

Program outcomes, program specific outcomes and course outcomes for all programs

The College is permanently affiliated to Gauhati University and it follows the programme wise curriculum designed by the university. The learning outcomes of the programmes and courses are stated clearly by the university. The same is published in the official website of the university which can be downloaded by the affiliated colleges.

The College has its own mechanism to communicate the learning outcomes of the curriculum to the teachers and the students. The following measures are adopted-

- Hard copy of syllabi and learning outcomes are available in all the departments for ready reference to the teachers and students.
- A web link to the Gauhati University Curriculum and learning outcomes of Programmes and Courses (both UG & PG) is also provided in the college website for reference.
- The departments also arrange Orientation Programmes/Tutorial Meetings to make the students aware of the curriculum and the learning outcomes.

Course outcomes:

DEPARTMENT OF ANTHROPOLOGY

PAPER	COURSE	OUTCOME
ANT-HC-1016	General Anthropology	The learning outcomes of this paper are: 1. The students will learn about various theories related to human evolution and variation. 2. They will learn about history of Physical Anthropology and how it is related to other disciplines.3. They will also learn about the relationship between non-human and human primates.4. From the practical component they will learn about how to measure and study various parts of the human body.
ANT-HC-1026	Introduction to Socio-Cultural Anthropology	The learning outcomes of this paper are: 1. The students will learn about the scope and relevance of Social-Cultural Anthropology and its relationship with other branches of anthropology. 2. They will learn about concepts of society, culture, social stratification, etc. 3. They will also learn about important institutions like family, marriage and kinship.4. From the practical component they will learn how to

		follow up some of the commonly used techniques of data collection in Social-Cultural Anthropology.
ANT-HC-2016	Archeological Anthropology	The learning outcomes of this paper are: 1. The students will learn about archaeological anthropology and its relationship with other sciences. 2. They will learn about how the past is reconstructed. 3. They will also learn about the method of understanding the prehistoric culture on the basis of archaeological findings. 4. From the practical component, they will learn about identification and interpretation of prehistoric tools.
ANT HC202	Fundamentals of Human Origin & Evolution	The learning outcomes of this paper are: 1. The students will learn about the origin of hominoid group in the primates. 2. They will learn about the origin, distribution and characteristics of extinct hominids and the process of hominization. 3. The components of the Practical paper will help students to understand how craniometric measurements and derived indices are useful in studying evolutionary changes in modern humans.
ANT HC301	Tribes and Peasants in India Theory	The learning outcomes of this paper are: 1. The students will learn about the concepts of tribes, their classification and distribution. 2. They will learn about how tribes are linked with the wider world. 3. They will also learn about peasantry and how it is related to tribes. 4. From the practical component they will learn to read original ethnographies and extract relevant information from the same.
ANT-HC-3026	Human Ecology: Biological & Cultural dimensions	The learning outcomes of this paper are: 1. The students will learn about biological aspects of ecology and adaptation. 2. They will learn about cultural aspects of ecology and adaptation. 3. They will also learn about the relationship between ecology and state

		formation. 4. From the practical component they will learn about measurement of various parts of the human body and about preparing a research design on study of any environmental problem.
ANT-HC-3036	Biological Diversity in Human Populations	The learning outcomes of this paper are: 1. The students will learn about the use of various markers of biological variation. 2. They will learn about the mechanisms of human adaptability. 3. They will also learn about the contribution of some anthropologists towards understanding the population diversity in India. 4. From the practical component they will learn about the use of blood group antigens and dermatoglyphic traits in measuring biological diversity.
Paper M 501 Paper M 502 Paper M 503 Paper M 504	Physical Anthropology (Human Evolution) Prehistoric Anthropology Social Anthropology (Indian Anthropology and Anthropology of Religion) Social Anthropology (Field Methodology, Tribes of North East India)	Learning outcomes are- 1. Student can understand the secret behind human evolution from primate to modern man through different stages of early humans 2. Knows about the human adaptation to different environment. 3. Gets knowledge about environmental background that favored evolution of man's culture. 4. Can date the antiques by applying different scientific methods 5. Understand the Palaeo ecology 6. Get the knowledge on the importance of studying religion, different religious thoughts,beliefs, myths, concept of disease in the societies, ethnomedicinal practices that are found in the different societies. 7. Acquire the knowledge on Indian social system, tribe, caste, castism,Characteristics of tribes in Indian Context,Concept of Scheduled tribes and Scheduled castes in India. 8. Students get benefited by learning the methods of field investigation. They are trained to write report or dissertation on collected data.

		<p>9. Students become skilled on the museum objects, their preservation and conservation.</p> <p>10. Student are trained not only to identify the fossil man but also to take blood pressure, pulse rate of individuals. They are also trained to take finger prints and palm prints.</p>
<p>Paper M 601</p> <p>Paper M 602</p> <p>Paper M 603</p> <p>Paper M 604</p> <p>Paper M605 (Practical)</p> <p>Paper M606 (Practical)</p>	<p>Physical Anthropology (Human Genetics)</p> <p>Prehistoric Anthropology</p> <p>Social Anthropology (Indian Anthropology)</p> <p>Applied Anthropology</p> <p>Physical Anthropology</p> <p>Social Anthropology (Technology and Field work)</p>	<p>Learning outcomes are-</p> <ol style="list-style-type: none"> 1. Students are benefited by learnig about human genetics, Mendelian Principles of heredity, Population genetics, influence of heredity and environment on human physical and hereditary characters. 2. Get detailed knowledge on field archaeology, ethno- archaeology, new archaeology, details of prehistoric cultural development in India, living prehistoric tradition of N.E. India. 3. Acquire knowledge on Indian society, tribe, caste, unity in diversity, pioneers of Indian Anthropology. 4. Learn to apply the anthropological knowledge for the benefits of human being and society as well. For e.g. application of eugenics, etc. 5. Skilled in taking anthropometric measurements and dermatoglyphics patterns which are necessary for forensic studies also. 6. Skilled in identify, collection and preservation of material cultures of different ethnic groups. Students are able to write a dissertation or research papers on the basis of their field data.

DEPARTMENT OF ASSAMESE

Students will get a very sound knowledge on Assamese literature, language and culture. They will be well introduced with the north eastern states from its linguistic and cultural point of view. They will get a clear knowledge on development of writing and speaking languages. The study of literature as well as language is the study of our intellectual history and civilisation. It will develop the aesthetic senses and socialistic approaches of the students. In addition to these, the students will be able to develop their concept on some noble field viz. grammar, philosophy, history, anthropology etc. Students will be able to know not only about the Indian literature but also the world literature. They will be well introduced with the varied form of literature e.g. short story, novel, song, poetry etc. By the skill enhancement course, the students will be able to start their profession as proof reader or creative writer or script writer. Through project work they will learn to do work in group and they have scope for their innovation.

COURSE	OUTCOME
Core course	Aims to make students acquainted with the history of Assamese literature and language. Many famous and historically important writers and writings are introduced to the students. It intends to give the knowledge of the culture of Assam, north east and India. Give thorough knowledge of General Linguistic, different form of language, language families etc. It intends to give an idea of the development of Assamese scripts. It also makes a student expert in grammar. It exposes the students to the different form of Assamese literature in particular and Indian literature in general e.g. poetry, short story, novel etc. It also gives knowledge of literary criticism.
AECC	This course will develop the speech delivering capacity, social adaptability and acceptability of a student through speech.
SEC	Students can do Assamese typing, proof reading and also can start carrier as creative writer.
DSE	Give knowledge of folk literature, Romantic poetry, Sankardev, Assamese science fiction etc. It will help to improve the student's creativity through project work.

GE	This course teaches the students about recitation, stage performance and musical aspects.
1. History of Assamese language, Oral literature to modern lit. Development of script –Specially Brahmi lipi	Students will gain knowledge about the development of Assamese language, literature and script.
2. Relationship with other modern Indian language, literature	Basic knowledge on Indian literature and language.
3. Language Families of the world	Acquire knowledge on the language varieties and their characteristics
4. Indo European Language families	Gain knowledge on language families of the world.
5. Culture-theory and exercises Specially of north east India	Apart from gaining knowledge, students could understand our cultural roots and heritage, unity among diversity etc
6. Poetry-theory, Brajabulu, old Assamese poetry, Modern Assamese poetry And Criticism	Student can develop their knowledge, understanding skill, feel the essence of creative writing, develop their own writing.
7.Drama-theory Ankiya Naat (old Assamese Drama) Modern Assamese Drama	To gain knowledge about old as well as modern Assamese dramas and their significance in literary arena.
8 Novel-theory, some important novels	To acquire in-depth understanding and critical analysis of various epic novels.
9. Comparative Literature- Indian and foreign	Understand the world community through their study
10. Assamese prose	Students can develop their expression through writing as well as talking and learn how to write prose and analytical skill of prose writing.
11. Translation	Students can take translation as profession, feeling attachment with the whole world
12. New trends of study literature and language	Up-to- date knowledge of the philosophy, changing norms of analysis through this content.

13. Criticism	Develop thinking capacity, by completing the course, apart from various government services students could take option in mass communication sector i.e. print, audio-visual and other social media. They can work as editor and translator. Students can also be self-engaged in tourism sector as local guide. They can work as language teacher by establishing own institutes.
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DEPARTMENT OF BENGALI

Bengali Literature provides the opportunity to the students to gain knowledge regarding Indian culture and social aspects. The text through multiple perspective and various contexts will be helpful for students to develop their personal and professional capability. On successful completion of the programme, the students will develop professional abilities through effective communicative skills; students will be socially and culturally responsible citizens.

<u>Course</u>	Outcome
Sem-I Ancient and Medieval literature(pre-Chaitanya era)	To acquire ancient and medieval style and language of the writer; also students will obtain history of socio-economic conditions of that period.
Medieval Literature	Study of this period helps to acquire the knowledge of society and literary aspects.
Sem-II Bangla Bhasa Porichay(The Bengali Language)	Study and discussion of Bengali language helps the students to know about the derivation of Bengali and other languages. History of languages and various components of linguistic students can be aware of.
Bangalir Samajik O Sanskritik Porichay (Social and Cultural Identity)	Through the study of Social and Cultural identity of Bengali in ancient and medieval period, students will get knowledge about the Brahminical culture, food-habits, entertainment, life style of urban and rural society.
Sem-III Folkculture and Folk literature	Folk studies help to develop knowledge about the root of our culture and imaginary world also enhanced the thinking power of

	creative writings and lyrics composition.
Prosody, Rhetoric and Prachya Kavyatattva.	Students will obtain knowledge regarding the base of poetic and creative writings .
History of Bengali Literature (Ancient and Medieval Period)	To comprehend literary texts of the writer.
BEN-SE Manuscript	Students will learn how to write manuscript from this course which will be helpful for film, drama and other write ups as profession.
Sem-IV History of Bengali Literature(Modern Age)	To acquire good knowledge about modern literary text and writer.
Study Of 19 th century Bengali Literature	To learn the literary, social, political ,economic condition and historical background will helpful for students.
Rabindra Literature	Students will learn societal, cultural philosophical and biographical background of Rabindranath Tagore's write up.
BEN-SE Translation Study	To know the basic principles of Translation. Students practicing translation from Bengali to other languages or other languages to Bengali, they can become translators in various sector of profession.
Sem-v Study of 20 th century Literature (Pre-Independence)	To learn literary, socio-economic aspects and political influence of societal condition of this period will develop the knowledge about our country and world history.
Study of 20 th century Literature (Post-Independence)	Students will obtain knowledge about social, economic, political condition. Changes of value after world war will also be helpful to know our historical background and relation of our country with whole world.

BEN-SE Proof Correction	To learn the symbols, signs and techniques of proof correction will help students to get employment in publication house, media etc.
Sem-VI Definition and form of Literature	To learn various forms and definitions of Epic, Poetry, Drama, Prose, Balled and other writings will help to relate with world literature.
Western theory and criticism	To learn of western theory and criticisms will be helpful for students to know the modern style of literature and philosophy of writers.
BEN –SE Script writing and Bengali Literature	To enable the students to learn the basic concepts and patterns of script writing from literature.
Sem-V SHORT STORY, NOVEL, DRAMA, ESSAY	By studying short story, novel, drama, essay, students can acquire knowledge about human psychology and the socio-cultural- economic condition of different era along with various ethnic groups.
Sem-VI TAGORE LITERATURE, AESTHETIC LITERATURE, LITERARY THEORY	By this course, students can learn the structure of different parts of literature. To learn western theory and isms will be helpful for students to know the modern style of literature and philosophy of the writer.

DEPARTMENT OF BOTANY

Programme Outcome:

Developing intellectual, personal and professional skills of students in plant sciences and making them ready for advance studies in plant sciences

Programme Specific Outcome:

- ❖ On successful completion of the Programme, the students will be well aware of different plant groups and different branches of Plant Sciences
- ❖ They will learn the techniques of studying plants- basic techniques as well as advance techniques.

- ❖ The students will also become aware of physiology and metabolism of different plant groups and their uses for human welfare.
- ❖ They become skilled in modern advanced branches of biochemistry, cytogenetics, molecular biology etc. and at the same time they develop the skill of traditional branches of botany like taxonomy, ecology, genetics, physiology, palynology, anatomy etc.
- ❖ The basic techniques of plant research like biostatistics, spectrometry, chromatography, microscopy, bioinformatics are also learned in the course.
- ❖ Students also learn to write project reports by writing reports on field visits.
- ❖ The course also helps in making a student a responsible citizen well aware of the need of environment conservation and ways to do so. As throughout the course, they are taught the importance of plants in human life and importance of plant resources and their conservation *in situ* (conservation ecology) as well as *in vivo* (tissue culture and gardens).

Paper	Course	Outcome
<i>Semester- I</i> Paper- BOT-HC-1016 BOT-HC-1016 BOT-HC-1026 BOT-HC-1026	Phycology and Microbiology Practical Biomolecules and Cell Biology Practical	In the theory and practical syllabus of first paper of this semester, students get to know about the different groups of plants. Details of algae as a whole is given in the first paper. In the second paper detail of cell and its organelles and the different major biomolecules involved in cell activities are studied and students get fundamental knowledge about the cell structure and functioning.
<i>Semester- II</i> Paper-BOT-HC-2016 BOT-HC-2016 BOT-HC-2026 BOT-HC-2026	Mycology and Phytopathology Practical Archegoniate Practical	Details of Fungi, including the structure, reproduction, special characters and utility to human and environment is given in the paper Bot-HC-2016. This paper also includes the role of fungi in disease development and method of their control. In the paper Archegoniate details of bryophyte and pteridophytes are given. In total of first and second semester theory and practical papers students get overall idea of all the lower plant groups which is very much necessary to have clear basics of plant sciences
<i>Semester- III</i> Paper-M301(Theory)	Ecology, Plant	The course content gives idea about ecological types and influence of environment on plants and plant type

M 302 M 303	Geography, Evolution Instrumentation and Laboratory Techniques Practical	ecology. The other theory paper gives idea about different plant study techniques involved in advance study of plants
<i>Semester- IV</i> Paper-M 401 M 402 M 403	 Morphology, Palynology, Embryology of Angiosperms Plant Taxonomy Practical	The course outcome is of detail taxonomic and morphological developments of plants
<i>Semester- V</i> Paper-M 501 M 502 M 503 M 504 M 505 M 506	 Microbiology and Immunology Plant Pathology and Lichen Cytogenetics, Plant Breeding and Biometrics Applied Botany (algae, fungi, bacteria, breeding, climate & horticulture) Practical: Microbiology, Plant Pathology and Lichen Practical:Cytogenetics, Plant Breeding, Biometrics and Applied Botany	Students get idea about microorganisms, their benefits, physiology, metabolism, growth and role in environment. The paper two deals with plant diseases and their control and also about symbiotic organisms. The paper three deals with cell genetic materials, their importance in genetic modifications, breeding techniques and their importance. Students also get skill of statistical analysis necessary for plant studies. The fourth theory paper is about economic importance of algae, fungi and bacteria and different techniques of plant breeding and horticulture. The practical papers are supportive in developing skill of thought in theory papers.
<i>Semester- VI</i>		This semester makes students skilled in latest plant studies and advance techniques

Paper-M 601	Molecular Biology and Plant Biochemistry	involved therewith. On completion of course of 6 th semester the students become well informed about molecular aspects of cell internal physiology, the biochemical aspects of different physiological and metabolic functions taking place inside a plant cell. Also different physiological activities and their importance for higher studies of plant. This semester also deals with advance study of plants and its genomics with the help of computer databases in bioinformatics. Advance utilization of different plant groups are also thought in this semester.
M 602	Bioinformatics, Computer Application and Biotechnology	
M 603	Plant Physiology	
M 604	Applied Botany (Plant Resource Utilization)	
M 605	Practical: Molecular Biology, Biotechnology, Bioinformatics and Computer Application	
M 606	Practical: Plant Physiology and Plant Resource utilization	

DEPARTMENT OF CHEMISTRY (U.G & P.G)

PAPER	COURSE	OUTCOME
CHE-HC-1016	Inorganic Chemistry-I	<p>This paper is divided into four units and imparts to the students the basic tenets of atomic and molecular structure, chemical bonding, periodicity of elements and redox behaviour of chemical species.</p> <p>The first unit of this paper provides the fundamental concept of the atomic and molecular structure in terms of classical mechanics as well as quantum mechanics.</p> <p>The second unit of this paper provides basic concept on the periodic properties of the elements, especially <i>s</i> and <i>p</i> block with emphasis on atomic/covalent radii, ionization energy, electron affinity, and electronegativity.</p>

