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2.6: Programme Learning Outcomes (PLO) and Course Learning Outcomes (CLO)

Programme Learning Outcomes (PLOs) and Course Learning Outcomes (CLOs) are clearly defined to ensure a structured, outcome-based approach to undergraduate education under the Bachelor's Degree (BG) programme. The Programme Learning Outcomes describe the knowledge, skills, values, and competencies that students are expected to acquire by the end of the programme, while the Course Learning Outcomes specify the measurable learning achievements for each individual course. Together, PLOs and CLOs align curriculum design, teaching-learning processes, and assessment strategies with national educational goals, promoting holistic development, critical thinking, employability, and lifelong learning among students**.**

2.6.1. Department of Arabic

Programme: Bachelors with Major in Arabic (UG)

2.6.1a. Programme Learning Outcomes - Arabic

PLOs	Bachelor Degree
After the completion of Bachelor degree in ARABIC the student should be able to:	
PLO-1: Knowledge and understanding	Read and comprehend Arabic texts including classical and modern Arabic literature, newspapers, etc with a focus on syntax and cultural context.
PLO-2: Skills	Master all four skills i.e. reading, writing, listening and speaking applicable to different situations encountered in day-to-day life.
PLO-3: Application of knowledge and Skills	Use Arabic confidently and fluently in conversations, presentations, debates and formal communication. Know the principles of translation and interpretation, so as to be able to translate texts to and from Arabic.
PLO-4: Critical thinking	Critically analyse Arabic texts with objectivity and to synthesize information from a variety of sources.
PLO-5: Ethics	Understand and practise ethical standards as illustrated in classical Arabic texts.
PLO-6: Communication	Should be able to effectively express himself and communicate with native Arabic speakers in standard Arabic.
PLO-7: Life Long Learning	Further improve and enhance his knowledge of Arabic language and literature through self-study and from other online/offline sources.
PLO-9: Digital Literacy	Type in Arabic on digital devices and access/utilize Arabic content on the world wide web.
PLO-10: Research Aptitude	Conduct independent and objective research using both primary and secondary sources.

2.6.1b. **Course Learning Outcomes- Arabic**

Semester: 1st: Course Title-				
Course Code: ARL122J	**Title Credits:**	**4+2**	**Total Contact Hrs:**	**60+30**
CLO 1:	Recognize, read and write Arabic Alphabets correctly.			
CLO 2:	Learn the basic vocabulary of things around him/her in Arabic.			
CLO 3:	Understand the basics of Arabic Writing.			
CLO 4:	Learn simple constructions in Arabic language			

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Semester: 1st: Course Title:				
Course Code: ARL122N	**Title Credits:**	**4+2**	**Total Contact Hrs:**	**60+30**
CLO 1:	Recognize, read and write Arabic Alphabets correctly.			
CLO 2:	Learn the basic vocabulary of things around him/her in Arabic.			
CLO 3:	Understand the basics of Arabic Writing.			
CLO 4:	Learn simple constructions in Arabic language			

Semester: 2nd					
Course Code:	**ARL222J**	**Title Credits:**	**4+2**	**Total Contact Hrs:**	**60+30**
CLO 1:		Learn elementary Grammar.			
CLO 2:		Understand the structure of nominal and verbal sentences in Arabic.			
CLO 3:		Speak, read and write the language more efficiently.			
CLO 4:		Learn usage of Arabic Numerals.			

Semester: 2nd					
Course Code:	**ARL222N**	**Title Credits:**	**4+2**	**Total Contact Hrs:**	**60+30**
CLO 1:		Learn elementary Grammar.			
CLO 2:		Understand the structure of nominal and verbal sentences in Arabic.			
CLO 3:		Speak, read and write the language more efficiently.			
CLO 4:		Learn usage of Arabic Numerals.			

Semester:		**3rd**			
Course Code:	**ARL322J**	**Title Credits:**	**4+2**	**Total Contact Hrs:**	**60+30**
CLO 1:		Read and understand the intermediate level of Arabic text and grammar.			
CLO 2:		Improve the communicative skills in Arabic.			
CLO 3:		Improve the accuracy, fluency in Arabic.			
CLO 4:		Improve the art of language expression.			

Semester:		**3rd**			
Course Code:	**ARL322N**	**Title Credits:**	**4+2**	**Total Contact Hrs:**	**60+30**
CLO 1:		Read and understand the intermediate level of Arabic text and grammar.			
CLO 2:		Improve the communicative skills in Arabic.			
CLO 3:		Improve the accuracy, fluency in Arabic.			
CLO 4:		Improve the art of language expression.			

