Course name (পাঠ্যসূচি বিবরণ)	Course outcome (পঠনগত ফলাফল)
LCC I MIL Bengali, Paper I For 1st Semester রচনা প্রস্তুতকরণ ১ সংবাদপত্রের উদ্দেশ্য ও রচনারীতির বৈশিষ্ট্য। ২ অভিযোগ পত্রের খসড়া রচনার বিষয় বৈচিত্র্য। ৩ বিভিন্ন বিষয়ে বিজ্ঞাপনের খসড়া প্রস্তুতকরণ। ৪ চাকরি, ছুটি, নিমন্ত্রণ, অনুমোদন ইত্যাদি বিষয়ক পত্র রচনা।	• প্রথম সেমেস্টারের ছাত্রছাত্রীদের উপযোগী এই পাঠ্যসূচি একান্তই কর্মমুখী। • দৈনন্দিন জীবনে বিভিন্ন প্রয়োজনে যে লিখিত বাংলার প্রয়োজন হয়, সেটি সঠিক ভাবে আয়ত্ত করতে বিশেষ নজর দেওয়া হয়েছে এখানে। • বৃত্তিগত প্রয়োজনে, কর্মক্ষেত্রে, সাহিত্য জগতে সঠিক ভাষায়, সঠিক ভঙ্গিতে যোগাযোগের দক্ষতা বৃদ্ধিতে এই পাঠক্রম অত্যন্ত সহায়ক, • যেহেতু পশ্চিমবঙ্গে বাংলা অন্যতম সরকারী বা দাপ্তরিক ভাষা, সেহেতু ভবিষ্যতে এই ভাষায় নানা উন্নত আবেদন ইত্যাদি যথাযথ উপায়ে পেশ করার ক্ষেত্রে শিক্ষার্থীর একান্ত সহায়ক বর্তমান পাঠ্যসূচি।।

Course name (পাঠ্যসূচি বিবরণ)	Course outcome (পঠনগত ফলাফল)
AECC 2 MIL Bengali For 2nd Semester ১ নির্বাচিত কবিতা ২ নির্বাচিত প্রবন্ধ ৩ নির্বাচিত গল্প ৪ নির্মিতি : ভাবসম্প্রসারণ সংক্ষিপ্তসার সংলাপ লেখন প্রতিবেদন ভাষণ প্রস্তুতি আমন্ত্রণপত্র বিজ্ঞপ্তি।	• বাংলা ভাষার প্রধান তিনটি স্তর সম্পর্কে সম্যক জ্ঞান অর্জনে বিশেষ সহায়ক এই পাঠ্যসূচি। • কবিতার পর্যায়ে যেহেতু কবিশ্রেষ্ঠ রবীন্দ্রনাথ থেকে আধুনিকতম কবি শঙ্খ ঘোষের কবিতা নির্বাচন করা হয়েছে, সেহেতু পঠনপাঠন শেষে শিক্ষার্থী বাংলা কবিতার বিষয়গত বৈচিত্র্য, বিভিন্ন কবির দৃষ্টিভঙ্গির বিশেষত্ব সম্পর্কে পূর্ণ জ্ঞানার্জনে সফল হবে। • প্রবন্ধের ক্ষেত্রে এই পাঠ্যক্রম বিষয়ভিত্তিক প্রবন্ধ সম্পর্কে জ্ঞান প্রদানে ~~[illegible]~~ সফল। • গল্পগুলি বিষয়বৈচিত্র্যে উজ্জ্বল হওয়ায় এবং রচনার কলাগত সার্থক্যে অধিকারী হওয়ার কারণে বাংলা ছোটগল্প সম্পর্কিত ধারণা স্বচ্ছ ও গভীর হয়ে উঠবে শিক্ষার্থীর কাছে। • নির্মিতি অংশের পাঠ্যসূচি বিদ্যার্থীকে নির্ভুল বাংলাভাষা লিখতে সাহায্য করবে এবং বাংলাভাষা প্রয়োগের বহুমুখী দিকটি সম্পর্কেও অবহিত করবে॥

Course name (পাঠ্যসূচি শিরোনাম)	Course outcome (পঠনগত ফলাফল)
LCC I MIL Bengali, Paper II For 3rd Semester ১ ধ্বনি পরিবর্তন 2 সংজ্ঞা ও উদাহরণ: অপিনিহিতি, অভিশ্রুতি, সমীভবন, স্বরভক্তি, স্বরসংগতি ইত্যাদি। ৩ স্বরধ্বনি ও ব্যঞ্জনধ্বনি, ৪ কারক, বিভক্তি, সমাস, প্রত্যয়, উপসর্গ, অনুসর্গ।	• এই পাঠক্রমে বাংলা ভাষাতত্ত্বের (Linguistics) বিভিন্ন দিক নিয়ে আলোচনা করার সুযোগ থাকায় এ বিষয়ে একজন শিক্ষার্থী পূর্ণাঙ্গ জ্ঞানার্জনে সমর্থ হয়। • বাংলা শব্দ এবং অনুচ্চারিত ধ্বনির নানা প্রকৃতি, সংজ্ঞা ও উদাহরণের সাহায্যে ব্যাখ্যা করার অবকাশ থাকায় একটি গুরুগম্ভীর বিষয় সহজে আয়ত্ত করার সুযোগ পায় শিক্ষার্থী। • ধ্বনি পরিবর্তনের প্রায় সব দিকগুলি সম্পর্কেই ছাত্রছাত্রী সম্যক জ্ঞানলাভ করে। • ভাষাতত্ত্ব সম্পর্কিত এই স্পষ্ট ধারণা ভবিষ্যতে যে-কোনো ভাষা নিয়ে গবেষণা করার ক্ষেত্রে বিশেষ সহায়ক। • ব্যাকরণ সংক্রান্ত বাংলা শব্দের নির্মিতি সম্পর্কে সম্যক ধারণা প্রদানকারী। সেই সাথে শুদ্ধ বানান ও সঠিক শব্দ নির্বাচনে অত্যন্ত সহায়তা করে পাঠক্রমের এই পর্যায়॥

Subject: Bengali.

Program out-come.

(বিষয় : বাংলা ।। প্রোগ্রামের ফলাফল)

যে সুদূর প্রত্নভাষা থেকে বাংলা ভাষার ক্রমোত্তরণ, পণ্ডিতেরা তার নামকরণ করেছেন 'ইন্দো-ইউরোপীয়' মূল ভাষা। এই মূল ভাষা ক্রমবিবর্তনের মধ্য দিয়ে প্রাচীন ভারতীয় আর্য, প্রাকৃত, প্রাচ্য প্রাকৃত, মাগধী প্রাকৃত, মাগধী অপভ্রংশ স্তর পার হয়ে বর্তমান বাংলা ভাষার রূপটি পরিগ্রহণ করেছে। বাংলা ভাষার সমৃদ্ধি ও মাধুর্য তাকে বিশ্বব্যাপী বিস্তার লাভে সহায়তা করেছে। সুদূর জাপান, জার্মানির মত দেশের উচ্চশিক্ষার পাঠ্যক্রমে ও বাংলা সংযোজিত হয়েছে। বাংলা সাহিত্যের বৈচিত্র্য ও উচ্চ গুণমানের কারণে এবং ভারতের দ্বিতীয় সর্বাধিক কথ্য ভাষা হিসেবে ভারতের বহু বিশ্ববিদ্যালয়েই বিষয় হিসেবে বাংলা ভাষা ও সাহিত্যের অন্তর্ভুক্তি ঘটেছে।

বাংলা সাহিত্যের বিভিন্ন দিক এবং ভাষাতত্ত্বের মনোগ্রাহী বিষয় ছাত্রদের এই ভাষায় রচিত উচ্চস্তরীয় সাহিত্য সম্পর্কে অবহিত করে এবং ভাষাগত সম্যক ধারণা সম্প্রসারেও সহায়তা করে। একবিংশ নব প্রজন্মের সুস্থ মানসিকতা গঠনে ও সৃষ্টিশীলতায় উদ্বুদ্ধ করার ক্ষেত্রে পাঠক্রমের একটি গুরুত্বপূর্ণ ভাষা হিসেবে বাংলার অবদান অনস্বীকার্য।।

DEPARTMENT OF BOTANY: OUTCOMES OF PROGRAMME AND COURSE

Programme Outcome	Ensuring that the students get both practical and theoretical knowledge of the subject in a balanced manner. Adopting the student-friendly approaches by encouraging the faculty in student discussion. Keeping up with the student's interest in the related fields as well as the core subject. Holistic development of the students Promoting leadership qualities. Students will gain the knowledge of the diverse biological functions of plants and the role plants play as a major group of living organism.

Programme Specific Outcomes	7. At the end of the course the students are well-trained in the various aspects of Botany as well as the other related fields 8. The students get wholesome education in the core fields of Plant Biology and Biotechnology, Genetics, Microbiology, Ecology, Plant Taxonomy, Plant Anatomy and Morphology, Physiology and Metabolism, Mycopathology, Economic Botany etc. 9. The Ability Enhancement Compulsory Courses direct at the Environmental Awareness and enhancing the language grip in English and in mother tongue. 10. Discipline Specific Courses give practical and theoretical knowledge about the novel applied fields like medicine, industry, agriculture, bioinformatics and Environment related fields. 11. Skill Enhancement Courses help the students to increase their skills in particularly new areas of Botany which may help the students in getting self-employment. 12. Generic Elective Courses give students of other disciplines an insight into the Subject. 13. Assistance of the students in competitive exams like JAM.

	14. Promoting sensitive attitude towards the natural surroundings. 15. Students will learn about various aspects of plant science including the diversity of plants, their distribution, economic importance, biological processes and their impact on environment.

CBCS BOTANY (HONOURS) COURSE OUTCOME:

SEMESTER	CORE COURSE	OUTCOME
I	**I. Algae and Microbiology**	This will help students to know about general characteristics and classification of algae, so that they can skilfully identify the algae for agricultural and industrial development. Also they will be capable to know about evolution and ecological significance of algae which is important for restructuring the ecosystem. Students will also be familiar with microbial world; viruses, bacteria, their structure and their role in agriculture and industry. The study will also help them to relate plant disease with microbes.
	II. Biomolecules and Cell Biology	The study will help the students to understand the interaction of macro and micro biomolecules and their role in cellular system. With this study they will also be capable to know structures and functions of different kinds of cells which make them interpret and correlate the role of biomolecules in cell biology.
II	**III. Mycology and Phytopathology**	Students will understand about fungal characteristics, classification through which they could identify and separate fungi group from other plant groups. It will develop an idea among students about the industrial use of fungus. Study of Phytopathology helps to develop a vast idea about plant pathogen interactions, plant diseases as well as different control measures for diseases.
	IV. Archegoniate	The study will give an idea about origin and evolution of plants with land habit adaptations. Students will able to understand the difference between Bryophyta, Pteridophyta, Gymnosperm and Angiosperms with their ecological and economic importance.

SEMESTER	CORE COURSE	OUTCOME
III	**V. Morphology and Anatomy**	Study of morphological features will enhance the knowledge of basic taxonomical information for identification of different Taxa. Anatomy will help to understand the internal tissue organization of plants and their specific role. Also, it will give a clear idea of anatomical adaptive features.
	VI. Economic Botany	Students will understand the economic valuesof different plants and their eco-friendly usefor human welfare.
	VII. Basics of Genetics	Genetics will help to explore the knowledge ofinheritance and provides an idea of geneconcept. Also, they will be aware of geneticdisorders and mutation. It will also help themto understand population and evolutionary background.
IV	**VIII. Molecular Biology**	Molecular Biology is the branch of Botany that deals with the study of the structure and function of heredity materials like DNA and / or RNA of living systems at the molecular level. Students will get knowledge mainly on DNA, RNA, Protein synthesis and their regulatory mechanism and understand the functions of cells at molecular level.
	IX. Plant Ecology and Phytogeography	Ecology is the branch of Botany which focuses on reciprocal interaction of living and non-living things with environment. Students will get knowledge about different biotic and abiotic factors of environment and its impact on living system. They also understand the interaction of population and community with environment. Side by side they will also learn different principles and theories of distribution of plants in different climatic region and local vegetation.
	X. Plant Systematic	The aim of studying Botany is not fulfilled without studying Plant Systematic. Students will understand how to identify, classify plants and their nomenclature. They will get knowledge about origin and evolution of present day plants and understand the methods of evolutionary study.

SEMESTER	CORE COURSE	OUTCOME
V.	**XI. Reproductive Biology of Angiosperms**	On completion of this course, the students will be able to recall the history of reproductive biology of angiosperms, and recognize the importance of genetic and molecular aspects of flower development. Students will also understand structure and functions of anther wall and pollen wall, evaluate the special structures of ovule, solve self-incompatibility in pollination and fertilization, and relate between embryo, endosperm and seed and comprehend the causes of polyembryony and apomixes with its classification.
	XII. Plant Physiology	Through this course, the students will be able to understandwater relation of plants with respect to various physiological processes, explain chemical properties and deficiency symptoms in plants, classify aerobic and anaerobic respiration, explain the significance of Photosynthesis and Respiration and assess photoperiodism, dormancy and germination in plants.

SKILL ENHANCEMENT COURSE- SEC (2)

SEMESTER	CORE COURSE	OUTCOME
III	**Biofertilizers (SEC-I)**	It will create awareness among the students about the eco-friendly sustainable agricultural practices. They will gather basic theoretical knowledge of biofertilizer production and its management.
IV	**Plant diversity and human welfare (SEC 2)**	Students will understand the values and uses of biodiversity in human welfare. They will get the knowledge about the reason of loss of biodiversity and how to conserve biodiversity and different organization associated with biodiversity management.

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

SEMESTER	COURSE	COURSE OUTCOME
V	**Plant Breeding (DSE 1)**	On completion of this course, the students will be able to develop conceptual understanding of plant genetic resources, plant breeding, gene bank and gene pool and familiarize with genetic basis of heterosis. Also they will be able to classify sexual and asexual modes of reproduction, explain monogenic and polygenic inheritance and reflect upon the role of various non-conventional methods used in crop improvement.
	Biostatistics (DSE 2)	Through this course the students will develop their potential to comprehend the fundamental concepts related to descriptive and inferential biostatistics. Also they will develop skills in data tabulation, its treatment, analysis, interpretation and graphical representation of data. Students will develop capacity to analyze the implications of inferential statistics in biology and develop their competence in hypothesis testing and interpretation.
VI	**Industrial and Environmental Microbiology (DSE 3)**	At the end of the course the students will be able tounderstand the concept and role of microbes in industry and environment. They will also able to critically analyze the types of bioreactors and the fermentation process, able to evaluate the role of microorganisms in industry and microbes in agriculture. Reflect upon different Landscaping practices and garden design and develop skills on the remediation process of contaminated soils.
	Analytical Techniques in plant sciences (DSE 4)	Through this course the students will be able to develop conceptual understanding of cell wall degradation enzymes and cellfractionation. They will know and classify different types of chromatography techniques. Students will also able to explain the principles of Light microscopy, compound microscopy, Fluorescencemicroscopy and confocal microscopy. They also able to apply suitable strategies in data collections and disseminating research findings.

****It will be possible to teach DSE papers only when a separate laboratory is available GENERIC ELECTIVE (GE)**

SEMESTER	COURSE	COURSE OUTCOME
I	**Plant Physiology and Metabolism (GE-1)**	Students will get idea about photosynthesis, respiration nitrogen metabolism like different metabolic pathways those are essential for plant growth and development.They are able to know about the response of light and temperature on plants.
II	**Biodiversity (Microbes, Algae, Fungi and Archegoniate (GE-2)**	Studies of Biodiversity make students to understand about different plant groups, their evolutionary significance and their ecological and economical perspectives. With the study of Microbes, students will also familiar with the virus, bacteria and their economic importance.

COURSE SPECIFIC OUTCOME B.SC.-BOTANY GENERAL SYLLABUS-

DSC-PAPER-1(THEORY)

BIODIVERSITY (MICROBES, ALGAE, FUNGI AND ARCHEGONIATE)

Enable the students to understand:-

- Discovery, general structure, replication (general account), DNA virus (T-phage); Lytic and lysogenic cycle, RNA virus (TMV); Economic importance; Bacteria – Discovery, General characteristics and cell structure; Reproduction – vegetative, asexual and recombination (conjugation, transformation and transduction); Economic importance.
- General characters, structure, reproduction in bacteria, algae, fungi, and archaebacteria, bryophytes, Pteridophytes and gymnosperm.
- Basics of microbiology, different types of microbes and their reproduction and recombination by transformation, transduction and conjugation process.

DSC-PAPER-2(THEORY)

PLANT ECOLOGY AND TAXONOMY LECTURES

Enable the students to understand:-

- Ecological Factors & Plant Communities Soil: Origin, formation, composition, soil profile. Water: States of water in the environment, precipitation types. Light and temperature: Variation Optimal and limiting factors; Shelford law of tolerance. Adaptation of hydrophytes and xerophytes.
- Characteristics of Plant communities: Ecotone and edge effect; Succession; Processes and types.
- Ecosystem & Phytogeography Structure; energy flow trophic organisation; Food chains and food webs, Ecological pyramids production and productivity; Biogeochemical cycling; Cycling of carbon and nitrogen Principle biogeographical zones; Endemism
- Introduction to plant taxonomy &Identifications Identification, Classification, Nomenclature. Functions of Herbarium, important herbaria and botanical gardens of the world and India; Documentation: Flora, Keys: single access and multi-access Taxonomic evidencesfrom palynology, cytology and phytochemistry Ranks, categories and taxonomic groups
- Taxonomic hierarchy& Botanical nomenclature Ranks, categories and Taxonomic groups.

DSC-PAPER-3 (THEORY)

PLANT ANATOMY AND EMBRYOLOGY

Enable the students to understand:-

- Meristematic and permanent tissues Root and shoot apical meristems; Simple and complex tissues. Structure of dicot and monocot root stem and leaf.

- This paper enables the students to acquire knowledge on tissue morphology and plant anatomy. It develops a better understanding for the students on adaptive features on xerophytes and hydrophytes. Students get a vivid idea on structural organization of flower and its internal parts, followed by pollination and fertilization processes. A clear concept on embryo and endosperm is enabled through this paper.
- Secondary Growth Vascular cambium – structure and function, seasonal activity. Secondary growth in root and stem, Wood (heartwood and sapwood). Adaptive and protective systems: Epidermis, cuticle, stomata; General account of adaptations in xerophytes and hydrophytes.
- Structural organization of flower Structure of anther and pollen; Structure and types of ovules; Types of embryo sacs, organization and ultrastructure of mature embryo sac.
- Pollination and fertilization Pollination mechanisms and adaptations; Double fertilization; Seed-structure appendages and dispersal mechanisms. Unit V: Embryo and endosperm, Apomixis and polyembryony Endosperm types, structure and functions; Dicot and monocot embryo; Embryoendosperm relationship. Apomixis and polyembryony:Definition, types and practical applications.

DSC-PAPER-4 (THEORY)

PLANT PHYSIOLOGY AND METABOLISM

Enable the students to understand**:-**

- It enhances and develops the basic knowledge of students on plant relations, essential nutrients, including micro and macro nutrients, transport of ions across cell membranes. Students learn in detail about fundamental processes of plants like Photosynthesis, Respiration and nitrogen metabolism. A good concept on structure of enzymes, its properties, study of plant hormones like auxin, gibberellins, cytokinins, ABA and ethylene is elaborated in this part. Students come to know about plants response to light and temperature through phenomenon like Photoperiodism, Photomorphogenesis and Vernalization .
- Plant-water relations & Mineral nutrition Importance of water, water potential and its components; Transpiration and its significance; Factors affecting transpiration; Root pressure and guttation. Essential elements, macro and micronutrients; Criteria of essentiality of elements; Role of essential elements; Transport of ions across cell membrane, active and passive transport, carriers, channels and pumps.
- Translocation in phloem & Photosynthesis Composition of phloem sap, girdling experiment; Pressure flow model; Phloem loading and unloading. Photosynthetic Pigments (Chl a, b, xanthophyll's, carotene); Photosystem I and II, reaction centre, antenna molecules; Electron transport and mechanism of ATP synthesis; C3, C4 and CAM pathways of carbon fixation; Photorespiration.

- Respiration Glycolysis, anaerobic respiration, TCA cycle; Oxidative phosphorylation, Glyoxylate, Oxidative Pentose Phosphate Pathway.
- Enzymes & Nitrogen metabolism Structure and properties; Mechanism of enzyme catalysis and enzyme inhibition. Biological nitrogen fixation; Nitrate and ammonia assimilation.
- Plant growth regulators & Plant response to light and temperature Discovery and physiological roles of auxins, gibberellins, cytokinins, ABA, ethylenPhotoperiodism (SDP, LDP, Day neutral plants); Phytochrome (discovery and structure), red and far red light responses on photomorphogenesis; Vernalization.

PROGRAM SPECIFIC COURSE OUTCOMES B.SC-BOTANY SYLLABUS-

- Knowledge and understanding of: 1.The range of plant diversity in terms of structure, function and environmental relationships. 2. The evaluation of plant diversity. 3. Plant classification and the flora of Maharashtra. 4. The role of plants in the functioning of the global ecosystem. 5. A selection of more specialized, optional topics. 6. Statistics as applied to biological data.

- Intellectual skills – able to: 1. Think logically and organize tasks into a structured form. 2. Assimilate knowledge and ideas based on wide reading and through the internet. 3. Transfer of appropriate knowledge and methods from one topic to another within the subject. 4. Understand the evolving state of knowledge in a rapidly developing field. 5. Construct and test hypothesis. 6. Plan, conduct and write a report on an independent term project.

- Practical skills: Students learn to carry out practical work, in the field and in the laboratory, with minimal risk. They gain introductory experience in applying each of the following skills and gain greater proficiency in a selection of them depending on their choice of optional modules. 1. Interpreting plant morphology and anatomy. 2. Plant identification. 3. Vegetation analysis techniques. 4. A range of physiochemical analyses of plant materials in the context of plant physiology and biochemistry. 5. Analyses data using appropriate statistical methods and computer packages. 6. Plant pathology to be added for sharing of field and lab data obtained.

- Transferable skills: 1. Use of IT (word-processing, use of internet, statistical packages and databases). 2. Communication of scientific ideas in writing and orally. 3. Ability to work as part of a team. 4. Ability to use library resources. 5. Time management. 6. Career planning.

- Scientific Knowledge: Apply the knowledge of basic science, life sciences and fundamental process of plants to study and analyse any plant form.

- Problem analysis: Identify the taxonomic position of plants, formulate the research literature, and analyse non reported plants with substantiated conclusions using first principles and methods of nomenclature and classification in Botany.

- Design/development of solutions: Design solutions from medicinal plants for health problems, disorders and disease of human beings and estimate the phytochemical content of plants which meet the specified needs to appropriate consideration for the public health

- Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and development of the information to provide valid conclusions.

- Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern instruments and equipment's for Biochemical estimation, Molecular Biology, Biotechnology, Plant Tissue culture experiments, cellular and physiological activities of plants with an understanding of the application and limitations.

- The Botanist and society: Apply reasoning informed by the contextual knowledge to assess plant diversity, its importance for society, health, safety, legal and environmental issues and the consequent responsibilities relevant to the biodiversity conservation practice.

- Environment and sustainability: Understand the impact of the plant diversity in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

- As a whole the B.Sc syllabus helps the students to prepare for competitive examinations (like WBFS and IFS, WBCS) for their career development.

Program Specific Outcomes and Course Outcomes in CHEMISTRY under CBCS

Outcomes of Core Course (HONOURS) in CHEMISTRY

The core course in Chemistry prepares students to make use the knowledge as future professionals and researchers. Theoretical knowledge along with laboratory works associated with each course makes the program almost complete and enjoying.

- The main objective of this program is to train the students to use the knowledge of Chemistry for professional use and future employability.
- Students are exposed to diverse branches of Chemistry.
- Quantum Chemistry along with other Inorganic Chemistry topics like periodic properties of elements and related experimental works in laboratory helps in building a solid base.
- Concepts of Physical Chemistry complements in better understanding of rates, equilibria and energy parameters associated with chemical processes. Physical Chemistry experiments involving codutometry, pHmetry, potentiometry and spectrophotometry train the students to use these techniques for a variety of applications.
- Students are acquainted with experimental procedures like analysis of salts and different titrations for analysis of unknown materials both qualitatively and quantitatively.
- Students have an opportunity to understand the fundamental Organic Chemistry and its applications.
- Students learn the chromatographic separation technique of oraganic compounds.
- Thermochemistry and Calorimetry concepts are learnt along with the calorimetric measurements in laboratories.

Outcomes of the course: Core Course (Honours in Chemistry)

Inorganic Chemistry

Atomic Structure

To make students understand atomic structure based on quantum mechanical considerations.

Periodicity of Elements

Students take up the periodicity of properties of elements and understands the chemistry behind variation of such properties, which helps them in understanding chemical processes involving inorganic materials.

Chemical Bonding

Force that binds the atoms is taken up and students get the opportunity to understand bonding and allied topics. Students also learn about other non-specific forces and its interactions.

Oxidation-Reduction:

Redox equations, Standard Electrode Potential and its application to inorganic reactions and

Principles involved in volumetric analysis are taken up for study.

PHYSICAL CHEMISTRY:

Gaseous state:

Chemistry of gases, concept of ideal and real gases and understanding of behaviour of gases in the light of microscopic properties help students to get an insight of gaseous world.

Liquid state:

Qualitative treatment of the structure of the liquid state; Radial distribution function; physical properties of liquids; vapour pressure, surface tension and coefficient of viscosity, and their determination. Effect of addition of various solutes on surface tension and viscosity. Explanation of cleansing action of detergents. Temperature variation of viscosity of liquids and comparison with that of gases.

Qualitative discussion of structure of water. Studies of liquid state help in applying the idea for many applications.

Solid state:

Nature of the solid state, law of constancy of interfacial angles, law of rational indices, Miller indices, elementary ideas of symmetry, symmetry elements and symmetry operations, qualitative idea of point and space groups, seven crystal systems and fourteen Bravais lattices; X-ray diffraction, Bragg's law, a simple account of rotating crystal method and powder pattern method. Analysis of powder diffraction patterns of NaCl, CsCl and KCl. Defects in crystals. Glasses and liquid crystals are also studied.

Ionic equilibria:

Solution Chemistry involving electrolytes and its ions are studied in details. Ionization, Dissociation, pH, Solubility etc. Gives a solid foundation for further studies in Chemistry.

ORGANIC CHEMISTRY

Basics of Organic Chemistry

Chemistry of Organic Compounds, Electronic Displacements arising from Inductive, electromeric, resonance and mesomeric effects, hyperconjugation and their applications; Dipole moment; Organic acids and bases; their relative strength and Homolytic and Heterolytic fission with suitable examples are learnt

Stereochemistry:

Fischer Projection, Newmann and Sawhorse Projection formulae and their interconversions; Geometrical isomerism: cis–trans and, syn-anti isomerism E/Z notations with C.I.P rules and Optical Isomerism help in understanding stereochemistry of compounds.

Chemistry of Aliphatic Hydrocarbons

Chemistry of hydrocarbons involving C-C single, C=C pi bonds are studied as basic Organic Chemistry.

Aromatic Hydrocarbons

Aromaticity: Hückel's rule, aromatic character of arenes, cyclic carbocations/carbanions and heterocyclic compounds with suitable examples. Electrophilic aromatic substitution: halogenation, nitration, sulphonation and Friedel-Craft's alkylation/acylation with their mechanism, Directing effects of the groups help to better understanding of Mechanism of reactions.

PHYSICAL CHEMISTRY- II

Chemical Thermodynamics

Laws of Thermodynamics and Thermochemistry gives a solid foundation to study thermochemical data of chemical reactions and processes.

Systems of Variable Composition, Chemical Equilibrium, Solutions and Colligative roperties of Dilute solutions; lowering of vapour pressure, Raoult's and Henry's Laws and their applications. Excess thermodynamic functions are also taken up.

INORGANIC CHEMISTRY-II

General Principles of Metallurgy, Acids and Bases, Chemistry of *s* and *p* Block Elements like Boric acid and borates, boron nitrides, borohydrides (diborane) carboranes and graphitic compounds, silanes, Oxides and oxoacids of nitrogen, Phosphorus and chlorine. Peroxo acids of sulphur, interhalogen compounds, polyhalide ions, pseudohalogens and basic properties of halogens are studied.

Noble Gases:

Occurrence and uses, rationalization of inertness of noble gases, Clathrates; preparation and properties of XeF_2, XeF_4 and XeF_6; Nature of bonding in noble gas compounds (Valence bond

treatment and MO treatment for XeF_2). Molecular shapes of noble gas compounds (VSEPR theory

Inorganic Polymers:

Types of inorganic polymers, comparison with organic polymers, synthesis, structural aspects and applications of silicones and siloxanes. Borazines, silicates and phosphazenes, and polysulphates.

ORGANIC CHEMISTRY-II

Chemistry of Halogenated Hydrocarbons:

Alkyl halides: Methods of preparation, nucleophilic substitution reactions – S_N1, S_N2 and S_Ni mechanisms with stereochemical aspects and effect of solvent etc.; nucleophilic substitution vs. elimination.

Aryl halides: Preparation, including preparation from diazonium salts. nucleophilic aromatic substitution; SNAr, Benzyne mechanism.

Relative reactivity of alkyl, allyl/benzyl, vinyl and aryl halides towards nucleophilic substitution reactions.

Organometallic compounds of Mg and Li – Use in synthesis of organic compounds.

Structure, reactivity and preparation of Alcohols, Phenols, Ethers and Epoxides, Carbonyl Compounds, Carboxylic Acids and their Derivatives are studied in details.

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Sulphur containing compounds:

Preparation and reactions of thiols, thioethers and sulphonilic acid are also taught.

Program Specific Outcome of Program Course (GENERAL) in CHEMISTRY

Six semester (three years) Program Course in Chemistry is designed to understand, learn the subject of Chemistry both theoretically and with in-hand practices in laboratories so that students pursuing the course are well-trained with the knowhow and training to find jobs in industry and health care providing organizations. Each course has a Practical component to enrich the students with practices of knowledge.

Course Outcome of Program Course in CHEMISTRY

Inorganic and Organic Chemistry:

(ATOMIC STRUCTURE, BONDING, GENERAL ORGANIC CHEMISTRY & ALIPHATIC HYDROCARBONS)

Atomic Structure: Review of: Bohr's theory and its limitations, dual behaviour of matter and Quantum mechanics is introced.

Chemical Bonding and Molecular Structure involving Ionic Bonding, Covalent bonding from VB and MO Approach: Rules for the LCAO method, bonding and antibonding MOs and their characteristics for s-s, s-p and p-p combinations of atomic orbitals, nonbonding combination of orbitals, MO treatment of homonuclear diatomic molecules of 1st and 2nd periods (including idea of s-p mixing) and heteronuclear diatomic molecules such as CO, NO and NO+ . Comparison of VB and MO approaches also help in understanding progress in concepts and ideas.

Fundamentals of Organic Chemistry, Stereochemistry , Aliphatic Hydrocarbons and Reactions of formation of metal acetylides, addition of bromine and alkaline KMnO4, ozonolysis and oxidation with hot alk. KMnO4 are also studied to give an exposure to organic chemistry.

Physical and Functional Organic Chemistry:

(CHEMICAL ENERGETICS, EQUILIBRIA & FUNCTIONAL ORGANIC CHEMISTRY-I)

Section A: Physical Chemistry-1

Chemical Energetics

Review of thermodynamics and the Laws of Thermodynamics, **Chemical Equilibrium**, **Ionic Equilibria**: Strong, moderate and weak electrolytes, degree of ionization, factors affecting degree of ionization, ionization constant and ionic product of water. Ionization of weak acids and bases, pH scale, common ion effect. Salt hydrolysis-calculation of hydrolysis constant, degree of hydrolysis and pH for different salts. Buffer solutions. Solubility and solubility product of sparingly soluble salts – applications of solubility product principle are studied to acquire the concept of Thermodynamics and Solution Chemistry.

Section B: Organic Chemistry

Functional group approach for the following reactions (preparations & reactions) to be studied in context to their structure.

Aromatic hydrocarbons, **Alkyl and Aryl Halides, Alcohols, Phenols and Ethers (Upto 5 Carbons), Aldehydes and ketones** are studied to study and analyse reactions and synthesis of different compounds.

Physical Chemistry and Organic Chemistry-II

SOLUTIONS, PHASE EQUILIBRIA, CONDUCTANCE, ELECTROCHEMISTRY & FUNCTIONAL GROUP ORGANIC CHEMISTRY-II

Section A: Physical Chemistry-2

Solutions and Dilute solutions, Phase Equilibria , Conductance Electrochemistry of cells are studied to give the basic idea of Physical Chemistrty.

Section B: Organic Chemistry

Functional group approach for the following reactions (preparations & reactions) to be studied in context to their structure.

Chemistrty of Carboxylic acids and their derivatives, Carboxylic acid derivatives (aliphatic), Amines and Diazonium salts (Preparationfrom aromatic amines. Reactions: conversion to benzene, phenol, dyes) are studied .

Amino Acids, Peptides and Proteins and **Carbohydrates**: Classification, and General Properties, Glucose and Fructose (open chain and cyclic structure), Determination of configuration of monosaccharides, absolute configuration of Glucose and Fructose, Mutarotation, ascending and descending in monosaccharides. Structure of disacharrides (sucrose, cellobiose, maltose, lactose) and polysacharrides (starch and cellulose) excluding their structure elucidation are also studied.

Inorganic and Physical Chemistry-II

TRANSITION METAL & COORDINATION CHEMISTRY, STATES OF MATTER & CHEMICAL KINETICS

Section A: Inorganic Chemistry-2

Transition Elements (3d series)

General group trends with special reference to electronic configuration, variable valency, colour, magnetic and catalytic properties, ability to form complexes and stability of various oxidation states (Latimer diagrams) for Mn, Fe and Cu. Lanthanoids and actinoids: Electronic configurations, oxidation states, colour, magnetic properties, lanthanide contraction, separation of lanthanides (ion exchange method only).

Coordination Chemistry

Valence Bond Theory (VBT): Inner and outer orbital complexes of Cr, Fe, Co, Ni and Cu (coordination numbers 4 and 6). Structural and stereoisomerism in complexes with coordination numbers 4 and 6. Drawbacks of VBT. IUPAC system of nomenclature.

Crystal Field Theory Crystal field effect, octahedral symmetry. Crystal field stabilization energy (CFSE), Crystal field effects for weak and strong fields. Tetrahedral symmetry. Factors affecting the magnitude of D. Spectrochemical series. Comparison of CFSE for Oh and Td complexes, Tetragonal distortion of octahedral geometry. Jahn-Teller distortion, Square planar coordination. (10 Lectures)

Section B: Physical Chemistry-3

Physical chemistry of Gases is studied to have an insight into the world of gases. Basic chemistry of liquids is also learnt.

Solids

Study of Forms of solids. Symmetry elements, unit cells, crystal systems, Bravais lattice types and identification of lattice planes; Laws of Crystallography - Law of constancy of interfacial angles, Law of rational indices, Miller indices, X–Ray diffraction by crystals, Bragg's law, Structures of NaCl, KCl and CsCl (qualitative treatment only), Defects in crystals, Glasses and liquid crystals help to understand Material Science.

Chemical Kinetics

The concept of reaction rates. Effect of temperature, pressure, catalyst and other factors on reaction rates. Order and molecularity of a reaction. Derivation of integrated rate equations for zero, first and second order reactions (both for equal and unequal concentrations of reactants). Half–life of a reaction. General methods for determination of order of a reaction. Concept of activation energy and its calculation from Arrhenius equation. Theories of Reaction Rates: Collision theory and Activated Complex theory of bimolecular reactions. Comparison of the two theories (qualitative treatment only). Study help to understand kinetics of synthetic organic chemistry.

BACHELORS OF COMMERCE (HONS. & PROGRAM)
SEMESTER –I

I. Financial Accounting [COURSE NO. CC-1 HONS. & DSE-1 PROGRAM]
COURSE OBJECTIVES
The objective of this Course is to help students to acquire conceptual knowledge of the financial accounting and to impart skills for recording various kinds of business transactions.
COURSE OUTCOMES
On the successful completion of the course, students will be able to
1. revisit and strengthen fundamental accounting principles and processes, learn relevant accounting standards, accounting treatment for depreciation and other special transactions culminating in the preparation of financial statements of non-corporate business entities
2. obtain an understanding of practical aspects of accounting including in the areas of branch, hire-purchase, joint ventures, consignments and many others.
3. learn the Accounting for Dissolution of the Partnership Firm.

II.Management Principles and Applications [COURSE NO.CC-2 HONS. & DSC-2 PROGRAM]
COURSE OBJECTIVES
The objectives of the course are to provide the student with an understanding of basic management concept, principles and practices.
COURSE OUTCOMES
After the completion of the course student are expected to
1. To understand the concept and importance of management and evolution of management thoughts.
2. Be familiar with strategic planning, environmental analysis technique (SWOT and BCG matrix), decision making and organising.
3. Acquire knowledge on directing, motivation theories, staffing, leadership, communication and controlling.
III. An Introduction to Economic Environment of India [COURSE NO. GE-I HONOURS]
COURSE OBJECTIVE
This course seeks to enable the students to grasp the knowledge about the economic environment of business in India.
COURSE OUTCOME

After the completion of the course students are expected to
1. understand the concept of Indian Economic environment, Economic development and growth as well as measures of development such as Human development index, National income
2. Have an idea and clarity regarding the five years plan, NITI Aayog and brief major Economic Reforms in India since 1991.
3. Analyse the role of agricultural sector, industry and service sector and financial sector in Indian economy.
4. Learn the major problems of Indian Economy such as poverty, unemployment, over-

population, illiteracy and inflation.