		<p>This third unit of this paper is instrumental in imparting core ideas on chemical bonding. This includes discussion on ionic bonding, covalent bonding, metallic bonding and weak chemical forces. Special emphasis is provided to concepts such as lattice energy and solvation energy in ionic compounds, Lewis dot theory, valence bond theory, hybridization of orbitals, molecular orbital theory of simple homonuclear molecules/ polyatomic molecules, valence shell electron pair repulsion theory describing the shape of molecules, polarizability in covalent compounds, band theory of metals, chemical interactions like van der Waals forces, ion-dipole forces, dipole-dipole interactions, induced dipole interactions, repulsive forces, hydrogen bonding, etc.</p> <p>The fourth and final unit encompasses redox properties of chemical species, the concept of standard electrode potential and its application to inorganic reactions.</p>
<p>CHE-HC-1026</p>	<p>Physical Chemistry-I</p>	<p>This paper is divided into five units and imparts the fundamental ideas of solid, liquid and gaseous states of matter, the elementary idea of symmetry, solid state chemistry of crystalline structures and ionic behaviour in solution phase, to the students.</p> <p>The first unit covers the kinetic theory of gases, ideal gas and real gas.</p> <p>The second unit provides qualitative treatment of the structure of liquid along with the physical properties of liquid, viz, vapour pressure, surface tension and viscosity.</p> <p>The third unit encompasses general discussion on molecular and crystal symmetry with qualitative idea of point groups/space groups and types of crystal systems.</p> <p>The fourth unit lays the groundwork for understanding the basic solid state chemistry application of x-ray crystallography for the determination of some very simple crystal</p>

		<p>structures.</p> <p>The fifth and final unit provides the concept of ionic equilibrium for electrolytes in solution and various related parameters like degree of ionization, dissociation constants, salt hydrolysis, buffer solutions, etc. Also included are discussion on solubility parameters and theory of acid–base titrations.</p>
	Laboratory Practical	<p>This paper aims to equip the students with practical knowledge on titrimetric analysis like use and calibration of common laboratory apparatus, preparation of solutions in terms of molarity and normality of titrants; acid-base titrations; oxidation-reduction titrimetry; pH-metric titrations involving strong and weak electrolytes, physical phenomena like surface tension and viscosity, and indexing of a given powder diffraction pattern of a cubic crystalline system</p>
CHE-HC-2016	Organic Chemistry I	<p>This paper is divided into four units and educates the students on the basic concepts of organic chemistry including different classes of organic compounds, description of their reactivity and explanation on their chemical and stereochemical aspects.</p> <p>The first unit provides the rudimentary idea on organic compounds, their stereoelectronic effects, types of reactions occurring in organic compounds and their mechanisms.</p> <p>The second unit covers the basic tenets of stereochemistry of organic compounds. Special emphasis is given to understanding Fischer/Sawhorse/Newmann projections, geometrical isomerism, optical isomerism, concepts of chirality, relative and absolute configuration: D/L and R/S designations, etc.</p> <p>The third unit covers the entire chemistry of aliphatic hydrocarbons, namely alkanes, alkenes and alkynes, in terms of their structure, bonding,</p>

		<p>properties, preparative methods and reactivities.</p> <p>The fourth and final unit covers the entire chemistry of aromatic hydrocarbons in terms of structure, bonding, properties, preparative methods, and reactivities.</p>
CHE-HC-2026: PHYSICAL CHEMISTRY II	Physical Chemistry II	<p>This paper is divided into four units and educates the students on the basic idea of chemical thermodynamics, chemical reaction kinetics and colligative properties of solutions.</p> <p>The first unit covers the important postulates of thermodynamics – zeroth, first, second and third law and their corresponding parameters like enthalpy, entropy, free energy etc.</p> <p>The second unit covers the system of variable compositions and their representation in thermodynamic terms like partial molar volume, chemical potential, etc.</p> <p>The third unit covers the concepts of chemical equilibrium in real and ideal gases, their equilibrium constants and their relative parameters.</p> <p>The third and final unit covers the colligative properties of solutions and their derivation from thermodynamic interpretations.</p>
	Laboratory Practical	<p>This paper aims to equip the students with practical knowledge on purification and identification of organic compounds based on their physical properties like solubility, melting point, boiling point, etc.; chromatographic separation of organic compound mixture; determination of thermochemical parameters like heat capacity, and enthalpy of various chemical compounds</p>
CHE-HC-3016:	Inorganic Chemistry-II	<p>This paper is divided into four units and imparts to the students the basic principles of metallurgy, acid-base concepts, chemistry of <i>s</i> and <i>p</i> block elements, chemistry of noble gases and general idea of inorganic polymers.</p>

CHE-HC-3026:	Organic Chemistry-II	This paper is divided into five units and encompasses the chemistry of halogenated hydrocarbons like alkyl and aryl halides; organic compounds like alcohols, phenols, ethers and epoxides; carbonyl compounds; carboxylic acids; sulphur containing organic compounds.
CHE-HC-3036:	Physical Chemistry-III	This paper is divided into four units and educates the students on the basic ideas of phase equilibrium; chemical kinetic concepts; catalysis and chemistry of surfaces.
	LABORATORY PRACTICAL	This paper aims to equip the students with practical knowledge on iodi/iodometric titrations; inorganic preparations of metals salts and double salts; functional group detection in organic compounds; organic preparation of compounds involving reactions like acetylation, benzoylation, oxidation, reduction, hydrolysis, condensation; critical temperature detection of eutectic systems like phenol-water; kinetic study of various reactions and adsorption studies of solid-liquid systems like acetic acid on activated charcoal.
CHE-HC-4016:	Inorganic Chemistry-III	This paper is divided into four units and imparts to the students the fundamental concepts in chemistry of coordination compounds; chemistry of transition elements (mostly d and f block elements); chemistry of lanthanides and actinide elements and chemistry of bioinorganic compounds with emphasis on biological systems.
CHE-HC-4026:	Organic Chemistry-III	This paper is divided into four units and educates the students on chemistry of organic compounds containing nitrogenous functional groups; the chemistry of polynuclear aromatic hydrocarbons; chemistry of heterocyclic compounds; and chemistry of natural products like alkaloids, terpenoids, etc.
CHE-HC-4036:	Physical Chemistry-IV	This paper is divided into four units and educates the students on the basic ideas of conductance of ions in solution; concept of electrochemistry; and

		ultimately a general discussion on electrical and magnetic property study of atoms and molecules.
	Laboratory Practical	This paper aims to equip the students with practical knowledge on gravimetric analysis of metal complexes; inorganic preparations of metal coordination complexes; chromatographic separations of metal ions; functional group detection of organic compounds containing nitrogen, sulphur and halogens; conductometric experiments on acid-base solutions; potentiometric experiments on acid-base solutions
501		<p>The first part of this paper is giving the concept of quantum chemistry and atomic structure. This chapter gives the ideas of black body radiation, photo electric effect, Compton effect, Schrodinger equation, wave function, operators, Hamiltonian, model systems-1D, 3D, particle in a ring, harmonic oscillator, rigid rotator, etc.</p> <p>Second unit covers the ideas of term symbols, spin-orbit coupling, Pauli's exclusion principle, quantum number, calculation of radial probability functions, etc.</p> <p>Third unit covers the concept of Born-Oppenheimer approximation, LCAO-MO theory, MO energy level diagram of homonuclear and heteronuclear diatomic molecules, Heitler-London theory, resonance, etc.</p>
502		<p>In the first unit of this paper is molecular reaction dynamics. It gives the ideas of collision theory, activated complex theory, theory of uni- molecular reactions, potential energy surfaces, reactions in solution, kinetic salt effect, etc.</p> <p>Second unit is photochemistry. It covers the concept of laws of photochemical equivalence, quantum yield, dimerisation, luminescence phenomenon, Jablonski diagram, quenching, air pollution, etc.</p> <p>Third unit is phase equilibrium. From this unit a student may gain the knowledge of definition of phase, meaning of components, degree of freedom, phase diagram, chemical potential,</p>

		<p>thermodynamics of mixing, Gibbs Duhem equation, fugacity, dependence of chemical potential on temperature and pressure, etc.</p> <p>Forth unit is surface chemistry. It gives the concepts of physisorption, chemisorptions, adsorption isotherms, determination of surface area, catalytic activity at surface, concept of surface excess, Gibbs equation, surface pressure, etc.</p>
503		<p>First part of this paper is organic reaction mechanisms. Here covers the concept of molecular rearrangement, oxidation-reduction with common oxidizing and reducing agents and pericyclic reactions.</p> <p>Second unit provides the concepts of polynuclear aromatic, nitro and amino compounds, organo S and organo P compounds, active methylene compounds and heterocyclic compounds.</p>
504		<p>First unit of this paper is related to bonding in coordination compounds. It provides the concepts of symmetry operation, point group classification, crystal field theory, crystal field stabilization energy, complexes with different spin states, adjusted crystal field theory, molecular orbital theory of octahedral complexes, and metal-metal bonding, etc.</p> <p>Second unit is related to organometallic compounds. From this unit a student may gain the knowledge of synthesis, structure and bonding of complexes with olefins, acetylene, allyl, EAN, IUPAC nomenclature, homogeneous catalysis by transition metal complexes, synthesis and structure of organometallic compounds of Sn, Pb, Zn, Cd, etc.</p> <p>Third unit is bioinorganic chemistry. This unit provides the concept of essential and trace elements, and their biological role, uptake and storage of iron, synthetic dioxygen carriers, dioxygen toxicity, etc.</p>
505		<p>This is an inorganic quantitative analysis paper. It covers the ideas of estimation of inorganic ions by volumetric, complexometric, gravimetric, redox and precipitation methods, chromatographic separation of cations by paper/TLC.</p>

506		This paper gives the ideas of preparation of different organic compounds such as benzanilide from aniline, dinitrobenzene from acetanilide, benzyl from benzoin, etc. It also give the ideas of determination of saponification equivalent of an ester, amount of glucose by titration with Fehling solution, estimation of urea by hypobromite method, etc.
601		This paper gives the ideas to spectroscopy. It includes the ideas of rotational, vibrational and Raman spectroscopy, electronic spectroscopy, spin resonance spectroscopy and mass spectroscopy.
602		The first unit of this paper is solid state. This unit includes the concept of Bragg's law, packing in solid, dislocation in solids, piezo and ferro electricity etc. This paper also covers the concepts of macromolecules and colloids, Statistical thermodynamics and data analysis.
603		This paper includes the concepts of organic photochemistry, polymers and fibers. Here a student may gain the knowledge of theory of photochemistry, typical photoreactions, addition and condensation polymers, preparation of different polymers namely nylon, terylene, urea formaldehyde resin, etc. This paper also covers the basic concepts of biochemistry, natural products and medicinal chemistry. In biochemistry part student have to taught the structure of cell, DNA, RNA, coenzymes, vitamins, etc. In natural products and medicinal chemistry part a student may gain the concept of terpenes, alkaloids, carbohydrates, sulphadiazine, cisplatin, etc.
604		First unit of this paper is spectra of coordination compounds. It covers the concepts of Orgel diagram, Laporte selection rule, vibronic coupling, color of the complexes, etc. In the bioinorganic chemistry part student have to taught metalloproteins and their role in photosynthesis, respiration, nitrogen fixation, etc. Also they have to learn toxicity due to metal ions and importance of metal salts in diet, diagnosis,

		chemotherapy, etc. In the third part of this paper a student may gain the knowledge of nuclear chemistry, lanthanides and actinides. This part covers physical properties of the proton, neutron, mass defect, binding energy, nuclear reactors and its uses, etc.
605		This is a physical experimental paper. This paper includes different physical experiments such as determination surface tension of a liquid by stalagmometer, mutual solubility curve of phenol and water, validity of Beer-Lambert's law using colorimeter, etc.
606		This is a project paper. Here student have to teach the modern techniques of analysis to investigate their prepared or synthesised product which they are prepared during their work.

DEPARTMENT OF CHEMISTRY (P.G)

Course	Outcomes
Semester I	
Paper: CH101	The modern approaches of the descriptive inorganic chemistry are given to the students. Students get familiarize with the new aspects of solid state chemistry as well as with advancement of organometallic chemistry.
Paper: CH102	The kinetics and energetic of organic reaction mechanisms with the existence of reactive intermediates have taught to students; stereochemistry of organic reaction mechanisms are also imparted in the study.
Paper: CH103	Obtaining the utility of wavepackets and operator in quantum mechanics. The approximate methods like perturbation theory, linear variation function, Born oppenheimer approximation etc have taught to students.
Paper: CH104	To acquire the comprehensive knowledge about the thermodynamics including statistical thermodynamics; basic ideas of polymer chemistry and data analysis.
Paper: CH105	To familiarize the theoretical and experimental aspects of stereochemistry in the field of organic and inorganic chemistry.
Paper: CH106	Basic concepts of group theory and character table have illustrated. The applications of group theory in the field of spectroscopy, ligand field theory and crystallographic system have emphasized.
Paper: CH107	The students have taught to analyze qualitatively the binary organic mixtures. The chromatographic separation techniques and simple synthetic techniques of

	organic compounds have also familiarized to students.
Semester II	
Paper: CH201	To acquire the knowledge about the electronic spectra of inorganic compounds, magnetic behaviours and photochemical characters.
Paper: CH202	To obtain the details of organic photochemistry and redox behaviour of different organic reactions.
Paper: CH203	The understand the concepts of molecular reaction dynamics, electrochemistry, chemical kinetics etc.
Paper: CH204	The detail applications of NMR, ESR, mass spectroscopy and Mossbauer spectroscopy.
Paper: CH205	To define and characterize the concepts of green chemistry and its utility in chemical synthesis.
Paper: CH206	To learn the synthetic methods of different inorganic complexes and its isomeric products. The quantitative analyses of different metal ions have also taught in this paper.
Semester III	
Paper: CH301	To achieve the knowledge of biochemistry in the context of bioorganic and bioinorganic chemistry.
Paper: CH302	To learn the modern instrumental techniques like microscopic, diffraction, spectroscopic etc for the analysis of different research aspects.
Paper: CH303	The synthetic aspects of organic compounds with C-C bond formation, retrosynthesis, protecting groups etc have illustrated. The dynamics of stereochemistry and heterocyclic compounds have also emphasized in this paper.
Paper: CH304	This is a core course where students have taught to prepare scientific presentation and literature survey.
Paper: CH305	To learn the physical experimental methods of related with experiments of chemical kinetics, conductometric titrations, pH titrations, cyclic voltammetry etc.
Paper: CH309	To gain knowledge about surface chemistry and catalysis; the topic includes the solid-liquid interface, physisorption and chemisorptions, surface characterization techniques, homogenous catalysis etc.
Semester IV	
Paper: CH402	To learn the modern synthetic methods of organic chemistry. These synthetic methods also include asymmetric synthetic method, synthesis of complex molecules and construction of ring systems.
Paper: CH406	Students have taught the bioinorganic chemistry of metalloenzymes, electron transfer system and metal ion storage and transport,
Paper: CH407	To gain the introductory knowledge about the supramolecular chemistry. Students have also taught the synthesis, structure and application of supramolecules. The catalytic device and molecular device have also included in the course.
Paper: CH409	Students have familiarized basic concepts of drug action, drug mechanism and its design. Details of antibiotics, antimalarial anticancer drugs have also taught.
Paper: CH411	In this paper students have trained with various stages of research planning and implementation.

DEPARTMENT OF COMMERCE

B.Com degree is structured to provide the students managerial skills in disciplines related to commerce. The course is designed with wide range of understanding in subject matter of accounting, corporate law, finance, marketing, taxation, management, insurance, information technology etc. B.Com students can easily explore numerous career options after obtaining their degree. It makes students capable to make decisions at personal & professional level after the completion of the course. Students can get a thorough knowledge of finance and commerce. They can make career in banking, Public Limited Companies, private companies, Audit firms, Legal firms, Broking firms, Patent firms, Investment Houses, Mutual funds, Marketing & sales, Accountant, Tax consultant and also a career being a Chartered or cost accountant or being a master in business Administration or MBA.

PAPER	COURSE	OUTCOMES
Ability – Enhancement compulsory course (AECC)-1	Business Communication (English/MIL)	Its purpose is to enable students to learn the process of sharing information between people within and outside of a company or an organization. Effective business communication teaches as to how the employees and management interact with each other to reach organizational goals and objectives. So it is beneficial for students to know about this subject as because being a part of the corporate world, it results in increased employee engagement and higher level of creativity. It also leads to building up a positive atmosphere, enhanced loyalty and increased consumer satisfaction.
C-1	Financial Accounting	Its purpose is to enable students to learn and to keep track of Companies Financial Transactions using standard guidelines & to know about preparing financial statements. It also helps the student to have career prospect of being an Accountant. The subject is concerned with the summary, analysis and reporting of financial transactions related to business.

