fields, line integrals, Fundamental theorems for line integrals, applications. • Green's theorem, study Stoke's theorem andlastly Divergence theorem.

		BMH4CC10	Ring Theory and Linear AlgebraI	• Rings, properties of rings, integral domains and fields, prime and maximalideals. • Ring homomorphisms, Isomorphism theorems I, II, III. • Vector spaces, subspaces, linear span, basis and dimensions, deletion and replacementtheorems. • Linear transformations, null space, rank and nullity, matrix representations, Isomorphismtheorems, change of coordinate matrix.

	Choose any one from the following courses			
	Skill Enhancement Courses (SEC)	BMH4SEC21	Graph Theory	• Definitions, basic properties of graphs, complete graphs, isomorphism ofgraphs. • Eulerian circuits, Hamiltonian cycles and theorems, incidence matrix, weightedgraph. • Travelling salesman's problem, Tree andtheir properties, spanning tree, Warshall algorithm.
		BMH3SEC22	Operating System (Linux)	• Linux-the Operating System, overview of Linux architecture, start-up scripts, Linuxsecurity. • The Ext2 and Ext3 file systems, file permissions, user management, types of users, using the command line and GUItools. • File and directory management, different editors, signals, systemscall for process, memory management, library and system calls formemory.
		BMH3SEC23	MATLAB Programming	• The MATLAB environment, variables and constants, MATLABTOOL toolboxes. • Matrix and linear algebra review, matrix operations and functions inMATLAB. • Algorithms and structures, simple sequential algorithms, control structures. • Programming, reading and writing data, Personalized functions, MATLAB graphicfunctions. • Numerical methods and simulations, random number generations,

Sem-V	Core Course (CC)	BMH5CC11	Partial Differential Equationsand Applications	• First order partial differential equations, general solution of quasi linear equations, canonical forms, method ofseparation of variables for solving 1st order partial differential equations. • Derivation of Heat equation, Wave equation and Laplace equation, canonicalforms. • Cauchy-Kowalewskaya theorem, Cauchy problem, semi infinite string with a fixed end, non-homogeneous Wave equation, solving theHeat Conduction problem.
		BMH5CC12	Mechanics I	• Co-planar forces, equilibrium of a particle on a rough curve, virtual work, stable and unstable equilibrium, equilibrium of flexiblestring. • Simple harmonic motion, motion of a particle under central force, Keplar's laws ofmotion,stabilityofnearly circular orbits, varying mass, motion of a particlein three dimensions, motionon a smooth sphere. • Degrees of freedom, momental ellipsoid, principal axes, motionabout a fixed axis, compound pendulum, conservationof momentum and energy.
	Choose any one from the following courses			
	Discipline Specific Electives (DSC)	BMH5DSE11	Linear Programming	• Simplex method, convex sets, simplex algorithm, two-phase method, Big-M method and their comparison. • Duality, primal-dual relationship, dual simplex method. • Transportation problem, northwest-cornermethod,

				algorithm for solving transportation problem, assignment problem, Hungarian method for solving assignment problem, travelling salesmanproblem. • Game theory, solving two person zero sum games, games with mixed strategies, linear programming solution of games.

		BMH5DSE12	Number Theory	• Linear Diophantine equation, statement of prime number theorem, Goldbach conjecture, linear congruences, Fermat's Little theorem, Wilson's theorem. • Number theoretic functions, totally multiplicative function, the Mobius Inversion formula, Euler's phi-function, Euler's theorem, • Order of an integer modulo n, primitive roots for primes, quadratic congruences with composite moduli, RSA encryption and decryption, Fermat's lasttheorem.
		BMH5DSE13	Point Set Topology	• Countable and uncountable sets, Cantor's theorem, Zorn's lemma, axiom of choice, Hausdorff'smaximality principle, ordinalnumbers. • Basis and Subbasisfor topology, Interior points, boundary of a set, open maps, product topology, metric topology, Bairecategorytheorem. • Connected and path connectedspaces, components and path components, compactness in metric spaces, totallyboundedspaces, the Lebesgue number lemma, local compactness.

	Choose any one from the following courses			
	Discipline Specific Electives (DSC)	BMH5DSE21	Probability & Statistics	• Sample space, real random variables,cumulativedistribution function, mathematical expectation, momentgeneratingfunction, binomial distribution, Poisson distribution, negative binomialdistribution, exponentialdistribution. • Joint probability density function, conditional expectations, bivariate normal distribution, joint moment generating function, linear regression for twovariables. • Chebyshev's inequality, central limit theorem for independent and identically distributed random variables with finite variance, Chapman- Kolmogorov equations, classification ofstates. • Random samples, estimation of parameters, testing of hypothesis.

		BMH5DSE22	Portfolio Optimization	• Financial markets, measures of return and risk, risk free assets, portfolio of assets, diversification. • Mean-variance portfolio optimization, efficient frontier, portfolios with short sales, capital market theory. • Capital assets pricing model-the capital market line, security market line, portfolio performance evaluation measures.
		BMH5DSE23	Boolean Algebra and Automata	• Definition and basic properties of ordered sets, duality principle, latticesasalgebraic structures,

			Theory	products and homomorphisms. • Properties of modular and distributive lattices, Boolean polynomials, Quinn-McCluskey method, Logic gates, switching circuitsandapplicationofit. • Strings, languages, regular expressions, regular languages and their relationship with finite automata, closureproperties of regularlanguages. • Context free grammars, parse trees, pushdown automaton and the language accepted by PDA, pumping lemma, closure properties, decisionproperties. • Turing Machines, programming with a Turing machine, variants of Turing machine and their equivalence. • Recursively enumerable and recursive languages, halting problem, Post CorrespondenceProblem and undecidability problems aboutCFGs.
Sem-VI		BMH6CC13	Metric Spaces and Complex Analysis	• Sequences in Metric space, Cauchy sequences, Cantor's theorem. • Continuous mappings, uniform continuity, connectedness, compactness, Heine-Boreltheorem, finite intersection property, homeomorphism, Banach Fixed point theorem. • Limits, continuity, regions in the complex plane, derivatives, Cauchy-Riemann equations, sufficient conditions for differentiability. • Analytic function, exponential function, derivatives of functions, contours, contour integrals, Cauchy-Goursattheorem, Cauchy integralformula. • Liouville's theorem, convergence of sequences and series, Taylor seriesand itsexamples.

				• Laurent series and its examples, uniform convergence of power series.

		BMH6CC14	Ring Theory and Linear AlgebraII	• Polynomial rings over commutative rings, principal ideal domains, reducibility tests, irreducibility tests, divisibility in integral domains, primes, unique factorization domains, Euclideandomains. • Dual spaces, double dual, annihilators, Eigen spaces of a linear operator, diagonalizability, Cayley- Hamilton theorem, canonicalforms. • Inner product spaces and norms, Bessel's inequality, least squares approximation, normal and self-adjoint operators, orthogonal projectionsand Spectral theorem.
	Choose any one from the following courses			
	Discipline Specific Electives (DSC)	BMH6DSE31	Mathematical Modelling	• The modelling process, arguments from scales,least squares, parameter estimation, generalizedleast squares estimators, population models, equilibria, oscillations, growth and decay. • Difference equations: modelling of trafficflows, Poisson process, single server queueing models.

		BMH6DSE32	Industrial Mathematics	• Medical imaging and inverse problems, elementary differential equations, complex numbers and matrices, calculus, geological anomalies in Earth'sinterior from measurements at its surface,Tomography. • X-ray behaviour and Beers law, lines in theplace. • Radon transform, linearity, phantom, back projection, properties andexamples. • CT scan, algorithms of CT scan machine, algebraic reconstruction techniques abbreviated as ARTwith application to CT scan.
		BMH6DSE33	Group Theory II	• Automorphism, automorphism groups of finite and infinite cyclic groups, commutator subgroup and itsproperties. • Properties of external direct products, internal direct products, Fundamental theorem of finite abelian groups. • Group actions, permutation representation associated with a given group action, applications of group actions, indextheorem. • Groups acting on themselves by conjugation, Sylow's theorems and consequences,Cauchy's theorem, non-simplicity tests.
	Choose any one from the following courses			
	Discipline Specific Electives (DSC)	BMH6DSE41	Bio Mathematics	• Mathematical biology, continuous models, Allee effect, Gompertzgrowth, kinetics, bacterial growth in a Chemostat, prey predator systems, epidemicmodels. • Activator-inhibitor systems, numerical solution ofthe models and its graphical

				Representation, steady state solutions, phase plane methods and qualitative solutions, bifurcations, spatial models, two species model with diffusion, conditions for diffusive instability, travelling wave solutions, spread of genesin apopulation. • Discrete models, steady state solution and linear stability analysis, linear models, decay models, discrete Prey-Predator models, Host-Parasitoid systems, case studies, models in genetics,stage structure models, age structure models.

		BMH6DSE42	Differential Geometry	• Theory of space curves, planer curves, torsion and Serret-Frenet formula, osculating circles and spheres, evolutes and involutes of curves. • Theory of surfaces, direction coefficients, first and second fundamental forms, lines of curvature, Euler's theorem, Rodrigues's formula, conjugate and asymptotic lines. • Developables, minimal surfaces, canonicalgeodesic equations, Clairaut's theorem, normal propertyof geodesics, torsion of a geodesic, geodesic curvature, Gauss-Bonnet theorem.
		BMH6DSE43	Mechanics II	• Interpretation of Newton's laws of motion, concept of absolute length and time, limitation of Newton's laws in solvingproblems. • Equilibrium of fluid in a given field of force, isothermal andadiabatic changes in gases, convective equilibrium, stress quadric. • Constraints and their classifications, Gibbs-Appell's principle of least constraints, work energy relation for constraintforces of shielding friction.

	OptionalDissertationorprojectworkinplaceofoneDisciplineSpecificElective(DSE)Paper.			
	PW	BMH6PW01	Project Work	• Students can choose any core from any semester. Teacher gives students an innovative area of that topic and students write an symposia on thattopic. • Students discuss of that topic with teacher for clear idea and students also search information's from internet oriented study.

BSc Mathematics General - Course Learning Outcome (2020-21)

Semester	Course Type	Course Code	Course Title	Course Learning Outcome

Sem-I	Core Course (CC)	BMG1CC1A	Differential Calculus	• Limit and Continuity (ε and δ definition), Types of discontinuities, Differentiability of functions • Successive differentiation, Leibnitz's theorem, Partial differentiation, Euler's theorem. • Parametric presentation of curves and tracing of parametric curves, Polar coordinates and tracingof curves in polar coordinates. • Rolle's Theorem, Mean Valuetheorems,Taylor's theorem with Lagrange's andCauchy'sformsof remainder.