SEMESTER –II

I. Management Principles and Applications [COURSE NO. DSE-3 HONS.]
COURSE OBJECTIVES
The objective of the course is to provide the student with an understanding of basic management concepts, principles and practices.
COURSE OUTCOMES
On the successful completion of the course, students will be able to
1. Understand the different managerial functions and evolution of the management thoughts.
2. Know the importance of planning and various techniques of business environment analysis and diagnosis. They study about the implementation of strategic planning and decision making techniques in the business units.
3. Get the clear picture about the concept and process of organising and also about the major theories related to motivation and leadership.
II. Corporate Laws [COURSE NO.DSC-4 HONS.]
COURSE OBJECTIVES
The objective of the course is to impart basic knowledge of the provisions of the Companies Act 2013 and the Depositories Act, 1996. Case studies involving issues in corporate laws are required to be discussed.
COURSE OUTCOMES
After the completion of the course student are expected to –
1. Understand the Administration of Company Law [including National Company Law Tribunal (NCLT), National Company Law Appellate Tribunal (NCLAT), Special Courts], Characteristics of a company and different types of companies.
2. Have clear picture on Memorandum of association, Articles of association and companies shelf and red herring prospectus.

4. Gain knowledge about the Company's Board of Management (Board of Directors) and meetings.
5. Learn about the Depositories Act 1996.

III. Macro-Economics [COURSE NO. GE-2 HONOURS]
COURSE OBJECTIVE
The course aims at providing the student with knowledge of basic concepts of the macro economics. The modern tools of macro-economic analysis are discussed and the policy framework is elaborated, including the open economy.
COURSE OUTCOME
After the completion of the course students are expected to;
1. Understand the concepts and variables of macroeconomics and Static macroeconomic analysis short and the long run – determination of supply, determination of demand, and conditions of equilibrium.
2. Have an idea and clarity regarding IS–LM framework, fiscal and monetary policy, determination of aggregate demand, shifts in aggregate demand, aggregate supply in

the short and long run, and aggregate demand aggregate supply analysis.
3. Analyse Inflation, Unemployment and Labour market.
4. Get the clear picture on Open economy – flows of goods and capital, saving and investment in a small and a large open economy, exchange rates, Mundell – Fleming model with fixed and flexible prices in a small open economy with fixed and with flexible. exchange rates, interest-rate differentials case of a large economy.
5. Learn about determinants of business fixed investment, effect of tax, determinants of residential investment and inventory investment. They grasp the concept of Demand for Money – Portfolio and transactions theories of demand for real balances, interest and income elasticities of demand for real balances and also Supply of money
6. To be familiar Game Theory Concept such as 2 person Zero – sum game, application of Baye's Theorem.

IV. BUSINESS ORGANISATION AND MANAGEMEN [DSE-3 PROGRAM]
COURSE OBJECTIVES
The course aims to provide basic knowledge to the students about the organisation and management of a business enterprise.
COURSE OUTCOMES
On the successful completion of the course, students will be able to
1. Learn about Manufacturing and service sectors; Small and medium enterprises; Problems and government policy, India's experience of liberalisation and globalisation. They also aware of Technological innovations and skill development.

2. Understand about the Forms of Business Organisation: Sole Proprietorship, Joint Hindu Family Firm, Partnership firm, Joint Stock Company, Cooperative society; Limited Liability Partnership; Rationale and Forms of Public Enterprises. They will gain knowledge on International Business and Multinational Corporations.
3. gain detail knowledge on management, organising, leadership, motivation and control
4. Know the concept of Marketing; Marketing Mix; Product Life Cycle; Pricing Policies and various Sources of Funds of the business houses – Equity Shares, Debentures, Venture Capital and Lease Finance. They will able to understand Securities Market, Role of SEBI.

V. CORPORATE LAWS [COURSE NO.DSE-4 PROGRAM]
COURSE OBJECTIVES
The objective of the course is to impart basic knowledge of the provisions of the Companies Act 2013. Case studies involving issues in company law are required to be discussed.
COURSE OUTCOMES
After the completion of the course student are expected to –
1. Understand the Administration of Company Law [including National Company Law Tribunal (NCLT), National Company Law Appellate Tribunal (NCLAT), Special Courts], Characteristics of a company and different types of companies.
2. Have clear idea on Memorandum of association, Articles of association and companies shelf and red herring prospectus.
3. Gain knowledge about the Company's Board of Management (Board of Directors) and meetings.

4. Learn about Company Account, Audit and Dividend.
5. Know about the concept and mode of winding up of Company.
Note: Syllabus is under revision, hence there is a repetition of subjects in Semester I and II.
BACHELORS OF COMMERCE (HONS. & PROGRAM)
SEMESTER –III
I. Human Resource Management [COURSE NO. DSC-5]
COURSE OBJECTIVES
The objective of the course is to acquaint students with the techniques and principles to manage human resource of an organisation.
COURSE OUTCOMES
On the successful completion of the course, students will be able to
1. Know about the concept and function Human Resource Management, Status and competencies of HR Manager, HR Policies, recent trends and Challenges of Human Resource Management, Human Resource Information System.
2. built an understanding of Human Resource Planning, Quantitative and Qualitative dimensions of human resource planning; and various concept and process of Recruitment, Selection, Placement and Induction
3. Learn the Concept and Importance of training and executive development, Identifying Training and Development Needs, methods and technique of training and executive development, challenges of career development, career planning and managing the work situation or career management.
4. Obtain knowledge about Modern techniques of performance appraisal; potential appraisal and employee counselling, importance of Employee health and safety, employee welfare, social security, industrial relations and industrial disputes and management of grievances.
II. INCOME TAX- LAW AND PRACTICE [COURSE NO.DSC-6 HONS. & DSC-5 PROGRAM]
COURSE OBJECTIVES
To provide basic knowledge and equip students with application of principles and provisions of Income-tax Act, 1961 and the relevant Rules.
COURSE OUTCOMES
After the completion of the course student are expected to –
1. Know the Concept of Assessment year, previous year and Residential Status while Calculating the Income Under different heads.
2. Compute the Income from Salary after deducting the Amount provided as per the Income Bracket provided by income tax Act and the percentage of calculation to be considered
3. Calculate the Income from House Property in Municipal Area and metro city with standard Deductions. .
4. To get the clear picture on Calculation of income from differentiating Between Business and Profession.

5. Compute the Income from Capital Gains Considering the Short term and Long Term Capital Asset Including securities taking into Consideration the time period which defines the Asset to be a short term or a long term.

6. Acquire the Concept of Total Income and how to Carry Forward of losses
7. Calculate the Tax Liability of Individual and the Firm.

III. CORPORATE ACCOUNTING [COURSE NO. DSE-7 HONOURS & DSC-6 PROGRAM]

COURSE OBJECTIVE

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

COURSE OUTCOME

After the completion of the course students are expected to -

1. learn Accounting for Share Capital & Debentures and can prepare the profit & loss account and balance sheet of corporate entities.
2. Do Valuation of Goodwill and Valuation of Shares of a company.
3. Have an insight about the Concepts and accounting treatment as per Accounting Standard in regard to Amalgamation of Companies.
4. Prepare the consolidated balance sheet with one subsidiary company and calculation of different types of Accounting Ratios and their implications.
5. Prepare the cash flow statement as per Indian Accounting Standard (Ind- AS): 7.

IV. BUSINESS STATISTICS [COURSE NO. GE-3 HONS.]

COURSE OBJECTIVES

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

COURSE OUTCOMES

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

1. Understand the Nature and Classification of data, Measures of Central Tendency, Measures of Variation, Skewness meaning, Concept of Kurtosis.
2. Be familiar with the concept of Probability and Probability Distribution, Simple Correlation and Regression Analysis, Meaning and uses of index numbers, Construction of consumer price indices, Important share price indices including BSE SENSEX and NSE NIFTY.
3. Acquire the knowledge of Time Series Analysis and Concept of Sampling, Sampling distributions and Theory of Estimation.

V. Entrepreneurship [COURSE NO. SEC-1 HONS & PROGRAM.]

COURSE OBJECTIVES

The purpose of the Course is to orient the learner toward entrepreneurship as a career option and creative thinking and behaviour.

COURSE OUTCOMES

The objectives of the course are to enable the learners

1. To acquire the knowledge on elements, importance, dimensions of entrepreneurship.
2. To get the clear picture on the dimension of entrepreneurship – intrapreneurship, netpreneurship, international entrepreneurship, technopreneurship, cultural entrepreneurship.
3. To acquire knowledge on availability and access of finance, marketing assistance and technology for new ventures.
4. To be familiarise with the concept and role of industries, entrepreneur’s association

and self-help groups. Concept , role and functions of business incubators, angel investors, venture capital and private equity fund
5. To analyse importance of business plan, project proposal, designing business process, preparation of project report.
6. To get the clear picture on how to mobilise resources for start-up. Preliminary contracts with the vendors, suppliers and basic start-up problems.

SEMESTER –IV

I. Cost Accounting[COURSE NO.DSC-8 HONS.& DSE-7 PROGRAM]
COURSE OBJECTIVES
To acquaint the students with basic concepts used in cost accounting, various methods involved in cost ascertainment and cost accounting book keeping systems.
COURSE OUTCOMES
After the completion of the course student are expected to –
1. To understand the Cost concepts and classifications, Elements of cost, Role of a cost accountant in an organisation.
2. Have clear idea on Unit costing, Job costing, Contract costing, Process costing (process losses, valuation of work in progress, joint and by-products), Service costing (only transport).
3. Gain knowledge about Reconciliation of cost and financial accounts.

II. Business Mathematics [COURSE NO. DSE-9 HONOURS]
COURSE OBJECTIVE
The objective of this course is to familiarize the students with the basic mathematical tools, with an emphasis on applications to business and economic situations.
COURSE OUTCOME
After the completion of the course students are expected to-
1. Understand the Algebra of matrices and Solution of system of linear equations (having unique solution and involving not more than three variables) using matrix inversion Method and Cremer’s Rule.
2. Have an idea and clarity regarding Mathematical functions and their types, Logarithmic function Concepts of limit, Concept and rules of differentiation, concept of Marginal Analysis and Elasticity, Applied Maximum and Minimum Problems including effect of Tax on Monopolist’s optimum price and quantity.
4. Acquire knowledge regarding Partial Differentiation, Integration, Application of Integration to marginal analysis.
5. Gain knowledge on the Rates of interest-nominal, effective– and their inter-relationships in different compounding situations. b. Compounding and discounting of a sum using different types of rates. c. Types of annuities, like ordinary, due, deferred, continuous, perpetual, and their future and present values using different types of rates of interest. Depreciation of Assets.
6. Learn about Formulation of linear programming problem (LPP).

III. PRINCIPLES OF MARKETING [DSE-10 HONOURS]
COURSE OBJECTIVES

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

COURSE OUTCOMES

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

1. Learn about Nature, scope and importance of marketing, Evolution of marketing and marketing environment.
2. Understand about the Consumer Behaviour, Factors influencing consumer buying behaviour and in details Market segmentation.
3. Have detail knowledge on Product classifications, Branding, packaging and labelling, Product-Support Services, Product life-cycle, New Product Development Process, Consumer adoption process.
4. Have clear picture on product Pricing, Factors affecting price of a product, Pricing policies and strategies and Channels of distribution.

5. Gain insight on Nature and importance of promotion and Recent developments in marketing.

IV. INDIAN ECONOMY [COURSE NO.GE-4 HONOURS]

COURSE OBJECTIVES

This course seeks to enable the student to grasp the major economic problems in India and their solution.

COURSE OUTCOMES

After the completion of the course student are expected to –

1. Understand the nature economic development since independence.
2. Learn the issues of land reforms, and their impact on Indian agriculture.
3. Gain insight on the importance of Green Revolution and their impact on the context of Indian agriculture.
4. Acquire knowledge on the major issues in Indian industry and their impact on the development of Indian industry.
5. Acquire knowledge on Monetary and Fiscal policies for structural transformation of the Indian Economy.
6. Know the Importance of different trade policies, Special economic zone, foreign investment inflows through FII and FDI.

V. E-COMMERCE [COURSE NO. SEC-2 HONOURS & PROGRAM]

COURSE OBJECTIVES

To enable the student to become familiar with the mechanism for conducting business transactions through electronic means.

COURSE OUTCOMES

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

1. Understand E-Commerce, e-commerce business models.
2. Learn about the dynamics of World Wide Web and internet, building and launching e-commerce website.
3. Obtain knowledge on Security and Encryption of e-commerce, IT Act 2000 and Cyber Crimes.
4. Have an insight on Models and methods of e–payments, online banking and On-line Business Transactions.

VI. Business Mathematics & Statistics [COURSE NO.DSC-8 PROGRAM]
COURSE OBJECTIVES
To provide basic knowledge and equip students with application of principles and provisions of Income-tax Act, 1961 and the relevant Rules.
COURSE OUTCOMES
After the completion of the course student are expected to –
1. Understand Algebra of matrices, Calculation of values of determinants up to third order.
2. Know Mathematical functions and their types, Concept of differentiation and Maxima and Minima of functions (involving second or third order derivatives) relating to cost, revenue and profit.
3. Compute Simple and compound interest Rates of interest and Compounding and discounting of a sum using different types of rates.
4. Measures of Central Tendency, Measures of Variation and know Simple Linear Correlation Analysis.
5. Understand Meaning and uses of index numbers,Trend analysis and Finding trend by moving average method and Fitting of linear trend line using principle of least squares.
BACHELORS OF COMMERCE (HONS. & PROGRAM)
SEMESTER –V

I. COMPUTER APPLICATIONS IN BUSINESS [COURSE NO. DSC-11 HONOURS & SEC-3 PROGRAM]
COURSE OBJECTIVES
To provide computer skills and knowledge for commerce students and to enhance the student understanding and usefulness of information technology tools for business operations.
COURSE OUTCOMES
On the successful completion of the course, students will be able to-
1. Learn word processing concepts, Use of Templates, Working with word document and Create Business Documents.
2. Prepare presentations for business purpose.
3. Handle Spreadsheet, Manage worksheets like Formatting, Entering data, Editing, and Printing a worksheet and also Handling operators in formula, Project involving multiple spreadsheets, Organizing Charts and graphs
4. Create spreadsheet in the area of Loan and Lease statement, Ratio Analysis, Payroll statements, Capital Budgeting, Depreciation Accounting, Graphical representation of data, Frequency distribution and its statistical parameters, Correlation and Regression.

II. Fundamentals of Financial Management [COURSE NO.DSC-12 HONS.]
COURSE OBJECTIVES
To familiarize the students with the principles and practices of financial management.
COURSE OUTCOMES
On the successful completion of the course, students are able-
1. To acquaint with the various concepts of Financial Management.
2. To learn about the term capital and the risk of arranging capital from different

sources.
3. To make appropriate use of capital and have a good idea on risk and return.
4. To evaluate various cost involved in investing capital through various techniques and methods like discounting and non-discounting.
5. To understand the concept of capital structure and the importance of leverage.
6. To get a clear concept on dividend policy and show how it affects the value of the firm.
7. To understand the various theories on dividend.
8. To analyze the concept of working capital management.

III. Banking and Insurance [COURSE NO. DSE-1(a) HONOURS & PROGRAM]
COURSE OBJECTIVE
To impart knowledge about the basic principles of the banking and insurance Contents.
COURSE OUTCOME
After the completion of the course students are expected to-
1. Learn Origin and growth of commercial banks in India, Financial Services offered by banks, changing role of commercial banks, types of banks.
2. Have an insight about Principles of sound lending, Secured vs. unsecured advances, Types of advances, and Advances against various securities.
3. Be familiar with internet banking.
4. Know about different basic concept involved in Insurance like Types of business risk, Assessment and transfer, Basic principles of utmost good faith, Indemnity, Economic function, Proximate cause, Subrogation and contribution and Types of insurance such as Life and Non-life, as well as functions and Role of IRDA, Online Insurance.

IV. MANAGEMENT ACCOUNTING [COURSE NO. DSE-2(a) HONS. & PROGRAM]
COURSE OBJECTIVES
To impart the students, knowledge about the use of financial, cost and other data for the purpose of managerial planning, control and decision making.
COURSE OUTCOMES
On the successful completion of the course, students will be able to-
1. Understand the Meaning, Objectives, Nature and Scope of management accounting, Difference between cost accounting and management accounting, Cost control and Cost reduction, Cost management.
2. Know Budgeting and Budgetary Control and different types of budgeting.
3. Learn Meaning of standard cost and standard costing.
4. Do Cost- Volume-Profit Analysis, Break-even analysis-algebraic and graphic methods.
5. Learn Steps in Decision Making Process, Concept of Relevant Costs and Benefits, Various short term decision making situations, Acceptance or Rejection of special/ export offers, Make or buy, Addition or Elimination of a product line, sell or process further, operate or shut down and Major factors influencing pricing decisions, various methods of pricing.
6. Get clear picture about Contemporary Issues in management accounting.

V. Principles of Microeconomics [COURSE NO. GE-1PROGRAM.]

COURSE OBJECTIVES

The purpose of the Course is to orient the learner toward entrepreneurship as a career option and creative thinking and behaviour.

COURSE OUTCOMES

On the successful completion of the course, students are able-

1. To learn the determinants of demand, determinants of Supply, Market equilibrium and price determination.
2. Learn about Consumer's preferences, Consumer's equilibrium.
3. To know the dimension of entrepreneurship – intrapreneurship, netpreneurship, international entrepreneurship, technopreneurship, cultural entrepreneurship.
4. To acquire knowledge on availability and access of finance, marketing assistance and technology for new ventures.
5. To be familiarise on the role of industries, entrepreneur's association and self-help groups. Concept , role and functions of business incubators, angel investors, venture capital and private equity fund
6. To acquire knowledge on importance of business plan, project proposal, designing business process, preparation of project report.
7. To learn how to mobilise resources for start-up, Preliminary contracts with the vendors, suppliers and basic start-up problems.

SEMESTER –VI

I. Auditing and Corporate Governance [COURSE NO.DSC-13 HONS. & DSE-3(b) PROGRAM]

COURSE OBJECTIVES

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

COURSE OUTCOMES

After the completion of the course student are expected to –

1. To understand the Classification of Audit, Audit Planning, Audit Procedure.
2. Have clear idea on Company Auditor- Qualifications and disqualifications, Appointment, Rotation, Removal, Remuneration, Rights and Duties Auditor's Report- Contents and Types.
3. Gain knowledge about Special Areas of Audit such as Cost audit, Tax audit, and Management audit. In addition Computer aided audit techniques and tools, Auditing Standards and Relevant Case Studies/Problems.
4. Have an insight about Corporate Governance Reforms, Major Corporate Scandals in India and Abroad.
5. Learn about business values and ethics, approaches and practices of business ethics, corporate ethics, ethics program, codes of ethics and concept of Corporate Social Responsibility(CSR), Corporate Philanthropy, Relationship of CSR with Corporate Sustainability; CSR and Business Ethics, CSR and Corporate Governance, CSR provisions under the Companies Act 2013.

II. Goods and Services Tax & Customs Duty [COURSE NO. DSE-14 HONOURS & DSE-
4(b) PROGRAM]
COURSE OUTCOME
After the completion of the course students are expected to;
1. Understand the Concept, features and principles of indirect taxes.
2. Have clear idea and clarity in GST Laws.
3. Learn Partial Differentiation, Integration and Application of Integration to marginal analysis.
4. Learn about Customs Law as contained in the Customs Act, 1962 and the Customs Tariff Act, 1975.

III. COMPUTERISED ACCOUNTING & SYSTEMS [DSE-3(a) HONOURS & PROGRAM]
COURSE OBJECTIVES
This course seeks to enhance the skills needed for computerized accounting system and to enable the students to develop simple accounting applications.
COURSE OUTCOMES
On the successful completion of the course, students will be able to
1. Deal with Computerized Accounts by using any popular accounting software and Generating Reports - Cash Book, Ledger Accounts, Trial Balance, Profit and Loss Account, Balance Sheet, and Cash Flow Statement.
2. Learn about Filing of income tax returns: Manually, On-line filing of Returns of Income & TDS.
3. Develop understanding about Auditing in Computerized Accounting system.

IV. Financial Markets, Institutions and Financial Services [COURSE NO.DSE-4(a) HONOURS]
COURSE OBJECTIVES
To provide the student a basic knowledge of financial markets and institutions and to familiarise them with major financial services in India.
COURSE OUTCOMES
After the completion of the course student are expected to –
1. Understand the financial markets and institutions as well as An overview of Indian financial system
2. Learn the Role of central bank in money market and an overview Capital.
3. Have insight about role of commercial banks in project finance and working capital finance, an overview and role of Development Financial institutions (DFIs) in Indian economy.
4. Learn about Overview of financial services industry and Regulatory framework relating to merchant banking in India.
5. Understand the issues of land reforms, and their impact on Indian agriculture.

V. INDIAN ECONOMY [COURSE NO.GE-4 HONOURS]
COURSE OBJECTIVES
This course seeks to enable the student to grasp the major economic problems in India and

their solution. It also seeks to provide an understanding of modern tools of macro-economic analysis and policy framework.

COURSE OUTCOMES

After the completion of the course student are expected to –

1. Learn the Concept and Measures of Development and Underdevelopment and Composition of national income and occupational structure.
2. Learn about Economic Reforms since 1991, Monetary and Fiscal policies with their implications on economy.
3. Gain knowledge on Development and Structural Change in different phases of growth and policy regimes across sectors and regions.
4. Have knowledge of Agrarian growth and performance in different phases of policy regimes i.e.pre green revolution and the two phases of green revolution in India
5. Have insight on Phases of Industrialisation in India i.e. the rate and pattern of industrial growth across alternative policy regimes
6. Get clear picture on Foreign Trade and balance of Payments: Structural Changes and Performance of India’s Foreign Trade and Balance of Payments; Trade Policy Debate, Role of FDI.
7. Acquire knowledge on Causes of rising and falling inflation an in addition Labour market and its interaction with production system.

VI. BUSINESS COMMUNICATION [COURSE NO. SEC-4 PROGRAM]

COURSE OBJECTIVES

To equip students of the B.Com course effectively to acquire skills in reading, writing, comprehension and communication, as also to use electronic media for business communication.

COURSE OUTCOMES

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

1. Understand the detailed idea of Communication and Barriers to Communication.
2. Know clearly the methods and techniques regarding Business Correspondence such as Letter Writing, presentation, Inviting quotations, Sending quotations, placing orders, Inviting tenders, Sales letters, claim & adjustment letters and social correspondence, Memorandum, Inter -office Memo, Notices, Agenda, Minutes.
3. Learn about how to write Business Reports.
4. Learn about various methods and techniques of Oral Presentation.

B.Com Program Outcome

Upon successful completion of the course, the following are the expected program outcome:

1. Through this course students are trained to adjust to the real commercial world by imparting knowledge in the area of Accounting and Finance, Banking, Retail

Marketing, Capital Market, Taxation, and Business laws.
2. The course is designed to impart basic knowledge in the field of Business Mathematics, Economics, Statistics, and management so that the students can cope with the changing scenario of corporate houses that demand multidisciplinary knowledge.
3. The course aims to inculcate professional skills, interpersonal skills, and leadership qualities in the students so they can excel in corporate houses.
4. Subjects like business ethics and corporate social responsibility aim to build their analyzing ability regarding the economic, social, and environmental issues relating to business.
5. Including subjects like information technology help students to get ready for the real-life demands of the corporate workforce.
6. Overall, this course inculcates ethical values, teamwork, managerial skills, and an inclination towards lifelong learning and acquiring contemporary knowledge

Program Specific Outcomes of Three Year Honours in Economics

- The three year Honours program in Economics will provide a comprehensive knowledge to the students in the fundamentals of economic theories and application of such micro and macroeconomic theories for formulation of policies and planning.
- The course will also enable the students to develop a thorough knowledge of mathematical and statistical concepts used in the analysis of economic problems which will foster analytical thinking among the students.
- The course will also provide an understanding of the functioning of the Indian and world economy. Through such knowledge, the students will be well equipped in assessing the real situation of the domestic and foreign economy in terms of changes in size of population, income, employment, trade, saving, investments etc.
- The course will also help in enhancing the skills of the students by providing the students with basic knowledge of application of computers, both theoretically and practically. Exposure to field and project work along with development of questionnaire and data collection will expose the students to alternative approaches for solving economic problems.
- On completion of the course, the students will develop the ability to analyse economic behaviour and express the economic point of view of any problem. It will also foster students' ability to analyse events, historical and contemporary, from an economic perspective.

Course Outcomes of Three Year Honours in Economics

Introductory Microeconomics

- To explore the subject matter of economics and understand the scope and method of economics.
- To understand, evaluate and discuss the laws of demand and supply.
- To understand and analyze the theories of consumer behaviour.
- To understand and analyze the theories of production.
- To understand the various concepts of cost and revenue.

Mathematical Methods for Economics-1

- To have an understanding of the theory of sets.
- To understand the concepts of vectors and matrices and their applications in economics.
- To understand the rules of differential calculus and their uses and applications in various economic concepts such as demand function, elasticity of demand, Marginal Revenue, Marginal Utility, Marginal Cost, indifference curve, production function etc.
- To understand the rules of integral calculus and their uses and applications in various economic concepts such as Total Revenue functions, Total Cost function, consumption function and saving function, consumer's surplus and producer's surplus.
- To enable students to solve constraints optimization problems in economics such as utility maximization subject to budget constraint, output maximization subject to cost constraint, cost minimization subject to an output constraint.
- To have knowledge about input-output analysis and input-output models.

Introductory Macroeconomics

- To understand the nature and scope of macro economic theory.
- To have knowledge regarding the process of calculating national income, identify its components and recognize the difficulties in its measurement
- To have an understanding of the Quantity Theory of Money and the different types of inflation.
- To understand the classical theory of employment, Say‘s law of market and Keynes’ criticism to the classical theory.

Mathematical Methods for Economics-II

- To define and solve differential equations and understand their applications in economic concepts such as time path of price and quantity, time path of income, stability model, time path of inflation and unemployment rates, Harrod-Domar and Solow growth model.
- To define and solve difference equations and understand their applications in economic concepts such as the cobweb model, the dynamic multiplier, nature and interpretation of the time path, the multiplier accelerator interaction model, inflation and unemployment.
- To enable students to have a knowledge of basic concept of linear program, duality, to solve linear programming problems and familiarise them with the basic techniques most commonly used in economic
  problems.
- To introduce the students to the concept of game theory, its structure, solution, the maximin and minimax principle, dominance property, pure and mixed strategy, graphical solution.
- To enable students to use mathematical methods in various economic models such as perfect competition, monopoly, discriminating monopoly, Cournot’s model of duopoly, cartels, price leadership model, Domar’s growth model and Domer’s debt burden model.

Intermediate Microeconomics-I

- To introduce to the students the concept of different market structures.
- To enable the students to understand price and output determination under perfect and imperfect competition.
- To enable the students to have a knowledge about welfare economics.

Intermediate Macroeconomics-I

- To enable students to understand income determination in the Simple Keynesian Model.
- To enable the students to understand the equilibrium determination in the IS-LM model.
- To help students develop knowledge regarding effective demand and its determination.
- To help students gain knowledge on income multiplier, dynamic multiplier, employment multiplier, balanced budget multiplier, foreign trade multiplier, multiplier-accelerator interaction model.
- To help students gain knowledge on open economy models.

Statistical Methods for Economics-I

- To introduce the different concepts of statistics and to understand the importance and application of statistics.

- To understand the concept of frequency distribution and outline the graphic and diagrammatic presentation of frequency distribution.
- To have knowledge regarding statistical measures such as mean, median and mode.
- To analyze the different measures of dispersion used in research.
- To gain knowledge on correlation correlation and regression and their application.
- To learn about moments, skewness and kurtosis.

Intermediate Microeconomics-II

- To understand choice under uncertainty.
- To learn about the labour market, capital market, theory of rent and profit.
- To identify the different causes and solutions of market failure.
- To have knowledge about Game Theory.

Intermediate Macroeconomics-II

- To understand the different theories of the consumption function.
- To have knowledge about the different growth models-Harrod-Domar, Solow Model, endogenous growth model.
- To understand the macroeconomic policies of the government i.e. the fiscal and monetary policies.

Statistical Methods for Economics-II

- To have a basic knowledge about population and sample and understand the difference between population parameters and sample statistics.
- To have a knowledge about the elementary probability theory.
- To learn about different probability distributions: uniform, binomial, normal, poisson and exponential.
- To have a basic knowledge on sampling theory and estimation.

Indian Economy

- To understand the basic characteristics of economic development and growth of Indian economy since independence.
- To understand the role and major issues of agriculture in Indian economy.
- To understand the major issues in Indian industry and their impact in the Indian economy.
- To understand growth and distribution in the Indian economy.
- To have knowledge about the economic reforms in India.

Development Economics

- To learn about the different concepts of development and the indicators of development.
- To learn about the concept of poverty and inequality.
- To learn about the different theories of economic development.
- To learn about the environment and sustainable development.

Economics of Health and Education

- To understand the role of health and education in human development.
- To learn about the education sector in India.
- To learn about the inequality in education.
- To learn about the health sector in India.
- To learn about the inequality in health and health care.
- To learn about the various gender issues in human development.

Economic History of India (1857-1947)

- To understand the theories of economic history and overview of colonial India.
- To understand agriculture and common property resources in colonial India.
- To understand railways and industry in colonial India.
- To understand the economy and state in the imperial context.

International Economics

- To understand the various concepts of international economics.
- To understand the theories of international trade.
- To understand the various trade policies.
- To understand the international macroeconomic policy and the role of IMF, WTO and IBRD in international trade.

Public Economics

- To understand the meaning, objectives and scope of public finance.
- To understand the various principles of taxation.
- To understand the meaning, classification and principle of public expenditure.
- To understand the meaning, sources and effects of public debt.
- To understand the different kinds and classification of public budgets.

Topics in International Economics

- To have knowledge about economic integration and integration schemes such as ASEAN, SAFTA.
- To understand the concepts and components of balance of trade and balance of payments and to learn the functions of IMF and WTO.
- To learn the theories of tariffs and income distribution.
- To learn about international labour mobility, international borrowings and lending, foreign direct investment and foreign portfolio investment, multinational firms and their role.

Dissertation/Project

- To understand how to prepare a project.
- To understand how to prepare a questionnaire for data collection.
- To understand how to undertake a field survey.
- To understand how to analyse data.

Program Specific Outcomes of Program Course in Economics

- Completion of the Program Course in Economics will enable the students to understand basic concepts of economics and economic theories.
- The course will also provide the students an idea of the functioning of the Indian economy and its various problems along with a basic knowledge of different plans and policies of the government.
- The course will also provide the students an elementary knowledge of statistical methods used in economics which would strengthen numerical aptitude among the students.
- By providing basic knowledge of computer applications, both theoretically and practically, the course will be able to enhance skills among the students.
- The course also provides students knowledge regarding the theories of development.

Course Specific Outcomes of Three year Program Course in Economics

Microeconomics

- To understand the concept of demand, law of demand, elasticity of demand.
- To understand the cardinal and ordinal utility theories of consumer behaviour.
- To understand the theory of production, cost and revenue.
- To understand the different types of market structures.
- To understand the marginal productivity theory of distribution, rent, wages.

Macroeconomics

- To understand the different concepts of national income, different methods of measuring national income, difficulties of measurement of national income.
- To understand the Quantity Theory of Money.
- To learn about the Classical theory of output and employment, Say's Law of Market.
- To learn about the Keynesian Theory of employment, consumption function, multiplier.
- To learn about the different theories of interest.
- To learn about the different types, causes, and effects of inflation and anti inflationary measures.

Development Economics

- To learn about the concepts of economic growth, economic development and the indicators of economic growth and economic development.
- To learn about the role and necessity of development planning in less developed countries.
- To learn about the relationship between population and economic development and features of India's population problem.
- To learn about the role of capital formation in LDCs and its problems and trends of savings and capital formation in India.
- To learn about foreign capital/Foreign Direct Investment (FDI), government policy, foreign aid, different forms of foreign investment and their roles in economic development.
- To learn about the role of IMF and World Bank in economic development of the LDCs.

Elementary Statistics

- To learn about the meaning of statistics and the basic concepts related to collection of data, classification & tabulation.
- To learn about the diagrammatic representation of statistical data.
- To learn about the basic concepts of frequency distribution, its diagrammatic representation, histogram, frequency polygon and ogive.
- To learn about the various measures of central tendency.
- To learn about the various measures of dispersion.

Indian Economy-I

- To learn about India's economic structure and the causes for India's under development.
- To learn about the trends in and features of India's national income and causes for its low growth.
- To learn about India's population problem, factors behind India's population growth, recent population policy of the government.
- To learn about the role of agriculture in India's economic development and to understand the features of Indian agriculture, causes of low productivity and its remedies.
- To learn about the land reform measures undertaken in India and west Bengal.

Indian Economy- II

- To learn about the role of cottage and small scale industry in India's economic development, and to understand their problems and solutions.
- To learn about globalisation and changes in Indian industrial labour, industrial relations, industrial disputes and social securities in India.
- To learn about India's money market, Reserve Bank of India, and features of Indian capital market.
- To learn about India's foreign trade in the post liberalisation period, recent balance of payments problems and its remedies.
- To learn about the objectives, characteristics of achievements and failures of India's five year plans.

UNDER GRADUATE DEPARTMENTS

Outcomes of the course: Three-year Degree Course in English Honours and Programme

- Students have been taught English literature in Honours Course and Programme Course.
- They learn a wide variety of literary pieces ranging from British, American, Greek to Indian.
- They also learn literary theories and criticism.
- By all this, they learn to appreciate literature, philosophy, history and society.
- The course aims to produce students with minds ignited to 'think'.
- Students are taught English communication which is required for jobs in public sphere especially in the Communication media.
- Students have been taught Business Communication (under SEC) that includes writing project report, annual report of companies, reports of field work, E-correspondence etc.
- They learn functional English under AECC-2 and LCC-2.
- They learn Editing and Proof -reading that prepare them for jobs as journalists.
- This helps them to learn English as a world language and be able to accurately and precisely communicate both in speaking and writing in a variety of contexts and genres.
- They try to acquire analytical skills in linguistics, communications and literary criticism and be able to analyze oral and written discourse of various genres with regard to social, cultural, political and historical contexts.
- A potential for careers and advanced studies in a wide range of English, Public relations or Communication fields.
- A broad foundation of knowledge and skills and cultivate a commitment to life-long learning and be prepared to pursue inquiry relevant to other academic and professional fields and personal interests.
- A potential to be articulate, conscientious leaders and problem solvers who are committed to contributing to their fields and society and be prepared to think critically and creatively and conceive real-world problems from different perspectives.

COURSE OUTCOME

History of English Literature

The students of History of English Literature will be able to:

CO1: Understand significant development in the history of English Literature.

CO2: Develop a passion for literature and appreciate literature's ability to elicit feeling, cultivate the imagination and call us to account us as humans.

CO3: Develop working knowledge of the principal works, authors, genres and periods of English Literature.

CO4: Read a variety of texts critically and proficiently to demonstrate in writing or speech the comprehension, analysis and interpretation of those texts.

CO5: Demonstrate knowledge and comprehension of major texts and traditions of literature written in English as well as their social, cultural, theoretical and historical contexts.

Classical Literatures

The students of Classical Literatures will be benefitted as follows:

CO1: Ancient literatures of Greece, Rome, and India have been taught to make students aware of the formative eras of our literatures.

CO2: An awareness of the origin and development of European literatures.

CO3: A proper understanding of our glorious cultural past through works of the masters such as Kalidasa, Sudraka, Homer.

Poetry and Short Stories

The students of Poetry and Short Stories will be able to:

CO1: Understand the characteristics of various literary genres.

CO2: Develop analytical skills and critical thinking through close reading of literary texts.

CO3: Cultivate appreciation of language as an artistic medium and understand the importance of forms, elements and style that shape literary works.

CO4: Understand that literature is an expression of human values within a historical and social context.

CO5: Recognize the culture and context of the works of literature thereby developing sensitivity to nature and fellow human beings.

Drama

The students of Drama will learn to:

CO1: Understand the historical and socio-political background of Drama in Literature.

CO2: Understand the concepts of religious drama, tragedy, comedy and contemplate their philosophical and psychological relevance.

CO3: Critically analyze, understand and make an informed critique on characters and situations thus developing their analytical skills.

CO4: Think critically and creatively and conceptualize real-world problems from different perspectives.

CO5: Develop empathy and sensitivity, and develop the competence to solve problems.

Women's Writings

The students of Women's Writings will be able to:

CO1: Recognize and discuss the different aspects of feminist theories and criticism.

CO2: Possess critical and analytical faculties enabling greater insight while studying a literary text.

CO3: Appreciate the impacts and influence of the social, cultural, political, historical and legal facets on women's writing.

CO4: Acquire enhanced awareness of the perception of gender roles assigned to both sexes in view of the cultural context.

CO5: Provide an in-depth understanding of the theories associated with women's writings.

Postcolonial Literatures

The students of Postcolonial Literatures will learn to:

CO1: Understand the history of colonialism and anti-colonial struggles in different countries.

CO2: Understand the theorization of colonialism and anti-colonial struggles in the form of postcolonial theory.

CO3: Learn to understand postcolonial societies through the prism of postcolonial literatures.

CO4: Understand India which was a colony once.

Literary Theory and Criticism

Students of Literary Theory and Criticism will learn

CO1: Modernism, Postmodernism, Feminism, Postcolonialism.

CO2: To have an understanding of the history of Literary Theory and Criticism.

CO3: Understand literature better with a mind informed by critical theories.

CO4: How to become critical readers of text from ordinary readers.

Partition Literature

Students of Partition Literature will learn:

CO1: To understand the history of India’s Partition of 1947.

CO2: To read the alternative history of Partition through literature.

CO3: To develop a literary mind informed by alternative knowledge of history, critical thinking of the past and the present, and a self-conscious vision of futue.

Outcomes of the course: 3 years degree course in English Programme

- Students are taught English communication which is required for jobs in public sphere especially in the Communication media.
- They are trained in writing Book Reviews that prepare them for jobs in publishing houses.
- They learn Film Review that helps them in working as Film journalists.
- They learn Editing and Proof -reading that prepare them for jobs as journalists.
- They learn appreciation of English Literature and History.
- The knowledge of English as a world language and be able to accurately and precisely communicate both in speaking and writing in a variety of contexts and genres.
- Analytical skills in linguistics, communications and literary criticism and be able to analyze oral and written discourse of various genres with regard to social, cultural, political and historical contexts.
- A potential for careers and advanced studies in a wide range of English, Public relations or Communication fields.
- A broad foundation of knowledge and skills and cultivate a commitment to life-long learning and be prepared to pursue inquiry relevant to other academic and professional fields and personal interests.
- A potential to be articulate, conscientious leaders and problem solvers who are committed to contributing to their fields and society and be prepared to think critically and creatively and conceive real-world problems from different perspectives.