<p>C-2</p>	<p>Business Law</p>	<p>Its purpose is to enable students to learn set of laws that govern the dealings regarding commercial matters. It encompasses all laws that guides on how to set up, start, manage, run, close or sell a business. The prime purpose of business law is to maintain order, resolve disputes, establish generally accepted standards and protect rights and liberties when it comes to business and its relation to other business, government authorities and the customers.</p>
<p>GE-1</p>	<p>Micro- Economics OR Investing in Stock Market</p>	<p>The subject of Micro economics is of great help to the students when it comes to studying the conditions of Economic Welfare. This branch of economics helps the students to understand the level of satisfaction of the people in the economy. It also helps the students to become economists so as to enable them to identify the allocation of resources within the economy. Micro economics also ensures us to understand the implications and problems of taxation formulate suitable taxation policies.</p> <p>OR</p> <p>The subject of investing in Stock market is of great importance and is of great help to know the economy of a country. The stock market plays a pivotal role in the growth of industry and commerce of the country that eventually affects the economy of the country to a great extent. That is the reason that the government, industry and even the central banks of the country keep a close watch on the happenings of the stock market. The stock market is important from both the</p>

		<p>industry's point of view. Whenever a company wants to raise up funds for further expansion or settling up a new business venture, they have to either take a loan from a financial organization or they have to issue shares through the stock market. The subject also gives the basis to the idea for the students regarding stock market working procedure and also motivates a student to take up the lucrative career of being a stock broker.</p>
<p>Ability Enhancement Compulsory Course (AECC) -2</p>	<p>Environmental Studies</p>	<p>Its purpose is to enable students to learn about the way we should live and how we can develop sustainable strategies to protect the Environment. It helps students, to develop an understanding of living and physical environment and how to resolve challenging environmental issues affecting the nature. The knowledge of this subject makes students aware and also to enable them to take steps towards protecting our environment.</p>
<p>C- 3</p>	<p>Corporate Accounting</p>	<p>Its purpose is to enable students to learn about the process of systematically record financial transactions, sort and analyze them, prepare financial statements, assessing the financial position, and to aid in the process of Decision making with financial data and information about the business. The main objective of this subject is to make students aware as to knowing the process to ascertain the results of financial transactions of a company. It also includes preparation of final accounts, cash flow statement and also for specific events like Amalgamation, Consolidated Balance Sheet etc. this branch of accounting not only benefits the company but also benefits the</p>

		<p>executives in making financial decisions. The corporate accountants dealing with all this work are also often referred to as Management Accountants. The subject helps students to pursue career as an accountant.</p>
C-4	Corporate Law	<p>Its purpose is to enable students to understand and also to know about the laws, rules, and regulations that pertain to the corporations. The subject matter includes issues like rights and obligations of all the people involved with forming, owning, operating and managing a corporation. It involves issues such as incorporation of companies, Directors and share holders rights, articles of association, memorandum of association, prospectus and also the matters pertaining to board meetings, secretarial matters and public listing and delisting of companies. This subject motivates a student to become a Corporate Lawyer in future.</p>
GE-2	Macro economics OR Insurance & Risk Management	<p>Its purpose is to enable students to learn & understand to evaluate the overall performance of the economy in terms of national income. The National income data helps in anticipating the level of fiscal activity and understanding the distribution of income among different groups of people in the economy. The study of this subject deals with the various problems relating unemployment, economic fluctuations, inflation deflation, international trade, and economic growth of a nation.</p> <p>OR</p> <p>This subject enables a student to understand the emerging concept of risk management in modern business. In the past, risk management was limited was</p>

		<p>limited which includes property risk, liability risk and personal risk. Now, risk management has a greater scope in modern business. In the world of finance, risk management is the practice of identifying potential risks in advance, analyzing them and taking precautionary steps. Risk management is the process of analyzing the risk and determining how to handle such risks. It enables student to become Risk manager and it is the work of a risk manager, to implement risk management programmes to minimize the chances of loss.</p>
C-5	Computer Applications in Business	<p>Computers have become very essential business tool. They are used in every aspect of a company's operation. It is used in product creation, marketing accounting, and administration. With the application of computers, people can perform work faster and more efficiently. Computers can store data more easily saving on the cost and business software application are used to increase productivity, to measure productivity and to perform other business functions accurately.</p>
C - 6	Income tax law and practice	<p>It helps the students to impart knowledge about law of Taxation. Taxation today has assumed very important and established role in any economy. The governments of both developed and as well as developing countries rely heavily on taxation measures not only to provide much needed financing for socio-economic development, but also to reduce the inequalities of wealth in the society. The subject gives knowledge about the set of laws, regulations and also the methods of establishing taxes.</p>

		The subject tries to emphasize the necessity of studying taxation in order to bring about a real partnership between tax payer and the state. The subject also motivates a student to be a Tax-Consultant or a Tax- practitioner in future.
C-7	Management Principles and Applications	Management, as we all know, is a discipline. It is in fact a complicated and a very important discipline with multiple facets and huge scope. Management principle is a broad and general guideline that regulates decision making and behavior within a group or organization. These principles extensively deals with human behavior, thoughts and actions which never remains static and thus are not as rigid as the principle that govern science or other disciplines. These principles are guidelines that are used when applying the techniques of management. Thus proper knowledge of this subject motivates a student to pursue career in management.
GE-3	Business statistics OR Operation research in business	The study of this subject enables students to learn about use of statistics for making sales projections, financial analysis of capital expenditure projects, constructing profit projections for a new venture or product, setting up production quantities and also making sampling analysis to determine the quality of product. It is also a study that deals with the collection and analysis of data. It is also used to keep records, calculate probabilities and provide knowledge. Basically the subject helps to understand the world a little better through numbers and other quantitative information. OR Management is constantly under pressure

		<p>to make economical decisions those results in more efficient operations and greater profits. The technique of operation research helps managers allocate resources more efficiently and effectively and enables them to better optimize the performance of business. the subject matter initiates to analyze a particular problem of decision making such as best location for factories, whether to open a new ware house , etc. it also helps in selecting economical means of transportation , job sequencing , production scheduling , replacement of old machinery etc. it's subject matter deals with problem, formulating solutions and finally help to make appropriate decision making. It is most often used to analyze complex real life problems typically with the goal of improving and optimizing performance. The proper knowledge of this all important subject helps a student to become an able business manager</p>
(SEC)-1	<p>Entrepreneurship OR New Venture Planning</p>	<p>Studying entrepreneurship benefits students and learners from different social and economic backgrounds because it teaches people to cultivate unique skills and think outside the box. The learning of this subject creates opportunity, instills confidence, ensures social justice and stimulates the economy. Entrepreneurship focused programs teach students crucial life skills that will help them navigate uncertain future. These skills include problem solving, building of team work, empathy, as well as learning to accept failure as a</p>

		<p>part of the growth process. The knowledge of this subject motivates a student to be a successful entrepreneur.</p> <p>OR</p> <p>The subject matter imparts knowledge to the students regarding to business plans which includes detailed information that can help the business's chances of success, like market analysis, competitive analysis, customer segmentation, marketing, logistics and operational plans, cash flow projection and an overall path to long term growth. It motivates a student to become a successful business manager of future.</p>
Course (B.Com 5th Semester) Non-CBCS	Marketing management	It is the subject which imparts knowledge to students regarding practical application of marketing orientation, marketing techniques and methods of a business enterprise and evolve as a subject inspiring students to take marketing as a career option.
	Financial management	It is the study to impart knowledge to the students about the process of planning, Organizing, controlling, and monitoring financial resources with a view to achieve financial goals and objectives of an organization. It inspires students to make a career in finance.
	Regulatory framework of business - I	It is the subject which imparts knowledge to the students about various rules, laws, and various regulatory bodies of business in India.
	Financial statement analysis	It is the subject which imparts knowledge to the students about the process of evaluation of financial performance of business by internal and external stakeholders. It is also to create income

		statement, cash flow statement, ratio analysis etc .The knowledge of which helps a student to better understand the performance of stock market in respect of companies.
	Customer relationship management	It's a subject which makes students aware about a company's interaction with current and potential customer. It uses data analysis about customer's history to improve business relationship with customer and thereby increasing sales growth and profit. It also helps to make a career in sales and marketing.
	Business Environment	It's a subject which makes student understand about economic, political, legal, demographic, social, competitive, global and technological sectors and helps them to understand as to improve business
6TH SEM	Regulatory framework in business - II	It is a subject which helps a student to get knowledge of business regulatory framework in India and also about branches of foreign corporation or companies doing business in India. It thus helps to impart knowledge of regulatory structure of business in India.
	Information technology in business	Its study aims to impart knowledge to the student about information technology which fosters innovation in business and enhances quality of services and boosts productivity and sales growth.
	Marketing of services	Its aim is to impart knowledge to student about marketing services which is used to market a service or a product. The knowledge of which helps to make a career in marketing.
	Project work	The aim of the project work is to acquire practical knowledge on the implementation of perceptions studied

		through the entire course structure.
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DEPARTMENT OF ECONOMICS

Programme Outcome:

The programme will provide a well-structured relevant curricula for the students which will prepare the graduates for employment and higher studies. The programme will also provide the students a well-founded education in Economics. The teaching of various courses in Economics will help the students to acquire in-depth knowledge and understanding of the functioning and performance of the Indian and other global economies. Students will be able to develop their understanding of core economic terms, concepts and theories. They will be encouraged to understand the basic economic principles and will also learn about their applications to a wide range of real-world issues. Students will learn how economic activities like production, consumption, distribution etc. are organized by the markets. They will also acquire knowledge about national income, employment, inflation, deflation, business cycle, monetary and fiscal policy and the banking system. Students will acquire analytical and reasoning skill and will be able to predict about possible economic outcomes based on economic theories. Students will be equipped with quantitative analytical skills with the help of which they will be able to collect, tabulate, present and analyze data to support economic decision making.

POGRAMME SPECIFIC OUTCOME (CBCS):

As the undergraduate CBCS programme is at par in all over the country, students will be immensely benefitted to gather knowledge about the subject equally with the students of other parts of India. This will help them to be prepared for National competitive examinations and students will be able to get equal job opportunities along with job seekers around the country. The programme is such that students can choose any of the subject of their choice, may it be from any stream which is of utmost importance to unlock the potential of students for they will find interest in the subject of their choice that will help them to build the future career. CBCS programme will definitely be beneficial for the ongoing education system to build a strong and self-sufficient future citizen of India if the programme is properly implemented all over the country with sufficient teaching force and improved infrastructure with advanced technology.

COURSE OUTCOME:

The course outcome can be analyzed with both advantages and disadvantages as given below:

ADVANTAGES:

1. As the course is very detailed and covers a number of topics. Students will gather a good basic knowledge about the subject.
2. As the course is all most same all over the country, it will help the students to go for higher studies in any of the universities and other institutes of higher education as they will be able to compete equally with the students of other parts of India with knowledge at par.
3. The course will help students to get success in competitive examinations like, UPSC, IRS, IES, NET, JRF and other competitive examinations for services in the institutions of repute.
4. The course provides in-depth knowledge of Economics along with the mathematical treatment and statistical applications of Economic Theories which will make the students to internalize the importance of Economics in day to day life, in each and every branch of higher education and policy prescription for national growth and development.
5. Inclusion of ICT in analyzing Economic problems is another important and needed feature of the course which will help the students to analyze the problem practically and find various Economic and other parameters and statistics relating to Economic development.
6. The course will enhance the ability of students to be acquainted with current national and Global Economic scenario and International trade relations among the countries of the world.
7. If students are properly guided and learned, students can develop themselves to good Economics analyst and policy makers through valuable research work they want to contribute to the society and also help other students to follow their path as a facilitator of Economic studies.

DISADVANTAGES:

1. Students without prior knowledge of mathematics find the course very tough – inclusion of too much mathematics and statistics may work as a backstabber for the subject itself that may be a major cause in the reduction of number of students in Economics in future.
2. Teachers are able to devote their full time, energy and concentration on the Honours students as they have to devote their time equally for Higher Secondary level classes.
3. The course will not be that beneficial without sufficient technological tools and infrastructure facilities within the campus.

SKILL ENHANCEMENT COURSE:

This course is like blessings for the students of Economics as the course helps them to gather practical knowledge of Applied Economics. The course will help the students to enhance their skill in real sense of the term. The course will help the students greatly to undertake Research Projects and proper analysis of the Economic variable that will help the country a lot to prescribe and implement policies and programme for faster growth and inclusive development in the real sense.

COURSE OUTCOME (NON-CBCS):

Paper No.	Courses	Outcomes
M 501	Elements of Public Finance	Students will learn in this paper about the nature and scope of Public Finance. They will learn about the important elements of public finance viz. Public Revenue, Public Expenditure and Public Debt.
M 502	Basic Statistics (for BA) Introduction to Econometrics (for BSc)	Students from the Arts stream learn Basic statistics. They will learn about the measures of Central tendency, Dispersion, Correlation, Regression and Probability. On the contrary, students from the Science stream will learn about theoretical frequency distribution and application of binomial, Poisson and normal distribution. They will also learn about Statistical inference and linear regression models.
M 503	Introduction to Environmental Economics	On successful completion of this course students will have an in-depth understanding of the discipline of environmental economics and its key principles. They will be able to understand and analyze the various environmental problems and will also be able to assess the different environmental policies. They will also be introduced to the different global environmental issues.
M 504	International Trade and Policy	The purpose of this course is to provide students with a thorough knowledge of the theories of international trade as well as terms of trade, gains from trade and international trade policy.
M 505	History of Economic Thought I	This course helps students to learn how the economic thought has evolved over time. It helps students to learn about the economic thought of the early period, the classical period and the socialist thought.
M 506	Development Policy and the Indian Economy	Students will develop ideas of the basic characteristics of the Indian economy. They will understand about poverty, inequality and unemployment. They will also learn about

		the role of agriculture in economic development and the role of industries in the development process.
M 601	Public Economics	This course will help students to learn about taxation, government budget, fiscal policy and federal finance. The students will also learn about the Finance Commission of India.
M 602	Applies Statistics (for BA) Econometric Methods (for BSc)	Students from the Arts stream will demonstrate their ability to apply statistics in Economics. They will learn to apply index numbers, time series analysis, vital statistics and sample survey in Economics. Students from the science stream learn about the problems in OLS estimations- Heteroscedasticity, Auto correlation and Multicollinearity. They will also learn about Lag Models, Dummy variables and Time Series Analysis.
M 603	Economics of Natural Resources and Sustainable Development	The students will learn about natural resources, economics of renewable and non-renewable resources and also about development-environment trade off. The course also deals with the policies necessary for the sustainable management of natural resources.
M 604	International Economics	The students will learn about the nature and scope of international economics. They will also learn about the determinants of exchange rates and the balance of payments. The course also deals with economic integration and international institutions.
M 605	History of Economic Thought II	.This courses teaches the students about famous schools of thought- Marginalist school, Austrian school. The students will also learn about neo-classical economics, welfare economics, Keynesian economics and Indian Economic Thought.
M 606	Planning for Development: India and the Northeast	The students will learn about different aspects of planning . They will also learn about India in the Global Economy. This course will also help the students to understand the economic problems of North-East India.

DEPARTMENT OF EDUCATION

Programme Outcome:

The Under Graduate programme in Education Major helps the students to understand the meaning, aims, function and role of Education. They are able to employ critical thinking and efficiency in problems solving ability in Education. The course explains the Indian and Western schools of Philosophy and their impact on Education. It discusses the contribution of great educators. The students after completing course at Graduation level in Education will develop an understanding of major concepts, theoretical principles in Education. The course also involves understanding the meaning and different perspectives of psychology and different theories of intelligence. The recommendations of the different Education Commissions are also included in the syllabus. By analyzing the various problems faced by the mentally and physically challenged children, an awareness program can be designed to encounter the problems of challenged children. Micro-teaching, preparing lesson- plans, practice teaching in schools which are integral parts of the syllabus will train the students in teaching skills. Students will also gain a reasonable knowledge in psychology. On successful completion of the course the students become efficient for teaching activities and guiding others to become good citizens in the society by usage of value education.

Course	Paper	Outcome
NON-CBCS COURSE	Semester-V	The students will be able to know the relationship between philosophy and education, acquire knowledge about the three major philosophies of education — Idealism, Naturalism and Pragmatism, understand the philosophy of life of different educational thinkers and their contribution to present day educational thought. concept, aims, scope and development of

		teacher education in India, various methods and devices of teaching, teaching effectiveness and classroom management, concept of experimental psychology and the methods of conducting various psychological experiments and tests.
CBCS Course	Semester-I Principles Of Education Psychological foundation of Education	<ul style="list-style-type: none"> ➤ The students will be able to know about the sound principles of education, the important concepts of Education, Curriculum, Democracy, Discipline and Freedom, develop knowledge about different Aims of Education, various types of Curriculum, Correlation of Studies and Forms of Discipline. ➤ Understand the concept of memory, forgetting, attention and interest. ➤ Understand intelligence, its theories, measurement, and concept of emotional intelligence. ➤ Acquaint with different types of personality and the adjustment mechanism
	Semester-II Philosophical and Sociological Foundations of Education Development Of Education In India-I	<p>After completion of this course the students will be able to --</p> <ul style="list-style-type: none"> ➤ Know the concept of philosophy and its relationship with education. ➤ Understand the educational implications of different Western schools of philosophy. ➤ Develop understanding about the concept of educational sociology, social groups and socialization. ➤ The learner will be able to develop the knowledge of the concept of Ancient Indian education system particularly Vedic Education and analyze the education system during British Period

	<p>Semester-III</p> <p>Development Of Education In India-Ii</p> <p>Educational Technology And Teaching Methods</p> <p>Value And Peace Education</p> <p>Public Speaking Skill</p>	<ul style="list-style-type: none"> ➤ Enable the students to know about the recommendations and educational importance of different Education Commission and Committees in post Independent India and analyze the National Policy on Education in different times & Accustom with the recent Educational Development in India. ➤ Acquaint the students with innovations in the field of education through technology & various methods and devices of teaching ➤ Acquaint students with levels, effectiveness of teaching and classroom management ➤ Make the students understand the strategies of effective teaching as a profession <p>The learner will be able to--</p> <ul style="list-style-type: none"> ➤ Become aware about the role of educational institutions in building a value based society. ➤ Understand the meaning and concept of peace and its importance in human life. ➤ Understand the meaning and importance of peace education and its relevance at national and international level. ➤ Identify the strategies and skills in promoting peace education at institutional level. ➤ After completing this course, students will be able to acquire the capacities of public speaking skill.
	<p>Semester-IV</p> <p>Great Educational Thinkers</p> <p>Educational Statistics and Practical</p> <p>Emerging</p>	<ul style="list-style-type: none"> ➤ After completion of this course the learner will be able to enable the students to learn the Philosophy of life of different Educational Thinkers and their works & enable the students to learn about relevance of some of their thoughts at present day context. ➤ The students will be able to develop the basic concepts of Statistics and develop the ability to represent educational data through graphs. ➤ Familiarize the students about the Normal Probability Curve and its applications in Education. ➤ Make the students acquaint with major emerging issues

	Issues In Education	<p>national, state, and local</p> <ul style="list-style-type: none"> ➤ Acquaint the students with the various issues in education that are emerging in the recent years in the higher education system
	<p>Semester-V</p> <p>Measurement And Evaluation In Education & Practical</p> <p>Guidance And Counselling</p> <p>Developmental Psychology</p>	<ul style="list-style-type: none"> ➤ Enable the students to understand the concept of measurement and evaluation in education. ➤ Acquaint the students with the general procedure of test construction and characteristics of a good test. ➤ Acquaint the students about personality test, and aptitude tests. <ul style="list-style-type: none"> ➤ Help the students to understand the concept, need and importance of Guidance and Counselling ➤ Acquaint the students with the organization of guidance service and school guidance clinic ➤ Enable the learners to understand the challenges faced by the teacher as guidance worker. <ul style="list-style-type: none"> ➤ Acquaint the students about heredity and environmental factors affecting pre-natal development ➤ Enable the students to understand the development aspects during infancy and childhood ➤ Enable the students to understand the development aspects of adolescence, importance of adolescence period and problems associated with this stage.