Sem-II	Core Course (CC)	BMG2CC1B	Differential Equations	• First order exact differential equations. Integrating factors, rules to find an integrating factor. First order higher degree equations solvable for x, y,p. • Methods for solving higher-order differential equations. Basic theoryof linear differential equations, Wronskian, and itsproperties. • The Cauchy-Euler equation, Simultaneous differential equations, Total differential equations. • Linear Partial differential equation of firstorder, Lagrange's method, Charpit's method.
Sem-III	Core Course (CC)	BMG3CC1C	Real Analysis	• Finite and infinite sets, examples of countable and uncountable sets. Real line, bounded sets, suprema and infima, completeness property of R, Archimedean property of R, intervals. • Real Sequence, Bounded sequence, Cauchy convergence criterion for sequences. Cauchy's theorem on limits, order preservation and squeeze theorem, monotone sequences. • Infinite series. Cauchy convergence criterion for series, positive term series, geometric series, comparisontest. • Sequences and series of functions, Point wiseanduniform convergence. Mn-test,M-test,
	Skill Enhancement Courses (SEC), Choose any one for SEC1			

	SEC	BMG3SEC11	Logic and Sets	• Introduction, propositions, truth table, negation, conjunction and disjunction. Implications, bi-conditional propositions, converse, contra positive and inverse propositions and precedence of logical operators. • Sets, subsets, Set operations and the lawsof set theory and Venn diagrams. • Difference and Symmetric difference of two sets. Set identities, Generalized unionand intersections.
	SEC	BMG3SEC12	Analytical Geometry	• Techniques for sketching parabola, ellipse, and hyperbola. • Reflection properties of conics, translation and rotation of axes and second degreeequations, classification ofconics. • Cylindrical surfaces. Central coincides, paraboloids, plane sections of coincides, Generating lines, classification ofquadrics
	SEC	BMG3SEC13	Integral Calculus	• Integration by partial function, integration of rational function. Properties of definite integral. • Reduction function of rational trigonometric, exponential function and their combinations • Double integration over rectangular region, Double integrals in polar co-ordinates, Triple integrals, Tripleintegralover a parallelepiped and solid regions.

Sem-IV	Core Course (CC)	BMG4CC1D	Algebra	• Definition and examples of groups, examples of abelian and non-abelian groups, the group Zn of integers. • Subgroups, cyclic subgroups, the concept of a subgroup generated bya subset and the commutator subgroup of group. • Lagrange's theorem, orderof an element, Normal subgroups: their definition, examples, and characterizations, Quotientgroups. • Subrings and ideals, Integral domains and fields, examples of fields: Zp, Q, R, and C. Fieldof rational functions.
	Skill Enhancement Courses (SEC), Choose any one for SEC2			
	SEC	BMG4SEC21	Vector Calculus	• Differentiation andpartial differentiation of vector function. • Derivative of sum, dot product and cross products. • Gradient divergence and curl
	SEC	BMG4SEC22	Theory of Equation	• General properties of polynomials, graphical presentation of a polynomials. • Descarte's rule of signs positive and negative rule. Relation between roots and coefficients, Transformation of equation • Symmetric function and application of symmetric function of the roots and properties of thederived function.
	SEC	BMG4SEC23	Number Theory	• Division algorithm, Lame's theorem, linear Diophantine equation, fundamental equation of arithmetic. • Goldbach conjecture binary and decimal representation ofintegers. • Number theoretic function, sum, and number of devisor,totally multiplicativefunctions. • Dirichlet product, the Mobius inversion formula, generator function, Euler'sphi function.
Discipline Specific Elective (DSE), Choose any one for DSE1A				

Sem-V	DSE	BMG5DSE1A1	Matrices	• Concept of linear independence, subspaces of R2, R3, dilation, rotation, interpretation of eigen values and eigen spaces as invariant subspaces. • Rank of matrix, reduction to normalform. • Matrices in diagonal form, solutions of a system of linearequations using matrices, illustrative example from Physics, Chemistry, Geometry.
	DSE	BMG5DSE1A2	Mechanics	• Conditions ofequilibrium of a particle, laws of friction, centre of gravity, work and potential energy. • Velocity and acceleration of a particle along a curve, tangential and normal components (space curve), Newton's laws of motion, simple harmonic motion, projectile motion.
	DSE	BMG5DSE1A3	Linear Algebra	• Vector spaces,subspaces, quotient spaces, linear span basis anddimension, dimension of sub spaces. • Linear transformations, null space, dual space, dual basis, Isomorphism theorems, change of co-ordinate matrix.

	Skill Enhancement Courses (SEC), Choose any one for SEC3			
	SEC	BMG5SEC31	Probabilityand Statistics	• Sample space,probability axioms, mathematical expectation, moment generating function, Poisson distribution, Normal distribution, Exponentialdistribution. • Joint cumulative distribution function, marginal and conditional distributions, conditional expectations,independent random variables.

	SEC	BMG5SEC32	Mathematical Finance	• Basic principles, time value of money, inflation, net present value, comparison of NPV and IRR, floating rate bonds, immunization. • Asset return, short selling, portfolio return, random returns, diversification, portfolio diagram,Markowitz model.
	SEC	BMG5SEC33	Mathematical Modelling	• Applications of differential equations, mixture problem, forced motion, electric circuit problem. • Applications to Traffic Flow, vibrating string, conduction of heat in solids, conservationlaws.
Discipline Specific Elective (DSE), Choose any one for DSE1B				
Sem-VI	DSE	BMG6DSE1B1	Numerical Methods	• Algorithms,Convergence,Bisection method, False position method Fixedpoint iteration method, Secant

				method, LU decomposition, Gauss- Jacobi. • Lagrange and Newton interpolation: linear and higher order, finite difference operators, Integration: trapezoidal rule, Simpson's rule, Euler's method for solvingordinary differential equations.
	DSE	BMG6DSE1B2	Complex Analysis	• Limits, Limits involving the point at infinity, continuity. Properties of complexnumbers, Cauchy Riemann equations, sufficient conditions for differentiability. • Analytic functions, examples of analytic functions, exponential function, Logarithmic function, trigonometric function,Contours, Contour integrals and its examples, upper bounds for moduli of contour integrals, Cauchy- Goursat theorem, Cauchy integralformula. • Liouville's theoremand the fundamental theorem of algebra. Convergence of sequences and series, Laurent series and its examples, absoluteand uniform convergence of power series.
	DSE	BMG6DSE1B3	Linear Programming	• Linear Programming Problems, Graphical Approach for solving some Linear Programs, Convex Sets. • Theory of simplex method, optimality and unboundedness, the simplex algorithm, simplex methodin tableau format.

				• Duality, formulation ofthe dual problem, primal-dualrelationships, economicinterpretationof the dual.
	Skill Enhancement Courses (SEC), Choose any one for SEC4			

	SEC	BMG6SEC31	Boolean Algebra	• Definition, examples, basic properties of ordered sets, duality principle, maximal and minimal elements, completelattices. • Distributive lattices, Boolean algebras, Karnaugh diagrams, switching circuits, Application ofswitching circuits.
	SEC	BMG6SEC32	Transportation and Game Theory	• Transportation problem, least cost method, VAM, assignment problem and its mathematical formulation, Hungarian method for solving assignmentproblem. • Game theory, solvingtwo person zero sum games, games with mixed strategies,graphical solution procedure.
	SEC	BMG6SEC33	Graph Theory	• Definition, examples and basic properties of graphs, complete graphs, bi-partite graphs. • Eulerian circuits, Hamiltonian cycles, the adjacency matrix, travelling salesman's problem, shortest path, Dijkstra's algorithm.

BSc Generic Mathematics - Course Learning Outcome (2020-21)

Semester	Course Type	Course Code	Course Title	Course Learning Outcome
Sem-I	Generic Electives (GE)	MATH-GE1 Or BMG1CC1A	Differential Calculus	• Limit and Continuity (ε and δ definition), Types of discontinuities, Differentiability of functions • Successive differentiation, Leibnitz's theorem, Partial differentiation, Euler's theorem. • Parametric presentation of curves and tracing of parametric curves, Polar coordinates and tracing of curves in polarcoordinates. • Rolle's Theorem, Mean Value theorems, Taylor's theorem with Lagrange's and Cauchy's formsof remainder.

Sem-II	Generic Electives (GE)	MATH-GE2 Or BMG2CC1B	Differential Equations	• First order exact differential equations. Integrating factors, rules to find an integrating factor. First order higher degree equations solvable for x, y, p. • Methods for solving higher-order differential equations. Basic theory of linear differentialequations, Wronskian, and its properties. • The Cauchy-Eulerequation, Simultaneous differential equations, Total differential equations. • Linear Partial differential equation of first order, Lagrange's method, Charpit's method.

Sem-III	Generic Electives (GE)	MATH-GE3 Or BMG3CC1C	Real Analysis	• Finite and infinite sets, examples of countable and uncountable sets. Real line, bounded sets, suprema and infima, completeness property of R,Archimedean property of R,intervals. • Real Sequence, Bounded sequence, Cauchy convergence criterion for sequences. Cauchy's theorem on limits, order preservation and squeeze theorem, monotone sequences. • Infinite series. Cauchy convergence criterion for series, positive term series, geometric series, comparisontest. • Sequences and series of functions, Point wise and uniform convergence.Mn-test, M-test,

Sem-IV	Generic Electives (GE)	MATH-GE4 Or BMG4CC1D	Algebra	• Definition and examples of groups, examples of abelian and non-abelian groups, the group Zn ofintegers. • Subgroups, cyclic subgroups, the concept of a subgroup generated by a subset and the commutator subgroup ofgroup. • Lagrange's theorem, order of an element, Normal subgroups: their definition, examples, and characterizations, Quotient groups. • Subrings and ideals, Integral domains and fields, examples of fields: Zp, Q, R,andC.Fieldofrational functions.

Programme Outcome of Bengali Honours

After completion of the programme of a student learns:

PO 1. শিক্ষার্থীর কল্পনাশক্তি মনন ও চিন্তন চর্চার বিকাশ এবং সাহিত্যচর্চা, সাহিত্যানুশীলন ও সাহিত্য সৃষ্টির প্রতিভাকে বিকশিত করা।

PO 2. শুধু মাতৃভাষা নয়, বিদেশী ভাষা ও সাহিত্য, কাব্যততত্ত্ব সম্পর্কে অবগত হওয়া ও সেই ভাষা সাহিত্যের অন্তর সম্পদের উপলব্ধি করা এবং সৃজনশীল প্রতিভা বিকাশে সহায়তা দান এবং শুধুমাত্র প্রথাগত শিক্ষা নয়, প্রথা বিলুপ্ত শিক্ষা অর্থা লোকসাহিত্য-লোকসংস্কৃতি সম্পর্কে ছাত্র-ছাত্রীরা লোকশিক্ষা গ্রহণ করতে পারবে এবং আপন ঐতিহ্য সম্পর্কে জানতে পারবে।

PO 3. শুধু পাঠ্যবইয়ের মধ্যে সীমাবদ্ধ না থেকে ক্ষেত্র সমীক্ষার মাধ্যমে একটি নির্দিষ্ট অঞ্চল ও শ্রেণী সম্প্রদায় ভেদে তাদের মৌখিক সাহিত্য ও সংস্কৃতি, শিল্পকলা বিষয়ে হাতে-কলমে জ্ঞান অর্জন করতে পারবে। বিশেষত শিল্পকলা বা লিখন অঙ্কন কেন্দ্রিক ঐতিহ্যের প্রতি শিক্ষার্থী মনোযোগী হবে এবং ভবিষ্যতে প্রথাগত শিক্ষার ক্ষেত্রে ব্যক্তিগত প্রশিক্ষণের মাধ্যমে লোক শিল্পচর্চায় নিয়োজিত ও দক্ষতা লাভ করতে পারবে।