Semester:		**4th**			
Course Code:	**ARL422J1**	**Title Credits:**	**3+1**	**Total Contact Hrs:**	**45+15**
CLO 1:		Learn practical and applied grammar.			

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CLO 2:	Translate the text from Arabic into English and vice-versa.
CLO 3:	Gain efficiency in Arabic morphology and Syntax.

Semester:		**4th**			
Course Code:	**ARL422N**	**Title Credits:**	**3+1**	**Total Contact Hrs:**	**45+15**
CLO 1:		Understand intermediate practical and applied grammar.			
CLO 2:		Translate texts from Arabic into English and vice-versa of intermediate level.			
CLO 3:		Gain efficiency in intermediate Arabic grammar.			

Semester:		**4th**			
Course Code:	**ARL422J2**	**Title Credits:**	**4+2**	**Total Contact Hrs:**	**60+30**
CLO 1:					
CLO 2:		Gain acquaintance with Arabic language, geography and culture of Arab world.			
CLO 3:		Understand Arab economy and its influence on the world trade.			
CLO 4:		Acquire the knowledge of important organizations and educational institutions of modern Arab world			
Semester:		**4th**			
Course Code:	**ARL422J3**	**Title Credits:**	**4+2**	**Total Contact Hrs:**	**60+30**
CLO 1:		Comprehend the art, style, techniques, and language used by modern prose writers.			
CLO 2:		Explore the literary master pieces of some renowned poets and prose writers.			
CLO 3:		Understand the different genres of prose and poetic literature produced by modern Arabic writers.			
CLO 4:		Comprehend the most prevalent styles and themes in the Modern Arabic literature along with their significance.			

Semester:		**5th**			
Course Code:	**ARL522J1**	**Title Credits:**	**3+1**	**Total Contact Hrs:**	**45+15**
CLO 1:		Learn advanced practical and applied grammar.			
CLO 2:		Translate the text from Arabic into English and vice-versa of advanced level.			
CLO 3:		Gain efficiency in advanced Arabic grammar.			

Semester:		**5th**			
Course Code:	**ARL522N**	**Title Credits:**		**Total Contact Hrs:**	
CLO 1:		Learn advanced practical and applied grammar.			
CLO 2:		Translate the text from Arabic into English and vice-versa of advanced level.			
CLO 3:		Gain efficiency in advanced Arabic grammar.			

Semester:		**5th**			
Course Code:	**ARL522J2**	**Title Credits:**	**4+2**	**Total Contact Hrs:**	**60+30**
CLO 1:		Gain knowledge of Arabic prose writers and poets during Pre-Islamic and Islamic period.			

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CLO 2:	Understand development of Arabic literature during Ummayad and Abbasid periods.
CLO 3:	Learn about the history, origin and development of the short story, Novel and Drama in Arabic.

Semester:		**5th**			
Course Code:	**ARL522J3**	**Title Credits:**	**4+2**	**Total Contact Hrs:**	**60+30**
CLO 1:		Gain a comprehensive understanding of the evolution of the Modern Arabic Poetry and its various genres.			
CLO 2:		Comprehend the emergence, role and significance of new literary schools and trends in shaping modern Arabic poetry.			
CLO 3:		Appreciate the contribution of modern Arabic poets to the Arabic Poetry, and seek inspiration from their creative poetic pursuits.			
Semester:		**6th**			
Course Code:	**ARL622J1**	**Title Credits:**	**3+1**	**Total Contact Hrs:**	**45+15**
CLO 1:		Demonstrate the knowledge and concept of Arabic syntax and structure of Language.			
CLO 2:		Create and structure text that effectively conveys the ideas			
CLO 3:		Evaluate the written text grammatically.			
CLO 4:		Have an understanding of the advanced concepts in morphology and syntax.			
CLO 5:		Identify and analyze the word and sentence structure of Arabic language.			
CLO 6:		Have an understanding of morphology as an important branch of linguistics.			

Semester:		**6th**			
Course Code:	**ARL622N**	**Title Credits:**		**Total Contact Hrs:**	
CLO 1:		Demonstrate the knowledge and concept of Arabic syntax and structure of Language.			
CLO 2:		Create and structure text that effectively conveys the ideas			
CLO 3:		Evaluate the written text grammatically.			
CLO 4:		Have an understanding of the advanced concepts in morphology and syntax.			
CLO 5:		Identify and analyze the word and sentence structure of Arabic language.			