COURSE OUTCOME

History of English Literature

The students of History of English Literature will be able to:

CO1: Understand significant development in the history of English Literature.

CO2: Develop a passion for literature and appreciate literature’s ability to elicit feeling, cultivate the imagination and call us to account us as humans.

CO3: Develop working knowledge of the principal works, authors, genres and periods of English Literature.

CO4: Read a variety of texts critically and proficiently to demonstrate in writing or speech the comprehension, analysis and interpretation of those texts.

CO5: Demonstrate knowledge and comprehension of major texts and traditions of literature written in English as well as their social, cultural, theoretical and historical contexts.

Poetry and Short Stories

The students of Poetry and Short Stories will be able to:

CO1: Understand the characteristics of various literary genres.

CO2: Develop analytical skills and critical thinking through close reading of literary texts.

CO3: Cultivate appreciation of language as an artistic medium and understand the importance of forms, elements and style that shape literary works.

CO4: Understand that literature is an expression of human values within a historical and social context.

CO5: Recognize the culture and context of the works of literature thereby developing sensitivity to nature and fellow human beings.

Drama

The students of Drama - I will be able to:

CO1: Understand the historical and socio-political background of Drama in Literature.

CO2: Understand the concepts of religious drama, tragedy, comedy and contemplate their philosophical and psychological relevance.

CO3: Critically analyze, understand and make an informed critique on characters and situations thus developing their analytical skills.

CO4: Think critically and creatively and conceptualize real-world problems from different perspectives.

CO5: Develop empathy and sensitivity, and develop the competence to solve problems.

Women’s Writings

The students of Women’s Writings will be able to:

CO1: Recognize and discuss the different aspects of feminist criticism.

CO2: Possess critical and analytical faculties enabling greater insight while studying a literary text.

CO3: Appreciate the impacts and influence of the social, cultural, political, historical and legal facets on women's writing.

CO4: Acquire enhanced awareness of the perception of gender roles assigned to both sexes in view of the cultural context.

CO5: Provide an in-depth understanding of the theories associated with women's writings.

Popular Studies

The students of Popular Studies will be able to:

CO1: Apply critical analysis to the popular culture environment both in the present and in its various historical manifestations.

CO2: Discuss popular culture as always both reflecting and influencing our society.

CO3: Relate concepts such as class, race, ideology, and spectatorship to popular culture and illustrate their significance.

CO4: Detailed knowledge of the social and cultural changes particularly in Britain and the US between 1956 and 1974

CO5: Construct a critical argument regarding the issues surrounding popular culture.

ENVIRONMENTAL STUDIES

MISSION AND LEARNING OUTCOMES.

Unit I : Introduction to environmental studies :

Environmental studies is not just a collection of facts or information about the environment, it also helps the learners how to live a better and sustainable life.

This object creates a new dimension of behavior of individuals and society as a whole towards a better environment.

Unit II : Ecosystems :

After learning about the structure and function of ecosystem, students will be equipped to observe and regulate habitats within ecosystem. They will be able to identify organism with similar needs that compete for resources. Students will understand how the environmental changes may cause organisms to thrive, to become ill, or even to perish, as well as how organism modify and adopt environment to meet their needs.

Unit III : Natural resources :

After completion of this lesson, students will be able to define and distinguish different types of natural resources. They will understand how the environment influences plant's growth and crop yields and ways to improve the environment. They will be able to identify soil types and ways to modify soil structure, as the soil fertility is the most important factor for plants growth.

They will learn how to identify and sustainably manage insects in various plant production systems. They will acquire effective knowledge of relating natural resources with the economy and environment for the present as well as for the future.

Unit IV : Biodiversity :

Learning about biodiversity is to empower students to explore various complexities. They will realize that the living creatures are dependent on such favourable habits that sustain various organisms. They will have the practical ideas about the role of certain species in a ecosystem. They will realize that life can be found almost everywhere on the earth.

Unit V : Environmental pollution :

Learning about environmental pollution will help the students to understand the types, causes, effects and controlling measures of various agents of environmental pollution. They will be able to learn how to identify pollution sources and its impact on nature. They will be able to understand problem of pollution, its appropriate solutions to reduce or prevent the hazards.

Unit VI : Environmental politics and practices :

They will be enriched by first hand idea of environmental laws, which will be helpful for ensuring a better environment in the future.

Unit VII : Human communities and the environment :

Loss of biodiversity and ecological imbalance caused by rapid growth of population and their activities is a major threat for the world. Learning of the subject and implementing its tenets will also help them to develop public awareness to protect out mother-nature by way of learning the techniques of disaster management giving priority to environmental ethics. It is therefore very important for the learners to understand the role of human communities in avoiding the disastrous outcome of destroying the biodiversity.

Unit VIII : Field work :

Collection of data through field work and their scientific analysis will help a student to think methodically and independently. Direct and independent field work like visiting a local polluted site or intensive study of flora and fauna will help the learner to raise their level of confidence to work outside the four walls of a Classroom or a Laboratory.

Programme Specific Outcomes of Three Year Honours in Geography

- The three year Honours program in Geography will provide a comprehensive knowledge to the students in the fundamentals of geographical theories and application of such theories for formulation of policies and planning.
- The course will also enable the students to develop a thorough knowledge of geographical and statistical concepts used in the analysis of socio-economic, cultural and environmental problems which will foster analytical thinking among the students.
- Exposure to field work and preparation of project report along with the use of questionnaire and data collection will provide a means of contextualising students' learning and contributing to students' cognitive development, enabling them to understand the relationships between groups of geographical factors, thereby bridging the divide between the classroom and the real world.
- The course will also help in enhancing the skills of the students in applying different cartographic and statistical techniques in computing the data and derive effective conclusions. With the handling of weather instruments as well as levelling and surveying instruments, the students will be able to assess the dynamics of the earth's surface and atmosphere. The course will also help in enhancing the skills of the students by providing the students with the knowledge of application of remote sensing and GIS techniques, along with different geo tools, both theoretically and practically for land use mapping, urban sprawl analysis, forests monitoring etc.
- The course will also provide an understanding of the relationship between the environment and human activities in different sectors of the economy and explore the contemporary issues associated with population-resource relationship and regions and make approaches to hazard study, natural and man induced, in terms of risk perception and vulnerability assessment.
- On completion of the course, the students will develop the ability to analyse geographical behaviour and express the geographical and environmental point of view of any problem. It will also foster students' ability to analyse events, historical and contemporary, from a geographical perspective.

Course Specific Outcomes of Three Year Honours in Geography

CC 1 Theory - Geotectonic

- To understand the basic concepts of the earth's tectonic and structural evolution with reference to geological time scale.

- To understand the earth's interior with special reference to seismology and theories of isostasy.
- To explore the theory of global tectonics and the associated formation of major relief features of ocean floors and continents including constructive, destructive and conservative plate margins and sea floor spreading.
- To have a better knowledge of folds, faults, their classifications and surface expressions and learn about the earthquakes and volcanoes and associated landforms.

CC 1 Practical

- To have a better knowledge of the concept of scale and construction of plain, comparative, diagonal and vernier scale graphically.
- To understand Map Projection and learn about calculations and techniques of construction of Polar Zenithal Stereographic Projection, Bonne's Projection, Mercator's Projection and Universal Transverse Mercator (UTM) Projection.

CC 2 Theory – Geomorphology

- To introduce to the students the nature, scope and fundamental concepts of Geomorphology.
- To explore different geomorphic processes such as weathering and mass wasting and cycle of erosion as postulated by Davis and Penck.
- To have a better understanding of the classification and evolution of fluvial, karst, aeolian, glacial and coastal landforms.
- To acquaint themselves with different slope forms, processes, factors and the associated landforms as well as the slope evolution theories as proposed by different geomorphologists.

CC 2 Practical

- To study topographical maps and learn about the techniques of - interpreting mountain area with the help of cross and longitudinal profile, interpreting relief profile using superimposed, projected and composite techniques and analysing slope with the help of Wentworth's Method and Smith's Method.
- To have knowledge about the identification of different types of rocks and minerals.

CC 3 Theory – Human Geography

- To define and understand the major themes of Human Geography and their relevance in contemporary world.

- To explore different components of space and society and have knowledge about the cultural regions in the context of race, religion and language.
- To enable students to have knowledge about the population growth, distribution and composition with special reference to India and the associated Demographic Transition Theory.
- To understand the relationship between population and resource and learn about the different Population-Resource Regions.

CC 3 Practical

- To have knowledge of representing the computed data diagrammatically in the form of line, bar and circle.
- To learn about properties, uses and limitations of different thematic mapping techniques and representing data by these techniques such as Proportional Cubes, Choropleth, Chorochromatic, Dot and Isopleths.

CC 4 Theory – Settlement Geography

- To have a basic knowledge about the origin and growth of rural and urban settlements.
- To understand the classification and morphology of rural and urban settlements.
- To understand the trends and patterns of world urbanization with special reference to India.
- To understand the theories of urban growth.

CC 4 Practical

- To gain knowledge about the basic concept of levelling and surveying and learn about levelling by Dumpy Level and determination of height of an object by Theodolite.
- To learn about the preparation and interpretation of thematic maps by conventional method.

CC 5 Theory – Climatology

- To have knowledge about the composition and structure of atmosphere and the associated phenomena of heat budget and temperature inversion.
- To have an understanding of the atmospheric pressure and wind system with special emphasis on jet streams and monsoon.
- To understand the forms of atmospheric moisture with more focus on precipitation and climatic regions as proposed by Koppen.
- To gain knowledge about the tropical and extra tropical cyclones.

CC 5 Practical

- To learn handling of the weather instruments and recording of the data.
- To learn interpretation of Indian daily weather report, summer and winter case and representation of climatic data by climographs and hythergraphs.

CC 6 Theory – Statistical Methods in Geography

- To explore the significance of statistical methods in Geography.
- To understand the source and use of data and scale of measurement in Geography.
- To gain knowledge about the different sampling techniques, their merits, demerits and usages.
- To have knowledge regarding the theoretical distribution including probability and normal distribution.

CC 6 Practical

- To gain knowledge about the tabulation of data by using different statistical techniques including Measures of Central Tendency, Centrographic techniques and Measures of Dispersion.
- To learn about the analysis of data by using different statistical techniques of association and correlation including Rank Correlation, Product Moment Correlation and Simple Regression.

CC 7 Theory – Geography of India

- To enable the students to identify the physiographic regions of India based on relief and topography and explore the characteristics and classification of soil, natural vegetation and climate of India.
- To gain knowledge about the distribution and utilisation of mineral and power resources, agricultural production and distribution of rice and wheat, development of automobile industry and Information Technology with reference to India.
- To understand the distribution of population in terms of race, caste, religion, language, tribes and their correlates.
- To gain knowledge about the Physiographic, Socio-cultural and Economic Regionalisation of India after R. L. Singh, Sopher and Sengupta respectively.

CC 7 Practical

- To learn illustration of temperature and rainfall graphs of selected stations from different physiographic regions of India.

- To gain knowledge about the measurement of arithmetic growth rate of population, comparative analysis of different decadal datasets and measures of inequality.

SEC 1 Theory – Remote Sensing

- To understand the concepts and principles of remote sensing technologies and the history of their development; platforms, types and photogrammetry.
- To understand the principles of Satellite Remote Sensing, the methodologies of extracting data from remotely sensed imagery, EMR interaction with atmosphere and earth's surface, different types of satellites and sensors.
- To acquaint themselves with Digital and Manual Image Processing; Radiometric and Geometric Correction Pre-Processing; filtering and Supervised and Un-supervised Classification.
- To learn about the interpretation of satellite image.

CC 8 Theory – Economic Geography

- To understand the concept of economic activity, the factors affecting its location with special reference to agriculture and industry.
- To understand the relationship between the environment and human activities in the primary sector of the economy.
- To acquaint themselves with the factors that led to the establishment and development of secondary activities.
- To comprehend the level of interactions between man and his environment in the tertiary sector.

.**CC 8 Practical**

- To learn about the transport network by analysing connectivity and accessibility.
- To learn about the use of thematic maps in representing variation in different components of labour force and comparative analysis of developed and backward states by composite index.

CC 9 Theory – Regional Planning and Development

- To define region and understand the evolution and types of regional planning; to ascertain the needs for regional planning.
- To understand the characteristics of ideal planning region and delineate different planning regions.
- To understand the Growth Pole Model of Perroux, Growth Centre Model in Indian context and theories of Myrdal and Rostow.

- To gain knowledge about the social, economic and environmental indicators of development and human development.

CC 9 Practical

- To learn about the delineation of formal and functional regions by weighted index method and breaking point analysis.
- To learn measuring inequality and regional disparity by Location Quotient method and Sopher Index.

CC 10 Theory – Field Work and Research Methodology

- To understand the role, value, data and ethics of field work in geographical studies.
- To define and identify the case studies of rural, urban, physical, environmental and human.
- To have knowledge about the merits, demerits and selection of appropriate field techniques, types of observation – participant and non-participant, questionnaires – open, closed, structured and non-structured, interview and space survey.
- To understand research problems and formulation of research objectives and hypothesis.

CC 10 Practical

- To learn about the use of field tools and collection of data for physical and socio-economic surveys.
- To gain knowledge about designing the field report including aims, objectives, methodology, analysis, interpretation and writing the report.
- To have first hand knowledge in the field, collect primary and secondary data and prepare a field report with the help of figures, tables, maps, photographs, references and appendices which should reflect original interpretation of the theme based on field observations.

SEC 2 Theory – Geographical Information System

- To have an understanding of the basic concepts and components of Geographical Information System.
- To gain knowledge about the principles and uses of Global Positioning System and Differential Global Positioning System (DGPS).
- To understand spatial, non-spatial, raster and vector data structure.
- To have an understanding of the input, geo-referencing, editing, output, query and overlays of GIS Data Analysis.

- To gain knowledge about the application of GIS in land use mapping, urban sprawl analysis and forests monitoring.

CC 11 Theory – Environmental Geography

- To understand the concept and scope of Environmental Geography and know about the physical and socio-cultural components of environment.
- To gain knowledge about the man-environment relationship, its historical progression and adaptation of man in different types of biomes.
- To understand the concept, structure, functions and problems of ecosystem with special reference to tropical and temperate ecosystems.
- To help students gain knowledge on the environmental programmes and policies at national, regional and global level.

CC 11 Practical

- To have knowledge on the preparation of questionnaire for perception survey on environmental problems.
- To prepare a project report on environmental problems of North Bengal based on primary and secondary data with the help of figures, tables, maps, photographs, references and appendices.

CC 12 Theory – Remote Sensing and GIS

- To have a basic knowledge about the components, development, platforms and types of Remote Sensing and GIS.
- To learn skills to identify, extract and determine the scales and orientation of Aerial Photos; principles of Remote Sensing; EMR interaction with atmosphere and earth's surface and different types of satellites and sensors.
- To understand spatial, non-spatial, raster and vector GIS data structure.
- To gain knowledge about the interpretation and application of GIS in land use/land cover mapping, urban sprawl analysis and forests monitoring.

CC 12 Practical

- To learn air photo interpretation with the help of pocket stereoscope and satellite imagery interpretation.
- To have understanding of digital and manual image processing, supervised and unsupervised classification, georeferencing, editing and output and overlays.

DSE 1 Theory – Population Geography

- To understand the nature and scope of Population Geography and sources of data with special reference to India
- To have knowledge about the size, distribution and growth of population, determinants and patterns of population and understand the Malthusian and Demographic Transition Theory.
- To understand the dynamics of population i.e. fertility, mortality and migration; its measures, determinants and implications.
- To understand population in terms of its composition and characteristics and explore into its contemporary issues such as ageing of population, declining sex ratio and HIV/AIDS.

DSE 1 Practical – Population Geography

- To learn about projection of population by arithmetic method and population density mapping for India.
- To analyse work participation rate by total and gender wise for India and occupation structure by dominant and distinctive functions for West Bengal.

DSE 2 Theory – Urban Geography

- To have an understanding of the nature and scope of Urban Geography.
- To identify and understand the patterns of urbanisation in developed and developing countries.
- To acquaint themselves with quantitative and qualitative methods of classifying urban centres based on functionality.
- To analyze the problems and prospects of urbanization in selected urban areas through case studies.

DSE 2 Practical – Urban Geography

- To gain knowledge about hierarchy of settlements by Rank-size rule method.
- To learn spatial and temporal analysis of urban growth of different states using Census data of India.

CC 13 Theory – Evolution of Geographical Thought

- To trace the history and development of geographical thought from the ancient period to the present era.
- To gain knowledge on the evolution of geographical thinking and disciplinary changes in Germany, France, Britain and United States of America.
- To debate on Systematic, Regional, Environmental Determinism and Possibilism.

- To have knowledge with regard to trends in geographical thought from Quantitative Revolution and its impact to Behariouralism, Feminism to Post Modernism and changing future concepts in Geography.

CC 13 Practical

- To learn about important quantitative techniques in Geography – Chi square, Standard Score, Ranking Coefficient by Kendall.
- To learn crop combination by Weber, Rafiulla and Doi.

CC 14 Theory – Disaster Management

- To gain knowledge on the concept and classification of hazards and disasters.
- To understand approaches to hazard study in terms of risk perception and vulnerability assessment.
- To have knowledge about the factors, consequences and management of earthquake, landslide, flood and riverbank erosion.
- To examine the causes of fire hazard, chemical and industrial accidents and assess the impact of such human induced hazards on the environment and population.

CC 14 Practical

- To prepare a project report on any natural hazard or human induced disaster based on primary and secondary data collected from local area with the help of figures, tables, photographs, maps, references and appendices.

DSE 3 Theory – Political Geography

- To understand the concepts, nature and scope of Political Geography.
- To understand the concept of State, Nation and Nation State and Geopolitics, attributes of state – frontiers, boundaries, shape, size, territory and sovereignty and learn about the theories of Heartland and Rimland.
- To introduce the concepts of resource conflicts with special emphasis on water sharing disputes and conflicts related to forest rights and minerals.
- To gain knowledge about the politics of displacement in terms of issues of relief, compensation and rehabilitation with reference to dams and Special Economic Zones.

DSE 3 Practical – Political Geography

- To prepare spatial distribution maps of India in terms of gender, caste and religion and analyse migration data with reference to rural to urban and urban to urban migration.
- To prepare checklist of indices for Social Impact Assessment.

DSE 4 Theory – Social Geography

- To understand the concept, origin, nature and scope of Social Geography.
- To have an understanding of the technology in relation to occupational change and migration.
- To learn about the different social categories including caste, class, religion, race and gender and their spatial distribution.
- To gain knowledge about the concept and components of welfare and wellbeing – healthcare, housing and education, social geographies of inclusion and exclusion and slums.

DSE 4 Practical – Social Geography

- To prepare flow chart showing migration trends.
- To represent spatial distribution of caste, religion and gender in India using proportional circles and proportional divided circles.

Program Specific Outcomes of Three Year Program Course in Geography

- Completion of the Program Course in Geography will enable the students to understand the basic concepts of geography and the related theories. The course will also provide the students an idea of geographical and statistical concepts used in the analysis of various problems which will strengthen numerical aptitude and foster analytical thinking among the students.
- Exposure to field work and preparation of project report along with the use of questionnaire and data collection will enable the students to understand the relationships between groups of geographical factors, thereby bridging the divide between the classroom and the real world. The course will also help in enhancing the skills of the students in applying different cartographic and statistical techniques in computing the data and derive effective conclusions.
- The course will also help in enhancing the skills of the students by providing the students with the knowledge of application of remote sensing and GIS techniques and their applications. The course also provides students knowledge regarding the theories of development along with a basic knowledge of different plans and policies of the government.

Course Specific Outcomes of Three Year Program Course in Geography

CC 1 Theory – Physical Geography

- To understand the earth’s interior with special reference to seismology.

- To have knowledge about the theory of Plate Tectonics and the associated processes and formation of major relief features of ocean floors and continents.
- To understand the types of folds and faults and the associated surface expressions.
- To have a better understanding of the classification and evolution of fluvial, aeolian, glacial and coastal landforms.

CC 1 Practical

- To have a better knowledge of the concept of scale and construction of plain, linear, comparative, diagonal and vernier scale.
- To understand Map Projection and learn about calculations and techniques of construction of Zenithal Gnomonic Projection (Polar Case), Cylindrical Equal Area Projection (Equatorial Case), Simple Conical Projection with one standard parallel and Sinusoidal Projection.

CC 2 Theory – Human Geography

- To understand the basic scope and content of Human Geography.
- To have an understanding of the cultural regions in terms of race, religion and language with reference to India.
- To enable students to have knowledge about the population growth, distribution and composition with special reference to India.
- To understand the relationship between population and resource and learn about the different Population-Resource Regions.

CC 2 Practical

- To have knowledge of representing the computed data diagrammatically in the form of line, bar and circle.
- To learn about properties, uses and limitations of different thematic mapping techniques and representing data by these techniques such as Proportional Circles, Proportional Divided Circles and Choropleth.

CC 3 Theory – Regional Development

- To define region, understand the evolution and types of regional planning and delineate different planning regions.
- To gain knowledge about the causes of regional imbalances and problems of functional regions.
- To understand the Growth Pole Model of Perroux and strategies for regional planning.

- To gain knowledge about the problem regions especially backward regions and evaluate regional plans with major focus on Special Area Development Plans in India.

CC 3 Practical

- To interpret Indian Topographical Maps with special reference to plains and plateaus taking physiography, drainage, natural vegetation, settlement, transport and communication into consideration.
- To learn Geological Maps and explore uniclinal and folded geological structure.

SEC 1 Rural Development

- To understand the concepts, basic elements and measures of rural development.
- To gain knowledge about the conceptual framework – Gandhian approach to rural development, Lewis Model of Economic Development.
- To have area based approach to rural development and identify drought prone area programmes and PMGSY.
- To have target group approach to rural development and identify different State and Central Government aided development programmes like SJSY, MNREGA, Jan Dhan Yojna and Rural Connectivity.
- To gain knowledge on Panchayati Raj System, rural development policies and programmes in India.

CC 4 Theory – Spatial Information Technology

- To introduce students to concept and historical development of Spatial Information Technology.
- To understand web data sources, registration and projection, data structures, data interpretation and modelling of spatial information.
- To explore the functions of spatial information system – Information retrieval, Topological modelling, networks, overlay and data output.
- To gain knowledge on different applications of Spatial Information Technology.

CC 4 Practical

- To identify broad physical and cultural features from aerial photographs using pocket stereoscope.
- To learn about statistical techniques like measures of central tendency and measures of dispersion.

SEC 2 Geographical Information System

- To have an understanding of the basic concepts and components of Geographical Information System.
- To gain knowledge about the principles and uses of Global Positioning System and Differential Global Positioning System (DGPS).
- To understand spatial, non-spatial, raster and vector data structure.
- To have an understanding of the input, geo-referencing, editing, output, query and overlays of GIS Data Analysis.
- To gain knowledge about the application of GIS in land use mapping, urban sprawl analysis and forests monitoring.

DSE 1 Theory – Disaster Management

- To understand the concept and classification of hazards and disasters and their risk and vulnerability.
- To have knowledge about the causes, impact, distribution and mapping of flood, landslide and drought with reference to India.
- To gain knowledge on the causes, impact, distribution and mapping of earthquake, tsunami and cyclone with reference to India.
- To have an understanding of the preparedness, Indigenous Knowledge and Community Based Disaster Management mitigation measures to different disasters and gain knowledge about National Disaster Management Authority and National Institute of Disaster Management.

DSE 1 Practical

- To prepare a project report on disaster, natural or human-induced taking a case study, based on primary and secondary data with the help of figures, tables, maps, photographs, references and appendices.

DSE 2 Theory – Rural Development

- To gain knowledge on the interdependence of rural and urban sectors of the economy, need for rural development and Gandhian approach to rural development.
- To understand the Panchayat Raj System, agriculture and allied sectors, seasonality and need for expanding non-farm activities, co-operatives and PURA.
- To have area based approach to rural development and identify drought prone area programmes and PMGSY.

- To have target group approach to rural development and identify different State and Central Government aided development programmes like SJSY, MNREGA, Jan Dhan Yojna and Rural Connectivity.

DSE 2 Practical

- To prepare a project report on socio-economic status of the people either at mouza or village level based on primary and secondary data with the help of figures, tables, maps, photographs, references and appendices

Course Outcome

Outcomes of the course: 1st Semester & 3rd Semester

- Students are taught Hindi communication which is required for jobs in public sphere especially in the Communication media.
- They are trained in writing for translation.
- They learn Film Review that helps them in working as Film journalists.
- They learn Editing and Proof -reading that prepare them for jobs as journalists.
- They learn appreciation of Hindi Literature and History.
- A potential for careers and advanced studies in a wide range of Hindi, Public relations or Communication fields.
- A broad foundation of knowledge and skills and cultivate a commitment to life-long learning and be prepared to pursue inquiry relevant to other academic and professional fields and personal interests.

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HISTORY

Programme Specific Outcomes (PSO)

After successful completion of B.A. three-year-degree course (honours) in History, a student is expected to achieve the following outcomes.

- Critical approach to the study of history as a discipline by acquiring ability to distinguish between fact and fiction with the understanding that there is no one historical truth.
- Understanding the theories and history of historical writing.
- Developing perspectives on historical inquiry to understand different values and beliefs that shaped and affected the lives of the multiple cultures in the past.
- Recognition of continuity and change, sequence of historical events across every civilization and any given period of time.
- Understanding the concept of cause and effect to identify chains of events and developments, both in short term and long term. This concept aims to identify, examine and analyse the reasons why events have occurred and the resulting consequences or outcomes.
- Developing a range of historical skills, essential for the process of historical inquiry.
- Understanding the origin and purpose or usefulness of primary and secondary sources and production of well researched work using both sources.
- Acquire a strong theoretical base to understand various issues and trends in the society at the local, national and global levels.
- Develop rational, humanitarian, democratic and secular outlook based on historical knowledge and contemporary societal, economic and political issues.
- Equip students with the capabilities to think, comprehend and present issues in a critical social scientific and nationalistic perspective.
- Develop a true sense of nationalism in tandem with internationalism.
- Prepare for future study, employability and responsible citizenship

Course Outcomes- **B.A (HONS), HISTORY**

CORE COURSE (14)

CC I : HISTORY OF INDIA- I (Earliest Times to 300 A.D)

(Full Marks-75 : Credits -6)

- The Students will reconstruct Ancient Indian History along the below given topics:

[a] They will have knowledge on Early Indian notions of History.
[b] They will know sources and tools for historical reconstruction.
[c] They will be able to make historical interpretations; with special reference to gender, environment,technology, and regions.

- Pre-historic hunter-gatherers.

They will be able to shed light on Palaeolithic cultures- sequence and distribution; stone industries and other technological developments. They will also have gained knowledge on Mesolithic cultures- regional and chronological distribution; new developments in technology and economy; rock art.

- The advent of food production.

The students can delve and write on Understanding the regional and chronological distribution of the Neolithic and Chalcolithic cultures: subsistence, and patterns of exchange.

- The Harappan civilization.

The students will have better understanding on the Origins; settlement patterns and town planning; agrarian base; craft productions and trade; social and political organization; religious beliefs and practices; art; the problem of urban decline and the late/post-Harappan traditions.

- Cultures in transition

They can elaborate on various topics under Settlement patterns, technological and economic developments; social stratification; political relations; religion and philosophy; the Aryan Problem. In relation to:-
[a] North India (circa 1500 BCE-300 BCE)
[b] Central India and the Deccan (circa 1000 BCE - circa 300 BCE)
[c] Tamilakam (circa 300 BCE to circa CE 300)

CC II : SOCIAL FORMATIONS AND CULTURAL PATTERNS OF THE ANCIENT WORLD

(Full Marks-75 : Credits -6)

- The course educates the students on the Evolution of humankind; Palaeolithic and Mesolithic cultures.
- The students will be able to discuss on Food production: beginnings of agriculture and animal husbandry.
- The course inculcates the knowledge of Bronze Age Civilizations, with reference to, Egypt (Old Kingdom); Mesopotamia (up to the Akkadian Empire); China (Shang); Eastern Mediterranean (Minoan) economy, social stratification, state structure, religion.
- The students will be able to discuss and debate on the Nomadic groups in Central and West Asia; and on the advent of iron and its implications.
- The course imparts knowledge on the Slave society in ancient Greece: agrarian economy, urbanization, trade and on Polis in ancient Greece: Athens and Sparta; Greek Culture.

CC III : HISTORY OF INDIA II (C 300BCE - 750 AD)

(Full Marks-75 : Credits -6)

- The students will gain an insight into the Economy and Society (circa 300 BCE to circa CE 300): with regards to; Expansion of agrarian economy: production relations. Urban growth: north India, central India and the Deccan; craft Production: trade and trade routes; coinage. Social stratification: class, Varna, jati, untouchability; gender; marriage and property relations.

- The course has imparted knowledge to the students regarding Changing political formations (circa 300 BCE to circa CE 300): during, The Mauryan Empire, Post-Mauryan Polities with special reference to the Kushanas and the Satavahanas and the Gana Sanghas.

The course has imparted education to the students regarding early medieval India [circa CE fourth century to CE 750]: giving focus on; Agrarian expansion: land grants, changing production relations; graded Land rights and peasantry; problem of urban decline: patterns of trade, currency, and urban settlements; Varna, proliferation of jatis: changing norms of marriage and property; and on the nature of polities: the Gupta empire and its contemporaries: post- Gupta polities -Pallavas, Chalukyas, and Vardhanas,

- The course has imparted knowledge to the students regarding religion, philosophy and society during (circa 300 BCE- CE 750): on matters like; Consolidation of the brahmanical tradition: dharma, Varnashram, Purusharthas, samskaras; Theistic cults (from circa second century BC): Mahayana; the Puranic tradition; and on the beginnings of Tantricism.

- The course introduces the students to Cultural developments during (circa 300 BCE - CE 750): regarding; A brief survey of Sanskrit, Pali, Prakrit and Tamil literature. Scientific and technical treaties and on the Art and architecture & forms and patronage; Mauryan, post-Mauryan, Gupta, and post-Gupta periods.

CC IV : SOCIAL FORMATIONS AND CULTURAL PATTERNS OF

THE MEDIEVAL WORLD

(Full Marks-75 : Credits -6)

- The course introduces the students to the Roman Republic, Participate and Empire & slave society in ancient Rome; and the Agrarian economy, urbanization, trade.

- The course introduced the students to the Religion and culture in ancient Rome.

- The course delved and gave an insight to the students about the Crises of the Roman Empire.

- The course acquainted the students on the Economic developments in Europe from the 7th to the 14th centuries:

- It teaches the students on the organization of production, towns and trade, technological developments. Crisis of feudalism.

- It acquaints the students to the Religion and culture in medieval Europe.

- They were introduced to the study of Societies in Central Islamic Lands, with regards to the; tribal background, ummah, Caliphal state; rise of Sultanates; Religious developments: the origins of shariah, Mihna, Sufism and Urbanization and trade.

CC V : HISTORY OF INDIA III (c. 750 -1206)

(Full Marks-75 : Credits -6)

- The students are brought to acquaintance with the study of Early Medieval India through Historical geography Sources: texts, epigraphic and numismatic data Debates on Indian feudalism, rise of the Rajputs and the nature of the state.
- The course imparts knowledge on Political Structures; Evolution of political structures: Rashtrakutas, Palas, Senas, Pratiharas, Rajputs and Cholas; Legitimization of kingship; bhramanas and temples; royal genealogies and rituals; Arab conquest of Sindh: nature and impact of the new set-up; Ismaili dawah and Causes and consequences of early Turkish invasions: Mahmud of Ghazni; Shahab-ud-Din of Ghur.
- The course familiarizes the students to the Agrarian Structure and Social Change: Under which comes; Agricultural expansion; crops; Landlords and peasants; Proliferation of castes; status of untouchables and Tribes as peasants and their place in the Varna order.
- The study gives knowledge to the students about the Trade and Commerce with focus on; Inter-regional trade; Maritime trade; Forms of exchange; Process of urbanization and Merchant guilds of South India.
- The students are acquainted with Religious and Cultural Developments which delves with; Bhakti, Tantrism, Puranic traditions; Buddhism and Jainism; Popular religious cults; Islamic intellectual traditions: Al-Biruni; Al-Hujwiri; Regional languages and literature and Art and architecture: Evolution of regional styles.

CC VI : RISE OF THE MODERN WEST - I

(Full Marks-75 : Credits -6)

- The students are made aware of the Transition from feudalism to capitalism: problems and theories.
- This course deals with the Early colonial expansion: motives, voyages and explorations; the conquests of the Americas: beginning of the era of colonization; mining and plantation; the African slaves.
- This course introduces the students to Renaissance: its social roots, city-states of Italy; spread of humanism in Europe; Art.
- This will help the students in understanding the Origins, course and results of the European Reformation in the 16th century.
- With this course the students will be able to understand the Economic developments of the sixteenth century: Shift of economic balance from the Mediterranean to the Atlantic; Commercial Revolution; Influx of American silver and the Price Revolution.
- The course will enable the students to understand the Emergence of European state system: Spain; France; England; Russia.

CC VII : HISTORY OF INDIA IV (c.1206 - 1550)

(Full Marks-75 : Credits -6)

- This course helps the students in Interpreting the Delhi Sultanate: with regards to the Survey of sources: Persian tarikh tradition; vernacular histories; epigraphy.
- This study helps the students with Sultanate Political Structures; Foundation, expansion and consolidation of the Sultanate of Delhi; The Khaljis and the Tughluqs; Mongol threat and Timur's invasion; The Lodis: Conquest of Bahlul and Sikandar; Ibrahim Lodi and the battle of Panipat; Theories of kingship; Ruling elites; Sufis, ulama and the political authority;imperial monuments and coinage; Emergence of provincial dynasties: Bahamanis, Vijayanagar, Gujarat, Malwa, Jaunpur and Bengal and Consolidation of regional identities; regional art, architecture and literature.
- With the study of this course the students will better understand the Society and Economy; Iqta and the revenue-free grants; Agricultural production; technology; Changes in rural society; revenue systems and Monetization; market regulations; growth of urban centers;trade and commerce; Indian Ocean trade
- This course gives an insight to the students on the Religion, Society and Culture: with regards to, Sufi silsilas: Chishtis and Suhrawardis; doctrines and practices; social roles. Bhakti movements and monotheistic traditions in South and North India; Women Bhaktas; Nathpanthis; Kabir, Nanak and the Sant tradition and Sufi literature: malfuzat; premakhayans.

CC VIII : RISE OF THE MODERN WEST - II

(Full Marks-75 : Credits -6)

- The course introduces the students to 17th century European crisis: economic, social and political dimensions.
- This paper imparts knowledge on the English Revolution: major issues; political and intellectual currents.
- This course emphasizes on the Rise of modern science in relation to European society from the Renaissance to the 17th century.
- The students are made aware on the Mercantilism and European economics; 17th and 18th centuries.
- It imparts knowledge on the European politics in the 18th century: parliamentary monarchy; patterns of Absolutism in Europe.
- This paper deals and imparts knowledge on the Political and economic issues in the American Revolution.
- With the study of this paper the students are introduced to Preludes to the Industrial Revolution.

CC IX : HISTORY OF INDIA V (c. 1550 - 1605)

(Full Marks-75 : Credits -6)

- This course delves into the Sources and Historiography; with regards to Persian literary culture; translations; Vernacular literary traditions and Modern Interpretations.
- This study deals with the Establishment of Mughal rule for the students with regards to; India on the eve of Babur's invasion; Fire arms, military technology and warfare; Humayun's struggle for empire and Sher Shah and his administrative and revenue reforms.
- This course also deals with the Consolidation of Mughal rule under Akbar: with regards to; Campaigns and conquests: tactics and technology; Evolution of administrative institutions: Zabt, Mansab, Jagir, Madad-i-Maash and Revolts and resistance.
- This paper introduces the students to Expansion and Integration under Emperor Akbar; Incorporation of Rajputs and other indigenous groups in Mughal nobility; North-West frontier, Gujarat and the Deccan and the Conquest of Bengal.
- Through the study of this paper the students can gain knowledge on the Rural Society and Economy of Akbar with regards to; Land rights and revenue system; Zamindars and peasants; rural tensions; Extension of agriculture; agricultural production; crop patterns; Trade routes and patterns of internal commerce; overseas trade; rise of Surat.
- This paper delves into the topic of the Political and religious ideals of Akbar with regards to; Inclusive political ideas: theory and practice; Religious tolerance and sulh-i-kul; Sufi mystical and intellectual interventions and Pressure from the Ulema.

CC X : HISTORY OF INDIA VII (c. 1605 - 1750s)

(Full Marks-75 : Credits -6)

- This paper deals with the sources of Persian and vernacular literary cultures, histories, memoirs and travelogues for the students.
- This paper helps the students better understand the Political Culture under Jahangir and Shah Jahan with regards to; Extension of Mughal rule; changes in mansab and jagir systems; imperial culture; Orthodoxy and syncretism - Naqshbandi Sufis, Miyan Mir, Dara Shukoh, Sarmad
- This course imparts knowledge to the students on the Mughal Empire under Aurangzeb with regards to; State and religion under Aurangzeb; issues in the war of succession; policies regarding Religious groups and institutions; Conquests and limits of expansion; Beginning of the crisis: contemporary perceptions; agrarian and jagir crises; revolts.
- This paper deals for the students with the Visual Culture: Paintings and Architecture of the said period.
- This course interprets the Patterns of Regional Politics in the sub continent with regards to ; Rajput political culture and state formation ; Deccan kingdoms; emergence of the Marathas; Shivaji; expansion under the Peshwas ; Mughal decline; emergence of successor states and Interpreting eighteenth century India: recent debates.
- This course inculcated knowledge on Trade and Commerce of the said period: with regards to; Crafts and technologies; Monetary system; Markets; transportation; urban centers and Indian Ocean trade network .