PO 4. বাংলা ভাষা বাঙালির মাতৃভাষা, তাই এই ভাষা সাহিত্য পাঠ ছাত্র-ছাত্রীদের জ্ঞানভান্ডারকে আরও সমৃদ্ধ করবে। নিজ ভাষার প্রতি, ঐতিহ্যের প্রতি শ্রদ্ধাশীল হয়ে উঠবে। অবহেলা নয় প্রগতিশীল চিন্তাধারার উদ্বুদ্ধ হয়ে মাতৃভাষার গুরুত্ব কে স্বীকার করবে। স্বতঃস্ফূর্ত অনুভূতি প্রকাশের সঠিক কৌশল আয়ত্ত করতে পারবে এবং ভাষা ব্যবহারের ক্ষেত্রে পরিপূর্ণ দক্ষতা অর্জন করবে।

PO 5. ছাত্র-ছাত্রী বিভিন্ন সাহিত্য সংরূপের সঙ্গে পরিচিতি লাভ করতে পারবে এবং সমস্ত প্রকার সংরূপ শিক্ষার্থীকে সামাজিক, মনস্তাত্ত্বিক পরিসরে বাস্তব জীবন প্রেক্ষিতকে বুঝতে শিখবে। সামাজিক মানুষ হিসেবে তাঁর মানবিক সত্ত্বাগুলির পরিপূর্ণ বিকাশ ঘটবে।

PO 6. ভাষা ও সাহিত্য শিক্ষা লাভ ছাত্র-ছাত্রীদের ভাষা ব্যবহার দক্ষতা বৃদ্ধি করার সাথে সাথে ভাষার সৌন্দর্য ও নন্দন চেতনা, সাহিত্য শিল্পকলার সৌন্দর্যের প্রতি গুরুত্ব দিতে শিখবে।

PO 7. আজকের আন্তরজালিক যুগ প্রেক্ষিতে বাংলা ভাষা সাহিত্যপাঠে ছাত্র-ছাত্রীরা আরো বেশি করে পঠন-পাঠনের অভ্যাস ও সাহিত্য অনুরাগী হয়ে উঠবে। পুরনো ব্যক্তিত্বের বিকাশ এ স্পষ্ট উচ্চারণে অর্থ প্রকাশক ভাবে এবং সঠিক স্বরভঙ্গিতে- যেকোনো বিষয় নিয়ে সহজ সরল ও সুন্দরভাবে নিজের বক্তব্য প্রকাশে সক্ষম হবে এবং শুধুমাত্র সিলেবাস কেন্দ্রিক পড়াশোনাই নয়, সিলেবাসের বাইরেও ছাত্র-ছাত্রীদের আবৃত্তি, অভিনয়, বিতর্কের মত বিষয়েও অনুপ্রেরণা জাগিয়ে তুলবে এই পাঠক্রম।

PO 8. অনুবাদ সাহিত্যের একটি গুরুত্বপূর্ণ শাখা। ইংরেজি থেকে বাংলায় অনুবাদের মাধ্যমে ছাত্র-ছাত্রীরা আক্ষরিক অনুবাদ, ভাবানুবাদ ও রসানুবাদ বিষয়ে আগ্রহী হতে পারবে।

PO 9. নানা প্রকার ব্যক্তিগত পত্র, সামাজিক পত্র, ব্যবহারিক পত্র ও বাণিজ্যিক পত্র সমূহ লেখার দক্ষতা এবং নিয়মাবলী সবকিছুই পুঙ্খানুপুঙ্খভাবে জানতে ও ব্যবহারিক জীবনে প্রয়োগ করতে পারবে। সর্বোপরি, বাংলা ভাষায় রবীন্দ্রনাথ ঠাকুর কাজী নজরুল ইসলাম প্রমথ চৌধুরী প্রমুখ এর অপূর্ব পত্রসাহিত্য গুলি পাঠের মাধ্যমে রসবোধে উত্তীর্ণ হতে পারবে ছাত্রছাত্রীরা।

Course Outcome of Bengali Honours (Course/Paper-wise)

Core Course - 1: বাংলা সাহিত্যের ইতিহাস (প্রাচীন ও মধ্যযুগ)

CO 1. প্রাচীন মধ্যযুগের সাহিত্যের ইতিহাস পাঠের মধ্য দিয়ে শিক্ষার্থীরা বাংলা সাহিত্যের যুগ বিভাগ সম্পর্কে জানতে পারবে।

CO 2. চর্যাপদ থেকে বাংলা ভাষা ও সাহিত্যের পথ চলা শুরু। তার পরবর্তী আজ পর্যন্ত হাজার বছরের বাংলা সাহিত্যের বিভিন্ন বিষয় তথা সমাজ-সংস্কৃতি, ভাষারূপ, ধর্মসাধনা ইত্যাদি বিষয়ে শিক্ষার্থী অবগত হবে।

CO 3. মধ্যযুগের সাহিত্য - শ্রীকৃষ্ণকীর্তন অনুবাদ সাহিত্য - ভাগবত, রামায়ণ, মহাভারত, মঙ্গলকাব্যের ধারা - 'মনসামঙ্গল', 'চণ্ডীমঙ্গল', 'ধর্মমঙ্গল', 'বৈষ্ণব পদাবলী', 'চৈতন্য জীবনী', সাহিত্য ইত্যাদি - সকল বিষয় গুলি জানবে এবং প্রাচীন মধ্যযুগীয় ভারতীয় ঐতিহ্য এবং প্রাচীন মধ্যযুগের বাংলার ঐতিহ্য সম্পর্কে শিক্ষার্থীদের লাভ করতে পারবে।

CO 4. মধ্যযুগের নবজাগরণের উদ্গাতা শ্রীচৈতন্য মহাপ্রভুর আগমন এবং তাকে কেন্দ্র করে সমকালীন সমাজ সংস্কৃতিতে পরিবর্তনের ইতিহাস সম্পর্কে শিক্ষার্থীরা অবগত হতে পারবে এবং চৈতন্য পূর্ব যুগ, চৈতন্য পরবর্তী যুগের মধ্যে পার্থক্য নির্ণয় করতে পারবে। সর্বোপরি বাংলা সাহিত্যের ইতিহাস পাঠের মধ্য দিয়ে শিক্ষার্থীরা সাহিত্য ও সংস্কৃতির মধ্যে আন্তরসম্পর্ক বিষয়ে জ্ঞান লাভ করতে পারবে।

Core Course - 2: ছন্দ, অলঙ্কার

CO 1. কবিতা পাঠের প্রয়োজনীয়তা সম্পর্কে শিক্ষার্থীরা সম্যক ধারণা ও জ্ঞান লাভ করতে পারবে। কবিতার ছন্দ বিচারকালে বর্ণ, অক্ষর, মাত্রা - ইত্যাদি বিষয় সম্পর্কে জানবে ও তার তা পর্য উপলব্ধি করতে পারবে।

CO 2. শিক্ষার্থীরা বাংলা ছন্দের নানান পরিভাষা সম্পর্কে নানান তথ্য জানতে পারবে। বাংলা কবিতার ছন্দ বিচারের ক্ষেত্রে শিক্ষার্থীরা এই ধারণা প্রয়োগ করে ছন্দ অনুসারী কবিতা রচনা করতে সমর্থ হবে।

CO 3. বাংলা ছন্দের নানাপ্রকার নীতিগত বিভাগ যেমন স্বরবৃত্ত বা দলবৃত্ত কলাবৃত্ত ও মিশ্র কলাবৃত্ত এবং বাংলা ছন্দের গঠনগত বিভাগ - একপদী, দ্বিপদী, ত্রিপদী, চৌপদী, মহাপয়ার, অমিত্রাক্ষর, মুক্তগদ্য, গদ্যছন্দ, সনেট ইত্যাদি বিভাগগুলি সম্পর্কে ছাত্রছাত্রীরা জানতে পারবে ও নিজ রচনায় প্রয়োগ করতে পারবে।

CO 4. ছন্দ অধ্যায়নকালে ভাষার নান্দনিকতা সম্পর্কে শিক্ষার্থীরা পরিচিতি লাভ করার সাথে সাথে অলংকার সম্পর্কিত বিভিন্ন শব্দালঙ্কার ও অর্থ লঙ্কার তথা অনুপ্রাস, যমক, শ্লেষা, উপমা, রূপক ইত্যাদি চিত্রকল্পের তা পর্য বিশ্লেষণ করতে পারবে শিক্ষার্থীদের কথা বলা ও লেখার সময় বাক্য গঠনে ভাষার আলংকারিক ব্যবহার সম্পর্কে সচেতনতা বাড়বে।

Generic Elective - 1: প্রবন্ধসাহিত্য: বঙ্কিমচন্দ্র ও রবীন্দ্রনাথ

CO 1. রবীন্দ্রনাথ ঠাকুরের প্রবন্ধ পাঠের মধ্য দিয়ে শিক্ষার্থীরা সমকালীন সমাজ, অর্থনীতি, রাজনীতি এবং স্বদেশ চিন্তা বিষয়ে জানবে আজকের প্রেক্ষিতে তা বিশ্লেষণ করতে পারবে।

CO 2. ভারতীয় সাহিত্যতত্ত্ব ও সাহিত্য সমালোচনার বিশ্লেষণধর্মী মনোভাব গড়ে উঠবে। প্রাচীন ভারতের ঐতিহ্য-ঐক্য সাধনের মনোভাব থেকে, জীবন সম্পর্কে সচেতনতা বাড়বে সম্যক ধারণা লাভ করবে শিক্ষার্থী।

CO 3. বঙ্কিমচন্দ্র চট্টোপাধ্যায়ের দার্শনিক দৃষ্টিভঙ্গি জীবনাদর্শ সম্পর্কে চিন্তা ভাবনার ধারণা, দেশাত্মবোধের পরিচয় এবং আর্থসামাজিক অবস্থার বাস্তবচিত্রের সঙ্গে পরিচিত হবে এবং শিক্ষার্থীদের মধ্যে সমাজতাত্ত্বিক বিশ্লেষণাত্মক মনোভাবটিও প্রকট হয়ে উঠবে।

CO 4. রবীন্দ্র সাহিত্যের মূল প্রাসঙ্গিকতা সাহিত্যের ভাবও বিষয়বস্তু সাহিত্যের সৌন্দর্য নির্মাণের বিষয়ে। তাই রবীন্দ্রনাথ ঠাকুরের প্রবন্ধ পাঠের মধ্য দিয়ে শিক্ষার্থীরা ভাষার সৌন্দর্য ও নন্দন চেতনা সাহিত্য-শিল্পকলার সৌন্দর্যের প্রতি গুরুত্ব দিতে শিখবে।

Core Course - 3: বৈষ্ণব পদাবলি, শাক্ত পদাবলি

CO 1. 'বৈষ্ণব পদাবলি' ও 'শাক্ত পদাবলি'র পদ গুলি পাঠ করে বৈষ্ণব পদাবলি ও শাক্ত পদাবলি সম্পর্কে প্রাথমিক ধারণা পাবে শিক্ষার্থীরা। মধ্যযুগের বৈষ্ণব ও সত্য ধর্ম ও দর্শন সম্পর্কে অবগত হতে পারবে এবং এই পদাবলী সাহিত্যে ভারতীয় শাস্ত্র তত্ত্বজ্ঞান ও ঈশ্বর উপাসনা সমন্বয় ঘটেছে সেই সম্পর্কিত জ্ঞান লাভ করতে পারবে।