Semester:		**6th**			
Course Code:	**ARL622J2**	**Title Credits:**	**4+2**	**Total Contact Hrs:**	**60+30**
CLO 1:		Understand the distinct features of Mahjar literature in Arabic.			
CLO 2:		Estimating the scope of various genres of Mahjar literature.			
CLO 3:		Know about the new literary schools and trends in American Arabic literature.			
CLO 4:		Assess the influence of western literature and culture in Mahjari literature.			
CLO 5:		Understand the style of writing of Mahjari poets and prose writers by reading some of their texts.			

Semester:		**6th**			
Course Code:	**ARL622J3**	**Title Credits:**	**4+2**	**Total Contact Hrs:**	**60+30**

CLO 1:	Know the historical connections between India and the Arab World since ancient times.
CLO 2:	Understand the emergence, and development of Arabic language and literature in India.
CLO 3:	Be gain knowledge of some famous literary works produced by Indian Arabic writers.

2.6.2: Department of Biochemistry

2.6..2a Programmed Learning Outcomes (PLOs) Bachelor's Degree in Biochemistry

PLO-1: Knowledge and understanding	Inculcate comprehensive knowledge and fundamental concepts of Biochemistry and apply basic principles of chemistry to biological systems.
PLO-2: Skills	Develop experimental and practical skills that enhances critical thinking and logical application in problem solving.
PLO-3: Application of Knowledge and Skills	Apply the theoretical knowledge and practical skills to analyse and interpret experimental results, and to assess the different approaches to generate solutions to specific problems pertaining to health and diseases.
PLO-4: Critical Thinking	Employ critical thinking and the scientific knowledge to design, carry out, record and analyse the results of experiments related to the subject.
PLO-5: Ethics	Identify and follow the ethical practices related to biology, biosafety, and all aspects of research and development.
PLO-6: Communication	Ability to communicate effectively with scientific community and society, such as, being able to make effective presentations and to write effective scientific reports.
PLO-7: Life Long Learning	Ability to retain thinking skills, and use them to update scientific knowledge and apply them in common place activities throughout life.
PLO-8: Environmental Awareness	Acquire knowledge about the general awareness of current developments about surroundings, resources, and their conservation.
PLO-9: Digital Literacy	Facilitate the use of digital resources, and application of various platforms to convey and explain concepts of biochemistry.

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PLO-10: Research Aptitude	Ability to formulate hypothesis and research questions, and to identify and consult relevant sources to find answers.

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2.6.2b. Course Learning Outcomes (CLOs) Biochemistry (UG)
Title of the programme: Bachelors with Biochemistry as Major (NEP)

Semester: I		
Course code: BCH122J	**Title credits:4+2**	**Total: 6**
Contact Hrs: 60		
CLO 1: To exhibit the knowledge to classify, define and explain various properties of carbohydrates and correlate them to their functions. Analyses the unknown samples qualitatively for the presence of carbohydrates.		
CLO 2. Be acquainted with the structures and classification of standard amino acids, along with their chemical and physical properties. Recognize the structural levels of organization of proteins, 3D structures of proteins, its functions, denaturation (haemoglobin, myoglobin etc.). Test unknown samples for presence of amino acids/proteins.		
CLO 3. Understand in detail the classification, nomenclature, structure, physico chemical properties and function of lipid from simple to derived lipid. Description of different properties and functions of phospholipids, isoprenoids and sterols		
CLO 4. Understand the characteristics and draw structures of various types of nucleic acids. Classify vitamins, their role and deficiencies associated.		

Semester: II		
Course code: BCH222J	**Title credits:4+2**	**Total: 6**
Contact Hrs: 60		
CLO1: Exhibit the knowledge of the structural organization of eukaryotic cell, the chemical composition and functions of plasma membrane. Understand the mechanism of membrane transport, passive and active transport.		
CLO 2: Know the structure and functions of different cell organelles along with brief concepts of protein segregation & secretion. Understand the maintenance of cytoskeleton structure and cell motility.		
CLO3: Comprehend cell signalling and communication. Learn various types of signalling molecules, receptors and junctions.		
CLO 4. Know the events in cell division; enumerate the phases of cell cycle; understand the process of apoptosis.		