	Semester-VI	
	Education and Development	➤ After completion of this course the learner will be able to know the relation between education and development & Educational development in the post globalization era.
	Project	➤ After completion of this course the learner will be able to explain the process of conducting a Project & Prepare a Project Report.
	Special Education	➤ Familiarize the students with the different types of special children with their characteristics ➤ Enable the students to know about different issues, educational provisions and support services of special education

DEPARTMENT OF ENGLISH

Mechanism of Communication:

The Department of English adopts outcome-based learning rather than input-oriented learning. In keeping with the institutional strategies, the following mechanism is adopted to communicate the learning outcomes to the teachers and students:

- Graduate attributes are described to the first year students at the commencement of the programme.
- The teachers spend the stipulated hours recommended by UGC for introducing the subject to the students.
- Learning Outcomes of the Programmes and Courses are strictly observed and assessed periodically.
- The importance of the learning outcomes is communicated to the teachers in every IQAC Meeting and Staff Council Meeting.
- The students are also communicated about the Programme and Course outcomes through regular tutorial classes.

Programme Outcomes

- Apply the knowledge of the subject logically in required fields keeping in consideration of the various social, cultural, political and environmental issues.
- Adopt adequate teaching strategies and measures to meet the diverse needs of the heterogeneous background of the learners thereby enabling them solve complex

problems and exhibit comprehension and understanding of the programmes and apply them in a multidisciplinary environment

- Use innovation-based knowledge and creative methods including design of assignments, seminar papers for analytical skill and synthesis of the information leading to valid conclusions.
- An attempt is made to create, select, and apply appropriate techniques, resources, and modern IT tools for better learning outcomes. The focus is on training and skill to engage in self-regulating and life-long learning in the digitally changing times.
- Generate awareness of the societal and environmental issues for ensuring the practice of sustainable development.
- Acquaint the learners with ethical principles, moral values, professional ethics and responsibilities.
- Inculcate leadership qualities, team-spirit as well as a sense of individuality in the learners.

Course Outcomes

Course	Outcome
Honours Course	<p><u>Semester I/II</u></p> <ul style="list-style-type: none"> • To help the students of English Literature gain an extensive understanding of the English language and the texts. • The aim is to provide students with the opportunity to study major classic as well as popular writings from the British, American and global Anglophone traditions • The aim is to help acquaint the learners to explore the entire vista of varied human experience as expressed in Fiction, Poetry, Non-Fiction, Prose and Drama • The Programme seeks to provide imagination and critical insights into the wide spectrum of human emotions and experiences- nature and culture, identity and sexuality, love and peace, history and justice. • Literature encourages the learners to develop reading as a source of life-long commitment to learning and growth. • It aims to help the learners to develop the habit of active reading and the ability to comprehend the complex, nuanced literary texts, appreciate the literal and figurative uses of language. • To encourage learners students to develop analytical and interpretive skills thereby instilling research-oriented outlook • The students are encouraged to practice critical writing and creative expression to enhance their thinking and communicative ability. • Students are trained to explore the diverse genres of literary

	<p>writing to enhance their intellectual growth and instil the habit of intellectual inquiry.</p> <ul style="list-style-type: none"> • To sensitize the students to become effective thinkers and communicators • Increase confidence in public speaking and articulating clear ideas in class discussion by listening thoughtfully and respectfully to other ideas. • Enhance ability to organize and deliver informed and interesting oral/written presentations make the learners well equipped for various professions in future. <p><u>Semester III/IV</u></p> <ul style="list-style-type: none"> • To help the students of English Literature gain an extensive understanding of the English language and the texts. • The aim is to provide students with the opportunity to study major classic as well as popular writings from the British, American and global Anglophone traditions • The aim is to help acquaint the learners to explore the entire vista of varied human experience as expressed in Fiction, Poetry, Non-Fiction, Prose and Drama • The Programme seeks to provide imagination and critical insights into the wide spectrum of human emotions an experiences- nature and culture, identity and sexuality, love and peace, history and justice. • Literature encourages the learners to develop reading as a source of life-long commitment to learning and growth • It aims to help the learners to develop the habit of active reading and the ability to comprehend the complex, nuanced literary texts, appreciate the literal and figurative uses of language. • To encourage learners students to develop analytical and interpretive skills thereby instilling research-oriented outlook • The students are encouraged to practice critical writing and creative expression to enhance their thinking and communicative ability. • Students are trained to explore the diverse genres of literary writing to enhance their intellectual growth and instil the habit of intellectual inquiry. • To sensitize the students to become effective thinkers and communicators • Increase confidence in public speaking and articulating clear ideas in class discussion by listening thoughtfully and respectfully to other ideas.
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- Enhance ability to organize and deliver informed and interesting oral/written presentations make the learners well equipped for various professions in future.

Semester V/VI

- To help the students of English Literature gain an extensive understanding of the English language and the texts.
- The aim is to provide students with the opportunity to study major classic as well as popular writings from the British, American and global Anglophone traditions.
- The aim is to help acquaint the learners to explore the entire vista of varied human experience as expressed in Fiction, Poetry, Non-Fiction, Prose and Drama
- The Programme seeks to provide imagination and critical insights into the wide spectrum of human emotions and experiences- nature and culture, identity and sexuality, love and peace, history and justice.
- Literature encourages the learners to develop reading as a source of life-long commitment to learning and growth
- It aims to help the learners to develop the habit of active reading and the ability to comprehend the complex, nuanced literary texts, appreciate the literal and figurative uses of language.
- To encourage learners students to develop analytical and interpretive skills thereby instilling research-oriented outlook.
- The students are encouraged to practice critical writing and creative expression to enhance their thinking and communicative ability.
- Students are trained to explore the diverse genres of literary writing to enhance their intellectual growth and instil the habit of intellectual inquiry.
- To sensitize the students to become effective thinkers and communicators.
- Increase confidence in public speaking and articulating clear ideas in class discussion by listening thoughtfully and respectfully to other ideas.
- Enhance ability to organize and deliver informed and interesting oral/written presentations make the learners well equipped for various professions in future.

<p>General Course - BA</p>	<p>Semester I/II</p> <ul style="list-style-type: none"> • Increase confidence in public speaking and articulating clear ideas in class discussion by listening thoughtfully and respectfully to other ideas. • Enhance the ability to organize and deliver informed and interesting oral/written presentations make the learners well equipped for various professions in future. • The students are encouraged to practice critical writing and creative expression to enhance their thinking and communicative ability. <p>Semester III/IV</p> <ul style="list-style-type: none"> • Increase confidence in public speaking and articulating clear ideas in class discussion by listening thoughtfully and respectfully to other ideas. • Enhance the ability to organize and deliver informed and interesting oral/written presentations make the learners well equipped for various professions in future. • The students are encouraged to practice critical writing and creative expression to enhance their thinking and communicative ability.
<p>General Course - BSc</p>	<p>Semester I</p> <ul style="list-style-type: none"> • Increase confidence in public speaking and articulating clear ideas in class discussion by listening thoughtfully and respectfully to other ideas. • Enhance the ability to organize and deliver informed and interesting oral/written presentations make the learners well equipped for various professions in future. • The students are encouraged to practice critical writing and creative expression to enhance their thinking and communicative ability.

DEPARTMENT OF GEOGRAPHY

Geography is considered to be the mother of all subjects. It is the study of the relationship between human and the environment. Hence, geography students are exposed not only to the study of the various aspects of the physical world, but also to the study of the various aspects of the society as well. Geography students are thus trained about the science of the physical world as well as the arts of the human world. With knowledge about geomorphology, climatology, oceanography, ecology, environmental geography and cartography, geography students are trained to be well versed physical geographers. On the other hand, imparting knowledge on the philosophical aspects of the subject through the study of geographic thought, students are also trained in the philosophical understanding of the subject as well. Furthermore, through papers like human geography, social geography, political geography, economic geography, etc. students thus emerge as geographers with in depth understanding of the dynamics of the society as well.

Paper	Course	Outcome
GGY-HC-1016	Geomorphology – Part A (Theory)	This paper aims to provide an in depth knowledge about the physical characteristics of the earth. Through this paper students will gain in depth knowledge about the various aspects of the earth, especially the lithosphere. Focus is also given on the creation, evolution and also destruction of various landforms of the earth.
(Practical)	Geomorphology - Part B	Practical on geomorphology aims to train the students with the ability to read and construct maps explaining the physical characteristics of the topography of the

		earth.
GGY - HC – 1026 Cartographic Techniques - Part A (Theory)	Cartographic Techniques - Part A (Theory)	This paper aims to provide the students with the theoretical understanding of the science of map making. Various concepts related to various types of map making are taught in this paper.
- <i>Part B (Practical)</i>	Cartographic Techniques	Practical on cartographic techniques aims to equip the students with ability to construct various types of maps. Based on different projections various maps are taught to be constructed. In addition to this, various surveying techniques using both manual and digital tools as well as methods are taught so that the students are capable of using such techniques in the practical field.
GENERIC ELECTIVE Paper Code: GGY-HG-1016	Physical Geography	Physical Geography paper attempts to provide the knowledge of the physical world. It not only includes the understanding of the subject of physical geography as a whole, but also specifically focuses on the study of the atmosphere, lithosphere and also hydrosphere.
GGY-RC-1016	Physical Geography Part A (Theory)	This paper attempts to provide a general idea about the topographic and surficial characteristics of

		<p>the</p> <p>Earth's surface to the students. In addition to this, it also aims to make the students aware of the dynamic geomorphic processes responsible for the development of landforms of varied types and nature.</p>
Part B (Practical)		<p>This paper aims to give the students the practical knowledge about the preparation of various profile drawings to better explain the geomorphic processes of the earth.</p>
GGY HC – 2016	Human Geography	<p>This paper provides the students with the knowledge about the human aspects of geography which forms the other aspect of the subject. Through this paper students are made well versed with the relationship between human beings and the natural world, i.e. the physical environment. The various philosophical contents of the paper attempts to provide the students about the philosophical background of the subject.</p>
Human Geography - Part B (Practical)		<p>Practical on human geography paper intends to give the students the knowledge about the</p>

		various quantitative techniques to depict, interpret and represent the human geographic data
GGY-HC-3016	Economic Geography	This paper intends to provide the students with the knowledge of how various economic activities are related with geography. The workings of the various economic sectors like primary, secondary and tertiary are specifically focused upon so that a better understanding of the relationship between geography and economics can be provided
Part B (Practical)		Practical on Economic Geography aims to equip the students with the ability to use various quantitative techniques in the interpretation and representation of various economic data.
GGY-HC-3026	Geography of India with special reference to N.E. India - Part A (Theory)	This paper intends to provide the students with the knowledge about the diversity of India giving special focus on the geographical diversity of North-East India.
Part B (Practical)		Practical paper on India attempts to enable the students with the ability to use various data and interpret them using various quantitative techniques

GGY-HC-3036	Quantitative Methods in Geography	This paper aims to equip the students with an in depth theoretical knowledge about the quantitative methods that are often used in the study of geography.
Part B (Practical)	Quantitative Methods in Geography -	Practical on quantitative methods aims to give the student hands on training on the usage of various quantitative methods so that they are capable of using them in the correct interpretation and representation of various geographic data.
SKILL ENHANCEMENT COURSE FOR HONOURS GGY – SE-3054	Thematic Cartography- Part A (Theory)	This paper intends to give theoretical knowledge about the art and science of thematic map making. Through this paper students can construct maps of various regions depicting various themes.
Part B (Practical)		This paper attempts to provide the students with practical knowledge about the construction of thematic mapping based on various geographical data.
: GGY-RC–3016	Economic Geography- Part A (Theory)	This paper intends in developing the understanding of the students on how geographical factors organize economic space, and to acquire knowledge about spatial patterns of various economic activities on the earth.

Part B (Practical)		This paper aims to make the students understand the basic principles of economic geography and associated patterns and processes of major economic activities in the world. It also attempts to develop insights among the students about the relevance of studying economic geography and understanding contemporary economic problems from geographical perspective.
<p>SKILL ENHANCEMENT COURSE</p> <p>Course Name: Thematic cartography- Part A (Theory)</p> <p>Paper Code: GGY – SE-3034</p>		Through this paper students can learn about the importance of various techniques of preparation of maps in geographical study. They will also gain a general understanding of preparation of different types of plans and maps. Further they are also trained with different cartographic techniques for representation of various facets of earth's surface.
Part B (Practical)		Practical paper on thematic cartography attempts to

		provide hands on training to the students to enable them to prepare various maps using cartographic techniques and principles.
PAPER 401: FORMS AND PROCESSES IN GEOMORPHOLOGY		Through the first unit, it is intended to teach the students about the various geomorphic processes that shape the topography of the earth. Focus is given to enable the students to understand the concepts of the development of various landforms. The second unit aims to train the students about the various hydrological aspects of the earth so that the students can understand the drainage processes of the earth along with the creation of various landforms that are produced as a result of the hydrological processes of the earth. The final unit intends to impart the knowledge of various geomorphic hazards and the subsequent creation of various landforms.
PAPER 402: HUMAN		The first unit aims to impart

<p>GEOGRAPHY</p>		<p>the knowledge of the important concepts and the definition of human geography to the students so that they can understand the meaning of the subject. The second unit aims to give the students the philosophical understanding as well as the approaches to the study of the subject of geography. The third unit aims to impart an in depth knowledge about the human and environment relationship to the students so that they can better analyze and interpret the relation between man and the natural environment. The fourth unit specifically aims to teach the students the response of the human beings to the various environmental conditions prevalent in different parts of the world. Further, the last unit aims to teach the students about the major human races of the world so that they can get a better understanding about the diversity of human life</p>
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		around the globe.
PAPER 403:	PRACTICAL ON GEOMORPHIC PROCESSES	This paper aims to provide the students about the knowledge of representing various landforms produced through geomorphic process through the study of topographic maps. It also aims to equip the students with the ability to use various theories practically in the delineation of flood plains and also various other topographies.
PAPER 501:	REGIONAL DEVELOPMENT PLANNING AND GEOGRAPHY OF DEVELOPMENT OF USA AND JAPAN	This paper intends to provide the students with the knowledge of the concept of region which become the core concept in the understanding of not only the different countries of the world, but also defining the world into various regions. Further, development of some of the developed countries like USA and Japan are taught in this paper based on the resources and industrial development of these countries.