CO 2. বৈষ্ণব পদাবলী পাঠের বৃন্দাবনের সঙ্গে বাংলার আন্তঃসম্পর্কের বিষয়ে শিক্ষার্থীরা জানতে পারবে। বৈষ্ণব পদাবলী পাঠের মাধ্যমে সমগ্র ভারত বর্ষ তথা উত্তর-পূর্ব ভারতে রাধাকৃষ্ণ সম্পর্কে লৌকিক অলৌকিক পরিধি পরিসরে বৈষ্ণব শাস্ত্রের বিষয় সম্পর্কে অবগত হবে এবং ভক্ত ভগবানের সম্পর্কের মধুরতা সম্পর্কে জানতে পারবে।

CO 3. গৌরাঙ্গ বিষয়ক গৌরচন্দ্রিকা বিষয়ক পদ সম্পর্কে অর্থা মহাপ্রভু শ্রী চৈতন্য শ্রী রাধা ও কৃষ্ণের মিলিত স্বরূপ এই বিষয়টি বিভিন্ন রসপর্যায়ের মধ্য দিয়ে জানবে।

CO 4. বৈষ্ণব পদাবলীর কাব্য সৌন্দর্য সম্পর্কে ছাত্র-ছাত্রীরা জানতে পারবে। আধুনিক কবিতার সঙ্গে ছাত্রছাত্রীরা পরিচয় হওয়ার পূর্বেই বৈষ্ণব সাধন করতে পারবে, গীতিকবিতায় রোমান্টিকতা সম্পর্কে জানতে পারবে, বাংলা ভাষার পাশাপাশি কাব্যভাষা 'ব্রজবুলি' সম্পর্কেও জানতে পারবে।

CO 5. শাক্ত পদাবলি ও বৈষ্ণব পদাবলির মধ্যে পার্থক্য নিরূপণ করতে পারবে। শাক্ত পদাবলী সাহিত্য পাঠের মাধ্যমে মধ্যযুগের সমাজ পরিবারের চালচিত্র সম্পর্কিত ধারণা লাভ করতে পারবে।

Core Course - 4: রামায়ণ, অন্নদামঙ্গল

CO 1. রামায়ণ পাঠের মাধ্যমে মধ্যযুগের অনুবাদ সাহিত্য সম্পর্কিত ধারণা প্রাপ্ত হয়, রামায়ণ রচনায় কৃত্তিবাসের মৌলিকত্বের পরিচয় পাওয়া যায়। রামায়ণ পাঠের মাধ্যমে মধ্যযুগের অনুবাদ সাহিত্য সম্পর্কিত ধারণা প্রাপ্ত হয়, কৃত্তিবাসী রামায়ণ ও বাল্মিকী রামায়ণের কোভিদ দৃষ্টির পার্থক্য নিরূপণ করতে পারবে।

CO 2. শিক্ষার্থীরা ভারতীয় ঐতিহ্যের প্রেক্ষাপটে বাল্মিকী রচিত আদি মহাকাব্য রামায়ণ এর বাংলা অনুবাদ সাহিত্য 'শ্রীরামপাঁচালী'। কবি কৃত্তিবাস তারেই অনুবাদ কাব্য ভারতীয় ঐতিহ্য পাশাপাশি বাঙালি ঐতিহ্যের প্রেক্ষিতে বাঙালি সমাজ, সংস্কৃতির প্রতি ছবি অঙ্কন করেছেন। এই কাব্য পাঠে শিক্ষার্থীরা জানতে পারবে কৃত্তিবাসী রামায়ণের জনপ্রিয়তার কারণগুলি।

CO 3. বাংলা মঙ্গলকাব্যের ইতিহাস এ মধ্যযুগের শেষ মঙ্গলকাব্য 'অন্নদামঙ্গল' পাঠ করে শিক্ষার্থীরা কবি ভারতচন্দ্রের স্বাতন্ত্র্য রচনারীতির সঙ্গে পরিচিত হবে। 'অন্নদামঙ্গল' কাব্যে অষ্টাদশ শতকের পরিবর্তমান ইতিহাসের দলিল রূপে রাজনৈতিক, ঐতিহাসিক ও আর্থসামাজিক পটভূমিকার শিক্ষার্থীরা অনুধাবন করতে পারবে।

CO 4. অন্নদামঙ্গল কাব্যের কবি ভারতচন্দ্রের কাব্য রীতির যে অভিনবত্বের পরিচয় পাওয়া যায় এবং এই কাব্যে আধুনিক কাব্যের বৈশিষ্ট্য ও বৈচিত্র্যতা লক্ষণীয় যা থেকে শিক্ষার্থীরা জানতে পারবে, কেন অন্যান্য মঙ্গলকাব্য থেকে অন্নদামঙ্গল স্বতন্ত্র? - তা নিরূপণ করতে পারবে। মধ্যযুগের শেষ কবি ভারতচন্দ্র অন্নদামঙ্গল কাব্যে অলঙ্কার প্রবাদ-প্রবচনের পরিচয়দানে, ভাষা ব্যবহারের অভিনবত্ব -সব মিলিয়ে তাঁর 'অন্নদামঙ্গল' কাব্যে "রাজকন্ঠের মনি মালার মতো" মধ্যযুগের বাংলা সাহিত্যের ইতিহাসে উজ্জ্বল হয়ে আছে, সে বিষয়ে শিক্ষার্থীরা জানতে পারবে।

Generic Elective 2: গল্প: প্রভাতকুমার ও শর চন্দ্র

CO 1. রবীন্দ্রযুগের সমকালীন ছোটগল্পকার প্রভাত কুমার মুখোপাধ্যায় ও শর চন্দ্র চট্টোপাধ্যায়ের গল্প পাঠের মধ্য দিয়ে শিক্ষার্থীরা মানুষের সঙ্গে মনুষ্যতর প্রাণীর (গোরু ও হাতি) মানবিক সম্পর্কের মধুরতা সম্পর্কে জানতে পারবে। বাস্তব জীবনে তার ইতিবাচক প্রতিফলন ঘটবে।

CO 2. সামাজিক সমস্যা সংক্রান্ত গল্প পাঠের মাধ্যমে শিক্ষার্থীরা জানতে পারবে সামাজিক নিয়মের প্রতি বিদ্রোহ, প্রেমের জটিলতা প্রসঙ্গ, পারিবারিক বিরোধ সংঘর্ষের বিষয়ও। আবার নির্মল হাস্যরসের বিষয়েও অবগত হবে।

CO 3. গল্পচর্চা অভ্যাস শিক্ষার্থীর মৌলিক কল্পনাশক্তি এবং গল্প লিখন দক্ষতা বৃদ্ধি পাবে। বাস্তব চিত্র ও কল্পনার সাহায্যে শিক্ষার্থীদের বাস্তবানুগ রচনাধর্মীতার তথা লেখনি শক্তির সমৃদ্ধি ঘটবে।

CO 4. গল্পে প্রাপ্ত সাধারন মানব-মানবীর জীবনবীক্ষার সঙ্গে শিক্ষার্থীরা পরিচিত হবে এবং তাদের জীবনবীক্ষার সংযোগ সাধন করতে পারবে।

AECC-2 (MIL)

CO 1. প্রবন্ধ পাঠের মাধ্যমে ছাত্র-ছাত্রীদের মানসিকতা, বুদ্ধিবৃত্তি, মননশীল, চিন্তাশক্তি ও যুক্তিশীলতা পরিস্ফুটন ঘটানো এবং নীতি-নৈতিক বদ সম্পর্কে শিক্ষার্থীদের মধ্যে সচেতনতা তৈরি করা।

CO 2. ইংরেজি থেকে বাংলায় অনুবাদের মাধ্যমে ছাত্র-ছাত্রীরা আক্ষরিক অনুবাদ, ভাবানুবাদ ও রসানুবাদের বিষয়ে আগ্রহী হতে পারবে। অনুবাদ এর মধ্য দিয়ে ভাষায় অনুবাদ চর্চার ফলে শিক্ষার্থীর শব্দভাণ্ডার সমৃদ্ধ হবে।

CO 3. প্রতিবেদন পাঠে শিক্ষার্থীর প্রতিবেদন লিখন ক্ষমতা ও চিন্তার উ কর্ষতা বৃদ্ধি পাবে। শিক্ষার্থীরা প্রতিবেদন রচনার নিয়ম সম্পর্কে অবগত হবে এবং প্রতিবেদন রচনার ক্ষেত্রে সঠিক তথ্যানুসন্ধানের গুরুত্ব উপলব্ধি করতে পারবে এবং দৈনন্দিন জীবনে ঘটে চলা প্রতিনিয়ত আলোড়ন সৃষ্টিকারী বিষয়গুলি দেখেশুনে নিজের বুদ্ধি-বিবেচনার উপর নির্ভর করে, শিক্ষার্থী সে বিষয়ে সচেতন হবে এবং গণ সচেতনতা বাড়ানোর উদ্দেশ্যে প্রতিবেদন আকারে পরিবেশন করতে পারবে। প্রতিনিয়ত ধারাবাহিক

চর্চায় লেখনি শক্তির সাহায্যে, উদ্ভাবনী শক্তির দ্বারা লেখনি কৌশলের উ কর্ষতা বৃদ্ধি পাবে।

CO 4. রবীন্দ্রনাথের ছোটগল্পগুলির কাহিনী পড়ে গল্পের বিষয়বস্তু এবং চরিত্র গুলির সমাজ বাস্তবতার সঙ্গে শিক্ষার্থী পরিচিতি লাভ করবে এবং তাদের বাস্তব অভিজ্ঞতায় তার প্রতিফলন ঘটাতে পারবে। ছোট গল্প পাট ও চর্চার মধ্য দিয়ে সাহিত্যমূল্য বিচার অর্থা গল্পের নামকরণ চরিত্র নির্মাণ সম্পর্কে ধারণা ও গল্পের বাস্তবসম্মত তা পর্য বিশ্লেষণ করতে সমর্থ হবে।

Core Course 5: বাংলা সাহিত্যের ইতিহাস (১৮০১-১৯৫০)

CO 1. আধুনিক বাংলা সাহিত্যের তথা গদ্যরীতিতে রচিত বাংলা সাহিত্য হাজার 900 তোকে পথ চলা শুরু করে, এই গদ্য ১৯ শতকে সূচনা ও বিকাশের ধারায় শ্রীরামপুর মিশন কলেজ এবং রামমোহন রায়ের অবদান সম্পর্কে জানতে পারবে শিক্ষার্থীরা। বিদ্যাসাগরের সাহিত্যিক গদ্যের রীতির বৈশিষ্ট্য কালীপ্রসন্ন সিংহ প্যারীচাঁদ মিত্রের সাধু ও চলিত ভাষা প্রণয়ন ইত্যাদির প্রচলনে বাংলা গদ্য সাহিত্যের বিকাশে সহায়ক হয়েছিল কিভাবে আজকের প্রেক্ষিতে শিক্ষার্থীরা জানতে পারবে এবং তুলনামূলক আলোচনায় আগ্রহী হবে।