CC XI : HISTORY OF MODERN EUROPE- I (C. 1780-1939)

(Full Marks-75 : Credits -6)

- This paper imparts knowledge to the students about the French Revolution and its European repercussions, with regards to ; Crisis of Ancient Regime ; Intellectual currents; Social classes and emerging gender relations; Phases of the French Revolution 1789 - 99; Art and Culture of French Revolution; Napoleonic consolidation - reform and empire.

- This course introduces the idea of Restoration and Revolution to the students: c. 1815 - 1848: Forces of conservatism & restoration of old hierarchies. Social, Political and intellectual currents. Revolutionary and Radical movements, 1830 - 1848.

- This paper prepared the students in Capitalist Industrialization and Social and Economic Transformation (Late 18th century to AD 1914) with focus on; Process of capitalist development in industry and agriculture: case Studies of Britain, France, the German States and Russia; Evolution and Differentiation of social classes: Bourgeoisie, Proletariat, land owning classes and peasantry; Changing trends in demography and urban patterns and Family, gender and process of industrialization.

- This paper imparted knowledge to the students regarding the Varieties of Nationalism and the Remaking of States in the 19^{th} and 20^{th} Centuries. With focus on, Intellectual currents, popular movements and the formation of National identities in Germany, Italy, Ireland and the Balkans and Specificity of economic development, political and administrative Reorganization - Italy; Germany.

CC XII : HISTORY OF INDIA VI (c. 1750 - 1857)

(Full Marks-75 : Credits -6)

- This paper deals with India in the mid 18th Century; Society, Economy, Polity for the students.

- This course imparted knowledge to the students on Expansion and Consolidation of colonial Power, with focus on, Mercantilism, foreign trade and early forms of exaction's from Bengal; Dynamics of expansion, with special reference to Bengal, Mysore, Western India, Awadh, Punjab, and Sindh.

- This study imparted knowledge to the students on Colonial State and Ideology, with focus on; Arms of the colonial state: army, police, law; Ideologies of the Raj and racial attitudes and Education: indigenous and modern.

- In this course the focus is on Rural Economy and Society for the students, with regards to; Land revenue systems and forest policy; Commercialization and indebtedness; Rural society: change and continuity; Famines and Pastoral economy and shifting cultivation.

- The course teaches the students on Trade and Industry, with primary focus on, De industrialization, Trade and fiscal policy, Drain of Wealth and Growth of modern industry.

- The study deals with the Popular Resistance of the era: Santhal uprising (1857); Indigo rebellion (1860); Pabna agrarian Leagues (1873); Deccan riots (1875) and the Uprising of 1857.

CC XIII : HISTORY OF INDIA VIII (c. 1857 - 1950)

(Full Marks-75 : Credits -6)

- The course imparted knowledge on the Cultures changes and Social and Religious Reform Movements with regards to the; The advent of printing and its implications, Reform and Revival: Brahmo Samaj, Prarthna Samaj, and Ramakrishna and Vivekananda, Arya Samaj, Wahabi, Deoband, Aligarh and Singh Sabha Movements; Debates around gender; Making of religious and linguistic identities and Caste: sanskritising and anti Brahminical trends.
- It teaches the students about Nationalism: Trends up to 1919: with main focus on; Political ideology and organizations, formation of INC; Moderates and extremists; Swedish movement and Revolutionaries .
- It teaches the students about Gandhian nationalism after 1919: Ideas and Movements: with regards to, Mahatma Gandhi: his Perspectives and methods; Impact of the First World War; Rowlett Satyagraha and Jallianwala Bagh; Non- Cooperative and Civil Disobedience; Provincial Autonomy, Quit India and INA; Left wing movements; Princely India States people movements and Nationalism and Culture: literature and art.
- The knowledge imparted to the students in this paper was Nationalism and Social Groups: Interfaces: Landlords, Professionals and Middle Classes, Peasants, Tribal, Labour, Dalits, Women and Business groups.
- This course deals with Communalism: Ideologies and practices, RSS, Hindu Maha Sabha, Muslim League for the knowledge of the students.
- This paper acquainted the students with Independence and Partition: with focus on, Negotiations for independence, and partition; Popular movements and Partition riots.
- This course teaches the students on the Emergence of a New State: with regards to; Making of the Constitution; Integration of princely states and Land reform and beginnings of planning.

CC XIV : HISTORY OF MODERN EUROPE II (c. 1780 - 1939)

(Full Marks-75 : Credits -6)

- The course acquainted the students on Liberal Democracy, Working Class Movements and Socialism in the 19th and 20th Centuries: with focus on; The struggle for parliamentary democracy and civil liberties in Britain; Forms of protest during early capitalism: food riots in France and England: Luddites and Chartism; Early socialist thought; Marxian Socialism û the First and the Second International; German Social Democracy, Politics and Culture and Christian Democracy as a political and ideological force in western and central Europe.
- The course enlightened the students on The Crisis of Feudalism in Russia and Experiments in Socialism: with regards to; Emancipation of serfs; Russian Populism and Social Democracy; Revolutions of 1905; the Bolshevik Revolution of 1917 and Programme of Socialist Construction.
- The course provides an overview on the Imperialism, War, and Crisis: c. 1880 û-1939: with regards to; Theories and mechanisms of imperialism; growth of Militarism; Power blocks and alliances: expansion of European empires - War of 1914 - 1918; The post 1919 World Order: economic crises, the Great

Depression and Recovery; Fascism and Nazism; The Spanish Civil War and Origins of the Second World War.

- This paper enlightens the students on Cultural and Intellectual developments since circa 1850: with focus on; Changing contexts: Notions of Culture,Creation of a New public sphere and mass media, Mass education and extension of literacy. Creation of new cultural forms, from Romanticism to Abstract Art. Major intellectual trends: Institutionalization of disciplines: History Sociology and Anthropology, Darwin and Freud. Culture and the making of ideologies: Constructions of Race, Class and Gender, ideologies of Empire.

DISCIPLINE SPECIFIC ELECTIVE (ANY FOUR)

DSE -1 : HISTORY OF THE MODERN EAST ASIA- I (C. 1840-1949)

(Full Marks-75 : Credits -6)

- It inculcated the knowledge of students about Imperialism and China during the 19th century with special focus on; Chinese feudalism: Gentry, bureaucracy and peasantry; the Confucian value system; Sinocentrism; the Canton commercial system; The transformation of China into an informal colony; the Opium Wars; the Unequal Treaties; the scramble for concessions; Finance Imperialism; the Open Door policy; Agrarian and Popular Movements: Taiping and Yi Ho Tuan and Attempts at Self-Strengthening (Tzu-chiang): Reforms of 1860-95; 1898; and 1901-08.

- This paper the students study about the Emergence of Nationalism in China with regards to; The Revolution of 1911: Causes, nature and significance; the social composition of the Revolution; Sun Yat-sen and his contribution; the formation of the Republic; Yuan Shih Kai; Warlordism and May Fourth Movement of 1919: Nature and significance.

- In this paper the students are educated about the History of China (c.1919-1949) : Nationalism &Communism in China (1921-1937), Formation of CCP; and the Guomintang (National Party of KMT), The First United Front. The Communist Movement (1938-1949). The Jiangxi Period and the rise of Mao Tse Tung.

DSE -2 : HISTORY OF MODERN EAST ASIA II (C. 1868-1945)

(Full Marks-75 : Credits -6)

- The course educated the pupils about the history of Japan (c.1868-1945) in context with; Transition from feudalism to capitalism: Crisis of Tokugawa Bakuhan system; Meiji Restoration: Its nature and Significance; Political Reorganization; Military Reforms; Social, cultural and educational reforms (bunmeikaika); Financial reforms and educational development in the ‘Meiji’era; Meiji Constitution. Japanese Imperialism; China; Manchuria and Korea. Democracy and Militarism/Fascism; Popular/People’ s Rights Movement; Nature of political parties; Rise of Militarism-Nature and significance; Second World War; American occupation and Post-War Changes.

- The course imparted the students the knowledge on the Emergence of Modern Korea. The old order and Institutional Decay:Joseon Korea. Korea’s interactions with the western powers and Korea’s unequal treaties with Japan. Attempts at social, political and economic reforms in Korea. Japan’s colonization: March First Movement and the growth of Korean nationalism; in situational transformation 1910-1945 and Post-War Changes.

DSE -3 : HISTORY OF NORTH BENGAL - I

(Full Marks-75 : Credits -6)

- In this course the students were enlightened about the Physical and Historical Geography of the North Bengal, in context with the Physical Aspects, North Bengal in Holy Writ, the Historic Period: Gauda, Pundra and Varendri, Pundravardhana-Bhukti, Cities in Ancient North Bengal. The Legendary Period, Early History from 326 B.C. to 320 A.D.

- The pupils were educated on this topic; Rise of Gauda (320-650 A.D.): with regards to, North Bengal under the Imperial Guptas, Rise of Gauda -.Sasanka. Political Disintegration after Sasanka: Kingdom of Gauda.

- The course acquainted the students to The Palas: Origin and Early History of the Palas, the Pala Empire, disintegration and temporary revival, the End of the Pala Empire, the Senas.

- The students were provided an overview into Religion: Religious Thought and Practice – Brahmanical, Jainism and Buddhism. Iconography: Vaisnava, Saiva, Sakti, Surya, Miscellaneous, Jaina and Buddhist images.

- This course shed light into the Architecture and Sculpture: Stupa, Monastic and temple Architecture. Sculpture: Introduction, Kushana Affiliation, the Gupta Idiom, Paharpur, Pala and Sena Sculpture.

- The students were introduced and educated on Society: Ethnological Background, Aryanisation of North Bengal, Socio-Religious rites, ceremonies and Festivals, General life of the People, Position of Women, Food and Drink, Dress and Ornaments, Games and Pastimes, Music and Dance, Conveyances, Luxury and immortality.

- The pupils were inculcated the knowledge of Ilyas Shahi Dynasty, Dinajpur Raj: Raja Ganesha, Hindu Kings of Bengal, Hussain Shahi Dynasty, Gour-Pandua and Adina, The Mughals in north Bengal. Khen Dyansty, Kamata-Koch Dynasty up to 1773.

DSE -4 : HISTORY OF NORTH BENGAL - II

(Full Marks-75 : Credits -6)

- In this course the students were imparted knowledge on the Conquest and expansion of British rule in North Bengal, Famines in North Bengal, 1770. Growth of District towns, Hill stations and process of urbanization. Expansion of economy: commercialization of agriculture (Tobbacco, Jute and Rice), plantation economy, trade and commerce, control over the forest resources. Trade, Transport and Communication; Land Revenue System of North Bengal.

- Demographic changes till the end of colonial rule, Business Community (European and Indian), People's participation in the anti-colonial movement in the districts of North Bengal, Swadeshi Movement, Quit India Movement. Peasant movements with special reference to Sannyasi-Fakir, Indigo, Santhal (Jitu Santhal) and Tebhaga Movement. Impact of worldwide economic depression in North Bengal. Caste movements with special emphasis on Rajbanshi *Khatriya* Movement and role of Rai Saheb Panchanan Barma. Education in Colonial North Bengal; Darjeeling, Jalpaiguri, Coochbehar and Malda. Relation of Princely State of Cooch Behar with the English, Merger of Cooch Behar after Indian independence. Freedom Struggle in North Bengal.

GENERIC ELECTIVE (GE)

(FOR STUDENTS HAVING HONOURS IN SUBJECTS OTHER THAN HISTORY AND FOR PROGRAMME STUDENTS)

GE: PAPER-1: HISTORY OF INDIA FROM EARLIEST TIMES UP TO 1193 CE.

- This course imparted knowledge on the Sources & Interpretation of the Indian History.
- This course laid basic emphasis on A broad survey of Palaeolithic, Mesolithic and Neolithic Cultures.
- It also imparted knowledge on the Harappan Civilization; Origin, Extent, dominant features &decline, Chalcolithic age.
- This course introduced the students to The Vedic Period: Polity, Society, Economy and Religion.
- The course imparted knowledge on the Territorial States and the rise of Magadha, Conditions for the rise of Mahajanpadas and the Causes of Magadha's success. Jainism and Buddhism: Causes, Doctrines, Spread, Decline and Contributions.
- In this course the students were imparted knowledge on the Iranian and Macedonian Invasions, Alexander's Invasion and impact.
- The students were imparted knowledge on the Emergence and Growth of Mauryan Empire; State , Administration, Economy, Ashoka's Dhamma,Art &Architecture in this paper.
- The students were imparted basic knowledge on The Rise & Growth of the Guptas: Administration, Society, Economy, Religion, Art, Literature, and Science &Technology.
- This paper deals with Harsha & His Times: Harsha's Kingdom, Administration, Buddhism & Nalanda for knowledge to the students.
- In this paper the students were imparted knowledge on the Evolution of Political structures of Rashtakutas, Pala &Pratiharas. Struggle for power in Northern India & establishment of Sultanate.

GE: PAPER- 2 : History of India from 1193 A.D. to 1950 AD

- The course enlightened the students on the Sources of Medieval Indian History.
- This course acquainted the pupils on the Ruling Class and different types of Nobility
- This course shed light on Balban's Theory of Kingship, Iqta, Mansabdari
- In this course the students learnt about the Economic Reforms of Ala-ud-din Khalji, Zabt, Dehsala, Trade
- This paper shed light on Bhakti, Sufism, Religious Ideas of Akbar and Aurangzeb
- This paper taught the students about Vijaynagar, Chattrapati Shivaji, Bengal Sultanate
- In this course the students were educated about Company expansion into Bengal, Mysore and Punjab.

- The course provides an overview into the Permanent Settlement, Ryotwari Settlement and Mahalwari Settlement, Revolt of 1857
- The course sheds light on Raja Ram Mohun Roy, Iswarchandra Vidyasagar, Ramakrishna, Jyotibaphule and Swami Vivekananda
- The paper gives an overview into the Growth of Nationalism, Indian National Congress, Swadeshi Movement, Rise of Muslim League
- The paper gives the students an insight into the Rise of Gandhi and Gandhian Movements, Netaji Subhas Chandra Bose, Indian Independence
- This course interprets for the students the Integration of Princely States into India, Ambedkar and the Indian Constitution

SKILL ENHANCEMENT COURSE (SEC): (ANY TWO)

(FOR HONOURS AND PROGRAMME)

SEC -1 : UNDERSTANDING HERITAGE

(Full Marks-75 : Credits -2)

This course will enable students to understand the different facets of heritage and their significance. It highlights the legal and institutional frameworks for heritage protection in India as also the challenges facing it. The implications of the rapidly changing interface between heritage and history will also be examined. The course will be strongly project-based and will require visits to sites and monuments. At least two Projects will be based on visits to Museums/Heritage Sites.

- This paper deals with Defining Heritage, Meaning of ‘antiquity’, ‘archaeological site’, ‘tangible heritage’, 'intangible heritage' and ‘art treasure.’
- The course provides an overview into the Evolution of Heritage Legislation and the Institutional Framework: Conventions and Acts— national and international Heritage-related government departments, museums, regulatory bodies etc. Conservation Initiatives
- The course acquainted the students with the Challenges facing Tangible and Intangible Heritage Development, antiquity smuggling, conflict (to be examined through specific case studies)
- The course brought an understanding of the Challenges facing Tangible and Intangible Heritage: Development, antiquity smuggling, conflict (to be examined through specific case studies)
- The paper shed light on the Heritage and Travel: Viewing Heritage Sites The relationship between cultural heritage, landscape and travel recent trends.

SEC -2 : ART APPRECIATION AN INTRODUCTION TO INDIAN ART

(Full Marks-75 : Credits -2)

The purpose of this course is to introduce students to Indian art, from ancient to contemporary times, in order to understand and appreciate its diversity and its aesthetic richness. The course will equip students with the abilities to understand art as a medium of cultural expression. It will give students direct exposure to Indian art through visuals, and visits to sites and museums.

- The course imparts knowledge to the students about Prehistoric and protohistoric art: Rock art; Harappan arts and crafts
- This course introduces the students to Indian art (c. 600 BCE – 600 CE): World Heritage Site Managers, UNESCO ,World Heritage Manuals, Notions of art and craft Canons of Indian paintings Major developments in stupa, cave, and temple art and architecture Early Indian sculpture: style and iconography Numismatic art .
- This paper teaches the students about Indian Art (c. 600 CE – 1200 CE) : Temple forms and their architectural features Early illustrated manuscripts and mural painting traditions Early medieval sculpture: style and iconography Indian bronzes or metal icons
- In this course the students were acquainted with Indian art and architecture (c. 1200 CE – 1800 CE) : Sultanate and Mughal architecture Miniature painting traditions: Mughal, Rajasthani,Pahari Introduction to fort, palace and haveli architecture.
- The course introduced the students to Modern and Contemporary Indian art and Architecture: The Colonial Period Art movements: Bengal School of Art, Progressive Artists Group, etc. Major artists and their artworks Popular art forms (folk art traditions)

SEC -3 : ARCHIVES AND MUSEUMS

(Full Marks-75 : Credits -2)

- This course introduces students to the institutions that house and maintain documentary, visual and material remains of the past. Museums and archives are among the most important such repositories and this course explains their significance and how they work. Students will be encouraged to undertake collection, documentation and exhibition of such materials in their localities and colleges. Visit to National Archives and National Museum are an integral part of the course.
- It helps the students understand, Definition and history of development (with special reference to India).
- It introduces the students to the Types of archives and museums: Understanding the traditions of preservation in India Collection policies, ethics and procedures.
- In this paper the students are educated in Collection: field exploration, excavation, purchase, gift and bequests, loans and deposits, exchanges, treasure trove confiscation and others.
- This course helps the students better understand, Documentation: accessioning, indexing, cataloguing, digital documentation and de-accessioning.
- The students are educated in the field of Preservation: curatorial care, preventive conservation, chemical preservation and Restoration. Museum Presentation and Exhibition: Museums, Archives and Society: (Education and communication Outreach Activities.

SEC -4 : UNDERSTANDING POPULAR CULTURE

(Full Marks-75 : Credits -2)

- The paper examines some popular cultures expressed in different mediums like visual, oral and cultural. In the process of their evolution, these cultures eclectically draw from traditions, articulate anxieties, and even give rise to new traditions. The paper endeavour to equip students with understanding such phenomena historically, with special reference to India. It is imperative that the students use electronic devices to view, record, and document the subject matter.
- The students were introduced to: Defining popular culture and understanding it historically.
- In this course the students were acquainted to Visual expressions, Folk art, calendar art, photography.
- The students were further introduced to Performance: Theatre; music; folk tales/songs/swang and Nautanki :Identifying themes, functionality, anxieties
- They were educated on matters such as the audio-visual: cinema and television: Indian cinema: Mapping the influence of the national struggle for independence (1930s and 40s); Idealized nationalism (1950s), disillusionment and the anti-establishment mood (1970s and 80s); documentary films, Expressions of popular culture in television.
- The course introduced the students to Fairs, Festivals and Rituals: Disentangling mythological stories, patronage, regional variations.
- The paper shed light on Popular culture in a globalized world: The impact of the Internet and audio visual media.

B.A. PROGRAMME IN HISTORY(GENERAL)

CORE COURSES: 4

CC-I : HISTORY OF INDIA FROM EARLIEST TIMES UP TO 300 CE.

(Full Marks-75 : Credits -6)

- The students shall trace the roots of Indian History and decipher it accordingly for their benefit as per the syllabus.
- This course enlightens the students on a broad survey of Palaeolithic, Mesolithic and Neolithic Cultures. Harappan Civilization ;Origin, Extent, dominant features &decline, Chalcolithic age. The Vedic Period: Polity, Society, Economy and Religion, Iron age with reference to PGW &Megaliths.
- This course acquaints the students with the territorial states and the rise of Magadha, Conditions for the rise of Mahajanpadas and the Causes of Magadha’s success.
- The students were educated about the Iranian and Macedonian Invasions, Alexander’s Invasion and impact.
- In this course the students learn about Jainism and Buddhism: Causes, Doctrines, Spread, Decline and Contributions.
- The course provides an overview into the Emergence and Growth of Mauryan Empire; State, Administration, Economy, Ashoka’s Dhamma, Art &Architecture

- The course brought an understanding about: The Satvahanas Phase: Aspects of Political History, Material Culture, Administration, Religion.
- It also imparted knowledge on The Sangam Age: Sangam Literature, The three Early Kingdoms, Society & the Tamil language.
- The students were also enlightened on The age of Shakas: Parthians & Kushanas, Aspects of Polity, Society, Religion, Arts & Crafts, Coins, Commerce and Towns.

CC-2 : HISTORY OF INDIA FROM. C.300 TO 1206

(Full Marks-75 : Credits -6)

- In this paper the students were educated on the subject of The Rise & Growth of the Guptas: Administration, Society, Economy, Religion, Art, Literature, and Science &Technology.
- In this course the students were acquainted with Harsha & His Times: Harsha's Kingdom, Administration, Buddhism & Nalanda.
- This paper dealt with South India: Polity, Society, and Economy & Culture for the students.
- The course shed light on the subject: Towards the Early Medieval: Changes in Society, Polity Economy and Culture with reference to the Pallavas, Chalukayas and Vardhanas for the pupils.
- This paper dealt with Evolution of Political structures of Rashtakutas, Pala &Pratiharas for the students.
- In this paper the students were acquainted with the Emergence of Rajput States in Northern India: Polity, Economy &Society.
- The students were educated on the Arabs in Sindh: Polity, Religion and Society.
- The course introduced the students on the Struggle for power in Northern India &establishment of Sultanate.

CC -3 : HISTORY OF INDIA FROM 1206 TO1707

(Full Marks-75 : Credits -6)

- In this paper the students were educated on the Foundation, Expansion &consolidation of the Delhi Sultanate; Nobility & Iqta system.
- This course provided an insight into the Miltary, administrative &economic reforms under the Khiljis and the Tughlaqs.
- The students were educated about the Bhakti and Sufi Movements.
- The students were given an insight into the Provincial kingdoms: Mewar, Bengal, Vijaynagara & Bahamanis.
- The course introduced the students to the Second Afghan State.

- The students were acquainted with the Emergence and consolidation of Mughal State, C.16th century to mid 17th century.
- The students were imparted knowledge from the eras of Akbar to Aurangzeb: administrative structure-Mansab & Jagirs, State and Religion, Socio - Religious Movements.
- The course imparted education on the subject of Economy, Society and Culture under the Mughals.
- The paper deals on the subject of the Emergence of Maratha Power.

CC -4 : HISTORY OF INDIA: 1707-1950.

(Full Marks-75 : Credits -6)

- The pupils are imparted knowledge on Interpreting the 18th Century.
- The course enlightens the students on the Emergence of Independent States &establishment of Colonial power.
- It also enlightens the students on the Expansion &consolidation of Colonial Power up to 1857.
- This paper deals with the Uprising of 1857: Causes, Nature and Aftermath.
- The students are educated about Colonial economy: Agriculture, Trade & Industry.
- The course acquaints the students with Socio-Religious Movements in the 19th century.
- The course imparted knowledge on the Emergence and Growth of Nationalism with focus on Gandhian nationalism.
- This paper deals with Communalism: Genesis, Growth and partition of India for the students.
- This course provides an insight into the Advent of freedom: Constituent Assembly, establishment of Republic.

DISCIPLINE SPECIFIC ELECTIVE (DSE) FOR PROGRAMME: ANY TWO

DSE - 1 : SOME ASPECTS OF EUROPEAN HISTORY: C. 1780 -1945

(Full Marks-75 : Credits -6)

- This course introduces the students to Some Aspects of European History: C.1780-1939 I.
- This paper acquaints the students to The French Revolution: Genesis Nature & Consequences, Napoleonic Era and aftermath.
- This paper brought an understanding about the Revolutions of 1830 & 1848.
- This course shed light on the Unification of Italy and Germany.

- The course inculcated the importance of Social and economic Changes.
- This paper shed light on the Imperialist Conflicts: World War I.
- It also enlightened the students on the Rise of Fascism and Nazism.
- This paper educated the students on the Origin of World War II.

DSE -2 : SOCIETY & ECONOMY OF MODERN EUROPE: 15TH – 18 CENTURY

(Full Marks-75 : Credits -6)

- This paper introduced the students to the Historiographical Trends.
- It also educated the students on the Feudal Crisis: Main strands.
- It also brought an understanding about the Renaissance: Origin, Spread &Dominant Features.
- The paper acquainted the students to European Reformation: Genesis, nature & Impact.
- It teaches the students about the Beginning of the era of colonization: motives; mining and plantation; the African slaves.
- The course provides an overview into the Economic developments of the sixteenth century; Shift of economic balance from the Mediterranean to the Atlantic.
- The course brought an understanding into the Transition from Feudalism to Capitalism: Industrial Revolution in England

DSE -3 : HISTORY OF NORTH BENGAL - I

(Full Marks-75 : Credits -6)

- The course enlightened the students about the Rise of Gauda (320-650 A.D.): North Bengal under the Imperial Guptas, Rise of Gauda -.Sasanka. Political Disintegration after Sasanka: Kingdom of Gauda.
- The course acquainted the students to The Palas: Origin and Early History of the Palas, the Pala Empire, disintegration and temporary revival, the End of the Pala Empire, the Senas.
- The students were provided an overview into Religion: Religious Thought and Practice – Brahmanical, Jainism and Buddhism. Iconography: Vaisnava, Saiva, Sakti, Surya, Miscellaneous, Jaina and Buddhist images.
- This course shed light into the Architecture and Sculpture: Stupa, Monastic and temple Architecture. Sculpture: Introduction, Kushana Affiliation, the Gupta Idiom, Paharpur, Pala and Sena Sculpture.
- The students were introduced and educated on Society: Ethnological Background, Aryanisation of North Bengal, Socio-Religious rites, ceremonies and Festivals, General life of the People, Position of Women, Food and Drink, Dress and Ornaments, Games and Pastimes, Music and Dance, Conveyances, Luxury and immortality.

- The pupils were inculcated the knowledge of Ilyas Shahi Dynasty, Dinajpur Raj: Raja Ganesha, Hindu Kings of Bengal, Hussain Shahi Dynasty, Gour-Pandua and Adina, The Mughals in north Bengal. Khen Dyansty, Kamata-Koch Dynasty up to 1773.

DSE -4 : HISTORY OF NORTH BENGAL - II

(Full Marks-75 : Credits -6)

- In this course the students were introduced to the Conquest and expansion of British rule in North Bengal, Famines in North Bengal, 1770 Growth of District towns, Hill stations and process of urbanization.
- This paper dealt with the Expansion of economy: commercialization of agriculture (Tobbacco, Jute and Rice), plantation economy, trade and commerce, control over the forest resources, Trade, Transport and Communication for the students.
- This course imparted knowledge on the Land Revenue System of North Bengal.
- This paper educated the students on the Demographic changes till the end of colonial rule, Business Community (European and Indian).
- In this papewr the students came to know about the People's participation in the anti-colonial movement in the districts of North Bengal, Swadeshi Movement, Quit India Movement. Peasant movements with special reference to Sannyasi-Fakir, Indigo, Santhal (Jitu Santhal) and Tebhaga Movement.
- This paper deals with the Impact of worldwide economic depression in North Bengal for the benefit of the students.
- This paper shed light on the Caste movements with special emphasis on Rajbanshi *Khatriya* Movement and role of Rai Saheb Panchanan Barma.
- Students got a basic knowledge on the Education in Colonial North Bengal.
- This paper throws light on the Relation of Princely State of Cooch Behar with the English, Merger of Cooch Behar after Indian independence.
- The pupils were introduced to the Freedom Struggle in North Bengal in this paper.

Program Specific Outcome (PSO) and Course Outcome (CO) for B.Sc. HONOURS in Mathematics

PSO1**:** Students will get a strong and valuable knowledge of mathematics which will help them to think logically and they can apply them in both their personal and professional life throughout.

PSO2: Students will have the ability to formulate and then solve the critical higher order and complex type problems.

PSO3: Students will create an interdisciplinary relation between the other streams.

PSO4: Students will have a creative and logical mind by which they can analyze & solve practical problems in their life.

PSO5: Students will apply appropriate techniques and also have the ability of modeling complex and challenging problems.

PSO6: The knowledge of Mathematics will make the students ethical and responsible citizen of nation.

PSO7: Students will be able to do work as a whole or team or individually and communicate effectively with others.

PSO8: Students will recognize the need of self learning and life-long learning to demonstrate the knowledge in the development of society and himself.

B.Sc. Honours:

Part-I -1st semester

Course code: MATH11 HCC-1

Course Title: Calculus, Geometry and Differential Equation.

Course Outcomes:

This course offers the students to:

CO1: know about the Hyperbolic functions, higher order derivatives, to know about Leibnitz rule and its applications.

CO2: understand the concavity and inflection points, envelopes, asymptotes, curve tracing in Cartesian coordinates.

CO3: gain a concept about L'Hospital's rule and its applications in different fields like in business, economics and life science.

CO4: know the Reduction formulae, derivations and illustrations of reduction formulae, understand the parametric equations, arc length of a curve, area and volume of revolution and to solve the related problems.

CO5: understand the basic concept of conics, rotation of axes and classification of conics and polar equations of conics.

CO6: know about the properties of Sphere, Cylindrical surfaces, conicoids, paraboloids , generating lines and solve these related problems.

CO7: understand the basic idea of Differential equation and apply the knowledge of Differential equations to solve the real life problems.

CO8: solve the first order Differential equations using different types of method, especially linear differential equations and Bernoulli equations.

Part I- 1st semester

Course Code: MATH11 HCC-II

Course Title: Algebra

Course Outcomes:

This course offers the students to:

CO1: understand the basics of Complex number, proof of De Moiver's theorem and its applications.

CO2: know about Theory of Equations, relationship between roots and coefficients, Descartes rule of signs, to solve the cubic & biquadratic equations.

CO3: have the knowledge in inequality involving $A.M \geq G.M \geq H.M$.

CO4: understand the basic concept of Integers, well ordering property of positive integers, congruence relation and mathematical induction and solving problems using these results.

CO5: know about set theory, equivalence relation, functions and its types.

CO6: have a basic and strong knowledge in Linear algebra.

CO7: solve the linear system problems using matrix representation, applications of linear systems.

CO8: gain knowledge about Vector space, subspaces and dimension of subspaces.

CO9: solve the Eigen value related problems; understand about Eigen vectors, Clayey-Hamilton theorem and using this find the inverse of a matrix.

Part-I 2nd semester

Course Code: MATH21 HCC-III

Course Title: Real Analysis.

Course Outcomes:

This course offers the students to:

CO1**:** understand the algebraic and order properties of R, brief idea about countability of sets, know L.U.B & G.L.B of a set, gain a clear idea of Archimedean property.

CO2: :understand about Point set theory, neighbourhood of a point, concept about limit points and find limit points of sets, know about Bolzano-Weierstrass theorem and know about its importance on limit point.

CO3: gain the concept on closed set, open set and its operations and apply this knowledge in solving some related problems.

CO4: understand about the concept of Sequence and check its convergence, non - convergence, Cauchy sequence, to understand some basic theorems on Subsequences, know about limsup. liminf of a sequence, subsequential limits.

CO5: know about series its definition, convergence and divergence, different types of test such as Comparison test, limit test, Cauchy's nth root test to check the convergence of infinite series of positive real numbers and also have an idea about Absolute and conditional convergence.

Part-I 2nd semester

Course Code: MATH21 HCC-IV

Course Title: Differential Equations and Vector Calculus.

Course Outcomes:

This course offers the students to:

CO1: know about Lipschitz condition and Picard's theorem to check the existence of a solution of a D.E, have idea to solve homogeneous equation of second order, and also linear homogeneous and non-homogeneous equations of higher order with

constant coefficients using the method of undetermined coeffiecients, method of variation of parameters.

CO2: understand the system of linear differential equations, and know differential operator and its applications to solve the linear system with constant coefficients.

CO3: know the Power series solution of D.E. and also understand the ordinary and singular points of an O.D.E.

CO4: gain the idea of equilibrium points and interpretation of phase plane.

CO5: gain idea of vector triple product and its application, understand about limit and continuity of vector functions and using this idea solve some problems, also know the differentiation and integration of vector functions.

B.Sc Hons 2nd year

Paper-V

Course Title: Real Analysis-II, Calculus of Several Variables-II, Applications of Calculus

Course Outcomes:

This course offers the students to:

CO1: To make a clear concept of series of non-negative real numbers, different types of test to check the convergent.

CO2: Able to understand Limit of functions, Sandwitch theorem,Cauchy criterion for the existence of finite limit.

CO3: Be able to understand Continuity of functions, Bolzano's theorem, Intermediate value theorem, Uniform continuity and their properties.

CO4: To make a clear concept of Derivative of functions,Lipschitz's condition and Darboux's theorem.

CO5: Gain a clear concept of maxima and minima of functions, sufficient condition for the existence and their applications.

CO6: To understand theory of Young's theorem, Schwartz's theorem, Jacobian, Implicit function and about functions of several variables.

CO7: To make clear concept about the application of Differential calculus: Plane curve,Tangents and Normals, Curvature, Asymptotes, Envelopes and Singular points.

CO8: To understand the application of Integral calculus: Area enclosed by a curve, Volume and Surface areas, Centre of Gravity, Moment of Inertia, Reduction Formulae.

B.Sc Hons 2nd year

Paper-VI

Course Title: Integral Calculus-II, Dynamics of a Particle.

Course Outcomes:

This course offers the students to:

CO1: To make a clear concept of Riemann Integration ,Darboux's theorem, Necessary and Sufficient condition of Riemann integrability and different classes of Riemann-integrable functions.

CO2: Gain clearer concept of Riemann sum, properties of definite integral, Fundamental theorem of Integral Calculus, statements and applications of First and Second Mean Value theorems of Integral Calculus.

CO3: To understand Motion in a straight line under variable acceleration, Simple Harmonic motion.

CO4: Be able to understand Motion in a plane under central forces, Central orbit, Tangential and normal components of acceleration and Circular motion.

CO5: Make a clear concept of Motion of a particle in a plane under different laws of resistance, Motion of a projectile in a resisting medium, Terminal velocity.

CO6: Gain clear concept of Motion of a particle under the Inverse square law in a plane,Kepler's laws of planetary motion

CO7: Able to understand Equation of motion of a particle of varying mass and problems of varying mass.

B.Sc Hons 2nd year

Paper-VII

Course Title: Modern Algebra-II, Linear Algebra-II, Vector. Analysis.

Course Outcomes:

This course offers the students to:

CO1: Able to understand Cosets,Lagrange's theorem and Cyclic groups.

CO2: Gain clearer concepts of Permutation, Ring, Integral domain, Field and able to solve related problems, theorems.

CO3: To make clear concept of Inner product spaces, Bessel's inequality, Gram-Schmidt orthogonalization method.

CO4: To understand concepts of Linear Transformation on Vector Spaces, corresponding Matrix representation and its properties.

CO5: Gain clear concept of Vector differentiation, Tangent to a curve at a point, Normal plane, Serret-Frenet formulae,Oscilating plane and Rectifying plane.

CO6: Able to understand concept of scalar and vector fields, Directional derivative,Gradient,Divergence and Curl, their properties, Green's theorem in a plane, Stokes' theorem and Divergence theorem.

B.Sc Hons 2nd year

Paper-VIII

Course Title: Geometry (3D), Differential Equations-II.

Course Outcomes:

This course offers the students to:

CO1: Gain clear concept of equation of plane, Straight line, condition of Co planarity of two lines, Skew lines and shortest distance between skew lines.

CO2: To make clear concept of Sphere, Cone, Cylinder, Ellipsoid, Hyperboloid, Paraboloid referred to principal axes and solve different types of problems.

CO3: Able to understand Transformation of rectangular axes by translation, rotation and their combinations, Tangent and Normal,Envelpoing cone and Reciprocal cone.

CO4: Gain clear concept of Second order linear differential equations with variable coefficients, simple Eigen value problem, Simultaneous linear differential equations.

CO5: Understand concept of Partial differential equations and classification, solution by Lagrange's method and Charpit's method,application of Laplace transformation,Power series solution.

B.Sc. Hons 3rd year

Paper-IX

Course Title: LPP,Tensor algebra and Analysis.

Course Outcomes:

The students who complete this course successfully are expected to:

CO1: Gain clear concept of Linear programming problem formulation, basic properties of Convex sets, Hyperplane, Convex hull, linear programming in matrix notation.

CO2: To understand different methods of solution of Linear programming problem such as Graphical method,Simplex method, duality, Transportation and Assignments problems.

CO3: Be able to understand concepts of E^n,Tensor as a generalisation of vector in E^2,E^3 and E^n,Covariant and Contravariant vectors,Invariant,Einstein's Summation convention,Kronecker delta.

CO4: Make clear concept of Covariant,Contravariant and Mixed tensors,Algebra of tensors, Symmetric and skew-symmetric tensors, Reciprocal tensor and Quotient law.

CO5: Gain clear concept of Riemannian space, Metric tensor, Magnitude of a vector, Angle between two vectors.

CO6: Understand concept of Christoffel symbols and their laws of transformations,Ricci tensor,Geodesic coordinates and Bianchi identity.

B.Sc. Hons 3rd year

Paper-X

Course Title: Real Analysis-III, Integral Calculus-III.

Course Outcomes:

This course offers the students to:

CO1: Gain clear concept of Linear point set, Compact sets, Cantor intersection theorem, Heine Borel theorem.

CO2: Be able to understand Limit, Continuity and Uniform continuity on Compact set, Sequence of function,Dinis theorem on Uniform convergence and able to check pointwise and uniform convergence of a given sequence of function.

CO3: Understand series of functions, some tests to check uniform convergence of a series of function.

CO4: Able to understand power series,Cauchy-Hadamard and Abel's limit theorem and their application, finding Radius of convergence.

CO5: Make a clear concept of Mean value theorem and Taylor's theorem,Extremum of functions of two and three variables.