502	REGIONAL GEOGRAPHY OF INDIA AND SAARC NATIONS	<p>In this paper, students are taught about the country of India as a region. Hence, students can learn about the physical environment, location, population, agriculture, industry, transport, etc about the country of India.</p> <p>Further, this paper also intends to impart knowledge about the regional geography of all the SAARC nations of the world which includes the location, diversity, unity, conflict, economic co-operation etc.</p>
503:	CARTOGRAPHIC AND QUANTITATIVE METHODS	<p>Through this paper, the art and science of map making are taught to the students so that the students can learn about the cartographic techniques both theoretically and practically. Specific focus is given to the teaching of</p>

		<p>various surveying techniques using tools and equipments like Plane Table, Prismatic Compass, Dumpy Level and Theodolite. Different projection techniques to enable the students in the making of manual maps are also taught so that the students can gain expertise in the making of various types of maps. In addition to this, various quantitative methods are also taught to the students so that they are well versed in the important quantitative methods to conduct future researches and also so that the students can better calculate and interpret the different geographical data.</p>
504:	<p>POPULATION AND SETTLEMENT GEOGRAPHY</p> <p>Section A: Population Geography</p>	<p>This paper aims to impart the students with the knowledge of population and human settlements. Since human geography is another branch of geography, students can learn about the various</p>

		<p>aspects of human life. In addition to this, important theories regarding population growth and distribution are also taught to the students. Students therefore can learn about the various factors that influence the distribution and growth of population and settlement around the world.</p>
505:	<p>PRACTICAL ON CARTOGRAPHIC METHODS (SURVEYING & MAP WORKS)</p>	<p>This paper attempts to impart practical training to the students in making maps as well as surveying using different tools and equipments. Hence students are able to depict, represent and analyse various socio-economic data.</p>
506:	<p>PRACTICAL ON CARTOGRAPHIC AND QUANTITATIVE METHODS</p>	<p>Through this paper, students can learn about the use of different quantitative methods in the calculation and analysis of various geographic data. Further they can also learn how these data can be represented in the maps. In addition to this, through this paper, students can also</p>

		learn to read different maps and also give meaning full interpretations of such maps.
601:	ENVIRONMENT AND DEVELOPMENT	This paper focuses on the study of the environment and development. It intends to impart the students with the knowledge about the concept of environment as well as the various environmental issues. Students therefore, can get deeper understanding about the different aspects of environment and development. Through this paper, students can learn about the concept of sustainable development. This paper thus aims to make the students responsible citizens by practicing sustainable development in their everyday life.
PAPER 603	REGIONAL GEOGRAPHY OF NORTH EAST INDIA WITH SPECIAL FOCUS ON ASSAM	This paper attempts to make the students learn about the North-Eastern part of India as a region with special focus on the state of Assam. As such, students gain in

		<p>depth knowledge about the various aspects of this region like, physiography, drainage, climate, soil, natural vegetation, population, society, economy, resources, infrastructure, biodiversity, etc. in addition to this, students also become aware about the various socio-economic problems of the region and Assam specifically.</p>
PAPER 604:	<p>PRINCIPLES AND APPLICATIONS OF REMOTE SENSING, GIS AND GPS</p>	<p>Through this paper the modern technological applications in geography are taught to the students. Students can gain in depth theoretical knowledge about the use of remote sensing, GIS and GPS, in the study of geography and in the conduct of geographic researches.</p>
PAPER 605:	<p>PRACTICAL ON ADVANCED TECHNIQUES IN GEOGRAPHY</p>	<p>Practical on advanced techniques in geography include the practical implications of the modern technologies in geography. Through the study of remote sensing and satellite</p>

		<p>imagery, students learn to identify and collect distant geographic data. In addition to this, they also learn to allocate ground control points. Further, they also learn to prepare digital maps using GIS softwares. Hence they gain expertise in the preparation of digital maps.</p>
606:	PROJECT WORK	<p>This paper focuses in imparting on field practical knowledge to the students in conducting researches. Attention is given to give different training in the various research methodologies so that students can gain practical lessons in conducting a research successfully. Students learn to collect their primary data using questionnaires and also to collect secondary data from various offices and authorities. They also learn how design their sample and practically learn to interpret the collected data. They also learn to represent</p>

		the data using both traditional and digital techniques. Thus through this paper, students get hands on expertise in conducting field research enquiring various research questions.
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DEPARTMENT OF GEOLOGY

COURSE	OUTCOME
General Geology, Geomorphology & Basic Principles of Remote Sensing	The students get acquainted with the scope of Geology, its branches and relation to the different fundamental sciences. They can know how about the use of seismic waves in the study of earth's internal structures. They can enhance their knowledge about the Universe and Solar System. They learn the major internal processes of the earth such as volcanism and earthquake, the role of climate and tectonics on landscape development, the geological actions by rivers, wind, glaciers, sea and their associated landforms. The basic principles of remote sensing and photogrammetry, advantages and limitations of remote sensing are also taught.
Crystallography & X-Ray Crystallography	They can know about the minerals and its relation to crystal, difference between crystal and amorphous substance, crystallization and crystal growth, different crystal system, crystal intergrowth and twinned crystals. They can also understand principles of X-ray crystallography and identification of minerals by X-ray diffractometry.
Crystallography & Geomorphology	They learn how to identify a crystal and their crystal system. They study the pattern of contours to indicate various topographical features. They can interpret topographic maps and geomorphological features from topographic maps.
Optical Mineralogy	They can learn how the optical properties help in identifying a particular mineral. They know about the parts and configuration of transmitted and

	reflected light microscope.
Physical & Descriptive Mineralogy	They can learn about physical properties of minerals and also the relationship of these properties with atomic structure.
Mineral hand specimens & Optical Mineralogy	They learn how to use optical microscope to study and identify a mineral in thin section and also to identify minerals based on their optical properties.
Structural Geology & Geotectonics	They learn about the deformation of the earth crust in the form of planar, linear, fold, fault, joints structures etc and the physics behind these deformations. They can also have idea about Continental drift, Sea floor spreading Plate Tectonics, geomagnetism, palaeomagnetism as well as polar wandering curve.
Petrology – I	They can study the distinguishing characters, textures and structures of igneous, sedimentary and metamorphic rocks, the basic study materials of geology.
Practical-I Exercise on Geological contoured maps Structural Geology problems Geological Field Work – I	They learn how to draw a profile section from geological contoured map and to solve structural problem with the help of stereographic net. A geological field work is also carried out in a geological type area. Students are also trained how to take structural readings with the help of Clinometer and Brunton Compass.
Crystal Chemistry & Geochemistry	They know about chemical bonding and atomic structure of crystals, cosmic abundance of elements; composition of meteorites & lunar rocks; geochemical classification of elements and composition of crust, mantle and core of the earth. They also learn about distribution of trace (including rare earth) elements in igneous, sedimentary & metamorphic rocks.
Petrology –II	They can study the details of petrogenetic history of the different types of igneous, sedimentary and metamorphic rocks.
Igneous & Metamorphic Petrology	They know how to identify a rock in hand specimen and under thin section based on mineralogy, textures- structures and petrogenetic history
Principles of Stratigraphy & Historical Geology	They learn the basic principles of stratigraphy and also can know about the Geological Time Scale and preliminary idea of crustal and biological evolution of earth through the geologic time. The principles of geochronology and the methods of measurement of geological time are also taught

Indian Stratigraphy	They know about the lithology, stratigraphy, tectonic activities, igneous activities, records of fossils in different stratigraphic horizons of India in different geological time
Palaeontology & Soil Geology	They know the scope of palaeontology, different branches of palaeontology; kinds of fossils; mode of preservation of fossils and importance of fossils in – chronological, palaeogeographical, palaeoecological, biostratigraphical, stratigraphical, evolutionary and economic studies. They can also learn about the processes of soil formation; physical properties of soil, soil erosion and conservation of soil.
Hydrogeology Remote Sensing & GIS	They can learn ground water table, ground water distribution and ground water provinces of India. They also know about orbital properties of remote sensing satellites and application of remote sensing in geomorphological, structural and lithological mapping; They also learn how to mitigate natural hazard.
Practical-I Sedimentary Petrology & Palaeontology	They learn how to identify sedimentary rocks in thin section and also to identify different plant and animal fossils and prepare stratigraphic horizon
Practical-I I Surveying Indian Rock types & Geological Field Work – II	They learn to carry out topographic survey with the help of Plane Table and Prismatic Compass. They also identify different specific Indian rock types based on distinctive features. A geological field work is also carried out in an Indian stratigraphic horizon.
Ore Genesis & Prospecting	They know how the economically important minerals are formed by different geological processes. They also learn about the methods of geological, geophysical, geochemical and geobotanical prospecting of mineral deposits
Indian Mineral Deposits & Mineral Economics	They study the mineralogy, mode of occurrence, geological setting, and origin and use economic mineral deposits of India. They also study the concept of mineral economics; strategic, critical & essential minerals and National Mineral Policy of India
Environmental Geology & Engineering Geology	They study Natural and anthropogenic environmental hazards; Landslide & flood, and their impact on environment; Impact of mining on environment; Environmental pollution, Seismic vulnerability and seismic hazard assessment parameters. They also know the role of geologists in construction of dams, tunnels, highways and bridges.

Fuel Geology & Mining Geology	They learn about chemical composition, source rock, reservoir rock, origin, migration & accumulation of petroleum. They can also have idea about the petroliferous basins and Oilfields of India. Besides they know about coal deposits, atomic minerals and nonconventional energy resources. They also get idea about methods of mining of mineral resources.
Practical-I Economic Geology, Reserve Estimation & Ore Microscopy Remote Sensing & Hydrogeology	They learn how to identify economic minerals in hand specimen and polished block, how to calculate reserve estimation and also to solve problems on remote sensing and hydrogeology
Practical-I I Engineering Geology Coal Geology Seminar Presentation & General Viva-voce (External)	They learn how to solve problems on Engineering geology, to identify different types of coal in hand specimen and thin section. Every student is to present & deliver a seminar on any topic chosen from the subjects included in this syllabus from First Semester to Sixth Semester. The faculty members of the concerned department are to evaluate the presentation. The External Examiner conducts the Viva-voce and each and he/she may ask questions to the students on any topics from the subjects included in this syllabus from First Semester to Sixth Semester.

DEPARTMENT OF HINDI

Hindi is the national language of India. The language Hindi plays a vital role to connect among various states of India. So it is national language (rashtrabhasha), connective language (sampark bhasha), official language (rajbhasha) and become 3rd world language. Students can develop their confidence and acquire mental strength to face any kind of competition and challenges in their life by learning properly both the ancient and modern Hindi literature. Students of Hindi language become successful applying the lessons they gathered from lectures, seminars, group discussions etc. in course of their studies. Advantages of Hindi language is because of India is growing quickly as global economy and its culture and language are very important to improve the conduct of business in the country. It's the second rapidly growing economy after china.

Papers	Course	Outcome
HIN-RC-1016	Hindi Sahitya ka Itihas	The paper introduces students to the rich history of Hindi literature and at the end of the course, the students are expected to have an overall understanding

		of the trajectory of Hindi literature.
Ability Enhancement Course (AEC) 1034	Hindi vyakran or Sampreshan	Students are introduced to the Minor genres such as essay and the literature is used to develop their social and moral senses in life. Moreover, it helps them to acquire knowledge of literary forms also.
3rd semester course Core course HIN-RC-3016	Adhunik Hindi kavita	Through this paper, students are acquainted with the socio-cultural & political dimensions from Adhunik kal. It also focuses upon the ancient poets and their literary works
SKILL ENHANCEMENT COMPULSORY COURSE HIN-SE-3014	Karyalayin Anuvad	The paper introduces with the Functional Hindi to the students with in-depth knowledge of grammatical structures.
5th semester course SKILL ENHANCEMENT COURSE HIN-SE- 5014-	Rang Aalekhan Evam Rangmanch	The aim of the paper is to provide with a brief knowledge of the history of Hindi Drama and Rangmanch.
DISIPINE SPECIFIC ELECTIVE (DSE) HIN-RE-5016	Lok Sahitya OR Kabir	The paper makes the students equipped with the conception of folk culture such as studying lok geet (sanskar geet, vrat geet, shram geet etc.) It also focuses students to understand the prescribed padasand sakhies of Sant Kabir Das with description of the social factors and secular

		thoughts of the poet. Also a detailed study of the sadhukkadi language used by the poet.
GENERIC ELECTIVE COURSE (GEC) HIN-RG-5016	Kala Aur Sahitya OR Sangit Evam Sahitya	The aim of the paper is to acquaint the students with the knowledge of connectivity between art and literature
FIFTH SEMESTER Non-CBCS		<p>This paper introduces with rich medieval Hindi literature.</p> <p>*Full depth knowledge about historical, political and cultural environment.</p> <p>*Introduction of different poets and their poems on medieval Hindi literature.</p> <p>*Identify the keyterms of the period.</p> <p>*Introduction of the pre independence history of hindi Literature.</p> <p>*Cultural context of the pre-independent era.</p> <p>*Introduction of the Independent- Movement.</p> <p>*Influence of the Independence-Movement in Cultural and social ethoes.</p>

DEPARTMENT OF HISTORY

PAPER	COURSE	OUTCOME
HIS-HC-1016	History of India-1	The Course will be completed with 5 lectures and 1 tutorial per week. After completion of this paper, the students will be able to explore and effectively use historical tools in reconstructing the remote past of ancient Indian pre and proto history. The course will also train the students to analyse various stages of evolution of human cultures and the belief systems in the proto-history period.
HIS-HC-1026	Social Formations and Cultural Patterns of the Ancient World	The course needs to be completed with 5 lectures and 1 tutorial per week. After the completion of this paper, the students will be able to explain the processes and stages of the evolution of the variety of cultural pattern throughout antiquarian periods in history. They will be able to relate the connections between the various Bronze Age civilizations in the ancient world as well as development of slave and polis societies in Ancient Greece.
HIS-HG-1016	History of India(From the Earliest times upto c1206)	The course will be completed with 5lectures and 1 tutorial per week. Upon the completion of this course, students will be able to explain the emergence of state system in North India, development of imperial state structure and state formation in South India in the early period. They will be able to understand the changes and transformations in polity, economy and society in early India and the linkages developed through contacts with the outside world
HIS-HC-3016	History of India III (c750-1206)	The paper will be completed with 5 lectures and 1 tutorial per week. The completion of this paper will enable the students to relate and explain the developments in India in its political time period between c700 to 1206. They will also be able to analyse India's interaction with another wave of foreign influence and the changes brought in its wake in the period.

HIS-HC-3026	Rise of the Modern West-1	The course will be completed through 5 lectures and 1 tutorial per week. On completion of this course, the students will be able to explain the major trends and developments in the Western world between the 14 th to the 16 th century CE. They will be able to explore and analyse the significant historical shifts and events and the resultant effects on the civilization of Europe in the period.
HIS-HC-3036	History of India IV(c.1206-1550)	The course will be completed through 5 Lectures and 1 tutorial per week. After the completion of this course, students will be able to explain the political and administrative history of medieval period of India from 1206 to 1550 AD. They will also be able to analyse the sources of history, regional variations, social, cultural and economic setup of the period.
HIS-HG-3016	History of India (c1757-1947)	The course will be completed through 5 lectures and 1 tutorial per week. Upon completion of this course, students will be able to understand the major factors that led to the establishment and consolidation of British rule in India. They will also be able to identify the process of growth of resistance against British colonial rule and the eventual growth of Indian nation
HIS-SE-3014	Historical Tourism in North-East India	This course will be completed through 3 Lecture and 1 Tutorial class per week. After completing this course, students will be able to explain Tourism in North-East India with special reference to the historical monuments, cultural and ecological elements and places of the north-east India as tourist and heritage site of the nation. They will be able to relate to the growing vocation of tourism as an industry and the applicability of historical knowledge for its growth.

509	India under the East India Company	This paper will basically focus on the advent of the European powers into India and intends to explore the factors of the establishment of British rule ultimately. The Paper will make the students aware of the various conquests of the British and the policies they implemented which had a long term impact upon the native states. They would also drive into factors that led to upsurge of political consciousness of the native powers
510	History of Assam (1228-1826)	This paper will focus on Medieval Assam with special reference to the Ahoms and with peripheral reference to the Kamrup-Kamata and Koch kingdom. A special mention will also be made of the Mughal invasions during that period. The Student will also be made aware of the Moamaria rebellion and Burmese invasion.
511	History of Europe (1789-1870)	The paper equips students understand and appreciate the events that unfolded in Europe during the period and how these events were not only results of previous political, historical, as well as economic and social events, but also shaped the future of European as well as World History. The paper analyses the French Revolution, the fall of Monarchy, the end of Feudalism, the growth of Capitalism and the Industrial Revolution and its relation to Colonialism.
512	History of Science and Technology in Pre-Colonial India	The paper identifies the stone tool technology and the importance of metal like Bronze and Iron in human history. The students are made aware of the ancient Indian contributions towards Science. The paper also speaks of the technological innovation in Medieval India.
513	History of Great Britain (1485-1820)	The paper focuses on the historical events of Great Britain during the period mentioned. Beginning with the Tudor dynasty and moving on to the Stuarts, the paper analyses the political history of Great Britain and concludes with the Industrialisation process of Great Britain and its social impact. Students are introduced to

		Great Britain and they get an opportunity to understand the gradual process through which constitutional government grew in Great Britain. The Industrial Revolution as well as the related colonial growth of Great Britain is also well emphasised.
514	History of China (1839-1949)	The Paper will provide to the students a learning of the different phases of Colonialism in China. It will be an understanding of the secret societies and its attempt to overcome Colonialism and feudalism in China. Students will also learn of the formation of Nationalist and Communist Parties in China and their role in China's independence.
Paper- 5.5	History of India (1757-1857)	This Paper speaks of the Colonial rule in India and its establishment through the different processes and the intrusion into the different spheres. The different diplomatic alliances besides the conquest have been thoroughly dealt with in the paper. The beginning of political consciousness were also articulately handled through the Revolt of 1857
Paper-5.6	History of Europe (1815-1939)	The Paper makes the student aware of the different facets of European history with a understanding of the Concert of Europe and the Revolution of 1830 and 1848. Emphasis has also been made of the Italian and German unification as well as the First World War and ideologies like Nazism and Fascism.