CO 2. আধুনিক বাংলা কবিতার বিকাশে ঈশ্বর গুপ্তের গুরুত্ব জানবে মধুসূদন দত্ত, হেমচন্দ্র, নবীনচন্দ্র রচিত মহাকাব্য ও আখ্যান কাব্যের বিষয় জানতে পারবে এবং এর অবলুপ্তির কারণ গুলি জানতে পারবে গীতিকবিতার ধারায় বিহারীলাল চক্রবর্তীর রবীন্দ্রনাথ ঠাকুরের স্বাতন্ত্রতার সাথে শিক্ষার্থীরা পরিচিত হবে এবং তাদের কাব্যসৌন্দর্য উদ্ভাবন ও কাব্য কবিতার বিশ্লেষণের মনোভাবের প্রকাশ সহায়ক হবে।

CO 3. বঙ্কিমচন্দ্র এবং ত পরবর্তী বাংলা উপন্যাসের ধারায় রবীন্দ্রনাথের আধুনিক চিন্তা-চেতনা, শর চন্দ্র চট্টোপাধ্যায়ের সামাজিক সংস্কারের মনোভাব, মানিক বন্দ্যোপাধ্যায়ের মানব-মনের জটিল মনস্তাত্ত্বিক উন্মোচনে, আঞ্চলিক লোক সংস্কৃতির প্রেক্ষিতে, তারাশঙ্কর বন্দ্যোপাধ্যায়ের উপন্যাস শিক্ষার্থীর সৃজনশীল রচনা অভ্যাস তৈরি হবে এবং সামাজিকতা বুদ্ধিবৃত্তির চিন্তাশক্তি ও যুক্তিশীলতা পরিস্ফুটন ঘটবে।

CO 4. প্রবন্ধ পাঠ এর মাধ্যমে যুক্তিবাদী ও সৃজনশীল মনোভাবের প্রকাশ ঘটবে এবং নীতি-নৈতিকতা শিক্ষার্থীদের মধ্যে সচেতনতা তৈরি হবে। অক্ষয় কুমার দত্তের প্রবন্ধ পাঠ এর পাশ্চাত্যের যুক্তিবাদী দর্শন ও বৈজ্ঞানিক চেতনার উন্মেষ, দেবেন্দ্রনাথ ঠাকুরের প্রবন্ধ পাঠে ধর্মের আদর্শ ও বেদ বেদান্ত ব্যাখ্যা, ভূদেব মুখোপাধ্যায় প্রবন্ধ পাশ্চাত্য ভাবের আলোকে হিন্দুধর্ম ও সমাজের ব্যাখ্যা, বঙ্কিমচন্দ্র চট্টোপাধ্যায় প্রবন্ধ পাঠ সমকালীন আর্থসামাজিক এবং ঐতিহ্যের বিষয়ে ধারণা প্রাপ্ত হবে শিক্ষার্থীরা। রবীন্দ্রনাথ ঠাকুরের প্রবন্ধ পাঠ জানতে পারবে প্রাচীন ভারতীয় কাব্যতত্ত্ব ও পাশ্চাত্য কাব্যতত্ত্বের তথ্য ও সত্যের তত্ত্বকথা।

CO 5. বাংলা নাটকের উ স বিবর্তিত রূপ এর সাথে সংস্কৃত নাটকের আদর্শ পাশ্চাত্য নাটকের প্রভাব সম্পর্কিত ধারণা লাভ করে দীনবন্ধু মিত্র, মধুসূদন দত্তের নাটকের মাধ্যমে উনিশ শতকের সমাজের বাস্তব সমস্যা, গিরিশচন্দ্র ঘোষের নাটক এর মাধ্যমে পৌরাণিক আদর্শ ভক্তিভাব, দ্বিজেন্দ্রলাল রায়ের নাটকের মাধ্যমে স্বদেশপ্রীতি, ক্ষীরোদপ্রসাদ বিদ্যাবিনোদ এর নাটকের মাধ্যমে ঐতিহাসিক চেতনা, রবীন্দ্রনাথ ঠাকুরের নাটকের পাশ্চাত্য নাট্যকলার প্রভাব সম্পর্কিত বিভিন্ন বিষয়ে শিক্ষার্থীরা জ্ঞান লাভ করতে সমর্থ হবে।

CO 6. ভারতীয় গণনাট্য আন্দোলনের উ স এবং বাংলা নাট্য সাহিত্যে ও সামাজিক-রাজনৈতিক ক্ষেত্রে এর প্রভাব এবং উনিশ ও বিশ শতকে নাট্যকারদের জীবন দৃষ্টি সামাজিকতা ও সাংস্কৃতিক প্রেক্ষাপট এবং সমস্যা সম্পর্কে বিস্তারিত জ্ঞান লাভ করতে পারবে।

CO 7. উনিশ ও বিশ শতকে সংঘটিত বিভিন্ন প্রকার সামাজিক সাংস্কৃতিক সাহিত্যিক ও নান্দনিক আন্দোলন গুলি সম্পর্কে বিস্তারিত জ্ঞান লাভ করতে পারবে শিক্ষার্থীরা। আজকের প্রেক্ষিতে বাস্তবতার সঙ্গে শিক্ষার্থী পরিচিতি লাভ করবে এবং তাদের বাস্তব অভিজ্ঞতায় তার প্রতিফলন ঘটাতে পারবে। উপনিবেশিক শাসন শোষণের প্রেক্ষিত এবং তার বিরুদ্ধে প্রতিবাদী আন্দোলনের স্বরূপ বিশ্লেষণ করতে পারবে।

Core Course 6: ভাষাতত্ত্ব

CO 1. বাংলা ভাষার উ পত্তি ও বিবর্তনের সম্পর্কিত তথ্য জানতে পারবে শিক্ষার্থীরা। ভাষার মূল উপকরণ গুলির উ পত্তি প্রকৃতি বিবর্তন ও তার ক্রমতালিকা অর্থা ধ্বনিতত্ত্ব সম্পর্কে জানতে পারবে শিক্ষার্থীরা।
CO 2. দীর্ঘ বিবর্তনের পথে বিভিন্ন সময়ে বাংলা ভাষা কিভাবে আজকের উচ্চারণ স্থান নিয়েছে সেই সম্পর্কে পরিষ্কার ধারণা তৈরি হবে ছাত্রছাত্রীদের মধ্যে। বাংলা ধ্বনীর উ পত্তি, উচ্চারণ স্থান এবং তার পরিবর্তনের বিভিন্ন কারণ ও ধারা গুলির সঙ্গে পরিচিত হবে শিক্ষার্থীরা।

CO 3. বাংলা শব্দ ভান্ডার সম্পর্কে বিস্তারিত জানতে পারবে ছাত্রছাত্রীরা। বিভিন্ন আগন্তুক ও প্রাদেশিক ভাষা সম্পর্কে জানতে পারবে শিক্ষার্থীরা।

CO 4. সাধু ও চলিত গদ্যের মধ্যে ভাষাতাত্ত্বিক পার্থক্য নির্ণয় করতে পারবে। বিভিন্ন আগন্তুক ও প্রাদেশিক ভাষা সম্পর্কে জানতে পারবে ছাত্রছাত্রীরা।

CO 5. বাংলা উপভাষা ও ভাষার মধ্যে সম্পর্ক নির্ণয় করতে পারবে। বিভিন্ন শ্রেণীর বাংলা কথ্য উপভাষা গুলির ভৌগলিক অঞ্চল চিহ্নিতকরণ করতে পারবে এবং বিভিন্ন প্রকার উপভাষার সঙ্গে পরিচিত হতে পারবে।

CO 6. পরিবর্তমান সমাজে ভাষা বৈচিত্রের সঙ্গে ছাত্রছাত্রীরা পরিচিতি লাভ করতে পারবে। ভাষা চর্চার মাধ্যমে সামাজিক ঐতিহ্য বিশ্বাস, প্রথা, পারিবারিক সংগঠন পদ্ধতি প্রভৃতি বিষয় সম্পর্কে অর্থা সামাজিক প্রথা ও সংস্কার এবং গোষ্ঠীবদ্ধ পারিবারিক

জীবন চর্চা কিভাবে একটি ভাষার উদ্ভব ও বিবর্তনের সহায়তা করে সে সম্পর্কে জানতে পারবে।

Core Course 7: উনিশ শতকের কাব্য

CO 1. উনিশ শতক বলতে কোন সময়কে বোঝায় এবং এই শতকের সাধারণ বৈশিষ্ট্য গুলো সম্পর্কে শিক্ষার্থীরা জানতে পারবে। এই শতকের কবি গোষ্ঠী এবং তাঁদের রচনা পাঠ করে সমকালীন সমাজ সংস্কৃতি বিষয়ে জ্ঞান লাভ করতে পারবে।

CO 2. উনিশ শতকের কবি গোষ্ঠীর অন্যতম মধুসূদন দত্তের 'বীরাঙ্গনা কাব্য পাঠের মধ্য দিয়ে একুশ শতকের প্রেক্ষিতে উনিশ শতকীয় নারী জাগরণের বিষয় সম্পর্কে জানতে পারবে। সেই সঙ্গে পুরাণিক চরিত্র গুলোর নব মূল্যায়নের দ্বারা ভারতীয় ঐতিহ্যের প্রেক্ষাপট জানতে পারবে।

CO 3. কবি মধুসূদন এর মৌলিক রচনার বৈশিষ্ট্য ছন্দময় চিত্রকাব্য প্রকরণের অভিনবত্বের দিকটিও শিক্ষার্থীরা অনুধাবন করতে পারবে এবং উনিশ শতকে কাব্যধারায় মধুসূদনের বীরাঙ্গনা কাব্যের মৌলিকতা তাঁরা নির্ণয় করতে পারবে।

CO 4. প্রথম আধুনিক গীতিকবিতা রূপে এবং রোমান্টিক গীতিকবি রূপে বিহারীলালের 'সারদামঙ্গল' কাব্য পাঠ শিক্ষার্থীরা সমর্থ হবে বিহারীলালের 'সারদামঙ্গল' কাব্যের প্রকৃতি বা নিসর্গ চিত্র দর্শনে শিক্ষার্থীরা কবি বিহারীলাল এর স্বতঃস্ফূর্ত কবি ভাবনার সঙ্গে পরিচিতি লাভ করবে।

CO 5. স্বয়ং কবি রবীন্দ্রনাথ যাকে 'ভোরের পাখি' রূপে, কবিগুরু রূপে স্বীকৃতি দিয়েছেন সেই বিহারীলালের কাব্য বৈশিষ্ট্যগুলির সঙ্গে শিক্ষার্থীরা পরিচিত হবে।

Generic Elective 3: বাংলা সাহিত্যের ইতিহাস

CO 1. প্রাচীন মধ্যযুগের সাহিত্যের ইতিহাস পাঠের মধ্য দিয়ে শিক্ষার্থীরা বাংলা সাহিত্যের যুগ বিভাগ সম্পর্কে জানতে পারবে।

CO 2. চর্যাপদ থেকে বাংলা ভাষা ও সাহিত্যের পথ চলা শুরু। তার পরবর্তী আজ পর্যন্ত হাজার বছরের বাংলা সাহিত্যের বিভিন্ন বিষয় সম্পর্কে শিক্ষার্থী অবগত হবে।