Semester: III		
Course code: BCH322J	**Title credits:4+2**	**Total: 6**
Contact Hrs: 60		
CLO1: Understand the basics of enzymes their nomenclature and IUB enzyme classification. Physiological significance of various enzymes in health and disease. Measurement of enzyme assays.		
CLO2: Understand the role of various co-enzymes and co-factors. Describe the basic principle of enzymatic catalysis.		
CLO 3: Identify the enzyme kinetics and describe various factors affecting its activity. Derivation of mathematical equations for understanding relationship between various enzymatic parameters (Km, Vmax etc.).		

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CLO4: Have a complete understanding of rate of reactions and order of reactions, and inhibitions and their kinetics. Understand various types of inhibitors and their impact on enzymes.

Semester: IV		
Course code: BCH422J1	**Title credits:3+1**	**Total: 4**
Contact Hrs: 45		
CLO1: Understand the basic principles of bioenergetics and biological thermodynamics.		
CLO2: Understand the mechanism of biochemical reactions and the energy changes involved therein.		
CLO3: Study the basic metabolic reactions involved in cellular metabolism of living organisms. Comprehend energy transfer and currency in biological systems		

Semester: IV		
Course code: BCH422J2	**Title credits:4+2**	**Total: 6**
Contact Hrs: 60		
CLO 1: Trace various components of immune system. Description of immunological barriers and their protective function.		
CLO 2: Describe the process of generation of immune response and its types, illustrating the mechanism of each type. Detailed structure of antibodies including diversity and hypermutation.		
CLO 3: Understand the mechanism of antigen presentation, processing and interaction. Comprehend the concepts of MHCs, HLAs, TLRs and receptor diversity.		
CLO 4: List immunodeficiency diseases, auto immune disease, tolerance and hypersensitivity. Learn various immunological techniques and production of vaccines.		

Semester: IV		
Course code: BCH422J3	**Title credits:4+2**	**Total: 6**
Contact Hrs: 60		
CLO 1: Accustom elementary laboratory tools and practices. Understand the basic chemistry and properties of water; basic concepts of preparing various solutions, reagents and buffers.		
CLO 2: Describe the basic principles, components and applications of spectrophotometer. Determining biomolecule concentration in test solutions using spectrophotometry		
CLO 3: Demonstrate the knowledge of the general principles, components and applications of centrifuges.		
CLO 4: Learn the principles and applications of chromatographic techniques in isolation, quantification and characterization of biomolecules.		

Semester: V		
Course code: BCH522J1	**Title credits:3+1**	**Total: 4**
Contact Hrs: 45		
CLO 1: Understand the fundamental energetics of biochemical processes, chemical logic of metabolic pathways. Illustrate the metabolism of carbohydrates through various anabolic and catabolic pathways.		
CLO 2: Describe general reactions of amino acids metabolism, how amino acids and proteins are		

metabolized while emphasizing the role of few intermediates of their metabolism.
CLO 3: Understand regulation of various metabolic pathways. Clinical significance and manifestation of different metabolic disorders.

Semester: V		
Course code: BCH522J2	**Title credits:4+2**	**Total: 6**
Contact Hrs: 60		
CLO 1: Understand the basic physiology and regulatory concepts of Digestive and Hepatobiliary system. Comprehend the anatomy, functions and assessment thence.		
CLO 2: Understand physiology of respiratory system like exchange of gases, lung function. Fundamentals of circulation, anatomy of heart, cardiac cycle and regulation of blood pressure.		
CLO 3: Demonstrate the understanding of Musculo-skeletal and nervous system. Understanding of mechanism of action potential, muscle potential and nerve impulse conduction.		
CLO 4: Demonstrate knowledge of excretory and reproductive systems. Structure of kidney, nephron; sexual differentiation; Fertilization and implantation.		
Semester: V		
Course code: BCH522J3	**Title credits:4+2**	**Total: 6**
Contact Hrs: 60		
CLO 1: Understanding of historical overview of inheritance; Mendelism and deviations from Mendelism. Understand gene interactions and their outcome. Chart different types of crosses mathematically.		
CLO 2: Comprehend the concepts of Linkage, crossing over and Sex-linked inheritance.		
CLO 3: Understand the basic concepts of organization, types and function of chromosomes and their impact on cellular functioning and development; types of chromosomal aberrations and their interpretation.		
CLO 4: Illustrate karyotyping and demonstrate various genetic and chromosomal anomalies. Explain the methods to identify various genetic disorders.		