DEPARTMENT OF MATHEMATICS (UG AND PG)

<p align="center">Programme Outcome</p>	<ol style="list-style-type: none"> 1. After completion of graduation and post graduation students apply their broad knowledge of science across a range of fields, with in-depth knowledge in at least one area of study, while demonstrating an understanding of the local and global contexts in which science is practiced. 2. Articulate the methods of science and explain why current scientific knowledge is both contestable and testable by further inquiry. Apply appropriate methods of research, investigation and design, to solve problems in science.
<p align="center">Programme Specific Outcome</p>	<p>Mathematics graduate(major) and post-graduate students will be able to apply critical thinking skills to solve problems that can be modelled mathematically, to critically interpret numerical and graphical data, to read and construct mathematical arguments and proofs, to use computer technology appropriately to solve problems and to promote understanding, to apply mathematical knowledge to a career related to mathematical sciences.</p>
<p align="center">Course</p>	<p align="center">Outcomes</p>
<p>Classical Algebra</p>	<p>Learn how to solve the cubic and biquadratic equations, also learn about symmetric functions of the roots for cubic and biquadratic equations, recognize consistent and inconsistent systems of linear equations by the row echelon form of the augmented matrix.</p>
<p>Linear Algebra</p>	<p>The course will enable the students to learn about the concept of linear independence of vectors over a field, and the dimension of a vector space basic concepts of linear transformations, dimension theorem, matrix representation of a linear transformation, compute the characteristic polynomial, eigenvalues, eigenvectors, and eigenspaces, as well as the geometric and the algebraic multiplicities of an eigenvalue and apply the basic diagonalization result compute inner products and determine orthogonality on vector spaces, including Gram–Schmidt orthogonalization to obtain orthonormal basis find the adjoint, normal, unitary and orthogonal operators.</p>

Calculus	To inculcate knowledge on the ability to find the effects of changing conditions on a system, sketch curves in a plane using its mathematical properties in different coordinate systems and apply the knowledge in problems in business, economics and life sciences.
Analytical Geometry	To inculcate knowledge on solve problems in analytic geometry and able to find appropriate solutions for given problems. Have a rigorous understanding of the concept of three dimensional coordinate systems, understand geometrical properties of dot product, cross product of vectors
Programming in C	Able to handle nonlinear equations as those can not be handled analytically. This course has equipped the students to carry out long and tedious computational works particularly when they go for research in some application oriented field and after knowing programming in C, the students can easily shift over to any other programming which are used in different fields.
Trigonometry, Vector Calculus	To inculcate knowledge on triangle properties and basic concepts of vector calculus.
Statics and dynamics	To inculcate knowledge on fixed and moving particle properties and proofs.
Operations Research	To inculcate knowledge on maximize the profit and minimize the cost in every place.
Functional Analysis	To inculcate knowledge on n-dimensional norm linear spaces and their properties & proofs.
Topology	To inculcate knowledge on understand the notation of distance function, topological structure and their properties with mathematical proofs.
Astronomy	To inculcate knowledge on solving of spherical properties of triangle and basic concept of celestial spheres.
Ordinary Differential Equation & Mathematical Methods	Able to learn basics of differential equations and mathematical modeling, formulate differential equations for various mathematical models, solve non-linear and linear differential equations of higher order using various techniques and apply these techniques to solve and analyze various mathematical models.
Partial Differential Equations	The course will enable the students to formulate, classify and transform first order PDEs into canonical form, learn about method of characteristics and separation of variables to solve first order PDE's, classify and solve second order linear PDEs, learn about Cauchy problem for second order PDE and homogeneous as well as non homogeneous wave equations, apply the method of separation of variables for solving second order PDEs
Real Analysis	To inculcate knowledge on real numbers and their properties and able to understand the concept of sequence of real numbers, infinite series and their related results.
Modern Algebra	To inculcate knowledge on various algebraic structures and their properties.

Discrete Mathematics	To inculcate knowledge on understand the notation of mathematical thinking, mathematical proofs, and graphical thinking and able to apply then in problem solving, become familiar with Boolean algebra, Boolean homomorphism, Karnaugh diagrams, switching circuits and their applications
Complex Analysis	To inculcate knowledge on complex numbers and their properties, to introduce the basic ideas of analysis for complex functions with visualization through relevant practicals.
Numerical Methods	To inculcate knowledge on algebraic equations solved by Numerical Methods. This will enable the students to learn some numerical methods to find the zeroes of nonlinear functions of a single variable and solution of a system of linear equations, to know about methods to solve system of linear equations, interpolation techniques to compute the values for a tabulated function at points not in the table, applications of numerical differentiation and integration to convert differential equations into difference equations for numerical solutions.
Dynamical System and Fractal Geometry	To inculcate knowledge on algebraic equations solved using differential equation.
Computer Algebra Systems and Related Software	This course will enable the students to use of softwares; Mathematica/MATLAB/Maxima/Maple etc. as a calculator, for plotting functions and animations, use of CAS for various applications of matrices such as solving system of equations and finding eigenvalues and eigenvectors, understand the use of the statistical software R as calculator and learn to read and get data into R.
Combinatorics and Graph Theory	Able to learn about the counting principles, permutations and combinations, Pigeonhole principle, understand the basics of graph theory and learn about social networks.
Linear Programming	This course will enable the students to learn about the graphical solution of linear programming problem with two variables, learn about the relation between basic feasible solutions and extreme points, to understand the theory of the simplex method used to solve linear programming problems, learn about two-phase and big-M methods to deal with problems involving artificial variables, to learn about the relationships between the primal and dual problems, to solve transportation and assignment problems apply linear programming method to solve two-person zero-sum game problems.
R Programming	Able to become familiar with R syntax and to use R as a calculator, understand the concepts of objects, vectors and data types, know about summary commands and summary table in R, visualize distribution of data in R and learn about normality test, plot various graphs and charts using R.
LaTeX and HTML	The students will be able to create and typeset a LaTeX

	document, Typeset a mathematical document using LaTeX, learn about pictures and graphics in LaTeX, create beamer presentations, create web page using HTML
Number Theory	This course will enable the students to learn about some fascinating discoveries related to the properties of prime numbers, and some of the open problems in number theory, viz., know about number theoretic functions and modular arithmetic, solve linear, quadratic and system of linear congruence equations.
Probability and Statistics	This course will enable the students to make the students familiar with the basic statistical concepts and tools which are needed to study situations involving uncertainty or randomness, to render the students to several examples and exercises that blend their everyday experiences with their scientific interests.
Spherical Trigonometry and Astronomy	It will enable the students to learn about the properties of spherical and polar triangles, to know about fundamental formulae of spherical triangles, learn about the celestial sphere, circumpolar star, learn about Kepler's law of planetary motion, Cassini's hypothesis, differential equation for fraction
Rigid Dynamics	Able to learn to introduce moments and products of inertia, theorem of six constants, D'Alembert's principle, Motion of a body in two dimension and Lagrange's equations.

DEPARTMENT OF PHILOSOPHY

Programme Outcome

The primary goal of philosophy course is to address some of those ultimate questions so as to enable students to lead a more substantive and meaningful life and have a reasoned foundations conducive to support for human values; to an awareness of a duty to work for justice, compassion, and peace; and to the integrated and rich human life worth living, thus providing students the abilities and opportunities to be more responsible for the interdependent world in which they find themselves. The Philosophy program seeks to promote the development of the person as an individual and as a meaningful contributor to the society. Moreover, philosophical training is intrinsically as well as extrinsically valuable. It seeks to foster in students the skills they need to develop, establish, reconstruct, and evaluate arguments in any field. Philosophical training also helps students seek general explanatory principles, reflect upon what really matters, look for alternatives to widely-accepted views, and learn to distinguish what is significant from what is not. Students will develop ability in critical thinking and understanding of concepts of right, wrong, good and bad and an understanding of moral principles and their application in everyday life.

Programme Specific Outcome

To develop in students a sense of the value and limits of philosophy, a reflective attitude and sensitivity to the difficulties and complexities of philosophical judgments, and a life-long commitment to learning and inquiry. The course acquaints students with Greek Philosophy, Indian and Western Philosophy, Ethics, Philosophy of Religion, Empiricism, Political Philosophy and Social Philosophy, Analytic Philosophy, Logic etc. Students also become familiar with some of the major figures and schools of thought in the intellectual tradition, and develop an appetite for further study and learning.

Papers	Course	Outcomes
1016	Indian Philosophy-I	Aims to acquaint students with the ancient Indian Texts-Vedas,Upanisads and Bhagavadgita-their meanings and different divisions etc. It also intends to acquaint students with the development of Indian Philosophy-its nature, scope and characteristics, schools of Indian Philosophical system especially the astika schools i.e,Carvaka, Jainism and Buddhism and also the schools of Buddhism.
2036	Greek Philosophy	It intends to acquaint students with the pre-Socratic Philosophers and their philosophical doctrines such as water philosophy of Thales, Philosophy of Flux of Heraclitus, Atomism of Democritus etc. It also seeks to acquaint students with the philosophy of the Sophists, Socrates' method and his concept of virtue, Plato's theory of forms, his concept of knowledge and opinion as well as Aristotle's classification of cause, his concept of actuality and potentiality, form and matter.
20461	Logic-II	Students will be acquainted with the development of symbolic logic from its traditional form, the uses of symbols in logic, the concept of variables and constant, types of logical connectives, the concept of truth table and truth function, construction of truth table. Students will also learn how to translate an ordinary sentence into a strict logical form, the technique of formal proof of validity in determining the validity of an argument, modern classification of proposition and the symbolization of universal and existential propositions.

3056	Western Philosophy: Descartes to Hegel	This course aims to acquaint students with the Rationalists philosophers and the Empiricists philosophers and their philosophical doctrines such as Descartes' method of doubt, mind-body dualism, Spinoza's substance, Leibnitz' Monadology and Pre-established Harmony, Locke's criticism of innate ideas, primary and secondary qualities, his theory of substance, Kant's concept of space and time ,categories, Hegel's dialectical method and Absolute Idealism.
3066	Indian Philosophy-II	Aims to acquaint students with the Vedic schools of Indian Philosophy and their different philosophical theories such as Purusa and Prakrti of Sankhya,the theory of Satkaryavada, Nyaya's division of perception and inference, Vaisesika's seven categories(padarthas) and its atomic theory, Mimamsa's pramanas etc. It also aims to acquaint students with Sankara and Ramanuja's philosophy of Brahman,Atman etc. And also Sankaradeva's philosophy of God and Bhakti.
3076	Ethics	This course seeks to acquaint students with the meaning, nature and scope of Ethics and the relationship of Ethics with other disciplines of study, object of moral judgement and moral obligations, the postulates of morality, concept of deontological and teleological ethics virtue ethics of Aristotle, Kant's deontological ethics, utilitarianism of Mill and Bentham, different theories of Punishment, the concept of professional ethics and environmental ethics, and the study of the law of karma, varna-asrama dharma, Buddhists pancasila, Jaina's Triratna and its other related topics.
4086	Contemporary Indian Philosophy	The course outcome is to make students aware about the philosophical thoughts of different Contemporary Indian Philosophers such as Aurobindo, Radhakrishnan, Gandhi and Vivekananda.

4096	Philosophy of Religion	The course outcome is to understand the critical examination of religion and to understand contemporary challenges to religion.
4106	Political and Social Philosophy	The course outcome is to understand the present day situation of society and politics and the different challenges of the present society.
Optional(Unit IV)	Political Theory Humanism Secularism Multiculturalism	The course outcome is to have an in-depth knowledge of different political theories, viz., humanism, secularism, multiculturalism.
5116	Analytic Philosophy	The course aims to acquaint students with the analytic philosophy of Moore, Russell, Wittgenstein and their major philosophical theories.
5126	Phenomenology and Existentialism	The course aims to have an understanding of the phenomenological and existential theories of Kierkegaard, Sartre, Heidegger and Husserl.
6136	Philosophy of Mind	The outcome of the course is to understand the Philosophy of Mind such as Cartesian Dualism, Parallelism, Occasionalism and other related theories
6146	Meta Ethics	Aims to acquaint students with the ethical concepts such as Meta Ethics, Normative Ethics and the theories of different moral philosophers, viz., Moore, Ayer, Stevenson, R.M Hare

DEPARTMENT OF PHYSICS

PAPER	COURSE	OUTCOME
HC-1016 (Theory)	Mathematical methods - 1	The students will gain knowledge about vector algebra and about the solution of differential equations and its application in the physical world. Also they shall learn about the different co-ordinate frames together with the concept of probability and various sources of error and how to calculate them.
HC – 1026 (Theory)	Mechanics	At the end of the prescribed syllabus, the students will acquire basic knowledge of mechanics, gravitation and will understand how to apply the conservation of rotational motion in different parts of physics. They shall also gain knowledge of special theory of relativity.
HC-2016 (Theory)	Electrical and Magnetism	Students will be able to understand electric and magnetic fields in matter, dielectric properties of matter, magnetic properties of matter, electromagnetic induction, and applications of Kirchoff's law in different circuits, applications of network theorem in circuits.
HC – 2026 (Theory)	Waves and Optics	After successful completion of this course, students will be able to understand superposition of harmonic oscillations, different types of wave motions, superposition of harmonic waves, interference and interferometer, diffraction, holography.
301 (Theory) (Non – CBCS)	Mathematical methods - III	To motivate the students to apply matrices for solving problems in spectroscopy, nuclear physics.
	Electrostatics	Will gain knowledge about the electric field, electrostatic energy and dielectrics.
302 (Theory) (Non – CBCS)	Current Electricity	Students will get the knowledge about direct current and alternating current and its application in electrical circuits.

	Magnetostatics	Acquire basic knowledge of magnetic properties.
401 (Theory) (Non – CBCS)	Mathematical methods - IV	Will gain knowledge about solution of second order differential equation and also about probability and also practical application
	Introducton To Computer And Computer Programming	Will gain basic knowledge about flow chart and algorithm.
402 (Theory) (Non – CBCS)	Wave Optics	To provide a knowledge of the behaviour of light
	Special Theory of relativity	Will gain negation of ether concept and also about the geometry of space-time and space-time interval.
501(Theory) (Non – CBCS)	Mathematical methods - V	Will acquire the concept of complex algebra
	Classical Mechanics	The concept of central force system and application of variational principle to solve different problems in mechanics will be learnt.
502(Theory) (Non – CBCS)	Atomic Physics	To provide a detailed study of atom and also to learn the impact of magnetic fields in spectra.
503(Theory) (Non – CBCS)	Quantum Mechanics	To motivate the students to apply schrodinger equation or solvingproblems in Wave mechanics, Nuclear physics etc.,
	Astro Physics	Will have the concept of stellar co-ordinate system, distance measurement and stellar classification.
504(Theory) (Non – CBCS)	Electronics	To motivate the students to apply the principles of electronics in their day-to-day life. It deals with both analog and digital electronics.
601(Theory) (Non – CBCS)	Nuclear Physics	To acquire knowledge and apply it to study the structure of nucleus. Know the formation of nucleus and their binding energy. To motivate the students and analyze the energy released by the nucleus during the fission and fusion

		process.
602(Theory) (Non – CBCS)	Mathematical Methods - VI	Students will gain the knowledge of tensors.
	Solid State Physics	The students will get to know about the structure of a solid and also the concept of the magnetic properties of matter.
603 (Theory) (Non – CBCS)	Modern Optics	Knowledge about laser, holography, optical fibres and their application will be acquired by the students.
	Electromagnetic Theory	Thorough knowledge of electromagnetic nature of wave will be gained together with the proof of basic laws of reflection and refraction.
604(Theory) (Non – CBCS)	Statistical Mechanics	Will gain the knowledge of statistical system and its co-ordinate together with application of MB, FD and BE statistics.
	Principles of Programming Concepts and C++ Programming	On successful completion of this subject the students have the programming ability in C++ Language to deal with physics problems.

Note: More over there are 8 practical papers in which the students are allowed to testify and visualise the different phenomenon of physics so that the students are motivated towards the subject.

There is also computational lab in HC-1016 and in 6th semester (Non-CBCS) where students not only learn computer programming and numerical analysis but their application in solving problems in physics.

DEPARTMENT OF POLITICAL SCIENCE

The syllabus of the department can be divided into two parts. The fifth semester students belong to the old semester course and the 1st and 3rd semester students belongs to the new CBCS course. The course program has been so designed that in the present job scenario the students are able to cope themselves with the job market.

The first year students are made acquainted with the concept of political theory. Without having a sound base of theory the understanding of the subject becomes difficult. The second paper deals with the constitutional process. The paper gives an insight into the rules and regulations a citizen is supposed to know. He is made aware about his rights and duties. He is acquainted with the entire administrative process.

The third semester students are taken deeper into the administrative procedure as they have to study a paper on public administration. The paper deals in detail regarding every aspect of administration. The students are not only confined to the regional or national paper but they are taken on a world cruise as one of the paper deals with international relations and world history. They get a glimpse of how international relations were jeopardized by the two devastating world wars and what steps have been taken by the various world organizations such as the league of nation and the UNO. The paper also gives an insight into the past history starting with the treaty of Westphalia.

A new paper has been introduced known as skill enhancement which is meant for both Honours and regular students. Students from other streams can also study this paper. The paper has both theoretical and practical aspect so the theory part enhances the theoretical concept and the practical part would enable the students to go deeper into the learning of the real administration of the country.

As for the 5th semester students they have to study six papers. Each of the papers elaborately deals with the political system not only of our own country but the world around. It teaches us about Human rights and also men's relation with society and culture. It also gives us a glimpse into our past philosophy, and also shows us our sociological traits.

The study of political science has with the present curriculum provides ample scope to the students in the job avenues. Various lines are open for them; from the teaching profession to the administrative field the scope is endless. Even the industrial arena is open for them.

Course Outcomes (Non- CBCS):

Course	Outcome
Public administration	This paper deals with the administration of the country. The students learn in detail about the mechanism through which the state machinery works. The students get an insight into how the central as well as the state government carries out its function
Local governance	The students are taught the intricacies of government functioning at the grass roots level. Local government provides the platform and also training ground for future politicians. It is the stepping stone for future progression into the national arena.

Human Rights	This paper teaches the students about our rights. Through this paper the students are acquainted with the rights in the national as well as international level. They are also shown how to claim redressal in case the executive or for that matter or other organization tries to trespass with our rights.
Contemporary issues	This paper gives an insight to the students regarding any current issues that are taking place globally. The students are kept updated with the current events, taking place in all spheres like , environment, terrorism, global warming, human rights violation, fundamentalism

DEPARTMENT OF SANSKRIT

Students can develop their confidence and acquire mental strength to face any kind of competition and challenges in their life by learning properly both the Vedic and Classical Sanskrit and become successful applying the lessons they gathered from lectures, seminars, group discussions etc. in course of their studies. As Sanskrit is said to be the mother of all Indian languages, so students can get the scope to go through the original Veda, Purana, Upanisads, Ayurveda, Grammar, Philosophy, Arthasastra, Natyasastra etc. which are written in Sanskrit only.