CO 3. প্রাচীন মধ্যযুগের সাহিত্য – 'শ্রীকৃষ্ণকীর্তন' অনুবাদ সাহিত্য - ভাগবত, রামায়ণ, মহাভারত, মঙ্গলকাব্যের ধারা – 'মনসামঙ্গল', 'চণ্ডীমঙ্গল', 'ধর্মমঙ্গল', বৈষ্ণব পদাবলী, চৈতন্য জীবনী সাহিত্য ইত্যাদি - এসকল বিষয় গুলি জানবে এবং প্রাচীন মধ্যযুগীয় ভারতীয় ঐতিহ্য এবং প্রাচীন মধ্যযুগীয় বাংলার ঐতিহ্য সম্পর্কে শিক্ষার্থী জ্ঞান লাভ করতে পারবে।

CO 4. আধুনিক ভাষা সাহিত্যের পথচলার শুরু অষ্টাদশ শতক থেকে। সেই বিষয়ে ফোর্ট উইলিয়াম কলেজের অবদান এবং পরবর্তী ভাষা সাহিত্য চর্চায় রাজা রামমোহন রায়,

বিদ্যাসাগর প্রমুখের অবদান সম্পর্কে শিক্ষার্থীরা জানতে পারবে। উনবিংশ শতকের নতুন নতুন সাহিত্য সংলাপের উদ্ভব ও বিকাশের ইতিহাস তথা - উপন্যাস, নাটক, ছোটগল্প, প্রবন্ধ, কাব্য, কবিতার দীর্ঘ বিস্তারিত ইতিহাস সম্পর্কে ছাত্রছাত্রীরা অবগত হবে।

Skill Enhancement Course 1: বাংলা ব্যাকরন

CO 1. শিক্ষার্থীরা ভাষাকে শুদ্ধভাবে প্রয়োগ করতে পারবে। শব্দ গঠনের ক্ষেত্রে সন্ধির রীতিনীতি জানতে পারবে বিভক্তি ও কারকের জ্ঞান বাক্য গঠনে সচেতনতা বৃদ্ধি করবে।

CO 2. যথাযথ অনুশীলনের দ্বারা বাক্য গঠনের শর্ত ও বাক্যের শ্রেণীবিভাগ সম্পর্কে জানবে।

CO 3. বাংলা বাক্যের পদক্রম সম্পর্কে বিস্তারিত জানতে পারবে। বাংলা বাচ্যের শ্রেণী বৈচিত্র্য সম্পর্কে জানবে।
CO 4. ধারাবাহিক চর্চায় লেখনি কৌশলের উ কর্ষতা বৃদ্ধি পাবে। শিক্ষার্থীর কল্পনাশক্তি মনন ও চিন্তন চর্চার বিকাশ এবং সাহিত্যচর্চা, সাহিত্যানুশীলন ও সাহিত্য সৃষ্টির প্রতিভাকে বিকশিত করতে সাহায্য করবে।

Core Course 8: কবিতা (রবীন্দ্রনাথের কবিতা, আধুনিক কালের কবিতা)

CO 1. বিস্তৃত প্রেক্ষাপটে বিশ্বকবি রবীন্দ্রনাথ ঠাকুরের লেখা কবিতা গুলির ভাববস্তু উপলব্ধি করতে পারবে। কবিগুরুর কাব্য বৈচিত্র অর্থা রোমান্টিকতা বাস্তবতা ও সমাজ সত্যকে উপলব্ধি করে পার্থ কবিতাগুলির কাব্যসৌন্দর্য কে বিশ্লেষণ করতে পারবে।

CO 2. শিক্ষার্থীরা রবীন্দ্রনাথের কবিতার সামগ্রিক পরিচয় পাবে এবং কবিতাগুলির সাধারণ বৈশিষ্ট্য ও আঙ্গিকগত তা পর্য নির্ণয় করতে পারবে গীতি কবিতার মৌলিক বৈশিষ্ট্য জানতে পারবে।

CO 3. আধুনিক কবিতার স্বরূপ বৈশিষ্ট্য বিশ্লেষণ করতে শিখবে এবং দর্শক ভেদে আধুনিক বাংলা কবিতার পরিবর্তন ও রূপান্তর গুলি বুঝতে পারবে এবং আধুনিক কবিদের কবিতা গুলো পাঠ করার মাধ্যমে বিভিন্ন আধুনিক কবিদের কবিতা বৈশিষ্ট্য ও তাদের রচনারীতি সম্পর্কে পরিচিতি লাভ করবে।

CO 4. প্রতিটা কবি কবিতার আলোচনায়ও পাঠে ছাত্র-ছাত্রীদের সমকালীন আর্থ-সামাজিক-রাজনৈতিক দেশকাল সমাজের বিষয়ে অবগত হবে। বিভিন্ন শিক্ষার্থী আধুনিক কবিতার কাব্যিক সৌন্দর্যে বিশ্লেষণ নন্দনতত্ত্ব বিষয়ে অবগত হবে এবং অনুরাগী যারা তারা কাব্য অর্থা কবিতা রচনায় উ সাহী, তাঁরা কবিতার প্রকরণগত দিক থেকে অবগত হতে পারবে।

Core Course 9: উপন্যাস (চন্দ্রশেখর, গণদেবতা)

CO 1. উপন্যাস পাঠের মাধ্যমে সৃজনশীল রচনা পাঠের অভ্যাস তৈরি করা এবং সৃজনশীল রচনা অভ্যাস তৈরি করা।

CO 2. উপন্যাস পাঠের মাধ্যমে ছাত্র-ছাত্রীদের সামাজিকতা, বুদ্ধিবৃত্তি, মননশীল চিন্তাশক্তি ও যুক্তি ছিল তার পরিস্ফুটন ঘটানো।

CO 3. নীতি-নৈতিক বোধ সম্পর্কে শিক্ষার্থীদের মধ্যে সচেতনতা তৈরি করা।

CO 4. মনস্তত্ত্বমূলক উপন্যাস সম্পর্কে ধারণা তৈরি করা এবং মানবমনের জটিলতা বিশ্লেষণের ক্ষমতা তৈরি করা বাংলার সমাজ ও সংস্কৃতিতে পুরুষতন্ত্রের কাঠামো ও নারীর অবস্থান বুঝে নেওয়া।

CO 5. উনিশ ও বিশ শতকের ঔপন্যাসিক - কথা সাহিত্যিক বঙ্কিমচন্দ্র চট্টোপাধ্যায় ও রবীন্দ্রনাথ ঠাকুরের রচনা নীতির সঙ্গে পরিচিত হতে পারবে।

Core Course 10: নাটক (নীলদর্পণ, শারদো সব)

CO 1. উনিশ ও বিশ শতকে নাট্যকারদের জীবনদৃষ্টি সামাজিকতা ও সাংস্কৃতিক প্রেক্ষাপট এবং সমস্যা সম্পর্কে বিস্তারিত জ্ঞান লাভ করা।

CO 2. সমাজ সচেতনতা এবং বিশ্লেষণ শক্তির বিকাশ ঘটানো।

CO 3. প্রায়োগিক শিল্প সম্পর্কে ধারণা লাভ, প্রতিবাদ-প্রতিরোধের হাতিয়ার হিসাবে তার ব্যবহার এবং লোকশিক্ষা ও নান্দনিকতার প্রকাশ ও এর প্রয়োগ সম্পর্কে শিক্ষার্থী অবগত হবে।

CO 4. উপনিবেশিক শাসন শোষণের প্রেক্ষিত এবং তাঁর বিরুদ্ধে প্রতিবাদী আন্দোলনের স্বরূপ বিশ্লেষণ করা।

CO 5. প্রথম মুক্ত শিক্ষা ব্যবস্থার প্রতি শিক্ষার্থীকে আকৃষ্ট করা। প্রকৃতির সান্নিধ্যে শিক্ষার বিকাশ ঘটে এই সম্পর্কে বিস্তারিত জ্ঞান লাভ করা।

Generic Elective 4: ভাষাতত্ত্ব

CO 1. বাংলা ভাষার উ পত্তি ও বিবর্তনের রূপ সম্পর্কিত তথ্য জানতে পারবে শিক্ষার্থীরা। ভাষার মূল উপকরণ গুলি উ পত্তি প্রকৃতি বিবর্তন ও তার ক্রমতালিকা অর্থা ধ্বনিতত্ত্ব সম্পর্কে জানতে পারবে শিক্ষার্থীরা।

CO 2. দীর্ঘ বিবর্তনের পথে বিভিন্ন সময়ে বাংলা ভাষা কিভাবে আজকের উচ্চারণ স্থান নিয়েছে সেই সম্পর্কে পরিষ্কার ধারণা তৈরি হবে ছাত্রছাত্রীদের মধ্যে। বাংলাধ্বনির উ পত্তি উচ্চারণ স্থান এবং তার পরিবর্তনের বিভিন্ন কারণ ও ধারাগুলির সঙ্গে পরিচিত হবে শিক্ষার্থীরা।

CO 3. বাংলা শব্দ ভান্ডার সম্পর্কে বিস্তারিত জানতে পারবে। বিভিন্ন আগন্তক ও প্রাদেশিক ভাষা সম্পর্কে জানতে পারবে ছাত্রছাত্রীরা।

CO 4. সাধু ও চলিত গদ্যের মধ্যে ভাষাতাত্ত্বিক পার্থক্য নির্ণয় করতে পারবে। বাংলা বাক্যের পদক্রম সম্পর্কে বিস্তারিত জানতে পারবে। বাংলা বাক্যের শ্রেণিবিভাগ সম্পর্কে জানবে।

CO 5. বাংলা উপভাষা ও ভাষার মধ্যে সম্পর্ক নির্ণয় করতে পারবে। বিভিন্ন শ্রেণীর বাংলা কথ্য উপভাষা গুলোর ভৌগোলিক অঞ্চল চিহ্নিতকরণ করতে পারবে এবং বিভিন্ন প্রকার উপভাষার সঙ্গে পরিচিত হতে পারবে।

Skill Enhancement Course - 2: রচনা শক্তির নৈপুণ্য

CO 1. পত্র লিখনের বিভিন্ন ধারা তারা চিনতে পারবে। নানা প্রকার ব্যক্তিগত পত্র, সামাজিক পত্র, ব্যবহারিক পত্র ও বাণিজ্যিক পত্র সমূহ লেখার দক্ষতা এবং নিয়মাবলী - সবকিছুই পুঙ্খানুপুঙ্খভাবে জানতে ও ব্যবহারিক জীবনে প্রয়োগ করতে পারবে। সর্বোপরি বাংলা ভাষায় রবীন্দ্রনাথ ঠাকুর, কাজী নজরুল ইসলাম, প্রমথ চৌধুরী প্রমুখের অপূর্ব পত্র সাহিত্য গুলি পাঠের মাধ্যমে রসবোধের উত্তীর্ণ হতে পারবে ছাত্র-ছাত্রীরা।

CO 2. শিক্ষার্থীরা বিভিন্ন প্রকার পত্রের অন্তর্বর্তী পার্থক্য নির্ণয় করতে পারবে এবং বাস্তব ক্ষেত্রে প্রয়োগ করতে সমর্থ হবে। ভাষারীতি অনুধাবন করে নতুন চিঠিপত্রের রচনায় তারা সাক্ষ্য প্রমাণ করতে পারবে অর্থা পত্র লিখন রীতিকে পরিকাঠামো বজায় রেখে নিজস্বতার স্বাক্ষর রাখতে পারবে।