Semester: VI		
Course code: BCH622J1	**Title credits:3+1**	**Total: 4**
Contact Hrs: 60		
CLO 1: Illustrate the metabolism of lipid through various anabolic and catabolic pathways. Biosynthesis of saturated and unsaturated fatty acids; Metabolism of ketone bodies.		
CLO 2: Describe how nucleotides are metabolized, emphasizing degradation, biosynthesis and salvage pathways.		
CLO 3: Understand the metabolic regulation and monitoring the deficiency and abundance disorders of metabolism.		

Semester: VI		
Course code: BCH622J2	**Title credits:4+2**	**Total: 6**
Contact Hrs: 60		
CLO 1: Understand core principles of molecular biology like structural levels of DNA, chromatin arrangement and remodelling, gene arrangement, etc.		
CLO 2: Description of mechanism of DNA replication, repair and recombination. Comparative		

analysis between prokaryotic and eukaryotic replication.
CLO 3: Demonstrate mechanism of Transcription; post transcriptional modifications; structure and functions of different types of RNAs.
CLO 4: Demonstrate Translation mechanism (eukaryotes and prokaryotes); features of genetic code; translational inhibitors and post translational modifications.
Semester: VI
Course code: BCH622J3 Title credits:4+2 Total: 6
Contact Hrs: 60
CLO 1: Know various types of microbes, understand the classification strategy, microbial diversity and morphology of major groups of microorganisms.
CLO 2: Demonstrate the cultivation and maintenance of microorganisms including the nutritional requirements and factors affecting the microbial growth; learn the various methods of control of microorganisms. Characterization and classification of antimicrobial agents.
CLO 3: Overview of host-microbe relationships; symptoms and mode of transmission of various infectious diseases with special reference to tuberculosis, COVID -19, AIDS, malaria etc.
CLO 4: Exhibit skills in preparation of media and staining; isolate, identify and characterize bacteria from different sources. Concepts, function and application of microscopy.

2.6.3. Department of Biotechnology
Title: Bachelors with Major in Biotechnology.

2.6.3a. Programme Learning Outcomes -Biotechnology

PLOs	Bachelor Degree (UG)
After the completion of Bachelor degree in Biotechnology, the student should be able to:	
PLO-1: Knowledge and understanding	Knowledge and understanding Demonstrate a strong understanding of fundamental and advanced concepts in biotechnology and related interdisciplinary fields.
PLO-2: Skills	Acquire hands-on laboratory skills, analytical abilities and proficiency with modern biotechnological tools and techniques.
PLO-3: Application of knowledge and Skills	Apply theoretical knowledge and practical skills to solve real-world problems in healthcare, agriculture, industry and the environment.
PLO-4: Critical thinking	Analyze scientific information, interpret data objectively and use evidence-based reasoning to draw meaningful conclusions.
PLO-5: Ethics	Follow ethical principles, biosafety regulations, and responsible conduct in biotechnology research and applications.
PLO-6: Communication	Communicate scientific ideas effectively through written, oral and digital formats to both expert and non-expert audiences.
PLO-7: Life Long Learning	Engage in continuous learning to keep pace with emerging biotechnological advancements and interdisciplinary innovations.

PLO-08: Environmental Awareness	Understand environmental challenges and utilize biotechnological approaches for sustainability and ecological conservation.
-9: Digital Litera	Effectively use digital tools, bioinformatics resources and data-analysis platforms for scientific and technological problem-solving.
Research Aptitude	Develop the ability to design experiments, analyse data and undertake independent or collaborative research projects.

2.6.3b. Course Learning Outcomes -Biotechnology

Semester: 1st **Course Title- BIOMOLECULES STRUCTURE AND FUNCTION**		
Course Code: BTG122J	**Total Credits: 4**	**Total Contact Hrs: 60**
Understand enzyme structure, function, and kinetics		
Interpret the chemistry and metabolism of carbohydrates		
Describe the structure, function, and metabolism of lipids		
Demonstrate understanding of nucleic acid structure and organization		
Semester: 2nd **Course Title- MICROBIOLOGY AND IMMUNOLOGY**		
Course Code: BTG222J	**Total Credits: 4**	**Total Contact Hrs: 60**
Understand microbial structure, organization, and genetics		
Analyse microbial nutritional needs, growth patterns, and control strategies		
Explain components and mechanisms of the innate immune system		
Interpret adaptive immune responses and their applications		

Course Title:	**BIOTECHNOLOGY: MOLECULAR CELL BIOLOGY**	
Semester:	**3rd**	
Course Code: BTG322J	**Credits:4**	**Total Contact Hours:60**
Draw the organization of cell membrane and distinguish between different types of transport across it.		
Analyse the functioning of Endoplasmic reticulum, Golgi complex and associated vesicle transport.		
Describe the structure and functioning of nucleus and other organelles.		