CO6: Gain clear concept of Improper integral, Necessary and Sufficient condition for convergence of improper integral, different types of test of convergence of improper integral, Uniform convergence of improper integral by M-test and convergence of Beta and Gamma functions.

CO7: Understand Differentiation and integration with respect to parameter under integral sign, some relevant theorems and problems.

CO8: Able to solve Fourier series problems.

CO9: Solve problems related to Multiple integral.

B.Sc Hons 3rd year

PAPER –XI

Course Title: Metric space, Complex Analysis, Modern Algebra-III.

Course Outcomes:

This course offers the students to:

CO1: understand the basic concepts of Metric spaces,

CO2: make a clear idea of open sets, closed set, subspace of Metric space.

CO3: understand Cauchy sequence, theory of Cantor Intersection, Real number as a complete ordered field.

CO4: gain concept complex number as an ordered pair, Stereographic projection.

CO5: understand complex functions, continuity and differentiability of complex functions. Analytic functions, harmonic functions.

CO6: know conformal mappings Bilinear transformation.

CO7: gain the basic concept of Normal subgroups, their properties, Quotient group of a group by a normal subgroup.

CO8: understand about Homomorphism, isomorphism. Infinite cyclic group is isomorphic to the group of residue classes of modulo n.

B.Sc Hons 3rd year

PAPER –XII

Course Title: Theory of Probability, Rigid Dynamics.

Course Outcomes:

This course offers the students to:

CO1: know the basic concept of random experiments, simple and compound events, event space, classical and frequency definitions of probability, axioms of probability, Bayes' theorem.

CO2: understand about independent events, Bernoulli trials and binomial law. Poisson trials, probability distribution function, continuous and discrete distribution: Binomial, Poisson, Gamma, Uniform and Normal distributions.

CO3: know about transformation of random variable, Two dimensional probability distributions, Discrete and continuous distributions, conditional distributions.

CO4: understand the concepts of mathematical expectation, mean, variance, moments and central moments, dispersion, skewness and kurtosis, median, mode quartiles, moment generating function, characteristic equation, correlation co-efficient, Regression curves, least square regression lines and parabolas.

CO5: know the idea of Chi-square and t-distributions and their properties, Tchebychef's inequality, statement of Bernoulli's limit theorem, law of large numbers, Poisson's approximation to binomial distribution and normal approximation to binomial distribution, statement of central limit theorem in the case of equal components and of limit theorem for characteristic functions.

CO6: understand about rigid dynamics- momental ellipsoid, equimomental system.

CO7: know about D'Alembert's principle, D'Alembert's equations of motion, principle of conservations of linear and angular momentum, independence of the motion of centre of inertia and the motion relative to the centre of inertia.

CO8: gain an idea about the equation of motion of a rigid body about a fixed axis, expression for kinetic energy and moment of momentum of a rigid body moving about a fixed axis.

CO9: know about compound pendulum, its point of suspension and centre of oscillation, minimum time of oscillation.

B.Sc Hons 3rd year

PAPER – XIII

Course Title: Theory of Statistics, Analytical Statics.

Course Outcomes:

This course offers the students to:

CO1: Know about the basic concept of Random sample, Sampling and its various types, tabulation and graphical representation of data.

CO2: Understand about Sampling distribution, estimates of a parameter, unbiased and consistent estimates, sampling distribution of the sample mean and variance.

CO3: Have an idea about Bivariate samples, sample correlation coefficient, and solve the problems related least square regression lines and parabolas.

CO4: Understand and solve the estimation of parameters, method of maximum likelihood function and its application in binomial , poisson and normal populations.

CO5:Have a clear idea about statistical hypothesis.

CO6:Know the theory of Neyman-Pearson and its application to normal population and also some application of hypothesis testing.

CO7: know about center of gravity, general formula of C.G., determination of C.G. of any arc, area of solid of known shape.

CO8: gain an idea about astatic equilibrium, astatic centre, and positions of equilibrium of a particle lying on a smooth plane curve under the action of given forces.

CO9: know about virtual work, principle of virtual work,principle of virtual work for any system of coplanar forces acting on a rigid body, converse of the principle of virtual work.

CO10:gain an idea about stable and unstable equilibrium, degree of freedom, conservative field, potential energy of a system, the energy test of stability,condition for stability of equilibrium of a heavy body lying on fixed body.

CO11: understand about forces in three dimensions, moment about a line, conditions for equilibrium of a system of forces acting on a body, Poinsot's central axis, and equation of central axis of a given system of forces.

B.Sc. Hons 3rd year

PAPER – XIV

Course Title: Classical Mechanics, Discrete Mathematics and Boolean Algebra.

Course Outcomes:

This course offers the students to:

CO1: gain a basic concept about conservation principles, conservation of linear momentum and energy, degrees of freedom.

CO2: know the Newtonian mechanics, its limitations, generalized potential, energy integrals for conservative fields.

CO3:understand the principle of Discrete mathematics and its applications, partial and linear orderings, lattices.

CO4: have an idea about Boolean Algebra, relation of Algebra with Boolean Algebra, duality, know about Boolean functions and its normal forms.

CO5: have a basic concept of Graph theory, its basic properties, different types of graphs such as connected graph, complete graph, complement of a graph, Bipartite graphs.

CO6: know about Euler graphs, Plannar graphs, basic idea of tree and its properties, Kruskal's algorithm, Binary tree.

B.Sc. Hons 3rd year

PAPER – XV

Course Title: Numerical Analysis, Computer Science and Programming.

Course Outcomes:

This course offers the students to:

CO1:know about the basics of numerical analysis, errors, different types of errors, types of operators.

CO2:understand about interpolation , students are capable to solve the problems related to interpolation, Newton's forward and backward interpolation formulae, Stirling's and Bessel's interpolation formulae, Lagrange's interpolation formula.

CO3:gain the concept of numerical differentiation, numerical integration ,their formulae and their application in solving problems.

CO4:know the method to solve the solutions of non-linear equations and system of linear equations- Guass elimination method, Seidal method their convergence.

CO5: solve the Eigen value problems, ordinary differential equations- Euler method, Runge-Kutta method(2^{nd} order, 4^{th} order).

CO6:understand the basics of computer fundamentals.

CO7:know about different types of number system and their conversion, algorithm and flow charts.

CO8:gain the knowledge about programming language.

CO9: know about the basics of ANSI C, construction of simple C program & apply this knowledge in various fields.

B.Sc Hons 3^{rd} year

PAPER – XVI

Course Title: Numerical methods: Practical (using scientific calculator and using C programming).

Course Outcomes:

This paper offers the students to:

CO1: solve the numerical methods using scientific calculator with the help of their knowledge of numerical analysis. The methods are-Bisection method, Fixed-point method, Newton- Raphson method, Regula-Falsi method, Newton's Divided Difference Interpolation, Stirling &Bessel interpolations, Lagrange interpolation, Newton's forward and backward interpolations, Trapezoidal, Simpson's 1/3 and Weddle's rules, Guass Elimination method, Guass-Seidal method, Euler's method, Runge-Kutta method(4^{th} order).

CO2: apply the knowledge of C programming in solving the numerical methods, such as- Bisection method, Fixed-point iteration, Scant method, Newton-Raphson method, Regula –Falsi method, Simpson's 1/3 rule, Euler's method, Runge-Kutta method(4^{th} order).

Program Specific Outcome (PSO) and Course Outcome (CO) for B.Sc. GENERAL / GE / DSC Course in Mathematics

Generic Elective (GE) Course

Course code: MATPGE1

Course Title: Calculus, Geometry and Differential Equation.

Course Outcomes:

This course offers the students to:

CO1:know about the Hyperbolic functions, higher order derivatives, to know about Leibnitz rule and its applications.

CO2: understand the concavity and inflection points,envelopes, asymptotes, curve tracing in Cartesian coordinates.

CO3: gain a concept about L'Hospital's rule and its applications in the different fields like in business, economics and life sciences.

CO4: know the Reduction formulae,derivations and illustrations of reduction formulae, understand the parametric equations, arc length of a curve, area and volume of revolution and to solve these related problems.

CO5: understand the basic concept of conics, rotation of axes and classification of conics and polar equations of conics.

CO6: know about the properties of Sphere, Cylindrical surfaces, conicoids, paraboloids , generating lines and solve these problems.

CO7: understand the basic idea of Differential equation and apply the knowledge of Differential equations to solve the real life problems.

CO8: solve the first order Differential equations using different types of method, specially linear differential equations and Bernoulli equations.

Course code: MATPGE2

Course Title: Algebra

Course Outcomes:

This course offers the students to:

CO1: understand the basics of Complex number, theory of De Moiver's theorem and its applications.

CO2: know about Theory of Equations, relationship between roots and coefficients, Descartes rule of signs, to solve the cubic & biquadratic equations.

CO3: have the knowledge in inequality involving A.M $\geq$ G.M $\geq$ H.M.

CO4: understand the basic concept in Integers, well ordering property of positive integers, congruence relation, and mathematical induction and solving problems using this.

CO5: know about set theory, equivalence relation, functions and its types.

CO6: have a basic and strong knowledge in Linear algebra.

CO7: solve the linear system problems using matrix representation, applications of linear systems.

CO8: gain knowledge about Vector space, subspaces and dimension of subspaces.

CO9: solve the Eigen value related problems, understand about Eigen vectors, Cayley-Hamilton theorem and using this find the inverse of a matrix.

Course code: MATPGE3

Course Title: Differential Equation and Vector Calculus.

Course Outcomes:

This course offers the students to:

CO1: Gain knowledge about Lipschitz condition and Picard's Theorem,2^{nd} order homogeneous equations, properties and applications of Wronskian.

CO2: Make a clear concept of Linear homogeneous and non-homogeneous equations of higher order with constant coefficients, Euler's equation.

CO3: Solve method of undetermined coefficients and method of variation of parameters related problems.

CO4: Gain a clear concept of power series solution of a differential equation about an ordinary point and solution about a regular singular point.

CO5: Know about systems of linear differential equations, types of linear system,operator method for linear systems with constant coefficients.

CO6: Make a clear concept of linear systems in normal form, homogeneous linear systems with constant coefficients

CO7: Understand vector triple product,limit,continuity,differentiation and integration of vector functions.

Course code: MATPGE4

Course Title: Group theory

Course Outcomes:

This course offers the students to:

CO1: Gain a clear concept of Groups including permutation groups and quaternion groups,subgroups,center of group,product of two subgroups.

CO2: Knowledge about cyclic groups ,properties of permutation,alternating group, Cosets,Lagrange's theorem and consequences including Fermat's Little theorem.

CO3: Make a clear concept of external direct product of finite number of groups,normal subgroups,factor groups and Cauchy's theorem.

CO4: Understand group homomorphism,properties of homomorphism.

CO5: Know about Cayley's theorem,properties of isomorphisms and isomorphism theorems.

Course code: MATPGE5

Course Title: Numerical Method

Course Outcomes:

This course offers the students to:

CO1:know about the basics of numerical analysis, errors, different types of errors, types of operators.

CO2:understand about interpolation , students are capable to solve the problems related to interpolation, Newton's forward and backward interpolation formulae, Lagrange's interpolation formula.

CO3:gain the concept of numerical differentiation, numerical integration ,their formulae and their application in solving problems.

CO4:know the method to solve the solutions of non-linear equations and system of linear equations- Guass elimination method, Seidal method their convergence.

CO5: solve the Eigen value problems, ordinary differential equations- Euler method, Runge-Kutta method(2^{nd} order).

B.SC. PROGRAMME COURSE / GENERAL

Mathematics

PSO1**:** Students will get a strong and valuable knowledge of mathematics which will help them to think logically and apply them in both their personal & professional life throughout.

PSO2: Students will have the ability to formulate and then solve the critical and complex type problems.

PSO3: Students will create an interdisciplinary relation between the other streams.

PSO4: Students will have a creative and logical mind by which they can analyze & solve practical problems in their life.

PSO5: The knowledge of Mathematics will make the students ethical and responsible citizen of nation.

PSO6: Students will be able to do work as a whole or team or individually and communicate effectively with others.

PSO7: Students will recognize the need of self learning and life-long learning to demonstrate the knowledge in the development of society and him.

UG PROGRAMME COURSE

Semester-1

Course Code: MATP11DSC

Paper-1

Course Title: Calculus and Geometry

Course Outcomes:

This course offers the students to:

CO1: know about the Hyperbolic functions, higher order derivatives, to know about Leibnitz rule and its applications.

CO2: understand the concavity and inflection points,envelopes, asymptotes, curve tracing in Cartesian coordinates.

CO3: gain a concept about L'Hospital's rule and its applications in the different fields like in business, economics and life sciences.

CO4: know the Reduction formulae,derivations and illustrations of reduction formulae, understand the parametric equations, arc length of a curve, area and volume of revolution and to solve these related problems.

CO5: understand the basic concept of conics, rotation of axes and classification of conics and polar equations of conics.

CO6: know about the properties of Sphere, Cylindrical surfaces, conicoids, paraboloids , generating lines and solve these related problems.

Semester-2

Course Code: MATP24 DSC

Paper-2

Course Title: Algebra.

Course Outcomes:

This course offers the students to:

CO1: understand the basics of Complex number, polar representation of complex number, theory of De Moiver's theorem and its applications.

CO2: know about Theory of Equations, relationship between roots and coefficients, Descartes rule of signs, to solve the cubic & biquadratic equations.

CO3: have the knowledge in inequality involving A.M $\geq$ G.M $\geq$ H.M.

CO4: understand the basic concept in Integers, well ordering property of positive integers, congruence relation, and mathematical induction and solving problems using this.

CO5: know about set theory, equivalence relation, functions and its types.

CO6: have a basic and strong knowledge in Linear algebra.

CO7: solve the linear system problems using matrix representation, applications of linear systems.

CO8: gain knowledge about Vector space, subspaces and dimension of subspaces.

CO9: solve the Eigen value related problems, understand about Eigen vectors, Cayley-Hamilton theorem and using this find the inverse of a matrix.

B.SC GENERAL 2nd Year

Paper-IV

Course Title: Integral Calculus, Ordinary Differential Equations.

Course Outcomes:

This course offers the students to:

CO1: Able to understand evaluation of Definite Integrals,Reduction formulae and associated problems,Integration as the limit of sum.

CO2: Understand definition of Improper Integrals,statements and simple problems of μ-test, comparison test, Beta and Gamma functions.

CO3: Familiar with the working knowledge of Double integral.

CO4: Make a clear concept of Rectification,Quadrature,some problems of volume and surface areas of solids formed by revolution of plane curve and areas.

CO5: Gain a clear concept of Order,degree,solution of Ordinary Differential Equation and its formation.

CO6: Understand First order Differential Equation, variables separable, Homogeneous equations, Exact equations, Euler's and Bernoulli's equations, Clairaut's equation.

CO7: Make a clear concept of Higher order Linear Differential Equations with constant coefficients, Euler's homogeneous equations and Orthogonal trajectories.

B.SC GENERAL 2nd Year

Paper-V

Course Title: Numerical Analysis, Linear Programming and Optimization

Course Outcomes:

This course offers the students to:

CO1: Able to understand Approximation of numbers, Rounding off numbers, various types of errors, definitions and some relations among Operators.

CO2: Make a clear concept of Polynomial Interpolations like Lagrange's Interpolation formula, Newton's divided interpolation formula, Newton's Forward and Backward Interpolation Formula and their applications.

CO3: Able to know deduction of Trapezoidal, Simpson's 1/3 formulae and their geometrical interpretations and some problems.

CO4: Gain a clear concept of finding solution of Numerical Equations by Location of root, Bisection method, Newton-Raphson method with geometrical problems and some problems.

CO5: Make a clear concept of Linear programming problem formulation, various types of solutions, basic properties of convex sets,Hyperplane.

CO6: Finding solution of Linear programming problem by Graphical method, Simplex method and method of Penalty.

CO7: Make a clear concept of Duality, Duality theorem and some dual problems.

B.SC GENERAL 2nd Year

Paper-VI

Course Title: Analytical Dynamics, Probability and Statistics.

Course Outcomes:

This course offers the students to:

CO1: Gain clear concept of Motion in a straight line under variable acceleration, Simple Harmonic motion.

CO2: know the expressions for velocity and acceleration of a particle moving on a plane in Cartesian and Polar coordinates, Central force and central orbit.

CO3: Make a clear concept of Tangential and normal accelerations, Circular motion.

CO4: Understand concept of Motion of a particle in a plane under different laws of resistance, Motion of a projectile in a resisting medium, Trajectories in a resisting medium, Terminal velocity.

CO5: Gain a clear concept of Random variables, Distribution function, Discrete and continuous distribution in two dimensions and their related study.

CO6: Make a clear idea about Mathematical expectation,Mean,Variance,Moments and central moments.

CO7: Understand Measures of skewness and kurtosis, Median, Mode, Quartiles, Covariance, Correlation co-efficient, Regression curves.

CO8: Gain clear concept of Random sample,collection,tabulation and graphical representations.

CO9: make a clear concept of sampling distribution.

B.SC GENERAL: Part- III

Paper-VII(A)

Course Title: Computer Science and Programming, A course of Calculus, Discrete Mathematics.

Course Outcomes:

This course offers the students to:

CO1: know about the basics of Computer Fundamentals such as its historical development, generations, gain knowledge about operating system, number system- binary, decimal, octal & their conversion.

CO2: gain a clear concept about programming languages: Machine language, Assembly language, High level language, their algorithm and their application to write a program.

CO3: able to gain the knowledge about key words, Data type different types of operator, statements: do, while statements and able to construct simple C program by using their knowledge and apply them in various kinds of fields.

CO4: gain a clear knowledge of Sequence of Functions their convergence, Uniform convergence and integration, uniform convergence and differentiation.

CO5: understand about Power Series , to perform term to term integration and differentiation of Power Series, convergence of Power Series and to solve simple problems related Power Series.

CO6: know about Fourier Series and its application to solve problems, Dirichlet's conditions for convergence of Fourier Series.

CO7:solve the Ordinary Differential Equations using Method of variation of parameters and Method of undetermined coefficients. Gain idea to solve simple Eigen value problems.

CO8: gain a basic knowledge about Partial Differential Equation, its formation and its solutions using Lagrange's method.

CO9: know about the Laplace Transform and how to use it in solving Ordinary Differential Equations, elementary properties of derivatives and integrals.

CO10: gain a preliminary knowledge in Integers, Division algorithm, integral solutions of ax+by=c this type of equations, Unique factorization theorem.

CO11: know about Congruence, its definition and properties, Euler's phi function and its application, understand the Chinese Remainder theorem, to check digits in ISBN, UPC and credit cards.

CO12: gain a clear concept about Boolean Algebra , Huntington postulates for Boolean Algebra, understand Algebra as an examples of Boolean Algebra , and know design of simple switching circuits. They gain the knowledge of Boolean Algebra to apply this in various fields.

Paper – VII(B)

Course Title: Practical: Numerical Methods

Course Outcomes:

This course offers the students to:

CO1: apply their knowledge of Numerical Analysis practically by solving some problems using Scientific Calculator and C programming. Students are able to solve the solutions using Bisection method, Fixed point iteration method, Newton - Raphson method, Regula-Falsi method. Also know Numerical Integration- Trapezoidal rule, Simpson's 1/3 rule.

Programme Specific Outcomes of Three Year Honours in Geography

- The three year Honours program in Geography will provide a comprehensive knowledge to the students in the fundamentals of geographical theories and application of such theories for formulation of policies and planning.
- The course will also enable the students to develop a thorough knowledge of geographical and statistical concepts used in the analysis of socio-economic, cultural and environmental problems which will foster analytical thinking among the students.
- Exposure to field work and preparation of project report along with the use of questionnaire and data collection will provide a means of contextualising students' learning and contributing to students' cognitive development, enabling them to understand the relationships between groups of geographical factors, thereby bridging the divide between the classroom and the real world.
- The course will also help in enhancing the skills of the students in applying different cartographic and statistical techniques in computing the data and derive effective conclusions. With the handling of weather instruments as well as levelling and surveying instruments, the students will be able to assess the dynamics of the earth's surface and atmosphere. The course will also help in enhancing the skills of the students by providing the students with the knowledge of application of remote sensing and GIS techniques, along with different geo tools, both theoretically and practically for land use mapping, urban sprawl analysis, forests monitoring etc.
- The course will also provide an understanding of the relationship between the environment and human activities in different sectors of the economy and explore the contemporary issues associated with population-resource relationship and regions and make approaches to hazard study, natural and man induced, in terms of risk perception and vulnerability assessment.
- On completion of the course, the students will develop the ability to analyse geographical behaviour and express the geographical and environmental point of view of any problem. It will also foster students' ability to analyse events, historical and contemporary, from a geographical perspective.

Course Specific Outcomes of Three Year Honours in Geography

CC 1 Theory - Geotectonic

- To understand the basic concepts of the earth's tectonic and structural evolution with reference to geological time scale.

- To understand the earth's interior with special reference to seismology and theories of isostasy.
- To explore the theory of global tectonics and the associated formation of major relief features of ocean floors and continents including constructive, destructive and conservative plate margins and sea floor spreading.
- To have a better knowledge of folds, faults, their classifications and surface expressions and learn about the earthquakes and volcanoes and associated landforms.

CC 1 Practical

- To have a better knowledge of the concept of scale and construction of plain, comparative, diagonal and vernier scale graphically.
- To understand Map Projection and learn about calculations and techniques of construction of Polar Zenithal Stereographic Projection, Bonne's Projection, Mercator's Projection and Universal Transverse Mercator (UTM) Projection.

CC 2 Theory – Geomorphology

- To introduce to the students the nature, scope and fundamental concepts of Geomorphology.
- To explore different geomorphic processes such as weathering and mass wasting and cycle of erosion as postulated by Davis and Penck.
- To have a better understanding of the classification and evolution of fluvial, karst, aeolian, glacial and coastal landforms.
- To acquaint themselves with different slope forms, processes, factors and the associated landforms as well as the slope evolution theories as proposed by different geomorphologists.

CC 2 Practical

- To study topographical maps and learn about the techniques of - interpreting mountain area with the help of cross and longitudinal profile, interpreting relief profile using superimposed, projected and composite techniques and analysing slope with the help of Wentworth's Method and Smith's Method.
- To have knowledge about the identification of different types of rocks and minerals.

CC 3 Theory – Human Geography

- To define and understand the major themes of Human Geography and their relevance in contemporary world.

- To explore different components of space and society and have knowledge about the cultural regions in the context of race, religion and language.
- To enable students to have knowledge about the population growth, distribution and composition with special reference to India and the associated Demographic Transition Theory.
- To understand the relationship between population and resource and learn about the different Population-Resource Regions.

CC 3 Practical

- To have knowledge of representing the computed data diagrammatically in the form of line, bar and circle.
- To learn about properties, uses and limitations of different thematic mapping techniques and representing data by these techniques such as Proportional Cubes, Choropleth, Chorochromatic, Dot and Isopleths.

CC 4 Theory – Settlement Geography

- To have a basic knowledge about the origin and growth of rural and urban settlements.
- To understand the classification and morphology of rural and urban settlements.
- To understand the trends and patterns of world urbanization with special reference to India.
- To understand the theories of urban growth.

CC 4 Practical

- To gain knowledge about the basic concept of levelling and surveying and learn about levelling by Dumpy Level and determination of height of an object by Theodolite.
- To learn about the preparation and interpretation of thematic maps by conventional method.

CC 5 Theory – Climatology

- To have knowledge about the composition and structure of atmosphere and the associated phenomena of heat budget and temperature inversion.
- To have an understanding of the atmospheric pressure and wind system with special emphasis on jet streams and monsoon.
- To understand the forms of atmospheric moisture with more focus on precipitation and climatic regions as proposed by Koppen.
- To gain knowledge about the tropical and extra tropical cyclones.

CC 5 Practical

- To learn handling of the weather instruments and recording of the data.
- To learn interpretation of Indian daily weather report, summer and winter case and representation of climatic data by climographs and hythergraphs.

CC 6 Theory – Statistical Methods in Geography

- To explore the significance of statistical methods in Geography.
- To understand the source and use of data and scale of measurement in Geography.
- To gain knowledge about the different sampling techniques, their merits, demerits and usages.
- To have knowledge regarding the theoretical distribution including probability and normal distribution.

CC 6 Practical

- To gain knowledge about the tabulation of data by using different statistical techniques including Measures of Central Tendency, Centrographic techniques and Measures of Dispersion.
- To learn about the analysis of data by using different statistical techniques of association and correlation including Rank Correlation, Product Moment Correlation and Simple Regression.

CC 7 Theory – Geography of India

- To enable the students to identify the physiographic regions of India based on relief and topography and explore the characteristics and classification of soil, natural vegetation and climate of India.
- To gain knowledge about the distribution and utilisation of mineral and power resources, agricultural production and distribution of rice and wheat, development of automobile industry and Information Technology with reference to India.
- To understand the distribution of population in terms of race, caste, religion, language, tribes and their correlates.
- To gain knowledge about the Physiographic, Socio-cultural and Economic Regionalisation of India after R. L. Singh, Sopher and Sengupta respectively.

CC 7 Practical

- To learn illustration of temperature and rainfall graphs of selected stations from different physiographic regions of India.

- To gain knowledge about the measurement of arithmetic growth rate of population, comparative analysis of different decadal datasets and measures of inequality.

SEC 1 Theory – Remote Sensing

- To understand the concepts and principles of remote sensing technologies and the history of their development; platforms, types and photogrammetry.
- To understand the principles of Satellite Remote Sensing, the methodologies of extracting data from remotely sensed imagery, EMR interaction with atmosphere and earth's surface, different types of satellites and sensors.
- To acquaint themselves with Digital and Manual Image Processing; Radiometric and Geometric Correction Pre-Processing; filtering and Supervised and Un-supervised Classification.
- To learn about the interpretation of satellite image.

CC 8 Theory – Economic Geography

- To understand the concept of economic activity, the factors affecting its location with special reference to agriculture and industry.
- To understand the relationship between the environment and human activities in the primary sector of the economy.
- To acquaint themselves with the factors that led to the establishment and development of secondary activities.
- To comprehend the level of interactions between man and his environment in the tertiary sector.

.**CC 8 Practical**

- To learn about the transport network by analysing connectivity and accessibility.
- To learn about the use of thematic maps in representing variation in different components of labour force and comparative analysis of developed and backward states by composite index.

CC 9 Theory – Regional Planning and Development

- To define region and understand the evolution and types of regional planning; to ascertain the needs for regional planning.
- To understand the characteristics of ideal planning region and delineate different planning regions.
- To understand the Growth Pole Model of Perroux, Growth Centre Model in Indian context and theories of Myrdal and Rostow.

- To gain knowledge about the social, economic and environmental indicators of development and human development.

CC 9 Practical

- To learn about the delineation of formal and functional regions by weighted index method and breaking point analysis.
- To learn measuring inequality and regional disparity by Location Quotient method and Sopher Index.

CC 10 Theory – Field Work and Research Methodology

- To understand the role, value, data and ethics of field work in geographical studies.
- To define and identify the case studies of rural, urban, physical, environmental and human.
- To have knowledge about the merits, demerits and selection of appropriate field techniques, types of observation – participant and non-participant, questionnaires – open, closed, structured and non-structured, interview and space survey.
- To understand research problems and formulation of research objectives and hypothesis.

CC 10 Practical

- To learn about the use of field tools and collection of data for physical and socio-economic surveys.
- To gain knowledge about designing the field report including aims, objectives, methodology, analysis, interpretation and writing the report.
- To have first hand knowledge in the field, collect primary and secondary data and prepare a field report with the help of figures, tables, maps, photographs, references and appendices which should reflect original interpretation of the theme based on field observations.

SEC 2 Theory – Geographical Information System

- To have an understanding of the basic concepts and components of Geographical Information System.
- To gain knowledge about the principles and uses of Global Positioning System and Differential Global Positioning System (DGPS).
- To understand spatial, non-spatial, raster and vector data structure.
- To have an understanding of the input, geo-referencing, editing, output, query and overlays of GIS Data Analysis.

- To gain knowledge about the application of GIS in land use mapping, urban sprawl analysis and forests monitoring.

CC 11 Theory – Environmental Geography

- To understand the concept and scope of Environmental Geography and know about the physical and socio-cultural components of environment.
- To gain knowledge about the man-environment relationship, its historical progression and adaptation of man in different types of biomes.
- To understand the concept, structure, functions and problems of ecosystem with special reference to tropical and temperate ecosystems.
- To help students gain knowledge on the environmental programmes and policies at national, regional and global level.

CC 11 Practical

- To have knowledge on the preparation of questionnaire for perception survey on environmental problems.
- To prepare a project report on environmental problems of North Bengal based on primary and secondary data with the help of figures, tables, maps, photographs, references and appendices.

CC 12 Theory – Remote Sensing and GIS

- To have a basic knowledge about the components, development, platforms and types of Remote Sensing and GIS.
- To learn skills to identify, extract and determine the scales and orientation of Aerial Photos; principles of Remote Sensing; EMR interaction with atmosphere and earth's surface and different types of satellites and sensors.
- To understand spatial, non-spatial, raster and vector GIS data structure.
- To gain knowledge about the interpretation and application of GIS in land use/land cover mapping, urban sprawl analysis and forests monitoring.

CC 12 Practical

- To learn air photo interpretation with the help of pocket stereoscope and satellite imagery interpretation.
- To have understanding of digital and manual image processing, supervised and unsupervised classification, georeferencing, editing and output and overlays.

DSE 1 Theory – Population Geography

- To understand the nature and scope of Population Geography and sources of data with special reference to India
- To have knowledge about the size, distribution and growth of population, determinants and patterns of population and understand the Malthusian and Demographic Transition Theory.
- To understand the dynamics of population i.e. fertility, mortality and migration; its measures, determinants and implications.
- To understand population in terms of its composition and characteristics and explore into its contemporary issues such as ageing of population, declining sex ratio and HIV/AIDS.

DSE 1 Practical – Population Geography

- To learn about projection of population by arithmetic method and population density mapping for India.
- To analyse work participation rate by total and gender wise for India and occupation structure by dominant and distinctive functions for West Bengal.

DSE 2 Theory – Urban Geography

- To have an understanding of the nature and scope of Urban Geography.
- To identify and understand the patterns of urbanisation in developed and developing countries.
- To acquaint themselves with quantitative and qualitative methods of classifying urban centres based on functionality.
- To analyze the problems and prospects of urbanization in selected urban areas through case studies.

DSE 2 Practical – Urban Geography

- To gain knowledge about hierarchy of settlements by Rank-size rule method.
- To learn spatial and temporal analysis of urban growth of different states using Census data of India.

CC 13 Theory – Evolution of Geographical Thought

- To trace the history and development of geographical thought from the ancient period to the present era.
- To gain knowledge on the evolution of geographical thinking and disciplinary changes in Germany, France, Britain and United States of America.
- To debate on Systematic, Regional, Environmental Determinism and Possibilism.

- To have knowledge with regard to trends in geographical thought from Quantitative Revolution and its impact to Behariouralism, Feminism to Post Modernism and changing future concepts in Geography.

CC 13 Practical

- To learn about important quantitative techniques in Geography – Chi square, Standard Score, Ranking Coefficient by Kendall.
- To learn crop combination by Weber, Rafiulla and Doi.

CC 14 Theory – Disaster Management

- To gain knowledge on the concept and classification of hazards and disasters.
- To understand approaches to hazard study in terms of risk perception and vulnerability assessment.
- To have knowledge about the factors, consequences and management of earthquake, landslide, flood and riverbank erosion.
- To examine the causes of fire hazard, chemical and industrial accidents and assess the impact of such human induced hazards on the environment and population.

CC 14 Practical

- To prepare a project report on any natural hazard or human induced disaster based on primary and secondary data collected from local area with the help of figures, tables, photographs, maps, references and appendices.

DSE 3 Theory – Political Geography

- To understand the concepts, nature and scope of Political Geography.
- To understand the concept of State, Nation and Nation State and Geopolitics, attributes of state – frontiers, boundaries, shape, size, territory and sovereignty and learn about the theories of Heartland and Rimland.
- To introduce the concepts of resource conflicts with special emphasis on water sharing disputes and conflicts related to forest rights and minerals.
- To gain knowledge about the politics of displacement in terms of issues of relief, compensation and rehabilitation with reference to dams and Special Economic Zones.

DSE 3 Practical – Political Geography

- To prepare spatial distribution maps of India in terms of gender, caste and religion and analyse migration data with reference to rural to urban and urban to urban migration.
- To prepare checklist of indices for Social Impact Assessment.

DSE 4 Theory – Social Geography

- To understand the concept, origin, nature and scope of Social Geography.
- To have an understanding of the technology in relation to occupational change and migration.
- To learn about the different social categories including caste, class, religion, race and gender and their spatial distribution.
- To gain knowledge about the concept and components of welfare and wellbeing – healthcare, housing and education, social geographies of inclusion and exclusion and slums.

DSE 4 Practical – Social Geography

- To prepare flow chart showing migration trends.
- To represent spatial distribution of caste, religion and gender in India using proportional circles and proportional divided circles.

Program Specific Outcomes of Three Year Program Course in Geography

- Completion of the Program Course in Geography will enable the students to understand the basic concepts of geography and the related theories. The course will also provide the students an idea of geographical and statistical concepts used in the analysis of various problems which will strengthen numerical aptitude and foster analytical thinking among the students.
- Exposure to field work and preparation of project report along with the use of questionnaire and data collection will enable the students to understand the relationships between groups of geographical factors, thereby bridging the divide between the classroom and the real world. The course will also help in enhancing the skills of the students in applying different cartographic and statistical techniques in computing the data and derive effective conclusions.
- The course will also help in enhancing the skills of the students by providing the students with the knowledge of application of remote sensing and GIS techniques and their applications. The course also provides students knowledge regarding the theories of development along with a basic knowledge of different plans and policies of the government.

Course Specific Outcomes of Three Year Program Course in Geography

CC 1 Theory – Physical Geography

- To understand the earth's interior with special reference to seismology.

- To have knowledge about the theory of Plate Tectonics and the associated processes and formation of major relief features of ocean floors and continents.
- To understand the types of folds and faults and the associated surface expressions.
- To have a better understanding of the classification and evolution of fluvial, aeolian, glacial and coastal landforms.

CC 1 Practical

- To have a better knowledge of the concept of scale and construction of plain, linear, comparative, diagonal and vernier scale.
- To understand Map Projection and learn about calculations and techniques of construction of Zenithal Gnomonic Projection (Polar Case), Cylindrical Equal Area Projection (Equatorial Case), Simple Conical Projection with one standard parallel and Sinusoidal Projection.

CC 2 Theory – Human Geography

- To understand the basic scope and content of Human Geography.
- To have an understanding of the cultural regions in terms of race, religion and language with reference to India.
- To enable students to have knowledge about the population growth, distribution and composition with special reference to India.
- To understand the relationship between population and resource and learn about the different Population-Resource Regions.

CC 2 Practical

- To have knowledge of representing the computed data diagrammatically in the form of line, bar and circle.
- To learn about properties, uses and limitations of different thematic mapping techniques and representing data by these techniques such as Proportional Circles, Proportional Divided Circles and Choropleth.

CC 3 Theory – Regional Development

- To define region, understand the evolution and types of regional planning and delineate different planning regions.
- To gain knowledge about the causes of regional imbalances and problems of functional regions.
- To understand the Growth Pole Model of Perroux and strategies for regional planning.

- To gain knowledge about the problem regions especially backward regions and evaluate regional plans with major focus on Special Area Development Plans in India.

CC 3 Practical

- To interpret Indian Topographical Maps with special reference to plains and plateaus taking physiography, drainage, natural vegetation, settlement, transport and communication into consideration.
- To learn Geological Maps and explore uniclinal and folded geological structure.

SEC 1 Rural Development

- To understand the concepts, basic elements and measures of rural development.
- To gain knowledge about the conceptual framework – Gandhian approach to rural development, Lewis Model of Economic Development.
- To have area based approach to rural development and identify drought prone area programmes and PMGSY.
- To have target group approach to rural development and identify different State and Central Government aided development programmes like SJSY, MNREGA, Jan Dhan Yojna and Rural Connectivity.
- To gain knowledge on Panchayati Raj System, rural development policies and programmes in India.

CC 4 Theory – Spatial Information Technology

- To introduce students to concept and historical development of Spatial Information Technology.
- To understand web data sources, registration and projection, data structures, data interpretation and modelling of spatial information.
- To explore the functions of spatial information system – Information retrieval, Topological modelling, networks, overlay and data output.
- To gain knowledge on different applications of Spatial Information Technology.

CC 4 Practical

- To identify broad physical and cultural features from aerial photographs using pocket stereoscope.
- To learn about statistical techniques like measures of central tendency and measures of dispersion.

SEC 2 Geographical Information System

- To have an understanding of the basic concepts and components of Geographical Information System.
- To gain knowledge about the principles and uses of Global Positioning System and Differential Global Positioning System (DGPS).
- To understand spatial, non-spatial, raster and vector data structure.
- To have an understanding of the input, geo-referencing, editing, output, query and overlays of GIS Data Analysis.
- To gain knowledge about the application of GIS in land use mapping, urban sprawl analysis and forests monitoring.

DSE 1 Theory – Disaster Management

- To understand the concept and classification of hazards and disasters and their risk and vulnerability.
- To have knowledge about the causes, impact, distribution and mapping of flood, landslide and drought with reference to India.
- To gain knowledge on the causes, impact, distribution and mapping of earthquake, tsunami and cyclone with reference to India.
- To have an understanding of the preparedness, Indigenous Knowledge and Community Based Disaster Management mitigation measures to different disasters and gain knowledge about National Disaster Management Authority and National Institute of Disaster Management.

DSE 1 Practical

- To prepare a project report on disaster, natural or human-induced taking a case study, based on primary and secondary data with the help of figures, tables, maps, photographs, references and appendices.

DSE 2 Theory – Rural Development

- To gain knowledge on the interdependence of rural and urban sectors of the economy, need for rural development and Gandhian approach to rural development.
- To understand the Panchayat Raj System, agriculture and allied sectors, seasonality and need for expanding non-farm activities, co-operatives and PURA.
- To have area based approach to rural development and identify drought prone area programmes and PMGSY.