CO 3. অনুচ্ছেদ এবং প্রবন্ধ রচনা উভয় সম্পর্কে বিস্তারিত জানতে পারবে, এই দুই বিষয়ের মধ্যে পার্থক্য নির্ণয় করতে পারবে। সমাজ সচেতনতা এবং বিশ্লেষণ শক্তির বিকাশ প্রয়োগ করে শিক্ষার্থী মৌলিক রচনায় দক্ষ হয়ে উঠবে।

CO 4. ভাবার্থ ও ভাবসম্প্রসারণ বিষয়ে সঠিক ধারণা তথা বু পত্তিগত অর্থ ভাবার্থ ও ভাব-সম্প্রসারণ বিষয়ের সঙ্গে মূলগত পার্থক্য নির্ণয় করতে শিক্ষার্থী এবং ভাবার্থ ভাবসম্প্রসারণ এর বৈশিষ্ট্য গুলি ব্যাখ্যা করতে শিখবে। বিশ্লেষণী ক্ষমতা ও ভাষা ব্যবহার দক্ষতা বৃদ্ধি করার সাথে সাথে ভাষার সৌন্দর্য ও নন্দন চেতনা, সাহিত্য-শিল্পকলার সৌন্দর্যের প্রতি গুরুত্ব দিতে শিখবে।

Core Course - 11: গল্প (গল্পগুচ্ছ, একালের গল্প)

CO 1. ছাত্র-ছাত্রীদের নান্দনিক চাহিদার চরিতার্থতা এবং সৃজনশীলতা এবং কল্পনা শক্তির বিকাশ সাধন করা।

CO 2. বাংলা ছোটগল্পের উদগাতা ও প্রধান শিল্পী রবীন্দ্রনাথের গল্প রীতি ও বিন্যাস সম্পর্কে শিক্ষার্থীদের মধ্যে স্পষ্ট ধারণা এবং রবীন্দ্র ছোটগল্পের বিষয়বৈচিত্র্য উপলব্ধি করতে পারবে।

CO 3. রবীন্দ্রোত্তর তথা বিশ শতকের ছোট গল্পকারদের শিল্পরূপ সম্বন্ধে সঠিক তথ্য তুলে ধরা একালের গল্প সংকলন পাঠে শিক্ষার্থীর প্রচলিত গল্পের সঙ্গে একালের গল্পের পার্থক্য ও সম্পর্ক নির্ণয় করতে পারবে।

CO 4. একালের গল্প সংকলনে গল্প লেখক হিসেবে যারা অন্তর্ভুক্ত হতে পারেন তাদের সাধারণ পরিচিতি লাভ করতে পারবে, প্রতিটা গল্প পাঠের ও আলোচনার মাধ্যমে শিক্ষার্থী সমকালীন অর্থ সামাজিক রাজনৈতিক তথা দেশ-কাল-সমাজের বিষয়ে সচেতন হবে এবং বিশ্লেষণ শক্তির বিকাশ ঘটবে আত্মপ্রত্যয় বাড়বে।

CO 5. শিক্ষার্থী কল্পনাশক্তি মনো চিন্তন চর্চার বিকাশ এবং সাহিত্যচর্চা সাহিত্যানুশীলন ও সাহিত্য সৃষ্টির প্রতিভার বিকাশে সাহায্য করবে।

Core Course - 12: প্রবন্ধ ও প্রাচ্য কাব্যতত্ত্ব

CO 1. ভারতীয় সাহিত্যতত্ত্ব ও সাহিত্য বিশ্লেষণের ধারা সম্পর্কে জানবে, বিষয়ের গভীরতা উপলব্ধির দক্ষতা বৃদ্ধি এবং সৃষ্টিধর্মী সমালোচনায় পারদর্শী হয়ে শিক্ষার্থীরা সাহিত্য সমালোচক হওয়ার প্রাথমিক পাঠ গ্রহণ করতে পারবে।

CO 2. লোকশিক্ষা, ভাষা, জাতি ও সংস্কৃতি সম্পর্কে জ্ঞান লাভ এবং তত্ত্ব ও তথ্য দিয়ে ঘটনার বিস্তারিত বিশ্লেষণের দক্ষতা অর্জন করতে পারবে।

CO 3. প্রাচীন ভারতীয় কাব্যতত্ত্ব ও পাশ্চাত্য কাব্যতত্ত্বের তুলনামূলক আলোচনা সম্পর্কে সঠিক উপলব্ধির পরিসর তৈরি হবে এবং ভারতীয় সাহিত্যতত্ত্ব ও সাহিত্য বিশ্লেষণের ধারা সম্পর্কে জানবে।

CO 4. সাহিত্য সমালোচনামূলক লোকশিক্ষা, ভাষা জাতি ও সংস্কৃতি সম্পর্কে জ্ঞান লাভ এবং তত্ত্ব ও তথ্য দিয়ে ঘটনার বিস্তারিত বিশ্লেষণের দক্ষতা অর্জন করতে পারবে।

CO 4. ভারতীয় কাব্যতত্ত্ব ও পাশ্চাত্য কাব্যতত্ত্বের তুলনামূলক আলোচনা সম্পর্কে সঠিক উপলব্ধির পরিসর তৈরি করা এবং অতীত ঐতিহ্য সম্পর্কে সম্যক ধারণা লাভ করতে পারবে।

Discipline Specific Elective (DSE) -1 : উনিশ শতকের বাংলা কাব্য ও প্রবন্ধ

CO 1. গীতি কবিতার মৌলিক বৈশিষ্ট্য জানতে পারবে শিক্ষার্থীরা। গীতিকবিতার সংগীত মাধুর্য উপলব্ধি করা এবং কল্পনাশক্তি বিকাশে সহায়তা করবে।

CO 2. উনিশ শতকের বাংলা কাব্য কবিতা পাঠে মহাকাব্য ও আখ্যান কাব্য সম্পর্কে সম্যক ধারণা পাবে এবং ভারতীয় মহাকাব্য পাঠের ধরন এবং পাঠ্য বিশ্লেষণ শিখতে পারবে। এই বিষয়ে তাদের লেখনি দক্ষতার বিকাশ করতে পারবে।

CO 3. আধুনিক সাহিত্য ও মধ্যযুগের সাহিত্যের মধ্যে পার্থক্য সম্পর্কে অবগত হতে পারবে শিক্ষার্থীরা। প্রবন্ধ পাঠ কালে বাংলা গদ্যের উদ্ভব ইতিহাস ও বাংলা গদ্যের বিকাশ সম্পর্কে জ্ঞান লাভ করবে।

CO 4. উনিশ শতকের বাংলা কাব্য কবিতার ধারায় সংঘটিত বিভিন্ন প্রকার সামাজিক-সাংস্কৃতিক-সাহিত্যিক ও নান্দনিক আন্দোলন গুলি সম্পর্কে বিস্তারিত জ্ঞান লাভ করতে পারবে। আজকের প্রেক্ষিতে বাস্তবতার সঙ্গে শিক্ষার্থী পরিচিতি লাভ করবে এবং তাদের বাস্তব অভিজ্ঞতায় তার প্রতিফলন ঘটাতে পারবে।

CO 5. শিক্ষার্থীরা বাংলা সাহিত্য চর্চায় তরুণদের ভূমিকা ও বিশিষ্ট প্রবন্ধকারদের রচনার সঙ্গে পরিচিত হয়ে তাদের প্রবন্ধ পাঠ এর মাধ্যমে যুক্তিবাদী ও সৃজনশীল মনোভাবের প্রকাশ ঘটবে এবং নীতি-নৈতিকতাকে শিক্ষার্থীদের মধ্যে সচেতনতা তৈরি হবে। যেমন - অক্ষয়কুমার দত্তের প্রবন্ধ পাঠে পাশ্চাত্য যুক্তিবাদের দর্শন ও বৈজ্ঞানিক চেতনার উন্মেষ, দেবেন্দ্রনাথ ঠাকুরের প্রবন্ধ পাঠে ধর্মের আদর্শ ও বেদ বেদান্ত ব্যাখ্যা, ভূদেব মুখোপাধ্যায়ের প্রবন্ধ পাঠে পাশ্চাত্য ভাবের আলোকে হিন্দু ধর্ম ও সমাজের ব্যাখ্যা, বঙ্কিমচন্দ্র চট্টোপাধ্যায়ের প্রবন্ধ পাঠে সমকালীন আর্থসামাজিক এবং ঐতিহ্যের বিষয়ে ধারণা প্রাপ্ত হবে শিক্ষার্থীরা।

Discipline Specific Elective (DSE) -2 : উনিশ শতকের বাংলা নাটক ও কথা সাহিত্য

CO 1. উনিশ শতকের ছোটগল্পের উদ্ভব ও ইতিহাস জানা যায় রবীন্দ্রনাথের ছোটগল্প আস্বাদনের মাধ্যমে। ছোট গল্পের বৈশিষ্ট্য সম্পর্কেও একালের ছোটগল্পের পাঠ্যাভ্যাসের মধ্য দিয়ে উনিশ শতকের গল্পের মধ্যে পার্থক্য নির্ণয় এবং বাংলা গল্পের বৈচিত্রতা সম্পর্কে অভিজ্ঞতা লাভ করবে।
উপন্যাসের উদ্ভবের ইতিহাস এবং শ্রেণীবিন্যাস ও বৈশিষ্ট্য সম্পর্কে জ্ঞান লাভ করতে পারবে। উপন্যাস পাঠের মাধ্যমে ঔপন্যাসিকের জীবন দর্শন ও রচনারীতি এবং উপন্যাসের বিবর্তন সম্পর্কিত জ্ঞান আহরণ করতে পারবে।

CO 2. শিক্ষার্থীরা উপন্যাস ও ছোটগল্পের মধ্যে পার্থক্য নির্ণয় করতে পারবে। উপন্যাস পাঠের মাধ্যমে সৃজনশীল রচনা পাঠের অভ্যাস তৈরি হবে এবং সামাজিকতা, বুদ্ধিবৃত্তি, মননশীল চিন্তাশক্তি ও যুক্তিশীলতার পরিস্ফুটন ঘটাতে পারবে।

CO 3. উনিশ শতকের বাংলা নাটকের উদ্ভবের ইতিহাস ও গঠন সম্পর্কিত জ্ঞান লাভ করতে পারবে। নাটকের শ্রেণী বৈচিত্র সম্পর্কে ধারণা পাবে শিক্ষার্থীরা। বাংলা নাটকের উ স বিবর্তিত রূপ এর সাথে সংস্কৃত নাটকের আদর্শ পাশ্চাত্য নাটকের প্রভাব সম্পর্কিত ধারণা লাভ করে দীনবন্ধু মিত্র, মধুসূদন দত্তের নাটকের মাধ্যমে উনিশ শতকের সমাজের বাস্তব সমস্যা, গিরিশচন্দ্র ঘোষের নাটকের মাধ্যমে পৌরাণিক আদর্শ ভক্তিভাব সম্পর্কিত বিভিন্ন বিষয়ে শিক্ষার্থীরা জ্ঞান লাভ করতে সমর্থ হবে।

CO 4. উনিশ শতকের নানা সমাজ-সংস্কার কেন্দ্রিক আন্দোলন সম্পর্কে অভিজ্ঞতা লাভ করবে। সাহিত্য সংরূপ-উপন্যাস, ছোটগল্প, নাটকের মাধ্যমে সেই সকল বিষয়গুলি অনুধাবন করতে সমর্থ হবে।