Programme Specific Outcome:

Learning the values of life and keeping their body and mind fit and controlled, they become a good citizen in the society. By acquiring moral lessons from upanisads and other works students enrich themselves and extend their helping hands to others . Character building and sense of ethical value and personality development of the student are the programme specific outcome.

Course Outcome of CBCS

Courses .	Courses Outcomes.
1016 Classical Sanskrit Literature(Poetry) Unit I Raghuvamśam: Canto-I (Verse: 1-25) Unit II Kumārasambhavam: Canto-V (Verse: 1-30) Unit III Kirātārjunīyam - Canto I (1-25 Verses) Unit IV Nītiśatakam (1-20 Verses) Unit V Origin and Development of Mahākāvya and Gītikāvya	Aims to get students acquainted with Classical Sanskrit Literature, understanding the literature and appreciate the development of Sanskrit literature and seeks to help students to negotiate texts independently.
1026 Critical Survey of Sanskrit literature Unit I Vedic Literature Unit II Rāmāyaṇa Unit III Mahābhārata Unit IV Purāṇas Unit V General Introduction to Vyākaraṇa,	Intends to give an outline of different traditions of Sanskrit Literature from the Vedic to the Puranas and Shastras.

Darśana and Sāhityaśāstra	
2016 Classical Sanskrit Literature(Prose) Unit I Śukanāsopadeśa (Ed. Prahlad Kumar) Unit II Viśrutacaritam Upto 15th Para Unit III Origin and development of prose	Deals with the origin and development of Sanskrit Prose Literature like Banabhatta's Sukonasopodesa, Fables and seeks to help students to understand the logical meaning of the texts.
2026 Self management in the Gita Unit I Gītā: Cognitive and emotive apparatus Unit II Gītā: Controlling the mind Unit III Gītā: Self management through devotion	Describes the cognitive and emotional apparatus as mentioned in the Gita, and helps students by explaining the controlling of mind and self management through devotion.
3016 Classical Sanskrit Literature(Drama) Unit I Svapnavāsavadattam– Bhāsa Act I & VI Unit II Abhijñānaśākuntalam– Kālidāsa I & IV Unit III Mudrārākṣasam - Viśākhadatta I, II & III Unit IV Critical survey of Sanskrit Drama	This course aims to acquaint student with three most famous dramas of Sanskrit literature which represent three stages in the growth of Sanskrit drama.

<p>3026 Poetics and Literary Criticism Unit I Introduction to Sanskrit Poetics Unit II Forms of Kāvya-Literature Unit III Śabda-śakti (Power of Word) and rasa- sūtra Unit IV Alamkāra (figures of speech) and chandas (metre)</p>	<p>The study of Sanskrit poetics embraces all poetic arts and include concepts like Alankara, rasa ,riti, bakrokti, Dhvani,Auchitya etc.</p>
<p>3036 Indian Social Institutions and Polity Unit I Indian Social Institutions : Nature and Concepts Unit II Structure of Society and Value of Life Unit III Indian Polity : Origin and Development Unit IV Cardinal Theories and Thinkers of Indian Polity</p>	<p>Deals with various aspects of social institutions and Indian polity as propounded in the ancient Sanskrit texts like Samhitas, Mahabharata, Purana, Kautilya's Arthasastra etc.which gives thorough knowledge about the structure of society and value of life.</p>
<p>4016 Indian Epigraphy,Palaeography and Chronology Unit I Epigraphy Unit II Paleography Unit III Study of selected inscriptions Unit IV Chronology</p>	<p>Aims to acquaint the students with the epigraphical journey in Sanskrit, the only source which directly reflects the society ,politics, geography and economy of the time and also help students to know the different styles of Sanskrit writings.</p>
<p>4026 Modern Sanskrit Literature Unit I Mahākāvya and Charitakāvya Unit II GadyaKāvya and Rūpaka Unit III GītiKāvya and Other genres Unit IV General Survey of Modern Sanskrit Literature</p>	<p>The purpose of this course is to expose students to rich and profound traditional knowledge and also of modern creative writing in Sanskrit.</p>
<p>4036 Sanskrit and World Literature Unit I Survey of Sanskrit Literature in the</p>	<p>This cours aims to provide informations to students about the spread and influence of</p>
<p>World Unit II Upaniṣads and Gītā in World Literature Unit III Sanskrit Fables in World Literature Unit IV Rāmāyaṇa and Mahābhārata in South East Asian Countries Unit V Kālidāsa's Literature in World Literature Unit VI Sanskrit Studies across the World</p>	<p>Sanskrit literature and culture through the ages in various parts of the world in medieval and modern times.Such as translation of the Gita in European languages and its impact on the religious philosophical thoughts of the west, translation of Pancatantra in Eastern and Western languages.</p>
<p>5016 Vedic Literature Unit I Saṁhitā and Brāhmaṇa Unit II Vedic Grammar 20 Unit III Muṇḍakopaniṣad 30</p>	<p>This course on Vedic literature aims to introduce various types of vedic texts.</p>

<p>5026 Sanskrit Grammar Unit I General Introduction to Vyakarana, Sivasutra, Paribhasa Sandhi Unit II Natvavidhi & ṣatvavidhi, Unit III Declension Conjugation and roots Unit IV Karaka prakaranam, Samasa Prakaranam</p>	<p>This course aims to acquaint students with general Sanskrit grammar.</p>
<p>6016 Indian Ontology and Epistemology Unit I Essentials of Indian Philosophy Unit II Ontology (Based on Tarkasaṅgraha) Unit III Epistemology (Based on Tarkasaṅgraha)</p>	<p>This course deals with the cardinal principles of the Nyaya Vaisesika Philosophy through the Tarkasaṅgraha. It also intends to give them an understanding of essential aspects of Indian philosophy.</p>
<p>6026 Sanskrit Composition and Communication Unit I Vibhaktiyartha, Voice and Kṛt Unit II Translation and Communication Unit III Essay</p>	<p>This paper aims to teaching composition and other related informations based on Laghu Siddhanta Kaumudi and Vibhaktiyartha Prakarana.</p>
<p>DISCIPLINE SPECIFIC ELECTIVE (DSE)</p>	
<p>5016 Art of Balanced Living Unit I Self-presentation Unit II Concentration Unit III Refinement of Behaviour</p>	<p>This course aims to get the students acquainted with theories of art of living inherent in Sanskrit literature and apply them to live a better life. It also intends to make students work on human resource management for giving better results.</p>
<p>5026 Theatre and Dramaturgy Unit I Theatre: Types and Constructions Unit II Drama: vastu(subject-matter), netā(Hero)and rasa Unit III Tradition and History of Indian Theatre</p>	<p>The history of theatre can be traced in the hymns (samvadasukta) of the Rigveda. The dramaturgy was later developed by the Bharatmuni. The objectives of the curriculum are to introduce classical aspects of development of Indian theatre among the students and which is considered to be the best form of all arts.</p>
<p>5036 Sanskrit Linguistic Unit I Bhasasastra Unit II Indo-European Language Family Unit III History and Prehistory of Sanskrit</p>	<p>This course introduces comparative philology and its relation with Sanskrit language. It will also make the students acquire knowledge about the historical development of Sanskrit from Indo-</p>
<p>Unit IV Phonetic Changes</p>	<p>European family of languages.</p>
<p>6016 Fundamentals of Ayurveda Unit I Introduction of Āyurveda Unit II Carakasamhitā – (Sūtra-sthānam) Unit III Bhaisajyaratnavali</p>	<p>The major objective is to understand the basic principles and concepts of preventive medicine and health maintenance, diet and nutrition, usage of commonly used spices and herbs and outline of Ayurvedic therapeutic procedures in Ayurveda in day to day life.</p>

6026 Environmental Awareness in Sanskrit Unit I Environmental Issues and Importance of Sanskrit Literature Unit II Environment Awareness in Vedic Literature Unit III Environment Awareness in Classical Sanskrit Literature	Deals with the Environmental awareness mentioned in vedic and classical Sanskrit literature.
6036 Kamarupa School of Dharmasastras Unit I Introduction to Dharmasastras in Assam Unit II Kamarupa School of Dharmasastra Unit III Tirthakaumudi of Pitambarasiddhantavagisha	Describes the Kamarupa school of Dharmasastra in Assam
GENERIC ELECTIVE	
1016 Basic Sanskrit Unit I Grammar and composition Part I Unit II Grammar and composition Part II Unit III Literature	This is an elementary grammar course in Sanskrit language designed for students who wish to learn Sanskrit from the very beginning.
2016 Indian Culture And Social Issues Unit I Culture in a multi-cultural society Unit II Cultural roots of India	This paper is designed to introduce about Indian culture to students and to show how cultural traditions have evolved.
3016 Basic Principles Of Indian Medicine System (Ayurveda) Unit I Introduction to Indian Medicine System: Ayurveda Unit II Basic Principles of Ayurveda Unit III Dietetics, Nutrition and Treatment in Ayurveda Unit IV Important Medicinal Plants and their based on Ayurveda	Ayurveda is a traditional Indian system of healthcare that has been traced back to as early as 5,000 BC. This course will introduce students to understand the basic principles and concepts of preventive medicine and health care, diet and nutrition etc.
4016 Fundamentals Of Indian Philosophy Unit I General Introduction Unit II Schools of Indian Philosophy Unit III Problems in Indian Philosophy	This course aims to get the students acquainted with the basic approach to study Indian philosophy and to enable students to grasp knowledge from the original Sanskrit text only.
SKILL ENHANCEMENT COURSE(SEC)	
3014 Acting And Script Writing Unit I Acting (Abhinaya) Unit II Script Writing (Paṭakathālekhana)	In this course is to make the students acquainted with the Acting and script writing. It aims at sharpening the dramatic talent of the students
4014 Sanskrit Metre And Music UNIT I Brief introduction to Cchandasastra UNIT II Classification and Elements of Sanskrit Metre UNIT III Analysis of Selected Vedic metres	From this course students will get the complete information regarding selected Vedic and Classical metres with lyrical techniques.

and their musical rendering UNIT IV Analysis of selected Classical metres and their musical rendering	
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Course Outcomes of Non- CBCS

PRESCRIBED COURSE	COURSE OUTCOME
1. . Rksamhita (1.1 and 1.2) 2. Atharva-Samhita Vidma Sarasya (1.2) 3. Tarkasamgraha (Pratyaksa khanda	This course on Vedic literature aims to introduce various types of vedic texts to enlighten the learners with the knowledge of development of Sanskrit from ancient time to the modern period.
4. .Raghuvamsa, Canto 1. 5. Svapnavasavadattam 6. .Laghusiddhantakaumudi (Samjna)	Aims to get students acquainted with Classical Sanskrit Literature, understanding the literature and appreciate the development of Sanskrit literature and seeks to help students to learn Paninian Grammar which is very much scientific.
7. .History of Classical Sanskrit Literature(Ornate poetry, Lyrics, Historical kavyas)	To enable students to learn about the development of classical Sanskrit literature with its various aspects like Ornate poetry, Gitikavya and historical kavya.
8. .laghusiddhantakaumudi (sandhi and karaka-vibhakti) and General Grammar	This course aims to acquaint students with general Sanskrit grammar and get the knowledge of scientific rules of Paninian Grammar.
9. .Hitopodesh (Mitrabha	Hitopodesh, Pancatantra etc. are the world class literature and student get knowledge about the source of prose writing and helps to expose the rich tradition of modern creative writing in Sanskrit Prose literature.
10. Chandomanjari (Samavrittis only- Anustup, Drutavilambita, Bhujangaprayata, Indravajra, Vamsasthavila, Sikharini, Vasantatilaka, sardulavikridita)	Chhanda or metre is one of the Six Vedangas and student get acquainted with various Vedic Chhandas like Gayatri, Tristup, Anustup etc. and Classical chhandas like Bhujangaprayata, Vamsasthabil which helps to develop capacity for creative writing and literary appreciation.

11. Translation (from English to Sanskrit, unseen) And composition	This is an elementary grammar course in Sanskrit language designed for students who wish to learn Sanskrit from the very beginning.
12. Ramayana (Balakanda ch-1) and Mahabharata (santiparvan, chapter 191-Asramadharm)	This course aims to provide information about the role of Mahakavyas for spreading and influencing the society through Sanskrit literature and culture in various parts of the world in medieval and modern times.
13. Sahitya Darpana chapter I, VI, IX and X	The study of Sanskrit poetics embraces all
	poetic arts and include concepts like Alankara, rasa, riti, bakrokti, Dhvani, Auhitya etc. This course also aims to acquaint students about the different types of Arthalankaras like Upama, Rupak etc.
14. Laghusiddhanta kaumudi Pratyayas: (krt = Ktvac, Tumun, Nyat, Yat, kta, Ktavatu, Lyap, Satr, Sanac, Tavya, Aniya) and Taddhita = Matup, In, Thak, Ta, Tal Stri = Tap, Nip	This course aims to acquaint students with general Sanskrit grammar and get the knowledge of scientific rules of Paninian Grammar.
15. History of Sanskrit Literature (Dramas-Bhasa, Kalidasa, Bhavabhuti, prose Romance, Tales and Fables)	This develops the capacity for creative writing and literary appreciation in dramas, prose romances and fables.
16. Brief sketches of Indian Philosophical Systems	The objective of this course is to acquire the knowledge of nine different philosophical schools prevalent in India.
17. Tarka-Samgraha (Anumana-khanda)	Anumana, Pramana etc. are the basic knowledge of Nyaya Vaisesika Philosophy. Through Tarkasamgraha it intends to give them an understanding of essential aspects of Indian Philosophy.
18. Sanskrit Philology	This course introduces comparative philology and its relation with Sanskrit language. It will also make the students acquire knowledge about the historical development of Sanskrit from Indo-European family of languages.
19. Sentence Interpretation in Mimamsa	To gain scientific knowledge about the meaning of both vedic and classical words in Sanskrit literature.
20. Introduction to Indian Arts	To enlighten the learners with the historical

(Rajput painting, Gupta ,Dravidian and Aryan Great Enlightenment	development and importance of Indian Arts and Sculpture.
21. Rksamhita-Indra sukta(II.12),Devisukta (X.125), Samjnanasukta (X.191) 22. Atharvasamhita-Bhumisukta (XII.1.1.10) 23. Satapathbrahmana Manu-matsya-katha (Vedic Selection part II)	This course on Vedic literature aims to introduce various types of vedic texts to enlighten the learners with the knowledge and development of Sanskrit from ancient time to the modern period.
24.Kavyaprakasa-Ullasa 25.Sahityadarpana Ch.X(Alankaras only 26.Kavyamimansa Ch.I	The study of Sanskrit poetics embraces all poetic arts and include concepts like Alankara, rasa ,riti, bakrokti, Dhvani,Auchitya etc.This course also aims to acquaint students about the different types of Arthalankaras like Upama,Rupak etc.
27.Kadambari (kathamukham) 28.Abhijnanasakuntalam	This course on prose literature aims to introduce two master pieces of Kalidasa and Banabhatta by studying which students are able to develop the art of literary appreciation.
29. Kiratarjuniyam-Canto I 30. Kumarsambhavam-canto III. 31. Nitisatakam (1-30 verses)	This course aims to provide informations to students about the spread and influence of Sanskrit literature and culture through the ages in various parts of the world.It also gives knowledge about the role of ethics in our life.
30.Kathoponisad (Adhyaya I) 31.Niruktam (Daivata kanda) 32.Essential Vedic grammar	This course on Vedic literature aims to introduce various types of vedic texts to enlighten the learners with the knowledge of development of Sanskrit from ancient time to the modern period.
33. Sarvadarsansamgraha of madhavacarya	This course deals with the Carvak principles
(Carvakdarsana and Paninidarsana 34. .Samkhyakarika with Gaudapada-bhasya (upto verse no.14)	and the Paninian Philosophy . It also intends to give them an understanding of essential aspects of Indian philosophy with special reference to Samkhyakarika.
35. Srimad Bhagavadgita (Chapter VIII Aksarabrahmayoga) 36. History of Indian philosophy (Advaita Vedanta and Buddha Philosophy	This course aims to provide informations to students about the spread and influence of Gita in Sanskrit literature and culture through the ages in various parts of the world in medieval and modern times. Student also acquire special knowledge about Advaita Vedanta and Buddhist Philosophy.