- To have target group approach to rural development and identify different State and Central Government aided development programmes like SJSY, MNREGA, Jan Dhan Yojna and Rural Connectivity.

DSE 2 Practical

- To prepare a project report on socio-economic status of the people either at mouza or village level based on primary and secondary data with the help of figures, tables, maps, photographs, references and appendices

2.6

2.6.1 Program outcomes, program specific outcomes and course outcomes for all programs offered by the Institution are stated and displayed on website and communicated to teachers and students

UNDER GRADUATE DEPARTMENTS

Outcomes of the course: Three-year Degree Course in English Honours and Programme

- Students have been taught English literature in Honours Course and Programme Course.
- They learn a wide variety of literary pieces ranging from British, American, Greek to Indian.
- They also learn literary theories and criticism.
- By all this, they learn to appreciate literature, philosophy, history and society.
- The course aims to produce students with minds ignited to 'think'.
- Students are taught English communication which is required for jobs in public sphere especially in the Communication media.
- Students have been taught Business Communication (under SEC) that includes writing project report, annual report of companies, reports of field work, E-correspondence etc.
- They learn functional English under AECC-2 and LCC-2.
- They learn Editing and Proof -reading that prepare them for jobs as journalists.
- This helps them to learn English as a world language and be able to accurately and precisely communicate both in speaking and writing in a variety of contexts and genres.
- They try to acquire analytical skills in linguistics, communications and literary criticism and be able to analyze oral and written discourse of various genres with regard to social, cultural, political and historical contexts.
- A potential for careers and advanced studies in a wide range of English, Public relations or Communication fields.
- A broad foundation of knowledge and skills and cultivate a commitment to life-long learning and be prepared to pursue inquiry relevant to other academic and professional fields and personal interests.
- A potential to be articulate, conscientious leaders and problem solvers who are committed to contributing to their fields and society and be prepared to think critically and creatively and conceive real-world problems from different perspectives.

COURSE OUTCOME

History of English Literature

The students of History of English Literature will be able to:

CO1: Understand significant development in the history of English Literature.

CO2: Develop a passion for literature and appreciate literature's ability to elicit feeling, cultivate the imagination and call us to account us as humans.

CO3: Develop working knowledge of the principal works, authors, genres and periods of English Literature.

CO4: Read a variety of texts critically and proficiently to demonstrate in writing or speech the comprehension, analysis and interpretation of those texts.

CO5: Demonstrate knowledge and comprehension of major texts and traditions of literature written in English as well as their social, cultural, theoretical and historical contexts.

Classical Literatures

The students of Classical Literatures will be benefitted as follows:

CO1: Ancient literatures of Greece, Rome, and India have been taught to make students aware of the formative eras of our literatures.

CO2: An awareness of the origin and development of European literatures.

CO3: A proper understanding of our glorious cultural past through works of the masters such as Kalidasa, Sudraka, Homer.

Poetry and Short Stories

The students of Poetry and Short Stories will be able to:

CO1: Understand the characteristics of various literary genres.

CO2: Develop analytical skills and critical thinking through close reading of literary texts.

CO3: Cultivate appreciation of language as an artistic medium and understand the importance of forms, elements and style that shape literary works.

CO4: Understand that literature is an expression of human values within a historical and social context.

CO5: Recognize the culture and context of the works of literature thereby developing sensitivity to nature and fellow human beings.

Drama

The students of Drama will learn to:

CO1: Understand the historical and socio-political background of Drama in Literature.

CO2: Understand the concepts of religious drama, tragedy, comedy and contemplate their philosophical and psychological relevance.

CO3: Critically analyze, understand and make an informed critique on characters and situations thus developing their analytical skills.

CO4: Think critically and creatively and conceptualize real-world problems from different perspectives.

CO5: Develop empathy and sensitivity, and develop the competence to solve problems.

Women's Writings

The students of Women's Writings will be able to:

CO1: Recognize and discuss the different aspects of feminist theories and criticism.

CO2: Possess critical and analytical faculties enabling greater insight while studying a literary text.

CO3: Appreciate the impacts and influence of the social, cultural, political, historical and legal facets on women's writing.

CO4: Acquire enhanced awareness of the perception of gender roles assigned to both sexes in view of the cultural context.

CO5: Provide an in-depth understanding of the theories associated with women's writings.

Postcolonial Literatures

The students of Postcolonial Literatures will learn to:

CO1: Understand the history of colonialism and anti-colonial struggles in different countries.

CO2: Understand the theorization of colonialism and anti-colonial struggles in the form of postcolonial theory.

CO3: Learn to understand postcolonial societies through the prism of postcolonial literatures.

CO4: Understand India which was a colony once.

Literary Theory and Criticism

Students of Literary Theory and Criticism will learn

CO1: Modernism, Postmodernism, Feminism, Postcolonialism.

CO2: To have an understanding of the history of Literary Theory and Criticism.

CO3: Understand literature better with a mind informed by critical theories.

CO4: How to become critical readers of text from ordinary readers.

Partition Literature

Students of Partition Literature will learn:

CO1: To understand the history of India's Partition of 1947.

CO2: To read the alternative history of Partition through literature.

CO3: To develop a literary mind informed by alternative knowledge of history, critical thinking of the past and the present, and a self-conscious vision of futue.

(Programme out comes)

स्नातकोत्तर नेपाली पाठ्यक्रमको परिचय

वर्तमानमा शिक्षकहरूले शिक्षण गराइरहेका र विद्यार्थीहरूले अध्ययन गरिरहेका नेपाली स्नातकोत्तर पाठ्यक्रम सी बी सी एस (Choice based credit system) अनुसार रहेको छ। यो पाठ्यक्रम विगत जुन सन् २०१७ देखि आरम्भ गरिएको हो ।

स्नातकोत्तर नेपालीको अध्ययन दुइ वर्षको भएकोले अनि यो सेमेस्टर पध्दतिको रहेकोले यसमा मोठ चारवटा सेमेस्टर छन् र प्रत्येक सेमेस्टरमा चारवटा अध्ययनपत्र (Paper) रहेकाले स्नातकोत्तर नेपालीका पाठ्यक्रममा अध्ययन तथा अध्यापनका लागिर मोठ १६वटा अध्ययनपत्रहरू छन्।

स्नातकोत्तर नेपालीको पहिलो सत्र (First semester) का लागि निम्न अध्ययनपत्रहरू छन्-

1) NEP-PG-C101 नेपाली भाषा विज्ञान
2) NEP-PG-C102 नेपाली कविता साहित्य
3) NEP-PG-C103 साहित्येतिहासको अवधारणा र नेपाली साहित्यको इतिहास
4) NEP-PG-C104 नेपाली कथा साहित्य

यी सबै अध्ययपत्रहरू ४ क्रेडिटका छन् र यी अध्ययनपत्रका निम्ति लिखित परीक्षा ७५ अङ्कको लिइन्छ । यसबाहेक प्रत्येक अध्ययनपत्रका लागि अनिवार्य योग्यता विकासको मूल्याङ्कनस्वरूप २५ अङ्कको आन्तरिक परीक्षा लिइन्छ । आन्तरिक परीक्षा वा योग्यता विकासका मूल्याङ्कनका लागि अनुशिक्षण, सङ्गोष्ठी पत्र लेखन र प्रस्तुति अनि सामूहिक परीक्षा विकल्पका रुपमा छन् ।

स्नातकोत्तर नेपालीको दोस्रो सत्र (Second semester)मा मोठ पाँचवटा अध्ययनपत्रहरू छन्-

1) NEP-PG-C201 नेपाली उपन्यास साहित्य
2) NEP-PG-C202 नेपाली निबन्ध साहित्य
3) NEP-PG-C203 साहित्य तत्त्व र पूर्वीय काव्य सिध्दान्त
4) NEP-PG-C304 पाश्चात्य साहित्य सिध्दान्त
5) NEP-PG-C305 तुलनात्मक भारतेली साहित्य र अनुवाद

यी अध्ययनपत्रहरूमध्ये C201 र C202 मूल विषय (Core subject) हुन् । अन्य तीनवटा चाहिँ वैकल्पिक भएकाले विद्यार्थीहरूले तीनवटा मध्ये दुइववटालाई चयन गरेर अध्ययन गर्न पाउँछन्।

यी सबै अध्ययपत्रहरू ४ क्रेडिटका छन् र यी अध्ययनपत्रका निम्ति लिखित परीक्षा ७५ अङ्कको लिइन्छ । यसबाहेक प्रत्येक अध्ययनपत्रका लागि अनिवार्य योग्यता विकासको मूल्याङ्कनस्वरूप २५ अङ्कको आन्तरिक परीक्षा लिइन्छ । आन्तरिक परीक्षा वा योग्यता विकासका मूल्याङ्कनका लागि अनुशिक्षण, शोध पत्र लेखन र प्रस्तुति अनि पुस्तक निरुपण विकल्पका रुपमा छन् ।

स्नातकोत्तर तेस्रो सत्र (Third semester)मा मोठ छवटा अध्ययनपत्रहरू छन्-

1) NEP-PG-C301 नेपाली समालोचना
2) NEP-PG-C302 नेपाली नाटक साहित्य र रङ्गमञ्च तथा चलचित्र अध्ययन
3) NEP-PG-C303 लोकवार्ता र नेपाली लोक साहित्य
4) NEP-PG-C304 सामान्य भाषा विज्ञान
5) NEP-PG-C305 समकालीन समालोचनाका सिध्दान्त र पध्दति
6) NEP-PG-C306 क्षेत्र अध्ययन र विवरण प्रस्तुति अनि शोध पत्र लेखन

यी छवटा अध्ययनपत्रहरूमध्ये C301 र C302 मूल विषय (Core subject) हुन् भने अन्य चारवटा चाहिँ वैक्लपिक विषय रहेका छन् ।

यी सबै अध्ययपत्रहरू ४ क्रेडिटका छन् र यी अध्ययनपत्रका निम्ति लिखित परीक्षा ७५ अङ्कको लिइन्छ । यसबाहेक प्रत्येक अध्ययनपत्रका लागि अनिवार्य योग्यता विकासको मूल्याङ्कनस्वरूप २५ अङ्कको आन्तरिक परीक्षा लिइन्छ । आन्तरिक परीक्षा वा योग्यता विकासका मूल्याङ्कनका लागि अनुशिक्षण, सङ्गोष्ठी पत्र लेखन र सामूहिक चर्चा विकल्पका रुपमा छन् ।

स्नातकोत्तर चौथो सत्र (Fourth Semester)मा मोठ सातवटा अध्ययनपत्रहरू छन्-

1) NEP-PG-C401 भारतेली नेपाली गद्याख्यान (कथा र उपन्यास)
2) NEP-PG-C402 भारतेली नेपाली कविता साहित्य
3) NEP-PG-C403 विश्व साहित्यको सर्वेक्षण
4) NEP-PG-C404 भाषा अध्ययनका सिध्दान्त र पध्दति
5) NEP-PG-C405 भारतेली नेपाली प्रबन्ध काव्य
6) NEP-PG-C406 लघु शोध प्रबन्ध
7) NEP-C407 कृति र कृतिकारबारे विशेष अध्ययन ।

यी छवटा अध्ययनपत्रहरू वैक्लपिक विषय रहेका छन् । अत: विद्यार्थीहरूले यी सातवटा मध्ये आफूलाई मनपरेका चारवटा अध्ययपत्र अध्ययन गर्न पाउँछन् ।

Course Out come

उपर्युक्त सबै अध्ययपत्रहरू ४ क्रेडिटका छन् र यी अध्ययनपत्रका निम्ति लिखित परीक्षा ७५ अङ्ककको लिइन्छ । यसबाहेक प्रत्येक अध्ययनपत्रका लागि अनिवार्य योग्यता विकासको मूल्याङ्कनस्वरूप २५ अङ्ककको आन्तरिक परीक्षा लिइन्छ । आन्तरिक परीक्षा वा योग्यता विकासका मूल्याङ्कनका लागि मौखिक परीक्षा, सङ्गोष्ठी पत्र लेखन र प्रस्तुति र सामूहिक चर्चा विकल्पका रुपमा छन् ।

नेपाली भाषा, भाषा विज्ञान, लोकवार्ता र नेपाली लोक साहित्य, चलचित्र अध्ययन लगायत विश्वसाहित्य आदि जस्ता महत्त्वपूर्ण विधा वा विषयबारे समुचित ज्ञान प्राप्त गराउने हुनाले स्नातकोत्तर नेपालीको यो पाठ्यक्रम समयअनुरूप आद्यावधिक र उम्दा पाठ्यक्रम रहेको छ। यो पाठ्यक्रमलाई समुचित ढङ्गमा अध्ययन गरेमा विद्यार्थीहरूले SSC (School Service Commission)/TET (Teacher eligibility test), SET/NET आदि जस्ता महत्त्वपूर्ण रोजगारीमुखी प्रतियोगितात्मक परीक्षाहरूमा सहजसित सफल हुन सक्नेछन्।

Details of course curriculum for Undergraduate Programme [Honours and General] in Nepali - Under Choice Based Credit System [Semester No. 06; Total No. of Papers - 14; All papers are equal Credit]

परीक्षा-पत्र - २ (दुई)

अनर्स - पहिलो सत्र - नेपाली साहित्यको इतिहास: पूर्णाङ्क-७५ क्रेडिट- ६
लिखित-६०, अनुशिक्षण-१०
कक्षा उपस्थिति - ५

प्रथम पत्र -

पाठ्यक्रमलाई मुख्यत: चारवटा बृहत् एकाइमा विभाजित गरिएको छ।

पहिलो एकाइमा नेपाली साहित्यको पृष्ठभूमि र विकासको रूपरेखाको सामान्य परिचयसहित नेपाली कविताको विकासक्रम राखिएको छ।

दोस्रो एकाइमा नेपाली आख्यानको विकासक्रम जसमा कथा र उपन्यास सहित आख्यानेतर गद्य एवं निबन्धको विकासक्रम अन्तर्भुक्त छ।

तेस्रो एकाइमा नेपाली नाटकको विकासक्रम र नेपाली समालोचनाको विकासक्रम सम्मिलित छ।

चौथो एकाइमा नेपाली पत्र-पत्रिकाको इतिहासका साथै भारतमा नेपाली सङ्घ-संस्थाको इतिहास अध्ययनका विषय छन्।

द्वितीय पत्र-पाठ्यक्रम - नेपाली कविता - [अङ्क माथिकै बराबर]

पहिलो एकाइमा कवितातत्त्वको परिचयात्मक अध्ययन अन्तर्गत नेपाली कविताका विविध रूप र प्रवृत्तिहरूको जानकारीसहित नेपाली वीर कविता, भक्ति कविता, शृङ्गारिक कविता, आधुनिक कविता, गद्य कविता, गजल, मुक्तक, हाइकु, खण्डकाव्य, महाकाव्य, लामो कविता जस्ता कविताका विविध रूपको अध्ययन समावेश छ।

दोस्रो एकाइमा कविको परिचयसहित 'सुवानन्ददास' 'पृथ्वीनारायण', 'रामायण सुन्दरकाण्ड', 'दुइना भजन', 'पिंजडाको सुगा' शीर्षक कविताहरू पाठ्य विषय छन्।

तेस्रो एकाइमा एवं रोतले कविको सपरिचय 'पागल', 'मोहब्बत गल्ली', 'आमाको सपना', "बिहान' शीर्षक कविताहरू पाठ्य विषय छन्।

चौथो एकाइमा 'असीमको सीमा', 'नयाँवर्ष', "सारङ्गी" "२७ मई १९६८', त्यो 'एकलो वृक्षलाई" भित्री मान्छे बोल्न खोज्छ' कविताका साथै कविको परिचय पाठ्य विषय छन्।

दोस्रो सत्र जसमा दुईवटा पत्र छन् अनि प्रत्येक पत्रको क्रेडिट सङ्ख्या, पूर्णाङ्क आदि समान छन्। यस सत्रको ✓ तेस्रो सत्रमा नेपाली भाषाविज्ञान पाठ्य विषय छ। जसमा पाठ्य विषयलाई तीनवटा एकाइमा विभाजन गरिएको छ।

पहिलो एकाइमा 'नेपाली भाषाको उत्पत्ति र विकासको सर्वेक्षण,' 'नेपाली भाषाका शब्दवर्ग,' र 'व्याकरणिक कोटिहरू' पाठ्यसामग्रीका रूपमा छन्।

दोस्रो एकाइमा 'नेपाली भाषाको शब्द-भण्डार,' 'नेपाली भाषाको शब्द निर्माण प्रक्रिया,' 'नेपाली भाषाको वर्ण-विन्यास' अध्ययनका विषय छन्।

तेस्रो एकाइमा 'नेपाली भाषाको अध्ययन परम्परा' र 'नेपाली व्याकरणको इतिहास पाठ्य विषय छन्।

दोस्रो सत्रको चौथो पत्रमा नेपाली कथा पठनीय छन् जसलाई चारवटा एकाइमा विभाजन गरिएको छ।

पहिलो एकाइमा कथाकारको परिचयसहित 'परालको आगो' र 'परिवर्त्त' कथा पाठ्य विषय छन् अनि आधुनिक नेपाली कथाका प्रमुख प्रवृत्ति यसको अध्ययन समावेशित छन्।

दोस्रो एकाइमा 'चन्मतीको सिनेमा स्वप्न,' 'माइतको मोल,' 'मैयाँ साहेब' र 'चौकीदार' कथाहरू छन्।

तेस्रो एकाइमा 'मेरो एउटा नाम हुनु,' 'रातभरि हुरी चल्यो,' 'ज्योतिविनाको उज्यालो' अनि 'पासाङ्हरूको कथा' पाठ्य कथाहरू छन्।

चौथो एकाइमा 'निर्वासित,' 'घर्केको घना,' 'टोटलाको फूल' र 'सन्तोष बाबुको डायरीमाथि' जस्ता कथाहरू पाठ्य विषयका रूपमा छन्।

तेस्रो सत्रमा तीनवटा पत्रहरू छन् जसमा पृथक-पृथक पाठ्यविषय रहेका छन्।

यस सत्रको पाँचौं पत्रमा तीनवटा एकाइहरू छन् जो निम्नप्रकार छन्–

पहिलो एकाइमा नेपाली उपन्यास मूल विषय अन्तर्गत 'आधुनिक नेपाली उपन्यासको पृष्ठभूमि र विकासको रूपरेखा,' 'उपन्यासको परिभाषा, स्वरूप र औपन्यासिक तत्त्वहरूको परिचय' र 'प्रमुख नेपाली उपन्यासकारका औपन्यासिक प्रवृत्तिको अध्ययन सामेल छन्।

दोस्रो एकाइमा 'भ्रमर,' 'लङ्गडाको साथी,' 'तीन घुम्ती जस्ता उपन्यासहरू पाठ्य विषय छन्।

तेस्रो एकाइमा 'परवलमित्र र बाहिर' अनि 'जुनेली रेखा' उपन्यासहरू पाठ्यक्रमका विषय छन्।

यस सत्रको छैठौं पत्रको मूल विषय नेपाली निबन्ध छ जसलाई चारवटा एकाइमा राखिएको छ।

पहिलो एकाइमा 'निबन्धको परिभाषा, स्वरूप र प्रकारहरू,' 'नेपाली निबन्ध साहित्यको विकासको संक्षिप्त सर्वेक्षण,' र 'प्रमुख नेपाली निबन्धकारहरूको निबन्धगत प्रवृत्ति, निबन्ध साहित्य क्षेत्रमा उनको योगदान र स्थान निर्धारण' जस्ता पाठ्य विषय छन्।

दोस्रो एकाइमा 'श्री गणेशाय नमः' 'एकसूत्राक्त चिन्तन ध्यान,' 'साहित्य र हावापानी' 'वक्तावरुको कुनो' शीर्षक निबन्धहरु पाठ्य विषय हुन।
तेस्रो एकाइमा 'कविको धन,' 'तरवार,' 'अजिब मौज' र 'हास्य' निबन्ध हुन।
चौथो एकाइमा 'जय भुँडी' 'खै खै,' 'भुँडी,' 'गृहस्थी जीवन,' 'रिसकिन कुरुह,' 'बाह! दार्जिलिङ टी' निबन्ध पाठ्य विषयमा राखिएका हुन।

तेस्रो सत्रको सातौं पत्रमा भारतीय नेपाली साहित्यको इतिहास मूल विषय हो जसमा चारवटा एकाइ हुन।
पहिलो एकाइमा 'भारतीय नेपाली साहित्यको पृष्ठभूमि र विकासको अध्ययन' र 'भारतीय नेपाली कविताको विकासक्रम पाठ्यक्रममा हुन।
दोस्रो एकाइमा 'भारतीय नेपाली कथाको विकासक्रम' र 'भारतीय नेपाली उपन्यासको विकासक्रम' पाठ्य विषय हुन।
तेस्रो एकाइमा 'भारतीय नेपाली निबन्धको विकासक्रम' र 'भारतीय नेपाली नाटकको विकासक्रम' अन्तर्भुक्त हुन।
चौथो एकाइमा 'भारतीय नेपाली समालोचनाको विकासक्रम' र 'भारतीय नेपाली आख्यानेतर गद्यको विकासक्रम' जस्ता विषयहरु हुन।

चौथो सत्रमा जम्मा तीनवटा पत्रहरु हुन जसमा अलग-अलग विषय रहेका हुन।
यस सत्रको आठौं पत्रमा समकालीन नेपाली कविता मूल पाठ्य विषय हो जसलाई चारवटा एकाइमा विभाजन गरिएको छ।
पहिलो एकाइमा 'समकालीन शब्दको अर्थ, परिभाषा र अवधारणा जस्ता सैद्धान्तिक विषय रहेका हुन भने समकालीन कविताका प्रमुख विशेषताहरुको अध्ययन सम्मिलित रहेको छ।
दोस्रो एकाइमा कवि परिचयसहित 'तिमीलाई म सधैं देखुँ,' 'शान्ति सन्देह,' 'सपनाहरु' र 'म बेथलेहम सहरको हिपोपोटामस' जस्ता कविताहरु हुन।
तेस्रो एकाइमा 'आज फेरि हाँसिऊ,' 'पौरखको नदी,' 'युक्लिप्टस आँउदो पिंढीलाई आशीर्वाद,' 'परेली परेलीमा मिलेर' र 'शकुन्तला' शीर्षक कविताहरु पाठ्य विषय छन्।
चौथो एकाइमा 'म कहिले बुद्ध हुनु,' 'बेरोजगार युवाको आइडेन्टिटी कार्ड,' 'पाखुल फूल: मरेका केही पत्रहरु,' 'जङ्गल एक सलिलको' र 'मध्यरातमा सहर' नामक कविताहरु अध्ययनका विषय हुन।

यस सत्रको नवौं पत्रमा नेपाली समालोचना मुख्य पाठ्य विषय हो अनि यसलाई चारवटा एकाइमा बाँडिएको छ।
पहिलो एकाइमा 'समालोचनाको अर्थ, परिभाषा र स्वरुप' सम्बन्धी सैद्धान्तिक विषयका साथै 'नेपाली समालोचनाको विकासक्रमको सर्वेक्षण' अनि 'केही प्रमुख समालोचकहरुको समालोचना प्रवृत्ति र योगदानको अध्ययन' पाठ्यविषय हुन।
दोस्रो एकाइमा 'नैवेद्य समालोचना,' 'टाक्सिएको नेपाली कविता,' 'पुलनालको हेराइमा मानुभक्त र ज्ञानदिल' अनि 'कविता र अनिर्वार्यता' जस्ता विषय हुन।
तेस्रो एकाइमा 'नेपालीमा शृङ्गारकालीन कविताको विकास,' 'मुनामदन-एक यथार्थवादी समालोचना,' 'आधुनिक नेपाली कथा: गति र प्रकृति' अनि 'आधुनिक नेपाली नाटक' हुन पाठ्य विषयका रुपमा।
चौथो एकाइमा 'शार्दूलप्रसाद नेपाली जाति: एक ऐतिहासिक अध्ययन' 'लक्ष्मीनिबन्धसँग र 'कविता के हो? एक भूमिका' शीर्षक समालोचनाहरु पाठ्य विषय हुन।

यस स्नातकोत्तर तहमा मूल विषय हो - सामान्य भाषाविज्ञान। यसमा विषयलाई दुईवटा एकाइमा विभाजन गरिएको छ।

पहिलो एकाइमा 'भाषाको अर्थ, प्रकृति र विशेषता' लगायत 'संसारका भाषाहरूको वर्गीकरणका आधार' • पारिवारिक वर्गीकरण र आकृतिमूलक वर्गीकरण' अनि • भाषा विज्ञानको परिभाषा र क्षेत्र' जस्ता विषय छन।

दोस्रो एकाइमा 'भाषाविज्ञानका प्रमुख विभागहरूको परिचय अन्तर्गत 'ध्वनिविज्ञान' जसमा भाषिक ध्वनि, ध्वनि उच्चारणका अवयवहरू, ध्वनि वर्गीकरणका आधार; 'रूप विज्ञान' जसमा रूपको परिचय, रूपका प्रकार, पद र शब्दको परिचय; 'वाक्य विज्ञान' जसमा वाक्यको परिभाषा र प्रकार, वाक्य विज्ञानको परिचय, पदबन्ध, उपवाक्य, वाक्यका अङ्ग; अनि 'अर्थविज्ञान' जसमा अर्थको परिचय, अर्थ परिवर्तनका कारण र दिशा, शब्द र अर्थको सम्बन्ध जस्ता विषयहरू पाठ्यक्रममा अन्तर्भुक्त छन।

Honours Generic Elective Course [GEC]

नेपाली भाषा र साहित्य अनर्स इतर अन्य विषयमा अनर्स लिएका विद्यार्थीहरुका निमित्त सामान्य अन्तर्विषयमूलक ऐच्छिक पाठ्यचर्या अन्तर्गत प्रथम सत्रमा एउटा पत्र पाठ्यक्रममा निर्धारित छ अनि दोस्रो सत्रमा पनि एउटा पत्र समेत छ। प्रत्येक पत्रको पूर्णाङ्क-७५ जसमा ६० अङ्क लिखित परीक्षा, १० अङ्क अनुशिक्षण र ५ अङ्क कक्षा उपस्थितिका रूपमा निर्धारित छ।

प्रथम सत्रमा नेपाली भाषाविज्ञान मूल विषय छ जसलाई तीनवटा एकाइमा विभाजन गरिएको छ -

पहिलो एकाइमा 'नेपाली भाषाको उत्पत्ति र विकासको सर्वेक्षण,' नेपाली भाषाका शब्दवर्ग' र 'व्याकरणिक कोटिहरु पाठ्य विषय छन्।

दोस्रो एकाइमा 'नेपाली भाषाको शब्द-भण्डार,' 'नेपाली भाषाको शब्द निर्माण प्रक्रिया,' र 'नेपाली भाषाको वर्ण-विन्यास' विषय अन्तर्भुक्त छन्।

तेस्रो एकाइमा 'नेपाली भाषाको अध्ययन परम्परा' र 'नेपाली व्याकरणको इतिहास' पाठ्यक्रममा सम्मिलित छ विषय छन्।

दोस्रो सत्रमा नेपाली लोक-साहित्यको परिचय मूल विषय छ जसमा दुईवटा एकाइ छन् -

पहिलो एकाइमा 'लोक साहित्यको अर्थ र परिभाषा' अनि 'लोक साहित्यका मुख्य विशेषता' पाठ्य विषय समावेश छ।

दोस्रो एकाइमा 'नेपाली लोक साहित्यका विधाहरुको परिचय' अन्तर्गत 'नेपाली लोक गीत, नेपाली लोक कविता, नेपाली लोक कथा, नेपाली लोक नाटक, नेपाली लोक गाथा, नेपाली उखान, टुक्का, वाग्धारा र गाउँखाने कथा' जस्ता उपशीर्षकहरु पाठ्य विषयका रूपमा छन्।

B.A. Programme Course Nepali Under CBCS

बिए प्रोग्राम- नेपालीमा प्रथम र द्वितीय सत्रमा एक-एक पत्र सम्मिलित छ जसको क्रेडिट सङ्ख्या ६, पूर्णाङ्क ७५ जसमा ६० अङ्क लिखित परीक्षा, १० अङ्क अनुशिक्षण र ५ अङ्क कक्षा उपस्थितिका रूपमा विभाजित छ।

पहिलो सत्रमा राखिएको पाठ्यक्रममा नेपाली भाषाविज्ञान मूल विषय छ जसलाई दुई वटा एकाइमा विभाजन गरिएको छ—

पहिलो एकाइमा 'नेपाली भाषाको उत्पत्ति र विकासको सर्वेक्षण,' 'नेपाली भाषाको शब्द-भण्डार,' र 'नेपाली भाषाका शब्दवर्ग' पाठ्य विषय छन्।

दोस्रो एकाइमा 'नेपाली भाषाका व्याकरणिक कोटि,' 'नेपाली भाषाको अध्ययन परम्परा' र 'नेपाली व्याकरणको इतिहास' पाठ्य विषयका रूपमा पाठ्यक्रममा छन्।

यसै सत्रमा बि.ए. र बि.कम का निम्ति नेपाली व्याकरण र रचना एल.सि.सि.का रूपमा पाठ्यक्रममा राखिएको छ जसलाई छवटै क्रेडिट दिइएको छ। यसका पनि दुईवटा एकाइ छन्—

पहिलो एकाइमा 'व्याकरणको अर्थ र परिभाषा' अनि 'नेपाली व्याकरणका विभागहरू' पाठ्य विषय छन्।

दोस्रो एकाइमा 'लोकोक्ति, गाउँखाने कथा, श्रुतलेख-पुस्तका र पाठ्यांश, पत्र लेखन, निबन्ध लेखन, संवाद लेखन, प्रतिवेदन लेखन, डायरी लेखन र रेडियो लेखन' जस्ता दुनियाँ विषयहरू अन्तर्भुक्त छन्।

दोस्रो सत्रमा विषयकेन्द्रित कोर पाठ्यचर्याका अतिरिक्त एइसिसि-२ अर्थात् प्रमुख भारतीय भाषाका रूपमा दुई (२) क्रेडिट भएको पाठ्यक्रम अन्तर्भुक्त छ।

यस सत्रको विषयकेन्द्रित कोर चर्चा अन्तर्गत पत्र-२ मा नेपाली कविता मूल पाठ्य विषय छ जसमा कविता सम्बन्धी सैद्धान्तिक पक्षहरूका साथै कविको परिचयसहित 'बिनीउँढा बिच्छीसित,' 'दुःखना भजन,' 'कविताको सरजाम,' 'पहिमा ढाकेको पत्रो,' 'थान्नी,' 'साहित्य सुचा,' 'के त्यसको कविता भनेँ!' 'हेरीलाई,' 'साहित्यिक होली,' 'उत्सर्ग,' र 'बिहान' कविता पाठ्यक्रमका विषय छन्।

यस सत्रमा प्रमुख भारतीय भाषाका रूपमा नेपालीलाई योग्यता विकासमूलक अनिवार्य पाठ्यक्रम (AECC-2) अन्तर्गत राखिएको छ जसमा 'मुनामदन- खण्डकाव्य,' भाषा- अर्थ, परिभाषा, मुख्य सङ्घटक एकाइहरू, प्रकृति र विशेषता, संसारका प्रमुख भाषा परिवारहरूको परिचय, नेपाली शब्दवर्ग र व्याकरणिक कोटि, पर्यायवाची शब्द, विलोम शब्द, सारशब्द, ठेट नेपाली शब्द, पारिभाषिक र प्राविधिक शब्द' जस्ता भाषा र भाषाशास्त्रका सामान्य विषय राखिएका छन्।

Department of Physics

B. Sc. Physics Programme Course

Semester I (DSC)

Paper GET1:

Course Objective:

The objective of the course is to develop the foundation in mathematical physics, which includes basic methodologies in Calculus, vector algebra, calculus and their applications. The applications of these mathematical tools to comprehend different physical theories and solving practical physical problems related to Physics are to be highlighted.

After going through this course the students are expected to:

1. Develop the foundational knowledge on the basic calculus, including the idea of limits, continuity, differentiability etc.
2. Have a thorough knowledge on about frames of reference, Newton's laws of motion, Galilean transformation, conservation of momentum, dynamics of systems of particles.
3. Comprehend the relations between force, work and energy, idea of conservative and non-conservative force.
4. Have a detail knowledge on laws of Gravitation, potential fields for rigid bodies of different shapes.
5. Be introduced with the motion of particle under central force.

Outcome of the course:

After successfully completing the course the students were observed to:

1. Acquire the introductory knowledge on Newtonian mechanics.
2. Develop skills to solve problems related to mechanical systems.
3. Acquire knowledge on properties of dynamical systems.
4. Become familiar with the properties of systems under simple harmonic oscillation.
5. Acquire knowledge on elastic properties of materials and fluid motion.
6. Gain an appreciation on the special theory of relativity.
7. Become familiar with simple harmonic oscillator.
8. Have introductory ideas on elasticity of materials and fluid motions,
9. Have knowledge about special theory of relativity which includes ideas about Lorentz Transformations, simultaneity and order of events, Lorentz contraction, time dilation, relativistic transformation of velocity, frequency and wave number.

Paper GEP1:

Course Objective:

This course is designed to give students the experience of some traditional hand on experiments on mechanics. These experiments are related with the theoretical knowledge that they gather from paper T1.

After completing the course the students are expected to

1. Be familiar with the basic measuring instruments related to mechanics experiments.
2. Experimentally verify the theoretical knowledge with which they were introduced in course T1.

Outcome of the course:
After successfully completing the course the students were observed to:

1. Have the skill to carryout practical experiments related to mechanics and motion.
2. Comprehend the empiricism of the theoretical inputs of course T1.

Semester II

Paper GET2:

Course Objective:

The objective of the course is to develop the foundation in mathematical physics, which includes basic methodologies in Electricity and Magnetism. The course is designed to give students knowledge about electrostatics, magnetic properties, electromagnetic induction and basic concepts about electromagnetic nature of light.

After going through this course the students are expected to:

1. Gain knowledge about electricity and magnetism and to understand these phenomenon as a consequence of one another.
2. Be introduced to Faraday's law of electromagnetic induction.

Outcome of the course:
After successfully completing the course the students were observed to:

1. Understand the phenomenon of electricity and magnetism and their applications.
2. Understand transverse nature of electromagnetic waves and propagation of light as an electromagnetic wave.
3. Understand light as electromagnetic wave.

Paper GEP2:

Course Objective:

This course is designed to give students the experience of some traditional hand on experiments on electricity and magnetism. These experiments are related with the theoretical knowledge that they gather from paper T2.

After completing the course the students are expected to

1. Experimentally verify the theoretical knowledge with which they were introduced in course T2.

Outcome of the course:
After successfully completing the course the students were observed to:

1. Be familiar with the basic measuring instruments related to electricity and magnetism experiments.
2. Have the skill to carryout practical experiments related to mechanics and motion.
3. Comprehend the empiricism of the theoretical inputs of course T1.

Semester III (DSC and GE)

Paper GET3:

Course Objective:
This course aims to introduce the basic ideas of Kinetic theory of gases and the laws of thermodynamics. Application of these laws are to be applied in understanding the gaseous behaviour. The course briefly covers different topics like velocity distribution in gases, deviation of perfect gas from real behaviour and the different laws of thermodynamics, widely used in understanding gaseous nature.
After completing this course the students are expected to:

1. Understand the application of Maxwell's velocity distribution law and its applications in solving practical problems.
2. Get introduced to the concept of mean velocity, root mean square velocity, most probable velocity and their applications.
3. Have knowledge about molecular collision, free path, mean free path and the idea of relaxation time.

Outcome of the course:
After successfully completing the course the students are expected to:

1. Understand gaseous systems and solve problems based on mean velocity, RMS velocity and most probable velocity.
2. Acquire knowledge on molecular collisions and free paths.
3. Use thermodynamics to further address the different properties of gaseous systems.
4. Have knowledge on heat engines and their efficiency.
5. Understand the importance of thermodynamics in Physics.

6. Get introduced to different transport phenomenon's like viscosity, diffusion and thermal conductivity.
7. Get introduced to the concept of work and heat and to extend the idea to acquire knowledge about adiabatic and isothermal process.
8. Have a brief idea about the laws of thermodynamics and its applications.
9. Have knowledge about phase transition and basic concept of different thermodynamic potentials.

Paper GEP3:

Course Objective:

This course is designed to give students the experience of some traditional hand on experiments on heat and thermodynamics. These experiments are related with the theoretical knowledge that they gather from paper T3.

After completing the course the students are expected to

1. Experimentally verify the theoretical knowledge with which they were introduced in course T3.

Outcome of the course:
After successfully completing the course the students were observed to:
1. Have the skill to carryout practical experiments related to heat and thermodynamics.
2. Comprehend the empiricism of the theoretical inputs of course T3.
3. Be familiar with the basic measuring instruments related to heat and thermodynamics.

Paper Core SEC T2:

Course Objective:
This course aims to introduce the basics of computational methods in Physics, which will be helpful to the students for solving physics problems.

After completing the course the students are expected to
1. Use linux operating system for computational purpose and as an editor.
2. Be familiar with algorithms and flow chart for plotting different figures arising in physics problems.
3. Use latex for preparing documentation.

Outcome of the course:
After successfully completing the course the students were observed to:

1. Understand and develop skills in linux operating system for different computational purposes.
2. Be able to solve basic physics problems using Fortran and C++ computer languages.
3. Use latex with same ease as windows based Microsoft word.
4. Understand linux commands and basics of Fortran and C++ programming skills.

DEPARTMENT OF POLITICAL SCIENCE

COURSE OUTCOME

Understand the relationship between Political Science and Society: understanding the inter relationship between policy decisions and its effects on society. This is achieved through a comprehensive teaching of the practice of public administration in India.

Critical thinking: the ability to analyse and predict socio political phenomena based on the study of existing socio-economic determinants and past experiences. This goal is achieved by training students in the different methods and tools of investigation such as empirical research methods, survey research and data analysis of subject responses.

Effective citizenship: the course curriculum inculcates among students a basic understanding of the rights and duties of citizenship and thereby to act as responsible citizens through the observation of important days such as Independence Day, Republic Day and also spreading awareness in society through different programmes based on specific socio political issues such as domestic violence, disillusioned youth of the materialistic world etc.