Core Course -13: সংস্কৃত ও ইংরেজি সাহিত্যের ইতিহাস

CO 1. শিক্ষার্থীরা সংস্কৃত সাহিত্যের ইতিহাস পাঠ করে ভারতীয় সংস্কৃতি ও সমাজ সম্পর্কে ধারণা লাভ করতে পারবে এবং অতীত মানবজীবন রাজনীতি ধর্ম অর্থনীতি ইত্যাদি সম্পর্কে সম্যক ধারণা লাভ করতে পারবে।

CO 2. ইংরেজি সাহিত্যের ইতিহাস পাঠের মধ্য দিয়ে ইউরোপ ও এশিয়ার মানবজীবন সংস্কৃতি-ঐতিহ্য ধর্ম প্রভৃতি সম্পর্কে স্পষ্ট ধারণা তৈরি হবে। সংস্কৃত সাহিত্য ও ইংরেজি সাহিত্যের বিষয়গুলি সম্পর্কে অবগত হওয়া এবং এ বিষয়ে শিক্ষার্থীরা বাংলা সাহিত্যের সাথে তুলনামূলক আলোচনায় অংশগ্রহণ করতে সমর্থ হবে।

CO 3. সংস্কৃত সাহিত্যের যুগ বিভাগ এবং বাংলা সাহিত্যে সংস্কৃত সাহিত্যের প্রভাব ও বিকাশ সম্পর্কে ধারণা লাভ করতে পারবে এবং সংস্কৃত সাহিত্য চর্চার মাধ্যমে শিক্ষার্থীর ভাষাগত দক্ষতাও বৃদ্ধি পাবে।

CO 4. ভারতীয় সংস্কৃতি ও সমাজকে, প্রবন্ধ পাঠ যুক্তিযুক্ত কল্পনাশক্তি চিন্তা শক্তি অর্জিত জ্ঞানের প্রকাশ ক্ষমতাকে বৃদ্ধি করে প্রাচীন সাহিত্যের সামগ্রিক পরিচয় পাওয়া যায়। ইংরেজি সাহিত্য পাঠের মাধ্যমে পাশ্চাত্য সাহিত্য সংগ্রহ এবং সাহিত্যিকদের সামগ্রিক লিখনরীতি সম্পর্কে জ্ঞান লাভ করতে পারবে শিক্ষার্থীরা।

Core Course -14: সাহিত্যের রূপরীতি ও সংরূপ

CO 1. প্রাচ্য ও পাশ্চাত্য সাহিত্যের ইতিহাস সম্পর্কে চেতনা লাভ করে মাতৃভাষায় আরো দক্ষতা অর্জন করা। তত্ত্ব কাঠামোয় বিশ্লেষণের দক্ষতা অর্জন এবং প্রাচ্য ও পাশ্চাত্য সাহিত্যের তুলনামূলক আলোচনায় অগ্রসর হতে পারবে।

CO 2. জীবন ও জগ সম্পর্কে বিস্তারিত ওষুধ বৃহ পরিসরে ভাবনার অভ্যাস তৈরি করতে পারবে।

শিক্ষার্থীরা পোয়েটিকস সংক্রান্ত বিষয়ে অবগত হবে। সাহিত্যের বিভিন্ন রূপ সম্পর্কিত ধারা এবং এইরূপ শাখা কিভাবে নির্মিত হয়েছে সে বিষয়ে পর্যবেক্ষণ ও আলোচনার মাধ্যমে নিজেদেরকে পরিপুষ্ঠ করতে পারবে।

CO 3. বাংলা সাহিত্যের বিভিন্ন সাহিত্যে সংরূপের উদ্ভব ও বিকাশ সংক্রান্ত তথ্য জানতে পারবে। প্রাচ্য ও পাশ্চাত্য সাহিত্যের সংরূপের মধ্যে সম্পর্ক নির্ণয় এবং তুলনামূলক আলোচনা অগ্রসর হতে পারবে।

Discipline Specific Elective (DSE) - 3 : বিশ শতকের স্বাধীনতা পূর্ববর্তী বাংলা কথাসাহিত্য

CO 1. স্বাধীনতা-পূর্ব বাংলা গল্প উপন্যাসের মধ্য দিয়ে স্বাধীনতাপরবর্তীসময়ে সামাজিক ও রাজনৈতিক সূত্রের পূর্ব প্রেক্ষিতটি জানতে পারবে শিক্ষার্থীরা।

CO 2. উনিশ শতকের গল্প-উপন্যাসের বিষয়ে আঙ্গিকের সাথে বিশ শতকের গল্প-উপন্যাসের পার্থক্য চিহ্নিত করতে পারবে। স্বাধীনতা পরবর্তী বিপর্যয় এর পটভূমি ও মন্বন্তরের ইতিহাসের এই চিত্র সময়কালের গল্প-উপন্যাসের থেকে জানা যায়। বিশ শতকের গল্প উপন্যাসের বিষয় বৈচিত্র সম্পর্কিত ধারণা লাভ করবে শিক্ষার্থীরা।

CO 3. বিশ্বযুদ্ধের মধ্যবর্তী ছোটগল্পকার ও ঔপন্যাসিকদের রচনা বৈশিষ্ট্যের পরিচয় জানতে পারবে, বিশ শতকের বাংলা উপন্যাস এর ক্রমঃবিবর্তিত ইউরোপীয় কথা সাহিত্যের প্রভাব গল্প উপন্যাস কে কতটা প্রভাবিত করেছিল সেই সংক্রান্ত ধারণা উপলব্ধি ও ব্যাখ্যা বিশ্লেষণ করতে পারবে শিক্ষার্থীরা।

CO 4. বিশ শতকের স্বাধীনতা পূর্ববর্তী বাংলা কথাসাহিত্য পাঠে ঔপনিবেশিক শাসন শোষণের পরীক্ষিত এবং তার বিরুদ্ধে প্রতিবাদী আন্দোলনের স্বরূপ বিশ্লেষণ করতে পারবে শিক্ষার্থীরা।

Discipline Specific Elective (DSE) -4 : সাহিত্য বিষয়ক প্রবন্ধ ও লোকসাহিত্য

CO 1. লোকসাহিত্য-লোকসংস্কৃতি সম্পর্কে প্রাথমিক ধারণা লাভ এবং উভয়ের মধ্যে পার্থক্য নির্ণয় করতে পারবে। লোকসাহিত্যের শ্রেণীবিভাগ করতে পারবে। লোকসংস্কৃতি ও লোকসাহিত্যের উপাদানগুলির সঙ্গে পরিচিত হবে।

CO 2. আধুনিক সাহিত্য সংস্কৃতি তথা নাগরিক সাহিত্য-সংস্কৃতি ও লোক সাহিত্য-লোকসংস্কৃতি মধ্যে পার্থক্য নির্ণয় ও বিবরণ দিতে সক্ষম হবে এবং ভারতীয় তথা লোকঐতিহ্যের গৌরবময় বৈশিষ্ট্য ও লক্ষণ গুলি জানতে পারবে।

CO 3. লুপ্তপ্রায় লোকঐতিহ্যের গৌরবময় পুনরুদ্ধার বিষয়ে শিক্ষার্থীরা উদ্যোগী হবে এবং জাতীয় ও আন্তর্জাতিক স্তরে জাতীয় ঐতিহ্যের গুরুত্ব উপলব্ধি করতে পারবে।

CO 4. ভারতীয় সাহিত্য সংস্কৃতি ও সমাজ সম্পর্কিত ধারণা সঙ্গে সাহিত্য স্বরূপ উপন্যাস, ছোট গল্প নাটক প্রবন্ধ পাঠ এর মাধ্যমে সেই সকল বিষয় গুলি অনুধাবন করতে সমর্থ হবে এবং বিশ্লেষণী শক্তির প্রয়োগ করে শিক্ষার্থী মৌলিক রচনা দক্ষ হয়ে উঠবে এর ফলে বিশ্লেষণী শক্তির বিকাশ ঘটবে, আত্মপ্রত্যয় বাড়বে।

CO 5. সাহিত্য বিষয়ক প্রবন্ধ রচনার মধ্য দিয়ে ছাত্র-ছাত্রীদের সামাজিক বুদ্ধিবৃত্তি, মননশীল চিন্তাশক্তি ও যুক্তিশীলতার পরিস্ফুটন ঘটানো যাবে।

Programme/Course Specific Outcome of Bengali Honours

PSO 1. বাংলা বিষয়ে শিক্ষা লাভ করে শিক্ষার্থী শিক্ষকতাকে পেশা হিসেবে গ্রহণ করতে পারবে। ভাষা সাহিত্যের শিক্ষক হিসেবে স্কুল থেকে বিশ্ববিদ্যালয় পর্যন্ত সেই সুযোগ আছে।

PSO 2. ভাষা ও সাহিত্য নিয়ে বিভিন্ন গবেষণামূলক কাজে আত্মনিয়োগ করতে পারবে। কবি, সাহিত্যিক, প্রাবন্ধিক হিসেবেও লেখাকে পেশা করে সমাজে প্রতিষ্ঠিত হতে পারে। ভাষা বিষয়ে বিশেষভাবে ফোনেটিক (Phonetics) বিষয়ে দেশে-বিদেশে কর্মের সুযোগ কাজে লাগাতে পারবে।

PSO 3. ঘোষক বা ঘোষিকা কিংবা সংবাদ পরিবেশন বা উপস্থাপক হিসেবে দূরদর্শনে বিভিন্ন কর্মক্ষেত্রের সুযোগ পেতে পারে। আর আবৃত্তি, অভিনয় (Performing art)ইত্যাদি শিল্পকলায় দক্ষতা অর্জনের দ্বারা কর্মক্ষেত্রে প্রবেশের অবাধ ক্ষেত্র রয়েছে।

PSO 4. রাজ্যের বিভিন্ন প্রতিযোগিতামূলক পরীক্ষা যেমন স্টাফ সিলেকশন কমিশনের বা পাবলিক সার্ভিস কমিশনের নানান পরীক্ষায় সাফল্য লাভ করে কর্মক্ষেত্রে প্রবেশের সুযোগ আছে। বিভিন্ন প্রশাসনিক পদেও কর্মক্ষেত্রের অবকাশ আছে।

PSO 5. মুদ্রণশিল্পের প্রুফ রিডার হিসেবে বা সংবাদপত্রের নানান বিভাগের কাজের সুযোগ পেতে পারবে।

PSO 6. লোকসাহিত্য ও লোক সংস্কৃতি বিষয়ে পাঠ লাভ এর ফলে লোকসাহিত্য সংগ্রাহকের ভূমিকা রূপে পেশাকে বেছে নিতে পারবে।

PSO 7. পাঠ্যবই রচনা গ্রন্থ রচনা গ্রন্থসম্পাদনা ইত্যাদির মাধ্যমে বাংলা ভাষা শিক্ষাকে কাজে লাগাতে পারবে। দেশ ও দেশের বাইরে বিস্তৃত পরিসরে এখন বাংলা ভাষা সাহিত্য কে গুরুত্ব দেওয়া হয়েছে। ফলতঃ, বৃহত্তর ও কর্ম পরিসরে আজকের শিক্ষার্থীরা পছন্দ অনুযায়ী জীবিকানুসন্ধান করতে পারবে।