37. Vastuvidya Brihatsamhita (Ch.53,1-41) 38. Vrksayurveda: Brihatsamhita (Ch.55) . 39. Lilavati Ch.1 (upto ghanavidhi	To enable the students to gain the scientific knowledge about Vastu vidya, Vrksayurveda and apply their experiences in their day to day life. It also enlighten the learners by acquiring knowledge about mathematics of ancient time and its application to the present day.
40. Caraka samhita (Sutrasthana, Dirghajivitiyam)	The major objective is to understand the basic principles and concepts of preventive medicine and health maintenance, diet and nutrition, usage of commonly used spices and herbs and outline of Ayurvedic therapeutic procedures in day to day life.
41. Main concept of a Computer i) Concept of Machine Language and high level languages ii) What are compilers, interpreters, assembler, linkers and loader? iii) Different types of operating system	This course intends to give the basic knowledge of computer to the students and aims to get students acquainted with the application in practical field knowing properly the different types of operating systems, machine languages etc.
42. Elements of Science of Language	This course discusses about the Indo-European language family, its characteristics and branches and position of Sanskrit language in that family tree with other languages.
43. Paribhasa-prakarana from Bhattoji Diksita's Siddhanta kaumudi	To enable the students to learn about the basic technical terms in Paninian Grammar.
44. Survey of Astronomy, Mathematics, Medicine and Architecture	This course aims to give more knowledge about Astronomy, Discovery of decimal and Zero in India, Ayurveda and Vedic architecture, the sources and formulae of those which are maintained in original Sanskrit only.
45. Kautilya's Arthasastra- Adhikarana 1 (Vidyasamuddesa, Brddhasamyoga, Amatyaniyoga, Mantradhikara)	Deals with various aspects of social institutions and Indian polity as propounded in the ancient Sanskrit texts like Samhitas, Mahabharata, Purana, Kautilya's Arthasastra etc. which gives thorough knowledge about the structure of society and value of life.
46. Naradasmriti (Adhyaya 1 and Adhyaya IV on Dayabhaga)	

DEPARTMENT OF STATISTICS

Programme Outcomes	<ul style="list-style-type: none"> • This course is expected to provide strong foundation of statistics to students. • It would familiarize students with basic to high-level statistical concepts. • Update students with mathematical tools that aid in statistical theory. • Strengthen students' knowledge of spreadsheets, programming languages and statistical packages. • Promote application-oriented pedagogy by exposing students to real word data. • Prepare students to undertake projects, which prepare them for getting jobs.
Programme Specific Outcomes	<ul style="list-style-type: none"> • This course exposes the students to the world of Statistics and its applications in our daily life. The course is designed to equip students with all the major concepts of Statistics along with the tools required to implement them. • Exposure to a lot of real life data helps in honing their analysing skills. Having practical component with every paper invokes their exploratory side and fine-tunes the interpretation abilities. • Introduction to computer softwares help them in analysis of data by making optimum usage of time and resources. These softwares give them the necessary support and an edge when progressing to their professional careers. • The structure of the course is designed in such a way that it goes a long way in giving students the required impetus and confidence for consultancy startups/jobs in near future. It also motivates the students to pursue careers in related disciplines, especially the actuarial sciences.
Course Outcomes	
Course	Outcomes
First semester	
HC-1016 (Descriptive Statistics)	<p>After completing this course, students should have developed a clear understanding of:</p> <ul style="list-style-type: none"> • The fundamental concepts of statistics. • Concept of population and sample. • Different scales of measurement. • Consistency and independence of attributes

	<ul style="list-style-type: none"> • Handling various types of data and their graphical representation. • Measures of location and dispersion. • Bivariate data. Significance of various coefficients of correlation. • Fitting of linear and nonlinear curve. • Students will possess the ability to appreciate, formulate solutions, and analyze use of index numbers to real world problem.
HC-1026 (Calculus)	On completing this course students are expected to develop concepts of Differential calculus, Integral calculus, Differential equations and partial Differential equations which in turn will help them to utilize this knowledge while solving various problems of Statistics.
Second semester	
HC-2016 (Probability and Probability distributions)	<p>After completing this course, students should have developed a clear understanding of: The fundamental concepts of Mathematical Statistics.</p> <ul style="list-style-type: none"> • Basic concept of random variable and its types. • Introduction to pmf, pdf and cdf. • Properties of random variables like expectation, moment generating function, cumulative • Generating function etc. • Marginal and conditional probability distributions. • Independence of variates. • Transformation in univariate and bivariate distributions. • Various discrete and continuous probability distributions like Binomial, Poisson,

	<ul style="list-style-type: none"> • Geometric, Negative Binomial, Hypergeometric, Normal, Uniform, Exponential, Beta and Gamma distributions.
HC-2026 (Algebra)	On completing this course students are expected to develop concepts of Matrix algebra including Determinants, which in turn will help them to utilize this knowledge while solving various problems of Statistics.
Third semester	
HC-3016 (Sampling Distributions)	<p>After completing this course, students will possess skills concerning:</p> <ul style="list-style-type: none"> • Parameter, statistic, standard error, sampling distribution of a statistic, • Hypothesis testing, • Sampling distributions of chi-square, t and F and their applications.
HC-3026 (Survey Sampling and Indian Official Statistics)	<p>After completing this course, students have a clear understanding of:</p> <ul style="list-style-type: none"> • The basic concept of sample survey and its need. • Simple random sampling. • Stratified random sampling. • Systematic sampling, Ratio and Regression method of estimation, Cluster sampling, Two stage sampling. • Present official statistical system in India • Functions of C.S.O. and N.S.S.O.
HC-3036 (Mathematical Analysis)	<p>This course is expected to provide concepts of:</p> <ul style="list-style-type: none"> • Real analysis • Infinite series • Limit, Continuity and Differentiability • Finite differences, interpolation and numerical

	<p>integration.</p> <ul style="list-style-type: none"> • Solution of difference equation.
SE-3014 (Statistical Data Analysis Using Software Packages)	<ul style="list-style-type: none"> • It is expected that this course will help in understanding the basic workings of SPSS and perform basic statistical analyses. • To perform descriptive statistics and graphics, and basic inferential statistics for • Comparisons and correlations using SPSS • Importing data, Code editing in SPSS. • This course will review topics in probability and statistics studied in core for data analysis. Introduction to SPSS for statistical computing, analysis and graphical interpretation would be done using software skills.
Fourth semester	
HC-4016 (Statistical Inference)	<p>After completing this course, students will possess skills concerning:</p> <ul style="list-style-type: none"> • Parameter, statistic, Characteristics of a good estimator, different methods of estimation. • Demonstrate use of these techniques in data analysis.
HC-4026 (Linear Models)	<p>Students would be able to distinguish between statistical models and equations. The fundamental concepts of</p> <ul style="list-style-type: none"> • Econometrics. • Specification of the model. • Simple and Multiple Linear Regression. • Analysis of Variance, Different types of models, Estimation of parameters, Gauss-Markov theorem, BLUE • Concepts of Multicollinearity, Heteroscedasticity and Autocorrelation.

HC-4036 (Statistical Quality Control)	<p>After completing this course, students would develop a clear understanding of:</p> <ul style="list-style-type: none"> • Statistical process control tools- Control charts for variables, attributes • Statistical product control tools- Sampling inspection plans.
SE-4014 (Statistical Data Analysis Using Software Packages).	<ul style="list-style-type: none"> • It is expected that this course will help in understanding the basic workings of R, and perform basic statistical analyses. • To perform descriptive statistics and graphics, and basic inferential statistics for • Comparisons and correlations using R. • Importing data, Code editing in R. • This course will review topics in probability and statistics studied in core for data analysis. • Introduction to R for statistical computing, analysis and graphical interpretation would be done using software skills.
Fifth semester (Non-CBCS)	
M-501(Sampling Distributions and Statistical Inference-I)	<p>This course imparts knowledge to students regarding:</p> <ul style="list-style-type: none"> • Sampling distributions such as chi-square, t, and F. • Order statistics. • It also gives idea of point estimation and methods of estimation.
M-502 (Sample Survey)	<p>To inculcate knowledge on the following concepts:</p> <ul style="list-style-type: none"> • The basic concept of sample survey and its need. • Simple random sampling.

	<ul style="list-style-type: none"> • Stratified random sampling. • Systematic sampling, Ratio and Regression method of estimation, Cluster sampling, Two stage sampling.
M-503(Applied Statistics-I)	<p>It discusses various applied statistics techniques such as index number, econometrics and time series.</p> <ul style="list-style-type: none"> • Students will possess the ability to appreciate, formulate solutions, and analyze use of index numbers to real world problem. •The fundamental concepts of : <ul style="list-style-type: none"> • Econometrics. • Specification of the model. • Simple and Multiple Linear Regression. • Analysis of Variance, Different types of models, Estimation of parameters, Gauss-Markov theorem, BLUE • Concepts of Multicollinearity, Heteroscedasticity and Autocorrelation. • Knowledge about components of time series and different methods of estimation and isolation.
M-504 (Operations Research-II)	<ul style="list-style-type: none"> • It is expected that students will be able to have some idea on Replacement and Inventory models. • It also puts emphasis on Network, CPM and PERT.
Sixth semester (Non-CBCS)	
M-601 (Statistical Inference – II)	<p>Basic objective is to provide knowledge on :</p> <ul style="list-style-type: none"> • Interval estimation and testing of hypothesis. • It also discusses some important Non-parametric tests.
M-602 (Design of Experiments)	<p>To inculcate knowledge on :</p> <ul style="list-style-type: none"> • Analysis of variance • Basic design of experiments such as CRD, RBD and

	<p>LSD.</p> <ul style="list-style-type: none"> • Factorial experiments and Confounding.
M-603(Applied Statistics– II)	<p>Its aim is to provide some idea on some applied statistical techniques such as:</p> <ul style="list-style-type: none"> • Demography • Statistical quality control • Official Statistics.
M-604 (Computer Programming and Multivariate Analysis)	<p>It enables students to have some idea on</p> <ul style="list-style-type: none"> • Writing computer programming using HLL Fortran77. • Students will derive some basic knowledge on multivariate analysis such as multivariate normal distribution and • Multinomial distribution.
Project Work	<p>Students will be required to go for data collection on some topics under the supervision of a teacher. On the basis of this data collection exercise, each student will be required to submit a project report. The aim of the project work is to acquire practical knowledge on the implementation of perceptions studied through the entire course structure.</p>

DEPARTMENT OF ZOOLOGY

Programme Outcome	<p>Apart from engaging themselves in study, research and documenting the fascinating fauna of nature, there are also many other specializations that the students pursuing the field can venture into. Being physiologists, taxonomists, embryologist, ecologist, academicians, biotechnologist, microbiologist, etc are some of the few among them since the program imparts intellectual and professional skill.</p>
Programme Specific Outcome	<ul style="list-style-type: none"> ❖ Helps them to know about the diverse animal diversity, its ecological and evolutionary relationship among each other. ❖ They will know about the various technique of studying animal diversity, or other aspects of animal study such as their behaviour, physiology etc ❖ By gaining knowledge about the biology of animals students can help contribute in different problems of nature in day to day life such as man animal conflict etc ❖ Students may also undertake entrepreneurship projects on fisheries,

	<p>sericulture, animal husbandry, agriculture improvement and contribute to economic growth of the country.</p> <ul style="list-style-type: none"> ❖ Regular project work, seminars and field study help them to learn how to present themselves or critically analyze situation and report them scientifically. ❖ Core issues of wildlife management, ecological disruptions, environmental pollution, disease effecting poultry, agriculture,etc could be well solved with this knowledge of Zoology.
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Courses	Course outcome
Semester I. ZOO-HC-1016:Non-chordates I:Protista to Pseudocoelomates ZOO-HC-1026: Principles of Ecology	Students get to know about diversity of invertebrates, its identification and how to classify them scientifically, know about taxonomic knowledge to identify new species etc They know about the environment, its conservation strategies, and wildlife management principles
Semester II ZOO-HC-2016: Non-chordates II:Coelomates ZOO-HC-2026: Cell Biology	Students get to know about diversity of invertebrates, its identification and how to classify them scientifically, know about taxonomic knowledge to identify new species etc Cell biology help to know the structure and function of cell.
Semester III ZOO-HC-3016:DIVERSITY OF CHORDATES ZOO-HC-3026 Physiology: Controlling and Coordinating Systems ZOO-HC-3036:FUNDAMENTALS OF BIOCHEMISTRY	Students get to know about diversity of vertebrates, its identification and how to classify them scientifically. The course speaks about the basic physiological process of animals, its detailed functioning, biochemistry speaks about the various biological reaction occurring in the biological system, endocrinology teaches about hormone and the processes they control,
Semester IV ZOO-HC-4016:COMPARATIVE	The course content gives idea comparative knowledge of the basic structure of organs or organ system in different group of

<p>ANATOMY OF VERTEBRATE</p> <p>ZOO-HC-4026:PHYSIOLOGY: SUSTAINING</p> <p>ZOO-HC-4036:BIOCHEMISTRY METABOLIC PROCESS</p>	<p>LIFE</p> <p>OF</p>	<p>animals to establish the evolutionary relationship.</p> <p>The course speaks about the basic physiological process of animals, its detailed functioning, biochemistry speaks about the various biological reaction occurring in the biological system, endocrinology teaches about hormone and the processes they control,</p>
<p>Semester V</p> <p>ZOO-HC-5016:MOLECULAR BIOLOGY</p> <p>ZOO-HC-5026: PRINCIPLES GENETICS</p>	<p>OF</p>	<p>This science allows understanding of how the natural world works. It provides insights into the mechanisms of evolution, growth, development, reproduction, and disease, plus tools to improve our quality of life. This may be through the development of a drug or drought-resistant crop plant or understanding what controls an individual's health. Making connections between molecular mechanisms driving a process and the outcomes of those mechanisms on the physiology and/or behavior of an organism allows understanding of biological organization and function, from molecules to cells, tissues, organs and the entire organism.</p> <p>Molecular biology methods are used extensively in modern-day drug discovery, research and development, and diagnostics.</p> <p>Heredity principles are studied in Genetic and how characters are transferred from one generation to other. It helps in gene therapy, gene manipulation in embryos (IVF) , in cancer treatment etc</p>
<p>Semester VI.</p> <p>ZOO-HC-6016:DEVELOPMENTAL BIOLOGY</p>		<p>It imparts knowledge of embryonic development of different animals,</p> <p>various evolutionary mechanism that gave rise to the present day animal diversity,</p>

ZOO-HC-6026:EVOLUTIONARY BIOLOGY .	
ZOOLOGY-Discipline Specific Electives(DSE)	
ZOO-HE-5016: COMPUTATIONAL BIOLOGY AND BIOSTATISTICS	Biological techniques deal with different techniques used for studying biology and biostatistical tools used for analysing biological data.
ZOO-HE-5026: ANIMAL BIOTECHNOLOGY	Endocrinology teaches about hormone and the processes they control
ZOO-HE-5036: ENDOCRINOLOGY	different sophisticated biological techniques for modern techniques, use of computer for studying animal diversity.
ZOO-HE-5046: PARASITOLOGY	Disease related parasites, their life cycle , causative organisms are studied in parasitology and hence can be explored to find means of combating it
ZOO-HE-6014 :BIOLOGY OF INSECTA	Insecta includes a huge group of insects that can be used as biopesticides, for food, for medicines, for maintaining food chain etc. knowledge about them can illicitresearch in this field.
ZOO-HE-6026: FISH AND FISHERIES	Fish and fisheries gives knowledge about the wide scope in fish rearing, cultivation and marketing.
ZOO-HE-6036: REPRODUCTIVE BIOLOGY	Concepts of reproductive biology can help students to pursue their career as embryologist and in conservation prospects.
ZOO-HE-6046: WILDLIFE CONSERVATION AND MANAGEMENT	Adequate knowledge of wildlife management will help in controlling man animal conflicts and poaching and other activities that disrupt the ecology.
ZOO-HE-6056 DISSERTATION	
Skill Enhancement Courses	
ZOO-SE-3014: ORNAMENTAL FISH AND	The topics covered under Ornamental Fishand Fisheries can generate

FISHERIES	<p>autochthonous income source for the students.</p> <p>For rural students, this subject will give them opportunities to train rural youths in ornamental fish culture</p> <p>For urban students, they can develop entrepreneurship in their own house, as ornamental fish can be cultured in small aquariums.</p> <p>They can also become specialized in breeding of ornamental fishes and supply ornamental fish spawns, thus conserving the wild stalk</p>
ZOO-SE-3024: APICULTURE	<p>Apiculture provides products such as honey and wax that are used commercially.</p> <p>Honeybees are responsible for pollination and thus help in increasing the yield of the several plants.</p> <p>Some recent researches have proven that honeybees venom comprises a mixture of proteins that has the capability of destroying the AIDS virus. These aspects can be explored for research and development.</p>
ZOO-SE-4014: Non-MulberrySericulture	<p>Since agriculture is a basic need for humans, there is always a lot of scope in this field of study. With the advent of technology and developments that come with it, there has been a wide variety of job opportunities in both public and private enterprises. Sericulture offers career opportunity in Govt. research centers, silk boards, academic fields, sericulture units, agriculture sector banks etc. One can get jobs in Central Government agencies like Central Silk Board/Silk Export Promotion Council/Fao/Nabard, Krishi Vigyan</p>

	Kendra etc. Candidates with M.Sc sericulture can apply for the post of lecturer, professor and lab assistant.
ZOO-SE-4024:Wildlife Photography and Eco-tourism .	The majority of wildlife photographers can work as freelancers. This means that they take photographs in hopes of selling them, or they are commissioned to take photographs of certain animals. The photographs that a wildlife photographer takes may be featured in different types of publications, including books and scientific journals. Travel and nature magazines also work with wildlife photographers on a regular basis. Some of these publications might even hire full or part-time wildlife photographers as staff members.

Course Outcome (Non-CBCS)

<i>Semester- V</i> M-501 Animal Physiology M-502 Biochemistry & Bioenergetics M-503 Endocrinology & Immunology M-504 Biological Techniques and Biostatistics M-505(P) Practical M-506 (P) Practical	The course speaks about the basic physiological process of animals, its detailed functioning, biochemistry speaks about the various biological reaction occurring in the biological system, endocrinology teaches about hormone and the processes they control, Biological techniques deal with different techniques used for studying biology and biostatistical tools used for analysing biological data.
<i>Semester- VI</i> M-601 Animal Behaviour M-602 Evolution and Adaptation M-603 Economic Zoology M-604 Biotechnology, Bioinformatics and Computer application M-605(P) Practical M-606 (P)* Project	The course teaches detail about behaviour of animal, how that can be managed, various evolutionary mechanism that gave rise to the present day animal diversity, knowledge about fishery science, bee keeping, lac culture sericulture, different sophisticated biological techniques for modern techniques, use of computer for studying animal diversity.