Communication: Establishment of linkages between academics and civil society at large so as to successfully address socio political problems. The fortnightly wall journal is a means for keeping the entire student population up to date with political occurrences both global and domestic. Debates, seminars and panel discussions are also regularly organised on relevant themes and participation is sought from experienced resource persons. To address the themes such as Diverse Paradigms of Indian Democracy: Crises and Challenges and The Indian Parliament: A critical Retrospect and also by participating in the Youth Parliament competition organised by the Department of Parliamentary Affairs, Government of West Bengal

DEPARTMENT OF POLITICAL SCIENCE

PROGRAMME OUTCOMES

CC 01/DSC101: UNDERSTANDING POLITICAL SCIENCE

Course Objectives: This foundation course attempts to familiarizes students with central debates in political theory in the discipline of Political Science and permits them an overview of the works of some of the discipline's most pertinent concepts. It does so by pointing out long term intellectual traditions of thought as well as implications for contemporary politics and Political Science. Students will learn to critically engage with concepts and canonical texts, to compare them analytically, and to translate what they mean for the present. In so doing, students will acquire the critical analytical vocabulary to address political questions in a reflected and theoretically informed way. Since the course Understanding Political Science is an introduction to political theory, it is the study that helps us develop working answers to contentious questions. The course is divided into thematic parts: which examines the problems of foundations – what politics is at its beginning; the question of 'science' and 'art', the state - its purpose and meanings; the problem of political rule and the many difficulties involved in having or sharing political power, as well as interrelations among core concepts. Learning Outcomes: The student will be able to appreciate the centrality and importance of 'politics' concepts, and institutions in the more ordinary and everyday aspects of our lives – the politics and policies that determine how we interact at work and in our more private worlds with family and friends, as well as in the public sphere. Throughout, students will be better equipped to employ and use a variety of resources – philosophic, literary, cultural, cinematic, and historical – to understand and develop conceptual ways of engaging with our political world, we choose to live by.

CC 02: PERSPECTIVES ON PUBLIC ADMINISTRATION

Course Objectives: This course introduces the history and practice of public administration at the global, national, state, and local levels. Topics include concepts of public policy, organizational theory, intergovernmental administration, human resources, the ethics of public service, and the general principles of impact of the information age. Public Administration also includes studies in law, public policy, organizational theory and a variety of other subjects. Classic confrontation between "politics" and "administration" will be examined in this course. The historical context of the "Good Government Movement" of the Nineteenth Century; the rise of the professions in public management; the issues of responsiveness and patronage; issues of gender will be taught and application made to current state and local government administrative practice. The political process and public policy making will also be examined. While elected officials are the most visible part of our government, it is the daily government workers, or "bureaucrats," who do the majority of governmental tasks and functions. Some of these bureaucrats are public administrators and have a difficult job. They have to come up with implementing solutions to the most daring of society's challenges. They advise elected officials of the strengths and weaknesses of public programs. A public administrator manages public agencies, sets budgets, and creates government policies. A course in public administration seeks to prepare students to successfully problem-solve and find solutions to various administrative issues. Learning Outcomes: Students can earn a master's or doctoral degree in public administration as the course will provide a sound academic foundation to students. Internships and graduate

assistantships are usually available, most commonly at the bachelor's and master's levels. Graduates can also work as urban and regional planners, city managers and more. Public administration attempts to decipher how decisions in government are made as well as administrating government projects to carry out those decisions so students will develop a diverse and multidisciplinary background in public policy, management, sociology, and political theory. Students will develop a strong understanding of finance and accounting, administrative skills and abilities, information about government workings as well as organizational capability. There are a lot of job opportunities in nonprofit firms, local government bodies, state government, public service organizations, such as healthcare agencies as well as animal welfare and various non-profit firms at the local, national and international level. After the successful completion of the course, aspirants are eligible to apply for government jobs as a profile for association executives or as a budget analyst with various social groups and also in the Union or state civil services.

SEMESTER 2: COURSE CC 03/DSC 301:

INDIAN GOVERNMENT AND POLITICS

Course Objectives: The course explains the complexities of the Indian political process and its effects on the constitutional institutions of India. Adopting a multi-disciplinary approach, it takes a fresh look at the socio-political and economic scenario of contemporary India and unearths new areas of inquiry by posing pertinent questions on the nature of Indian politics. The strength of the course lies in its focused content, which thoroughly analyses the political happenings in India and studies how the political institutions have emerged and changed since the end of colonial rule in the country. The highlights of this course include discussions and debates on the genesis of the Indian Constitution; the major constitutional offices of India; the theory and practice of federalism; the powers and functions of the Union and state legislature, executive and judiciary; preliminary issues of planning and economic development and discussions on the party system. The course also broadly initiates discussion on various contemporary issues in Indian politics and governance with respect to the institutions. Ultimately, the goal of this course is to help each member of the class arrive at a deeper, more comprehensive understanding of the forces that shape Indian government and politics, so that he or she may be both a more discerning student and critic of the system and a more informed and reflective participant in it. Learning Outcomes: Students will learn the structure and dynamics of Indian national government, providing a broad-based introduction to the ideas and institutions that shape politics in the contemporary India. Students will have a sound foundation on three major areas: the Indian Constitution and the debates of the founding era and the institutions of modern Indian government. At the completion of the course, students will be familiar with the strategies, roles, and limitations of both governmental elites and ordinary citizens, with particular emphasis on how they communicate and interact within the constitutional “rules of the game” to promote (or inhibit?) the achievement of public goods. Students will be able to critically examine important political phenomena and governmental processes from a variety of perspectives. On successful completion of this course students should be able to show strong knowledge of the Indian political institutions and the way in which they interact in the process of policy making; familiarize themselves with the history of the Indian political system; become aware of the main contentious policy debates that have dominated contemporary Indian political

discourse; demonstrate strong understanding of the Indian electoral process as well as critically assess the electoral process.

CC 04: WESTERN POLITICAL THOUGHT

Course Objectives: One of the most enduring controversies in Western political thought is how to conceptualize the relationship among concepts such as justice, freedom, politics, and citizenship. Aristotle sharply distinguished the economic and political realms, and held that humans experienced freedom—which consisted in civic activity—only in the latter. The English philosopher, John Locke, however, saw freedom, economics, and citizenship as integrally interrelated: government exists to protect not only persons but also property, and freedom largely consists in the ability to accumulate and enjoy property without the threat of either anarchy or tyranny. Marx and Engels agreed with Locke that freedom, economics, and citizenship were integrally interrelated, but Marx and Engels thought private property was antithetical to freedom, and reconceived citizenship as revolution against capitalism. This course introduces the students to Western political thought by tracing the classical history of the philosophical debate over the proper relation among justice, freedom, economics, and citizenship. Though Plato, Aristotle, J.S Mill, Bentham figure most centrally in the storyline, we will also consider works by Thomas Hobbes, Rousseau, John Locke and others. Heavy emphasis will be placed on enhancing the skills in writing and argument. In this regard, certain key texts (extracts) shall be circulated that will help the students in developing the skill of content analysis. Learning Outcomes: Students will understand the origin and nature of political theory and the ways political theoretical thinking can enhance our capacities for critical reflection and democratic citizenship. They will also understand how the concepts of freedom and citizenship have had multiple and sometimes conflicting meanings in the history of Western political thought and meanings of freedom and citizenship have varied in response to changing understanding. After completing this course, students will be familiar with the main features of the two most important and influential political theories of all time – those of Plato and Aristotle. They will also understand the historical origins of political theory as a field of study and the ultimate roots of contemporary political thought. They will be trained in Socratic, deductive and empirical approaches to studying social life; Students will be able to describe and apply the main classical concepts of political theory, including justice, liberty and community and know the classical forms of government and their comparative strengths and weaknesses. Broadly, they will comprehend some key points of similarity and difference between classical and modern political thought.

SEMESTER III COURSE CC 05/DSC 301 COMPARATIVE POLITICS

Course Objectives: This course studies the political systems of a number of different countries, providing the opportunity to examine the features of individual political systems and to investigate the similarities and differences among political systems in two or more countries. Comparative politics attempts to analyze and explain its findings through comparative study. As such, the goal of comparative study is to develop “law-like” generalizations and thereby facilitate both explanation and prediction, thus warranting the status of a “science.” The course includes case studies of countries such as United Kingdom,

United States, China and France. U.S.A. ,China and Russia. The course is aimed at generating a wealth of information that allows us to construct the key features for each of the individual cases, examine similarities and differences among various political systems, and appreciate the diversity of the political world. The case studies also permit interesting conclusions and allow for the generation of useful questions. Most importantly, though, the case studies examined allow you to begin to engage in comparative political analysis. The course takes that the task of comparative analysis is not simply to describe what is going on in one, two, or more countries, but it is to dig for credible reasons for why these things are going on and offer clear evidence for the ideas that students may unearth. Identify the components of system theory and explain its use in political science. The objectives of the course are to identify the key theoretical approaches and methods used in comparative politics in the hope that students apply these comparative approaches to one, two, or more countries (i.e., undertake comparative analysis). The students will also be expected to distinguish between and analyze the politics of three types of political systems: industrialized democracies, former and current Communist regimes, and the Third World. Learning Outcomes: Students will be able to compare states according to their historical evolution, political culture and political participation, state institutions, form of government, and public policy. They will also be able to describe, the important details of the political systems addressed in the course. They will be enabled to analyze the impact of globalization on the states covered in the course and assess the level of democratization in the regimes studied in the course. In this course, will explore and understand major questions and issues in contemporary comparative politics. Students will be able to answer questions that have long been central to research in comparative politics, including the challenges for democratization and democratic stability in certain social and economic contexts, how countries vary in their political institutions (constitutional, electoral, administrative, and party systems) and why these variations matter, and what explains the persistence of ethnicity and causes of civil conflict. At the successful completion of the course, students will be able to: • Define the key terms in Comparative Politics • Discuss the political history, institutions, political cultures, political parties, interest groups, political issues, cleavages, and the major political conflicts of various contemporary political systems • Compare and contrast major aspects of democratic and non-democratic political systems • Compare and contrast economic challenges facing developed and developing states • Debate the role of a state in economic development • Participate in group discussions about contested concepts with confidence and with tolerance for other points of view • Navigate the large amounts of research material available in this subject through both traditional academic sources and through the use of information technology • Demonstrate career readiness and leadership skills appropriate for beginning professional practice, including lifelong learning skills characterised by academic rigour, self-direction and intellectual independence

COURSE CC: 06 PUBLIC POLICY AND ADMINISTRATION IN INDIA

Public Policy and Administration in India covers a wide range of topics, from the norms and values informing democratic policymaking to the basics of cost-benefit and other tools of policy analysis. Though emphases will differ based on instructor strengths, all sections will address the institutional arrangements for making public policy decisions, the role of various actors-including nonprofit and private-sector professionals-in shaping policy outcomes, and the fundamentals (and limits) of analytic approaches to public policy. This course introduces

students to a broad range of research strategies, methods and techniques used in policy analysis. It explores recent developments in analytical techniques, with particular reference to their underlying assumptions and their relevance to problems facing policy analysts and decision makers. This course introduces basic policy concepts, the policy process and elements of the machinery of government showing the links between the foundations of policy analysis and contemporary public issues in the context of India. In this regard the course will discuss in detail the concept of Public Policy, its characteristics, definition and models; introduce them to the meaning of Decentralization – its significance, approaches and types; learn about the Local Self Governance: Rural and Urban; introduce them to the concept and significance of Budget as well as inform them about budget cycles in India and various types of Budgeting. Putting the idea of Citizen and Administration Interface and Public Service Delivery the course will attempt to make them familiar with the Redressal of Public Grievances, RTI, Lokpal, Citizen's Charter and E-Governance. Finally, the course will also introduce them to the concept and approaches of Social Welfare including the Right to Education, National Health Mission, Right to Food Security and MNREGA. Learning Outcomes: At the completion of the course, the student will be able to competently assume foundational positions in policy development organisations, implementation and evaluation, and manage these functions in government, non-profit organisations, international organisations and the private sector Implement skills in all aspects of management, including general management, leadership, organisation management, strategic planning, - financial management, human resource management, and IT management. They will be able to utilise training grounded in theory and practical application of theory to work in organisations in developed countries and countries with emerging economies such as India. They will also understand how to analyse data and make effective management decisions given the diversity and complexity of the Indian social reality. The students will be able to look beyond traditional paradigms, looking instead to non-traditional path-breaking solutions for problems that are specific to India. The students will also be able to effectively recognize, communicate, and contrast foundational concepts and issues in public policy and administration in India. In particular, they will be enabled to practice public administration constitutionally and legally by understanding the Constitution of India, due process, and equal protection rights. They will understand Union budget processes and assess financial implications of public decisions to the people of India.

COURSE CC 07: NATIONALISM IN INDIA

This course is primarily a survey of Indian history from colonial period to the present, focusing on the ideas, encounters, and exchanges that have formed this dynamic region. For the first two-thirds of the course, we will focus on the history of India from British colonial advent to 1947, privileging the two-and-a-half centuries of British colonial rule in India and the political, social, and cultural contestations that culminated in its independence. In the course's final third, we will focus on the history of the region since India's Partition. In particular, the course will focus on the concept of nationalism and its development in India. This course addresses the conflict and oppression that can be engendered through nationalism, and the global changes that can be brought about by national identities, ideologies and interests. Students will gain a comprehensive knowledge of the central concepts and major theories of nationalism, and identify key issues and problems through

comparative and case study approaches. Learning Outcomes: The course will impart an appreciation of the multidisciplinary nature of nationalism studies, in the context of Indian nationalism and provide a thorough grounding the central concepts and major theories of nationalism give students a comprehensive view of the ideas of key figures in the field convey the need to understand nationalism in the context of long-term, historical social change identify key issues and problems in comparative and case study approaches to the study of nationalism provide explorations of a variety of substantive cases of nationalism, helping students to think concretely about the phenomenon enable students to carry out substantial independent research or write a dissertation on a topic of their interest within the field at a later and higher stage. The course will familiarizes students with major concepts, theories and academic approaches which have influenced scholarly and popular understandings of ethnicity, nationhood, nationalism and notions of individual and group identities in diverse political and territorial contexts. After the completion of the course the students will be enabled to cultivate a theoretical framework for analyzing the various manifestations of identities that are commonly labelled as ‘ethnic’ and ‘national’; engage in a critical inquiry into these processes in diverse cultural and political contexts; develop a comparative perspective to identify underlying similarities as well as distinctive elements of ethnic and nationalist politics across different political, regional and cultural contexts, and finally, gain a broader understanding of the rise and growth of Indian nationalism.

SEC 301: PUBLIC OPINION AND SURVEY RESEARCH

Objectives: Opinion surveys are nearly ubiquitous in public life today. What are surveys, how do we conduct them, what can they tell us (and fail to tell us), and what is their relevance to legal and social research? This course is a skills-based workshop geared to train students to critically consume, generate and interpret survey data including polls. Key topics we will cover include: the history of the concept of public opinion; historical approaches to survey research methods; the role of public opinion in a democracy; understanding sampling theory and questionnaire design; learning about different modes of interviewing and alternatives to opinion surveys; reading texts that discuss public opinion and use survey data; primary analysis of survey data including core concepts of qualitative and quantitative data. This course seeks to provide basic and necessary experience with the use of statistics and probability theory. Students are expected to work on a group project and a research paper for the class which will be used for internal evaluation. Learning Outcomes: Students will develop a large number of cross-disciplinary skills such as: discernment, analytical and summarising skills, research experience, and so on. This range of skills, combined with specialist knowledge acquired during their studies, prepares students for professional careers in very varied sectors of activity, such as: private and public companies in the sector of polling, data collection and analysis (social and market research), careers in public administration, statistical offices, Masters and doctoral training, research and teaching at University or college, Non-governmental and international organizations, Journalism, media, public relations, communication, Business and marketing analytics. Students would have gained advanced training in the theory and hands-on design of survey and public opinion polling instruments, learn how to administer and analyze the results of survey instruments and polls, identify how to make data accessible and meaningful across various stakeholder

communities and the general public, as well as integrate polling and survey research so that it can be effective for a range of professional settings and workplace environments.

COURSE GE 301: READING GANDHI

Course Objectives: This course will take us back to where it all started, and explore the ideas of the man who, more than any other, was responsible for inventing Civil Disobedience. This will not, primarily, be a class on Gandhi's life. Instead, we will examine the both original writings of both Gandhi and some of his major interpretations to better understand what satyagraha and civil disobedience is, what it is not, in what historical contexts it has been effective, and how it is still relevant today. The course will seek and answer to the question: What is Gandhian philosophy? Is it the religious and social ideas adopted and developed by Gandhi, first during his period in South Africa from 1893 to 1914, and later of course in India or are there other sources? Students will learn that these ideas have been further developed by later "Gandhians", most notably, in India by, Vinoba Bhave and Jayaprakash Narayan. Outside of India some of the work of, for example, Martin Luther King Jr. can also be viewed in this light. Students will delve into the manner in which Gandhi understood human nature by critically looking at his ideas of the universe as an organic whole, where the philosophy exists on several planes - the spiritual or religious, moral, political, economic, social, individual and collective. Students will discuss in detail the twin cardinal principles of Gandhi's thought which are truth and nonviolence. In short, the course will discuss the contribution of Gandhian thought in the making of modern India through his own works, as well as through the interpretations of selected scholars, so that students can evaluate the relevance of Gandhi to the modern times. Learning Outcomes: The course will give students a good knowledge about Human values and Gandhian Principles. This helps students to improve their attitude to Gandhi and his philosophy. It inculcates the right moral values in students. It teaches students to understand that doing Social service and field work is essential for self-development. The course focuses on Gandhi's influence on Indian and Western thinkers, on the historical developments of Gandhi's philosophy, on ethical issues, Gandhi's moral, religious and social philosophy. The course also gives an over-all picture of Gandhi, as a writer, as a humorist, as a philosopher, as the maker of Modern India and his relevance to contemporary India.

SEMESTER IV

CC 408 – INTRODUCTION TO INTERNATIONAL RELATIONS

Explaining scope and subject matter of International Relations as an autonomous academic discipline. Approaches and methods to study the discipline through Political realism, Pluralism and Worlds system's Model.

Examining the issues of Underdevelopment, Terrorism, Regionalism and Integration that characterizes the Post second world war order.

Studying the role of Diplomacy, Propaganda and Military capabilities in the making of foreign policy.

Explaining certain basic concepts like Globalisation in contemporary world order.

Describing the Cold War phases and understanding the post Cold War era.

Discussing the developments in European Ethno-nationalism since 1990's. Tracing the growth of European Union

Examining Indian Foreign Policy: Basic Principles, Evolution and Bilateral Relations.

Evaluating the working of UN and its organs; Peace keeping Function and Human Rights.

Analysing the Foreign Policy of USA and China.

CC 409 – POLITICAL SOCIOLOGY

Studying the concepts of Power, Authority and Legitimacy in the context o society.

Examining social stratification through the index of class, caste and elite.

Evaluating the impact of Religion on society.

Relating Gender and Politics

Creating awareness among students about Nationalism and State building processes in Western Europe and third world

Establishing State –society interrelationship.

Classifying the different types of Political systems.

Discussing the approaches to the study of Political Culture. Evaluating the different agents of Political Socialization and their interrelationships.

Evaluating the concept and types of Political Participation.

Discussing the relation between Military and Politics with reference to conditions and types of intervention

Studying groups in politics: political parties and pressure groups.

Assessing the approaches to Political Communication; Electoral Behaviour

Evaluating the concept of Political Development and Social Change- Role of Tradition and Modernity.

CC 410 – POLITICAL THEORY: CONCEPTS AND DEBATES

Section A:

Core Concepts I. Importance of Freedom a) Negative Freedom: Liberty b) Positive Freedom: Freedom as Emancipation and Development Important Issue: Freedom of belief, expression and dissent

II. Significance of Equality a) Formal Equality: Equality of opportunity b) Political equality c) Egalitarianism: Background inequalities and differential treatment Important Issue: Affirmative action

III. Indispensability of Justice a) Procedural Justice b) Distributive Justice c) Global Justice Important Issue: Capital punishment

IV. The Universality of Rights a) Natural Rights b) Moral and Legal Rights c) Three Generations of Rights d) Rights and Obligations Important Issue: Rights of the girl child

Section B: Major Debates

I. Why should we obey the state? Issues of political obligation and civil disobedience.
II. Are human rights universal? Issue of cultural relativism.
III. How do we accommodate diversity in plural society? Issues of multiculturalism and toleration.

SEC 402- DEMOCRATIC AND LEGAL AWARENESS

1. Outline of the Legal system in India: (a) System of courts/tribunals and their jurisdiction in India - criminal and civil courts, writ jurisdiction, specialized courts such as juvenile courts, Mahila courts and tribunals. (b) Role of the police and executive in criminal law administration. (c) Alternate dispute mechanisms such as lok adalats, non- formal mechanisms.

2. Brief understanding of the laws applicable in India (a) Constitution - fundamental rights, fundamental duties, other constitutional rights and their manner of enforcement, with emphasis on public interest litigation and the expansion of certain rights under Article 21 of the Constitution. (b) Laws relating to criminal jurisdiction - provision relating to filing an FIR, arrest, bail search and seizure and some understanding of the questions of evidence and procedure in Cr. P.C. and related laws, important offences under the Indian Penal Code, offences against women, juvenile justice, prevention of atrocities on Scheduled Castes and Scheduled Tribes., Concepts like Burden of Proof, Presumption of Innocence, Principles of Natural Justice, Fair comment under Contempt laws. (c) Personal laws in India: Pluralism and Democracy (d) Laws relating to contract, property and tenancy laws. (e) Laws relating to dowry, sexual harassment and violence against women (f) Laws relating to consumer rights (g) Laws relating to cybercrimes (h) Anti-terrorist laws: implications for security and human rights

3. Practical application: Visit to either a (I) court or (ii) a legal aid centre set up by the Legal Services Authority or an NGO or (iii) a Lok-Adalat, and to interview a litigant or person being counselled. Preparation of a case history.

4. Access to courts and enforcement of rights (a) Critical Understanding of the Functioning of the Legal System (b) Legal Services Authorities Act and right to legal aid, ADR systems 24 (c) Practical application: What to do if you are arrested; if you are a consumer with a grievance; if you are a victim of sexual harassment; domestic violence, child abuse, caste, ethnic and religious discrimination; filing a public interest litigation. How can you challenge administrative orders that violate rights, judicial and administrative remedies

5. Using a hypothetical case of (for example) child abuse or sexual harassment or any other violation of a right, preparation of an FIR or writing a complaint addressed to the appropriate authority.

GE 402 – FEMINISM: THEORY AND PRACTICE

1. Approaches to understanding Patriarchy (a) Feminist theorising of the sex/gender distinction. Biologism versus social constructivism (b) Understanding Patriarchy and Feminism (c) Liberal, Socialist, Marxist, Radical feminism, New Feminist Schools/Traditions

2. History of Feminism (a) Origins of Feminism in the West: France, Britain and United States of America (b) Feminism in the Socialist Countries: China, Cuba and erstwhile USSR (c) Feminist issues and women's participation in anti-colonial and national liberation movements with special focus on India

3. The Indian Experience (a) Traditional Historiography and Feminist critiques. Social Reforms Movement and position of women in India. History of Women's struggle in India (b) Family in contemporary India - patrilineal and matrilineal practices. Gender Relations in the Family, Patterns of Consumption: Intra Household Divisions, entitlements and bargaining, Property Rights (c) Understanding Woman's Work and Labour – Sexual Division of Labour, Productive and Reproductive labour, Visible - invisible work – Unpaid (reproductive and care),Underpaid and Paid work,- Methods of computing women's work , Female headed Households

SEMESTER V

CC 511 – UNDERSTANDING GLOBAL POLITICS

1.: What Makes the World What it is? a. The Sovereign State System (i) Evolution of the state system (ii) The concept of Sovereignty

2. : . What Makes the World What it is? (b) The Global Economy (i) Discussing the Bretton Woods Institutions and WTO (ii) Ideological underpinnings (iii)Transnational Economic Actors (c) Identity and Culture

3 : What Drives the World Apart? a. Global Inequalities b. Violence: Conflict, War and Terrorism

4. : Why We Need to Bring the World Together? a. Global Environment b. Global Civil Society

CC 512 – INDIAN POLITICAL THOUGHT

1. Ancient Indian Political Thought: Main Features– Contribution of Kautilya.

2. Medieval Political Thought: Main Features.

3. Indian Awakening and birth of Modernity: Rammohun and Syed Ahmed Khan

4. Ideas of Nationalism: Bankimchandra, Tilak and Rabindranath

5. M. K. Gandhi: ideas on State and Trusteeship.

6. Alternative trends in political ideas: a) B. R. Ambedkar: on social justice. b) M. N. Roy: Radical Humanism. c) Narendra Deva: contributions to Socialism.

DSE 501A – PARTY SYSTEM IN INDIA

Understanding Political Parties, its meaning and typology

Features and characteristics of Indian Party system

Emerging trends in Indian Party system

Understanding the emergence, nature, ideology and working of Major Political parties in India.

Classification of Political parties as national political parties, state political parties and regional political parties in India.

Reading the major national political parties like Indian National Congress, Bharatiya Janata Party, Communist Parties of India, All India Trinamool Congress, Bahujan Samaj Party etc.

Understanding the emergence of Regional political parties in India.

To understand the impact of regional political parties in India.

Understanding the emergence of Coalition politics in India.

DSE 501B – HUMAN RIGHTS

Understanding the concept of Human Rights. Assessing the availability of Human Rights in the Constitution of India. Studying the State Human Rights Commission.

Understanding different aspects of Human Rights- Theoretical traditions

Understanding Human rights in the backdrop of democratisation, Human rights and world politics.

Understanding the different areas and issues and human Rights- Nature of human right violation.

Understanding the social aspects of human rights- human rights and women, children and human rights, poverty and human rights etc.

DSE 502A – ELECTORAL PROCESS IN INDIA AND WORKING OF PARLIAMENTARY DEMOCRACY

The course is designed to provide a clear understanding of the electoral process in India along with understanding of the working of parliamentary democracy in India.

Unit 1 of this course focusses on the election system in India. Here the learners will understand the features, merits and demerits of election system in India, the election commission-its composition and functions.

Understanding the electoral process in India including electoral reforms.

Understanding voting behaviour with its features and determinants along with political participation in India.

Understanding the mechanism of elections in India and studying the lok sabha elections since 1952 and government formation in India.

Learning about political defection, politics of reservation etc.

Understanding the working of parliamentary democracy in India.

DSE 502B – INTERNATIONAL ORGANISATIONS

The programme is designed to give an insight into the international organisations, their workings and relevance in contemporary world politics.

Understanding the genealogy relating to the growth of different international organisation like League of Nations, UNO etc.

Special focus is given to the study of UNO along with its different organs like General Assembly, Security Council, International Court if Justice, ECOSOC, UNESCO, WHO ETC.

Understanding the role of the different international organisations in maintenance of International Peace, Security, development etc.

Understanding IMF, European Union, SAARC, ASEAN, WTO

SEMESTER VI

CC 613 – INDIAS FOREIGN POLICY IN A GLOBALISED WORLD

The course is designed to make the students familiar with India's foreign policy in a globalised world.

The programme will familiarise the students with the determinants and ideological roots of India's foreign policy.

Understanding India's relations with

USA,

USSR and

China.

The course maps the India's position and role in south asia.

Understanding India in the multipolar world.

CC 614 – POLITICAL IDEOLOGIES

The course is designed to make the students familiar with the different political ideologies for the better understanding of the political concepts.

Understanding Liberalism- its meaning and characteristics.

Understanding the development of liberalism highlighting the negative and positive liberalism.

Familiarising the learners with the theories of democracy. Reading the major theories of democracy like classical theory of democracy, Elite Theory of Democracy Pluralist Theory of Democracy and Marxist Theory of Democracy.

Understanding Marxism with special focus on Marxian Interpretation of History and Marxian Theory of Social and Political Change and Marxist Theory of Revolution.

Reading Socialism and Fascism with special focus on Meaning, Features and Development of socialism and Fascism.

DSE 603A – INDIA AND HER NEIGHBOURS

This course is designed to give an input into India's relation, proximity, areac of cooperation and conflicts with its neighbours. The course is divided into four units in the following manner:-

UNIT I - ***INDIA AND PAKISTAN*** (i) Colonial Legacies (ii) Geographical and Strategic Importance (iii) Demographic, Socio-Cultural Composition (iv) Natural Resources (v) Development, Democracy and Dictatorship (vi) Nuclear Policy of India and Pakistan (vii) Kashmir Question (viii) Areas of Cooperation and Conflict

UNIT II - ***INDIA AND BANGLADESH*** (i) Colonial Legacies 35 (ii) Geographical and Strategic Importance (iii) Demographic, Socio-Cultural Composition (iv) Natural Resources (v) Development, Democracy and Dictatorship (vi) Refugee Problem (vii) Ganga Water Issue (viii) Areas of Cooperation and Conflict

UNIT III - ***INDIA AND SRILANKA*** (i) Geographical and Strategic Importance (ii) Demographic, Socio-Cultural Composition (iii) Natural Resources (iv) Development and Democracy (v) Tamil Question (vi) Areas of Cooperation and Conflicts

UNIT IV - ***INDIA AND NEPAL*** (i) Historical Relations with Nepal (ii) Geographical and Strategic Importance (iii) Demography and Socio-Cultural Composition (iv) Development and Democracy (v) Areas of Cooperation and Conflict

DSE 603B – DEVELOPMENT PROCESS AND SOCIAL MOVEMENTS IN CONTEMPORARY INDIA

The course is designed to familiarise the learners with:-

I. Development Process since Independence a. State and planning b. Liberalization and reforms
II. Industrial Development Strategy and its Impact on the Social Structure a. Mixed economy, privatization, the impact on organized and unorganized labour b. Emergence of the new middle class

III. Agrarian Development Strategy and its Impact on the Social Structure a. Land Reforms, Green Revolution b. Agrarian crisis since the 1990s and its impact on farmers

IV. Social Movements a. Tribal, Peasant, Dalit and Women's movements b. Maoist challenge c. Civil rights movements

DSE 604A – GRASSROOT DEMOCRACY IN INDIA

The course is designed to explain the following:-

- Historical Background of Panchayati Raj Institutions (PRIs) in India after Independence Constitutional Recognition of PRIs in India after Independence
- GRAM PANCHAYAT Gram Sabha Composition and Functions of Gram Panchayat
- PANCHAYAT SAMITI Composition and Functions
- Zila Parishad – Composition and Functions
- Features of 73 rd & 74th Amendments Composition and Functions of Municipal Corporation
- Democratic Decentralisation in India: Critical Evaluation

DSE 604B – EMERGING TRENDS IN INDIAN POLITICS.

This course attempts to understand:-

1. Casteism: Meaning, Features, Impact of Caste on Indian Politics, Communalism and Secularism: Meaning, Features, Causes and Impact on Indian Politics.
2. Regionalism: Meaning, Causes and Features, Regional Imbalances: Indicators and Impact on Indian Politics.
3. Emergence of Regional Political Parties (ii) Regional Political Parties with Special Reference to National Conference, Akali Dal, DMK, Telgu Desham (iii) Impact of Regional Political Parties on National Politics
4. Coalition Politics in India (ii) Coalition Politics in States
5. Globalization: Meaning, Features and its Effect on Indian Economy Issues of Environment in India

PROGRAM SPECIFIC OUTCOMES (PSO) DEPT. OF SOCIOLOGY

Generic Elective – 3rd Semester

Gender and Violence

- **Understanding the meaning and concept of gender violence.**
- **Getting to know the functions of certain social institutions in creating disparities based on their gender.**
- **It involves the understanding of the logic behind violence. Makes the students aware of the social drawbacks of a society.**
- **It helps to equip an individual by learning the legalities and the rights provided by one's constitution/government for protection and justice.**
- **This course has a very practical & logical approach towards the life of any individual and the hardships that they face on the basis of gender violence. Therefore making the students well informed and helping in making pragmatic & effective choices while resisting or intervening in the context of gendered violence.**

Sudarshana Pradhan

Department of Sociology

Kurseong College

DEPARTMENT OF SOCIOLOGY

PROGRAM SPECIFIC OUTCOME FOR SOCIOLOGY

THREE YEAR PROGRAM COURSE:

- The outcome of this program course in three years allows the students to have a basic understanding of sociology and various related theories. The subject enables the students to understand sociological concepts and approaches.
- This course provides the students, the knowledge of diverse methodologies of research. It gives ideas and comprehension of research work, ways to collect data & analyse their research work. Although this is just a theoretical process done in the classroom, this course helps student appreciate and make use of it in higher studies.
- The subject offered is very relatable and useful to any individual as it delegates the process and functions of a society.
- It helps understand the history of Indian society and the evolution of contemporary Indian society. How dynamic a society is and the effects and consequences of these changes.
- The subject matter discussed in the class such as culture, values, traditions, religion, secularism, communalism, family, marriage, community, social institutions, social groups and actions & so on, provides the knowledge to make an individual aware of its being and having a healthy social living.
- The themes given in the syllabi focus on projecting the gravity of Society, socialization and human conditioning.
- There are issues such as Religion and Media which discusses elaborately the relevance of such institutions, of a society and its influences to create an ideal or a deviant individual. The social patterns moulding the human behaviour help emerge a new social tradition and customs.
- This course allows the students to learn & build a perspective of their own by analysing and studying the relatability of the subject matters in reality and its usage in personal and professional arena. Sociology helps to develop a critical/analytic thinking mind.
- An internal assessment is conducted in each semester where a paper has to be submitted or demonstrations on the paper are given by the students. This helps the students in public speaking, makes them more sociable, use their analysing skills.
- Sociology offers great career opportunities such as Social Researchers, Administrators, Paralegals, Legislative Aide, Teacher, Human Rights Officer, Family Counsellor, Rehabilitation Counsellor, Social Worker, Survey Researcher, Policy Analyst, Media Planner, Journalist and the list goes on.
- Sociology helps us realize that it is not only the society that moulds us, but it is also us who mould the society.

COURSE SPECIFIC OUTCOME FOR THREE YEARS PROGRAM COURSE IN SOCIOLOGY

INTRODUCTION TO SOCIOLOGY:

- To understand the meaning, nature and scope of the subject
- To learn the similarities & differences between Sociology and other social sciences
- To understand many sociological concepts that a society is comprised of.
- To understand what a society is.
- To understand how a society changes and its effect on the individual & on the community.

SOCIOLOGY OF INDIA:

- This unit helps to understand the diversity of Indian society
- Understanding different types of social institutions and practices.
- The importance of family as an institution, the structures and functions of a family and significance of Kinship
- The Indian society consists of many diverse communities with different identities and it helps to understand the co-existence of every group in one society and the changes it brings about.
- To understand the meaning & relation between State and society.
- The impact of secularism and communalism in contemporary India.

SOCIOLOGICAL THEORIES:

- Understanding society through the theories of Auguste Comte, Durkheim, Marx, Weber & H. Spencer
- To understand the evolution of a society.
- To learn about the history materialistic concept.
- To understand class struggle.
- To have the knowledge of working of a society and its psychological & sociological effects on mankind as a society.
- To understand social action and authority.
- To understand the effects of religion and capitalism.

TECHNIQUES OF SOCIAL RESEARCH:

- Learning different techniques of research.
- Learning to make sample studies
- Learning to make hypothesis & validity of your research work.
- Learning the technicalities of conducting Surveys
- Quantitative & qualitative measurements
- Learning different methods of data collection.
- Learning to analyse the data

SOCIOLOGY OF MEDIA:

- This paper includes the relevance of media in our society.
- To have the knowledge of the interconnection between Media & Society.
- To learn about the transmission and reception of media content.
- To understand media through various approaches.

RELIGION & SOCIETY:

- Understanding the meaning of Religion.
- Learning about different religions coexisting together in Indian society.
- To learn about the fundamental doctrines, features and influences
- To understand the meaning and significance of Secularism and growth of Communalism in the Indian Society.

PROGRAM SPECIFIC OUTCOME FOR GENERIC ELECTIVE PAPER IN SOCIOLOGY:

- The Generic Elective paper i.e., GE paper for Sociology is offered to those students who have taken a specific Honours paper. This Generic Elective paper is taught for two semesters only. These two semesters allow the students to recognize the struggles and social problems of our society.
- In these two semesters students are given ample knowledge and made acquaintance with the subjects like Gender and Population. These topics are very current issues and make young minds aware of the conditions and social outlook of our modern society.
- Completion of two semesters in Sociology lets students dive deep into the functions of the social structure of a society. It lets us understand the diverse culture, religion, new perspectives, and attitudes of different societies.
- This course allows the students to learn & build a perspective of their own by analysing and studying the relatability of the subject matters in reality and its usage in personal and professional arena. Sociology helps to develop a critical/analytic thinking mind.
- This paper enables the students to learn the division in society between caste, class and discrimination against different genders.
- It makes one aware of the violence formed against women.
- It gives the significance of demography of a society in building a community.
- This paper enables to have a basic knowledge about the recent social crisis. It also talks about the public welfare and social programs that the government has granted.
- An internal assessment is conducted in each semester where a paper has to be submitted or demonstrations on the paper are given by the students. This helps the students in public speaking, makes them more sociable, use their analysing skills.
- Sociology offers great career opportunities such as Social Researchers, Administrators, Paralegals, Legislative Aide, Teacher, Human Rights Officer, Family Counsellor, Rehabilitation Counsellor, Social Worker, Survey Researcher, Policy Analyst, Media Planner, Journalist and the list goes on.
- Sociology helps us realize that it is not only the society that moulds us, but it is also us who mould the society.

COURSE SPECIFIC OUTCOME FOR GENERIC ELECTIVE PAPER IN SOCIOLOGY

GENDER & VIOLENCE:

- Understanding the meaning and concept of gender violence.
- Getting to know the functions of certain social institutions in creating disparities based on their gender.
- It involves the understanding of the logic behind violence. Makes the students aware of the social drawbacks of a society.
- This paper deals with the issues of gender inequality, discrimination, sexual violence and harassment in our society.
- It helps to equip an individual by learning the legalities and the rights provided by one's constitution/government for protection and justice.
- This course has a very practical & logical approach towards life of any individual and the hardships that they face on the basis of gender violence. Therefore making the students well informed and helping in making pragmatic & effective choices while resisting or intervening in the context of gendered violence.

POPULATION & SOCIETY:

- Study of Population and learning the concept and approaches of Demography.
- There are numerous theories to learn the concept of Population.
- One of the topics in this unit concerns about the social structure of population such as age & sex, size & growth of the population.
- The Unit shows the relation between population and society. The importance of population in a society.
- It shows various factors that influences the demography of population of society: such as fertility, mortality and its trends.
- To understand the usefulness of the programmes & policies of Population and building awareness.
- Learning population as restrictions in the society & resources for the development.

DEPARTMENT OF ZOOLOGY
KURSEONG COLLEGE
Three Years B.Sc. Honours in Zoology

PROGRAM OUTCOMES: Three Years B.Sc. Honours in Zoology

B.Sc. Honours in Zoology is one of the most fundamental unit of basic sciences studied at undergraduate level. The program helps to develop scientific tempers and attitudes. After studying this program, students will be more equipped to learn and know about different biological systems, their coordination and control as well as evolution, behavior and biological roles of the animals in the ecosystem. Moreover, they will be able to qualitatively and quantitatively analyse evolutionary parameters using various bioinformatics and computational tools used in modern sciences. This will provide them ample opportunities to explore different career avenues in sericulture, fisheries and apiculture (included under skill enhancement courses). The program will also provide a platform for classical genetics in order to understand distribution or inheritance of different traits and diseases among populations, their ethnicity and correlate with contemporary and modern techniques and molecular diagnostic tools. After the completion of this course, students have the option to go for higher studies, i.e., M. Sc. / Integrated MS Ph.D. and then do research workfor the welfare of mankind. Science graduates can go to serve in industries or may opt for establishing their own industrial unit. Practical and theoretical skills gained in this program will be helpful in designing different public health strategies for social welfare. After the completion of the B.Sc degree there are various other options available for the science students.

PROGRAM SPECIFIC OUTCOMES:

PSO1: Understand the Basic principles of animal classification and classify invertebrate Phyla upto Nematoda with example; to understand the principles of Ecology with respect to ecosystem, population and commonity.
PSO2: Learn to classify invertebrate Phyla upto Echinodermata with example and Understand the nature and basic concepts of cell biology
PSO3: To understand the different principles of Physiology and Genetics. Understand the basic principles of vertebrate classification and learn to classify vertebrates with examples. Gain knowledge about Apiculture.
PSO4: Understand the biology and rearing of silkworm. Gain knowledge abourt the comparative anatomy with respect to different organ system in vertebrates.
PSO5: Understand the different principles of Molecular Biology, Immunology, Endocrinology and Animal Behaviour.
PSO6: Understand the morphology and anatomy of insects, various principles of Developmental biologyand evolutionary Biology. Learn statistical computation sbased on central tendencies, dispersion and hypothesis testing.

COURSE OUTCOMES:

SEMESTER-I

Core T1- (Non-Chordates I)

CO 1. (Basics of Animal Classification)	Describe general taxonomic rules on Animal Classification.
CO 2. (Protista & Metazoa)	• Classify Phylum Protozoa to Echinodermata with taxonomic keys. • Knowledge about pseudopodial, flagellar and ciliary locomotion. • Develops idea about life cycle and pathogenicity of Plasmodium sp. and Entamoeba sp. • Students gain knowledge about basic concepts of evolution of symmerty and segmentation in Metazoa
CO 3. (Porifera)	• Classify Phylum Porifera with examples. • Detailed knowledge of cell types spicules and asconoid, syconoid and leuconoid canal system in sponges
CO 4. (Cnidaria)	• Classify Phylum Cnidaria with examples. • Comprehensive knowledge about Metagenesis, polymorphism. • Knowledge about Coral reefs, function and conservation.
CO 5. (Ctenophora)	Describe general characteristics of Ctenophora.
CO 6. (Platyhelminthes)	• Classify Phylum Platyhelminthes with taxonomic keys. • Knowledge about life cycle of Fasciola sp. and Taenia sp.
CO 7.	• Classify Phylum Nematoda with taxonomic keys.

(Nematoda)	• Knowledge about life cycle of Ascaris sp. and Wuchereria sp. • Comprehensive knowledge about parasitic adaptations in helminthes.
Core T2- (Ecology)	
CO 1. (Introduction to Ecology)	• Students will gain knowledge about different contributors in the field of ecology. • Students will be introduced to the concept of Biosphere and some physical factors such as light and temperature.
CO 2. (Population)	Understand the various features and aspects of population ecology..
CO 3. (Community)	• Understand the various features and aspects of community ecology such as species diversity, abundance dominance, richness. • Knowledge about Ecological succession. a
CO 4. (Ecosystem)	• Understand the various features and aspects of natural and human modified ecosystem ecology. • They will have the knowledge about energy flow in an ecosystem. • They will acquire knowledge about nutrien and biogeochemical cycle.
CO 5. (Applied Ecology)	• Student will be learning the various issues related to wildlife conservation. • Students will gain knowledge about Wild life protection act (1972) and also learn about management and strategies for tiger conservation.
SEMESTER-II	
Core T3- (Non-Chordates II)	
CO 1. (Introduction)	Knowledge about evolution of coelom and metamerism.
CO 2. (Annelida)	• Classify Phylum Annelida with taxonomic keys upto Class level. • Knowledge about excretion, metamerism and locomotion in Nereis sp.
CO 3. (Arthropoda)	• Classify Phylum Platyhelminthes with taxonomic keys upto Class level. • Knowledge about vision in insecta, respiration and metamorphosis in Lepidopterans.
CO 4. (Onycophora)	Knowledge about evolutionary significance and affinities of Peripatus sp.
CO 5. (Mollusca)	• Classify Phylum Mollusca with taxonomic keys upto Class level. • Knowledge about nervous system, torsion and detorsion in Gastropoda. • Comprehensive knowledge about respiration in Pila sp and significance of trocophore larva.
CO 6. (Echinodermata)	• Classify Phylum Echinodermata with taxonomic keys upto Class level. • Knowledge about water-vascular system, larval forms and affinities with Chordates.
CO 7. (Hemichordata)	• Students will learn about the general characteristics of Hemichordata. • Relationship with non-chordates and Chordates.
Core T4- (Cell Biology)	
CO 1. (Overview of Cells)	Students will understand the structures and purposes of basic components of prokaryotic and eukaryotic cells, Viruses, Viriod, Prion and Mycoplasma.
CO 2. (Plasma Membrane)	Stidents will gain knowledge about: • Ultrastructure and composition of plasma membrane • Fluid mosaic Model • active passive and facilitated transport. • Cell junctions
CO 3. (Cytoplasmic Organelles I)	Students will gain knowledge about Cytoplasmic Orgnelles • Endoplasmic Reticulum • Golgi Apparatus • Lysosomes
CO 4.	• Students will gain knowledge about Mitochondria viz. Replication,

(Cytoplasmic Organelles II)	Endosymbiotic hypothesis of its origin, mitochondrial respiratory chain and chemi-osmotic hypothesis of ATP production • Students will gain knowledge about the structure and function of Perixomes and Centrosomes.
CO 5. (Cytoskeleton)	The students should be able to differentiate the molecular structure of microtubules and microfilaments and explain the structure of skeletal framework.
CO 6. (Nucleus)	The students should be able to explain the ultra structure of nucleus, nuclear encelope and nucleolus in relation to the importance of the organelle as the central coordinating centre of a cell.
CO 7. (Cell Division)	• They will be able to describe Cancer through Concept of oncogenes and tumor suppressor genes. • The students will gain knowledge to understand the different types of cell division i.e., mitosis and meoiosis and its significance in vegetative and reproductive cells
CO 8. (Cell Signalling)	The students will be able to explain and write on the. Cell signalling and transduction pathways
SEMESTER-III	
Core T5- (Chordates)	
CO 1. (Introduction to Chordates)	Students will be able to understand the main characteristic features of Phylum Chordata and general characteristic features upto Class level.
CO 2. (Protochordata)	• Students will be able to describe the general characters of Sub-Phylum Urochordata and Cephalochordata and their classification upto Class level. • students will be able to write about Retrogressive metamorphosis in Ascidia sp. And filter feeding in Branchiostoma sp.
CO 3. (Origin of Chordata)	• Understand how the chordates originated through Dipleurula concept and Echinoderm theories of origin.
CO 4. (Agnatha)	• Learn about characteristic features of cyclostomes upto order level. • The students will also know about the process of metamorphosis in Lamprey and the zoological importance of ammocoete larva
CO 5. (Pisces)	• Students will be familiarized with two major classes of fishes, the Chondrichthyes and Osteichthyes. • The students will learn the process of migration and parental care in fishes and the diversity in the structure of swim bladder in fishes.
CO 6. (Amphibia)	• Students will learn to classify Amphibia upto living orders along with parental care, metamorphosis, neoteny and paedogenesis.
CO 7. (Reptilia)	• Students will be able to classify Class Reptilia up to living orders • They will also gain a deeper insight into the biting mechanism of snakes and the poison apparatus
CO 8. (Aves)	• Develop idea about the characters and classification of Aves . • Understand the mechanism of migration in birds, their exoskeletal structures and double respiration. • The students will understand the aerodynamics and principles of flight
CO 9. (Mammals)	• The students will learn to classify Mammals up to living orders, the exoskeletal structures, adaptive radiation and echolocation in bats,
CO 10. (Zoogeography)	• Students will gain a comprehensive knowledge about The Continental Drift theory, and animal distribution globally with a detailed understanding of Zoogeographical Realms.
Core T6- (Animal Physiology: Controlling and Co-ordinating Systems)	
CO1. (Tissues)	• Students will learn about the structure and function of different kinds of tissues.
CO2. (Bone & Cartilage)	• Students will be able to write about the Structure and structural types of bones and cartilage and about the process of ossification.

CO3. (Nervous System)	• Students will learn the role of the nervous system in coordinating an animal's response to environment and organ system of human body. • The basic structure and function of a neuron, the structure and function of a synapse and neurotransmitter chemicals. • Students will be able to understand the origin and propagation of nerve impulse in myelinated and non-myelinated nerve fibre. • Types of reflex with examples.
CO4. (Muscular System)	• Students will gather a detailed knowledge about different types of muscles and also understand the molecular and chemical basis of muscular contraction.
CO5. (Reproductive System)	• Students will understand the organs for reproduction and the roles of hormones in reproduction.
CO6. (Endocrine System)	• Detailed knowledge on hormones and histology and function of Pituitary, Thyroid, Pancreas and Adrenal.
Core T7- (Genetics)	
CO1. (Mendelian Genetics & its extension)	• Students will understand the basic principles of Mendelian inheritance and the extension of Mendelian genetics.
CO2. (Linkage, Crossingover & Chromosomal mapping)	• Students will be able to explain the process of linkage and crossing over and apply the principles in measuring recombination frequency.
CO3. (Mutations)	• Students will gain knowledge on different types of gene mutations and chromosomal aberrations their molecular basis.
CO4. (Sex Determination)	• Students will be able to write the different mechanisms of sex determination through their knowledge on specific examples of sex-determination in Drosophila sp . and Humans
CO5. (Extra-chromosomal Inheritance)	• The concept of extra-chromosomal inheritance will be understood through examples of antibiotic resistance, kappa particle and shell spiralling.
CO6. (Recombination in Bacteria & Viruses)	• Students will learn conjugation, transformation and transduction and will be able to differeitiate and describe the recombination processes.
SEC T1- Apiculture	
CO1. (Biology of Bees)	• Students will learn about the Biology, Classification and Social organization of Honey Bees. • They will be able to name the different classes of honeybees and have a preliminary knowledge regarding Apiculture.
CO2. (Rearing of Bees)	• Students will have a comprehensive knowlege about selection of honey bee, different rearing equipments, different kinds of beehives and methods of honey extraction.
CO3. (Diseases and enemies)	• Students will be able to understand and treat/control/prevent different diseases of honey bees based on the symptoms.
CO4. (Bee Economy)	• Students will gain knowledge on different products of apiculture industry such as honey, beeswax propolis etc.
CO5. (Entrepreneurship in Apiculture)	• Modern methods of beekeeping will be taught in detail and the students will also be given an insight into the beekeeping industry.
SEMESTER-IV	
Core T8- (Comparative anatomy of vertebrates)	
CO1. (Integumentary system)	• Students will learn about integumentary system in mammals and birds and will be able to write about their derivatives in the two classes.
CO2.	• Students will get an overview of axial and appendicular skeleton; Jaw suspension;

(Skeletal System)	Visceral arch
CO3. (Digestive System)	• Students will learn about comparative anatomy of stomach in birds and mammals and dentition in mammal
CO4. (Respiratory system)	• Students will be able to describe the respiratory organs in fish, amphibian, birds and mammals
CO5. (Circulatory system)	• Students will get a comprehensive idea about the general plan of circulation and knowledge about comparative account of heart and aortic arches
CO6. (Urinogenital system)	• Students will be introduced to the urinogenital system, succession of kidney and evolution of urinogenital ducts
CO7. (Nervous system)	• Students will be able to describe the brains in different vertebrate groups and cranial nerves in mammals
CO8. (Sense organs)	• Students will learn about sense organs in animals and the different classification of receptors
CORE T9 (Animal Physiology: Life Sustaining Systems)	
CO1. (Physiology of Digestion)	• Students will learn about structural organisation and functions of Gastrointestinal tract and Associated glands. • They will develop an understanding about mechanical and chemical digestion and absorption of Carbohydrates, Lipids, and Proteins.
CO2. (Physiology of Respiration)	• Students will learn about mechanism of Respiration in vertebrates with comprehensive knowledge about transport of Oxygen and Carbon dioxide in blood and types of respiratory pigments.
CO3. Physiology of Circulation	Students will gain knowledge about: • Components of Blood and their functions; Structure and functions of haemoglobin • Haemostasis; Blood clotting system, Fibrinolytic system • Haemopoiesis; Basic steps and its regulation • Blood groups; ABO and Rh factor
CO4. Physiology of Heart	Students will be able to understand the following aspects on the physiology of heart: • Structure of mammalian heart with special reference to human, Coronary Circulation, Structure and • working of conducting myocardial fibres, Origin and conduction of cardiac impulses • Cardiac Cycle and cardiac output • Blood pressure and its regulation
CO5. Thermoregulation & Osmoregulation	• Students will gain knowledge about osmoregulatory organs and mechanism of osmoregulation in vertebrates. • They will learn about the classification and mechanisms of thermoregulation in vertebrates.
CO6. Renal Physiology	• Students will develop knowledge about structure of Kidney and nephron. They will understand in detail the mechanism of urine formation.
Core T10 - Fundamentals of Biochemistry	
CO1. Carbohydrates	• Students will gain comprehensive knowledge about Monosaccharides, Disaccharides, Polysaccharides • They will study Carbohydrate metabolism through Glycolysis, Citric acid cycle, Pentose phosphate pathway, Gluconeogenesis
CO2. Lipids	• Students will be able to understand the structure and Significance of physiologically important saturated and unsaturated fatty acids, Triacylglycerols, Phospholipids, Sphingolipid, Glycolipids, Steroids, Eicosanoids and terpinoids. • They will learn about Lipid metabolism in detail.
CO3. Proteins	• Students will learn about Structure, Classification, General and Electro chemical properties of α-amino acids; • They will be able to understand the different levels of organization of Proteins (primary, secondary, tertiary, quaternary). • Students will be about to undersstand and write about Protein metabolism.

CO4. Nucleic Acids	• Effort will be made to make the students understand the structure of Purines and pyrimidines, Nucleosides, Nucleotides, Nucleic acids • They will be able to understand the different types of DNA and RNA.
CO5. Enzymes	• Students will be able to understand the nomenclature and classification of enzymes. • They will be able to understand the mechanism of enzyme action, and different types of enzyme inhibitions. • Students will be introduced to the concept of Enzyme kinetics;.
CO6. Oxidative Phosphorylation	• The concept of mitochondrial respiratory chain and ATP synthesis will be clear to the students.
SEC Paper 2 (Group A)– Sericulture	
CO1. Introduction	• Students will be introduced to Sericulture. • They will learn about types of silkworms on the basis of their geographic origin and food preference.
CO2. Biology of Silkworm	• Students will learn about the Life cycle of Bombyx mori and will be able to describe the structure of silk gland and secretion of silk.
CO3. Rearing of Silkworms	Students will get an overall idea about selection of mulberry, rearing house and rearing appliances. Disinfectants, Spinning, harvesting and storage of cocoons
CO4. Pests and Diseases	• Students will learn about different pests of silkworm • They will learn about the Pathogenesis of Protozoan, viral, fungal and bacterial silkworm diseases and their Control and Prevention.
CO5. Entrepreneurship in Sericulture	• Students will get an overall idea about Sericulture industry in different states, employment, potential in mulberry and non-mulberry sericulture.
SEMESTER-V	
Core T11 - Molecular Biology	
CO 1 Nucleic Acids	• Students will be able to describe the Salient features of DNA and RNA • They will also be able to describe the Watson and Crick Model of DNA, and Clover leaf model of tRNA
CO 2 DNA Replication	• Students will be able to understand the mechanism of DNA Replication in Prokaryotes at length.
CO3 Transcription	• Mechanism of Transcription in prokaryotes Inhibitors of transcription will be made clear to the students.
CO4 Translation	• Mechanism of protein synthesis in prokaryotes will be explained to the students with insight into the machinery for translation along with the knowledge aboutGenetic codeand inhibitors of protein synthesis
CO5 Gene Regulation	• Regulation of Transcription in prokaryotes with examples of lac operon and trp operon will be taught to the students for a better understanding of gene regulation.
CO 6 DNA Repair Mechanisms	• Students will be able to understand the DNA repair mechanisms with examples of RecBCD model in prokaryotes, nucleotide and base excision repair and SOS repair
CO7 Molecular Techniques	• Students will be introduced with some techniques of Molecular Biology such as Basic Principles of PCR, Western and Southern blot, Northern Blot, Sanger DNA sequencing
Core T12 – Immunology	
CO1 Overview of Immune System	• Students will be able to understand the basic concepts of health and diseases they will be given an insight into the Historical perspective of Immunology and Cells and organs of the Immune system

CO2 Innate and Adaptive Immunity	• Students will be taught innate immunity and adaptive immunity and their difference with respect to Cell and molecules involved and the mode of functioning of the two systems.
CO3 Antigens	• The concept of antigens will be dealt with in detail and the students will understand the concept of Antigenicity and immunogenicity, Immunogens, Adjuvants and haptens, Factors influencing immunogenicity, B and T-Cell epitopes
CO4 Immunoglobulins	• Students will be able to describe the Structure and functions of different classes of immunoglobulins. They will be able to write about Antigen- antibody interactions and the different techniques based on this principle such as Immunoassays (ELISA and RIA), Hybridoma technology, Monoclonal antibody production.
CO5 Major Histocompatibility Complex	• Structure and functions of MHC molecules will be taught in detail.
CO6 Cytokines	• Students wil be able to write about the different types of cytokines along with their properties and functions.
CO7 Complement System	• Students will be able to gather knowledge about Components and the two pathways of complement activation i.e., Classical & alternative.
CO8 Hypersensitivity	• Students will be able to Classify Hypersensitivity on the basis of Gell and Coombs' classification.
CO9 Immunology of disease	• The concept of immunology of diseases with be taught to the students with specific example of Malaria.
CO10 Vaccines	• Students will be able to understand the concept of vaccines their various types and will allso be able to write about active & passive immunization.
DSE Paper 1 –Endocrinology	
CO1 Introduction to Endocrinology	• Students will get a general idea of Endocrine system. They will be able to Classify hormones and write about the characteristic and transport of Hormones.
CO2 Epiphysis, Hypothalamo-hypophysial Axis	• Students will be taught the structure of pineal gland and pituitary gland their secretions and functions in biological rhythms and reproduction. • Structure and functions of hypothalamus and Hypothalamic nuclei, Hypothalamo-hypophysial portal system, will be taught along with some disorders of pituitary gland.
CO3 Peripheral Endocrine Glands	• Students will be taught about the Structure, Hormones, Functions, regulation and disorders of Thyroid gland, Parathyroid, Adrenal, Pancreas, Ovary and Testis.
CO4 Regulation of Hormone Action	The following topics will be taught to the students: • Mechanism of action of steroidal, non-steroidal hormones with receptors • Bioassays of hormones using RIA & ELISA • Estrous cycle in rat and menstrual cycle in human • Multifaceted role of Vasopressin & Oxytocin. Hormonal regulation of parturition.
DSE Paper 2 -Animal Behaviour and Chronobiology	
CO1 Introduction to animal behaviour	• Students will be able to learn about the origin and history of Ethology by studying about the contributions of Karl Von Frish, Ivan Pavlov, Konrad Lorenz, Niko Tinbergen in brief.
CO2 Patterns of Behaviour	• Students will be able to understand Stereotyped Behaviours (Orientation, Reflexes); Individual Behavioural patterns; Instinct vs. Learnt Behaviour; Associative learning, classical and operant conditioning, Habituation, Imprinting.
CO3 Social and Sexual Behaviour	• Social Behaviour will be taught to the students by introducing them to the concept of Society using honey bee as example covering topics such as Foraging in honey bee and advantages of the waggle dance. • They will learn about different communication in insects.

	• Students will gain comprehensice knowledge about Sexual Behaviour such as Asymmetry of sex, Sexual dimorphism, Mate choice, Intra-sexual selection (male rivalry), Inter-sexual selection (female choice), Sexual conflict in parental care.
CO4 Introduction to Chronobiology	• Students will learn about historical developments in chronobiology • Biological oscillation: the concept of Average, amplitude, phase and period will be made clear to the students. • They will be able to write about Adaptive significance of biological clocks
CO5 Biological Rhythm	• Types and characteristics of biological rhythms such as s hort- and Long- term rhythms, circadian rhythms, Tidal rhythms and Lunar rhythms will be taught. • The role of melatonin in regulation of seasonal reproduction of vertebrates will be clear to the students.
SEMESTER-VI	
Core P 13 - Developmental Biology	
CO1 Introduction	Students will be introduced to the basic concepts of developmental biology such as Phases of Development, Cell cell interaction, Differentiation and growth, Differential gene expression etc.
CO2 Early Embryonic Development	Early embryonic development upto gastrulation will be taught to the students they will be able to throw light on Gametogenesis, Fertilization (External (Sea urchin) and Internal (mammal)), Changes in gametes, cleavage, Types of Blastula, and gastrulation. Ther concept of Embryonic induction and organizers will also be explained.
CO3 Late Embryonic Development	Students will gain knowledge about Extra-embryonic membranes in chick, Implantation of embryo in humans, and the different types of placenta based on the tissues involved along with their functions.
CO4 Post Embryonic Development	The concept of post embryonic development will be explained with specific examples of Development of brain and Eye in chick. After the completio of the course the students will be able to write about modes of regeneration, epimorphosis, morphallaxis and compensatory regeneration (with examples)
CO5 Implications of Developmental Biology	Topics covering Teratogenesis in embryonic development, In vitro fertilization, Stem cell (ESC) and Amniocentesis will be made clear to the students
CC 14–Evolutionary Biology & Biostatistics	
CO1	Students will be able to understand the concept of Origin of life.
CO2	Theories of evolution such as Lamarkism, Darwinism and Neo Darwinism will be clear to the students.
CO3	Students will learn about Geological time scale, Evolution of horse, Phylogenetic trees and their interpretations, convergent and divergent evolution, Neutral theory of molecular evolution, Molecular clock.
CO4	Students will understand Heritable variations and their role in evolution
CO5	The concept of Population genetics will be explained using Hardy-Weinberg Law. Students will gain knowledge about Natural selection through concept of fitness, types of selection, selection coefficient, mode of selection heterozygous superiority. Ath the end of the course they will have a better insight into the concepts of Genetic Drift, Migration and Mutation in changing allele frequencies.
CO6	The concept of origin of species and its underlying theories such as isolating mechanisms, modes of speciation, adaptive radiation/macroevolution (exemplified by Galapagos finches) will be clear to the students.
CO7	Students will be able to write on Extinctions citing specific examples on back ground and mass extinctions (causes and effects) and K-T extinction.
CO8 Biostatistics	Students will be able to compute simple problems based on Central tendencies, Measures of dispersion (Variance, Standard daviation, Standard error) Correlation and regression, T test.

DSE Paper 4 (Group C)- Biology of Insects	
CO1 Introduction	Students will be able to understand the reasons for distribution and Success of Insects on the Earth
CO2 Insect Taxonomy	They will be able understand the basic morphology of insects and classify them upto Order with specific examples.
CO3 General Morphology of Insects	Students will gain knowledge and will be able to describe the general morphology of insects like Eyes, Types of antennae, Mouth parts w.r.t. feeding habits,Wings and wing articulation, Types of Legs adapted to diverse habitat Abdominal appendages and genitalia
CO4 Physiology of Insects	Students will study the Integumentary, digestive, excretory, circulatory, respiratory, endocrine, reproductive, and nervous system in insects at length. The course will also introduce them to Photoreceptors: Types, Structure and Function and Metamorphosis: Types and Neuroendocrine control of metamorphosis
CO5 Insect Society	Insect society with specific reference of termites will be taught to the students they will also learn about Trophallaxis in social insects such as ants, termites and bees
CO6 Insect Plant Interaction	Students will be able to write about Theory of co-evolution, role of allelochemicals in host plant mediation Host-plant selection by phytophagous insects. They will also be able to describe the major insect pests in paddy
CO7 Insects as Vectors	Students will be able to describe different insects that function as vectors. Differentiate between Insects as mechanical and biological vectors,.

THREE YEARS B.Sc. PROGRAME COURSE IN ZOOLOGY

PROGRAM OUTCOMES: Three Years B.Sc. Programme in Zoology

Zoology is one of the most fundamental branch of biology studied at undergraduate level. The course helps students to learn and understand about animal diversity to appreciate the variability in relation to their morphology, anatomy and behaviour among different animals. The students will be equipped to learn and know about different human systems, their coordination and control. This course will also provide an opportunity to learn about the mechanisms of origin and evolution in animals. They will be able to qualitatively and quantitatively analyse evolutionary parameters using various bioinformatics and computational tools used in modern sciences. This will provide them ample opportunities to explore different career avenues. This course will also provide a platform to learn classical genetics to understand distribution of different traits among populations, their inheritance ethnicity and can correlate with contemporary and modern techniques like genomics, metagenomics, genome editing and molecular diagnostic too Practical and theoretical skills gained in this course will be helpful in designing different public health strategies for social welfare.

PROGRAM SPECIFIC OUTCOMES:

- To provide Knowledge of various animals from primitive to highly evolved forms and its complexity.
- To foster curiosity in the students for Zoology & understand potential of various branches of Zoology.
- To equip students with laboratory skills as well as field based studies to become an successful enterpreuner.
- To highlight biodiversity and its need of conservation.
- To make aware about ways of conservation and sustainability.
- To inculcate knowledge and make successful career in zoology.
- To inculcate research attitude and aptitude among students.
- To conduct basic and applied research which has societal and environmental value.

COURSE OUTCOMES

SEMESTER-I

DSC-PAPER 1 Animal Diversity

CO1	• Classify Phylum Protista to Echinodermata with taxonomic keys.
Kingdom Protista	• Knowledge about pseudopodial, flagellar and ciliary locomotion.
CO2	• Classify Phylum Porifera with examples.
Phylum Porifera	• *Detailed knowledge of syconoid canal system in sponges Classify Phylum Cnidaria with examples.* • *Comprehensive knowledge about Metagenesis, polymorphism.*
CO3	• Classify Phylum Cnidaria with examples.

Phylum Cnidaria	• Comprehensive knowledge about Metagenesis, polymorphism.
CO4	• Classify Phylum Platyhelminthes with taxonomic keys.
Phylum Platyhelminthes	• *Knowledge about life cycle of Taenia sp.*
CO5	• Classify Phylum Nematoda with taxonomic keys.
Phylum Nemathelminthes	• Knowledge about life cycle of Ascaris sp.Classify Phylum Annelida with taxonomic keys upto Class level.
	• Knowledge about excretion, metamerism
CO6	• Classify Phylum Annelida with taxonomic keys upto Class level.
Phylum Annelida	• Knowledge about metamerism
CO7	• Classify Phylum Platyhelminthes with taxonomic keys upto Class level.
Phylum Arthropoda	• Knowledge about metamorphosis
CO8	• Classify Phylum Mollusca with taxonomic keys upto Class level.
Phylum Mollusca	• Knowledge about torsion in Gastropoda.
CO9	• Classify Phylum Echinodermata with taxonomic keys upto Class level.
Phylum Echinodermata	• Knowledge about water-vascular system in *Asterias*
CO10	• Students will learn about the general features and Phylogeny of Protochordata
Protochordates	
CO11	• Learn about characteristic features of cyclostomes upto order level.
Agnatha	
CO12	• Students will be familiarized with two major classes of fishes, the
Pisces	Chondrichthyes and Osteichthyes.
	• The students will learn the process of osmoregulation in fishes.
CO13	• Students will learn to classify Amphibia upto living orders along with parental
Amphibia	care
CO14	• Students will be able to classify Class Reptilia up to living orders
Reptiles	• They will learn about poisonous and non-poisonous snakes and will also gain a deeper insight into the biting mechanism of snakes and the poison apparatus
CO15	• Develop idea about the characters and classification of Aves .
Aves	The students will understand the aerodynamics and principles of flightand the various adaptations for flight.
CO16	• The students will learn to classify Mammals up to living orders. They will also
Mammals	develop an understanding about the Origin of Mammals.

SEMESTER-II

DSC Paper 2- Comparative Anatomy and Developmental Biology of Vertebrates

CO1	• Students will gain knowledge about derivatives of integument such as nails and
Integumentary System	hooves in birds and mammals
CO2	• Students will develop idea about evolution of visceral arches
Skeletal System	
CO3	• Students will be able to gain knowledge about alimentary canal and digestive
Digestive System	glands
CO4	• Students will learn about gills, lungs, air sacs and swim bladder
Respiratory System	
CO5	• At the end of the course students will be able to write about evolution of heart
Circulatory System	and aortic arches
CO6	• Students will gain comprehensive knowledge on succession of kidney and
Urinogenital System	evolution of urinogenital ducts.
CO7	• Comparative account of brain will be clear to the students.
Nervous System	
CO8	• Students wil learn about Types of receptors in different sense organs.
Sense Organs	
CO9	• At the end of the course students will be able to understand the different aspects
Early Embryonic	of early embryonic development upto gastrulation including Gametogenesis,
Development	Fertilization and Fate of germ layers; Neurulation in frog embryo.
CO10	• Students will learn about different events in the late embryonic development such
Late Embryonic	as Implantation of embryo in humans, Formation of human placenta and

Development	functions.
CO11 Control of Development	• Students will gain brief idea on Fundamental processes in development such as Gene activation, determination, induction, Differentiation, morphogenesis, intercellular communication, cell movements and cell death

SEMESTER-III

DSC Paper 3- Physiology and Biochemistry

CO 1 Nerve and muscle	• Students eill be able to describe Structure of a neuron, Origin of Action potential and its propagation in myelinated and non-myelinated nerve fibres Ultra-structure of skeletal muscle and Molecular and chemical basis of muscle contraction will also be taught.
CO 2 Digestion	• Students will get an overall idea on the Physiology of digestion aand absorption of carbohydrates, proteins, lipids in the alimentary canal.
CO 3 Respiration	• Students will be able to understand the mechanism transport of Oxygen and carbon dioxide in blood.
CO 4 Excretion	• Students will be able to describe the structure of nephron, and understand the mechanism of Urine formation
5 Cardiovascular system	• Composition of blood, Hemostasis, Structure of Heart, Origin and conduction of the cardiac impulse and Cardiac cycle will be taught to the students.
CO 6 Reproduction and Endocrine Glands	• Structure and function of different endocrine glans and their role in reproduction will be clear to the students.
CO 7 Carbohydrate Metabolism	• Students will gain comprehensive knowledge about the complete metabolism of Glucose.
CO 8 Lipid Metabolism	• Lipid metabolism with specific example of β oxidation of palmitic acid will be clear to the students.
CO 9 Protein metabolism	• At the end of the course students will be able to understand the metabolism of Proteins in animals.
CO 10 Enzymes	• Students will be able to understand Mechanism of action, Enzyme Kinetics, and Inhibition.

SEC 1 Paper-1 (Apiculture)

CO 1 Biology of Bees	• Students will learn about the Biology, Classification and Social organization of Honey Bees.
CO 2 Rearing of Bees	• Students will have a comprehensive knowlege about selection of honey bee, different rearing equipments, different kinds of beehives and methods of honey extraction.
CO 3 Diseases and Enemies	• Students will be able to understand and treat/control/prevent different diseases of honey bees based on the symptoms.
CO 4 Bee Economy	• Students will gain knowledge on different products of apiculture industry such as honey, beeswax propolis etc.
CO 5 Entrepreneurship in Apiculture	• Modern methods of beekeeping will be taught in detail and the students will also be given an insight into the beekeeping industry.

SEMESTER-IV

DSC Paper 4 Genetics and evolutionary Biology

CO 1 Introduction to Genetics	• Students will understand the basic principles of Mendelian inheritance and Molecular basis of Genetic Information
CO 2 Mendelian Genetics and its Extension	• Students will understand the basic principles of Mendelian inheritance and the extension of Mendelian genetics.
CO 3 Linkage, Crossing Over and Chromosomal Mapping	• Students will be able to explain the process of linkage and crossing over and apply the principles in measuring recombination frequency.
CO 4	• Students will gain knowledge on different types of gene mutations and

Mutations	chromosomal aberrations their molecular basis.
CO 5 Sex Determination	• Students will be able to write the different mechanisms of sex determination through their knowledge on specific examples of sex-determination in Drosophila sp .
CO 6 Origin of Life	• Students will be able to understand the concept of Origin of life.
CO7 Introduction to Evolutionary Theories	• Theories of evolution such as Lamarkism, Darwinism and Neo Darwinism will be clear to the students.
CO8 Direct Evidences of Evolution	• Students will gain knowledge about types of fossils, Incompleteness of fossil record, Dating of fossils, Phylogeny of horse
CO9 Processes of Evolutionary Change	• Organic variations; Isolating Mechanisms; Natural selection (Example: Industrial melanism); Students will understand the types of natural selection (Directional, Stabilizing, Disruptive), Artificial selection, origin of variations and isolating mechanisms.
CO10 Species Concept	• The concept of origin of species and its underlying theories such as isolating mechanisms, modes of speciation
CO11 Macro-evolution	• Macroevolution (exemplified by Galapagos finches) will be clear to the students.
CO12 Extinction	• Students will be able to write on Extinctions citing specific examples on back ground and mass extinctions (causes and effects) and K-T extinction.
SEC Paper 2 (Sericulture)	
CO1. Introduction	• Students will be introduced to Sericulture. • They will learn about types of silkworms on the basis of their geographic origin and food preference.
CO2. Biology of Silkworm	• Students will learn about the Life cycle of Bombyx mori and will be able to describe the structure of silk gland and secretion of silk.
CO3. Rearing of Silkworms	Students will get an overall idea about selection of mulberry, rearing house and rearing appliances. Disinfectants, Spinning, harvesting and storage of cocoons
CO4. Pests and Diseases	• Students will learn about different pests of silkworm • They will learn about the Pathogenesis of Protozoan, viral, fungal and bacterial silkworm diseases and their Control and Prevention.
CO5. Entrepreneurship in Sericulture	• Students will get an overall idea about Sericulture industry in different states, employment, potential in mulberry and non-mulberry sericulture.
SEMESTER-V	
DSE Paper-1 Animal Biotechnology	
CO1 Introduction	• Students will be introduced to the Concept and scope of biotechnology
CO2 Molecular Techniques in Gene manipulation	• Students will gain comprehensive knowledge on Cloning vectors, • Restriction enzymes, Transformation techniques, Construction of genomic and cDNA libraries. • Further they will be given theory and practical knowledge on the techniques of molecular Biology such as Southern, Northern and Western blotting; DNA sequencing Polymerase Chain Reaction, DNA Finger Printing and DNA micro array.
CO3 Genetically Modified Organisms	• Students will understand the molecular techniques for Production of cloned and transgenic animals and the application of transgenic animals in pharmaceuticals and biomedical science.
CO4 Culture Techniques and Applications	• Animal cell culture, Expressing cloned genes in mammalian cells, Molecular diagnosis of genetic diseases (Cystic fibrosis, Sickle cell anemia)
SEMESTER VI	

DSE Paper-2 Immunology

CO1 Overview of the Immune System	• Students will be able to understand the basic concepts of health and diseases they will be given an insight into the Historical perspective of Immunology
CO2 Cells and Organs of the Immune System	• Students will be given a detailed account of the Cells and organs of the Immune system
CO3 Antigens	• The concept of antigens will be dealt with in detail and the students will understand the concept of Antigenicity and immunogenicity, Immunogens, Adjuvants and haptens, Factors influencing immunogenicity, B and T-Cell epitopes
CO4 Antibodies	• Students will be able to describe the Structure and functions of different classes of immunoglobulins. They will be able to write about Antigen- antibody interactions and the different techniques based on this principle such as Immunoassays (ELISA and RIA), Hybridoma technology, Monoclonal antibody production.
CO5 Working of the immune system	• Students will be taught innate immunity and adaptive immunity. • Structure and functions of MHC molecules will be taught in detail. • Students wil be able to write about the different types of cytokines along with their properties and functions. • Students will be able to gather knowledge about Components and the two pathways of complement activation i.e., Classical & alternative.
CO6 Immune system in health and disease	• The concept of immunology of diseases with be taught to the students • Students will be able to Classify Hypersensitivity on the basis of Gell and Coombs' classification.
CO7 Vaccines	• Students will be able to understand the concept of vaccines their various types and will allso be able to write about active & passive immunization.