Course Title:	**Introduction to Biotechnology**
Semester:	**1st, 2nd and 3rd**

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Course Code: BTG022I	**Credits:3**	**Total Contact Hours:45**
Understanding of Biotechnology as a discipline.		
Understanding the flow of information in a cell and basics of recombinant DNA technology.		
Understanding the applications of Biotechnology.		

Semester: 4Th. **Title: Biotechniques**		
Course Code: BTG422J1	**Credits:3**	**Total Contact Hours:45**
Prepare specimens and use different types of microscopes for observation of use of UV-VIS spectroscopy for different applications.		
Separate, purify and characterize different biomolecules using different and chromatographic techniques.		
Analyze, separate and identify nucleic acids and proteins by different electrophoretic and blotting techniques.		

Course Title:	**INTRODUCTION TO BIOTECHNOLOGY**	
Semester:	**1st, 2nd and 3rd**	
Course Code: BTG022I	**Credits:3**	**Total Contact Hours:45**
Understanding of Biotechnology as a discipline.		
Understanding the flow of information in a cell and basics of recombinant DNA technology.		
Understanding the applications of Biotechnology.		

Title:	**BIOTECHNIQUES**	
Semester:	**4th**	
Course Code: BTG422J1	**Credits:3**	**Total Contact Hours:45**
Prepare specimens and use different types of microscopes for observation of use of UV-VIS spectroscopy for different applications.		
Separate, purify and characterize different biomolecules using different and chromatographic techniques.		
Analyze, separate and identify nucleic acids and proteins by different electrophoretic and blotting techniques.		

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Course Title:	**MOLECULAR BIOLOGY**	
Semester:	**4th**	
Course Code: BTG422J2	**Credits:4**	**Total Contact Hours:60**
Analyze the different properties of nucleic acids and genome.		
Interpret and predict the role of different enzymes and proteins involved in replication of DNA, mutation and repair.		
Illustrate the process of gene expression, factors involved and processing, regulation of expression.		
Describe how the language of the nucleic acids is translated into proteins and its regulation.		

Course Title:	**RECOMBINANT DNA TECHNOLOGY**	
Semester:	**4th**	
Course Code: BTG 422J3	**Credits:4**	**Total Contact Hours:60**
Use different enzymes for cloning, modification and purification of DNA.		
Select and use the suitable vector for cloning and screening of transformants.		
Express recombinant proteins and purify them.		
Make cDNA library, edit and target different genes.		

Course Title:	**BIOTECHNOLOGY DEVELOPMENT AND SYSTEM BIOLOGY**	
Semester:	**5th**	
Course Code: BTG 522J1	**Credits:3**	**Total Contact Hours:45**
Define the different terms related to developmental biology and learn about stages of development in plants.		
Recognize the different events in animal development.		
Integrate use of systems biology in understanding complex processes.		

Course Title:	**Animal Biotechnology**
Semester:	**5th**

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Course Code: BTG 522J2	**Credits:4**	**Total Contact Hours:60**
Figure out different components of cell culture lab.		
Set up a cell line and perform different assays.		
Use cell culture technology for different applications.		
Employ modern techniques in animal biotechnology		

Course Title:	**Biostatistics and Bioinformatics**	
Semester:	**5th**	
Course Code: BTG 522J3	**Credits:4**	**Total Contact Hours:60**
Collect, represent and compute different parameters of data.		
Establish the relationship between different data variables.		
Use basic bioinformatics tools.		
Predict protein structure and make phylogenetic trees.		

Course Title:	**Environmental Biotechnology**	
Semester:	**6th**	
Course Code: BTG 622N	**Credits:3**	**Total Contact Hours:45**
Differentiate between different types of pollutions and the respective causes.		
To treat waste water and solid waste and turn it into environment friendly end products.		
Employ biotechnological approaches for neutralizing different toxic substances.		

Course Title:	**Biotechnology- Plant Technology**

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Semester:	**6th**	
Course Code: BTG622J2	**Credits:4**	**Total Contact Hours:60**
Decipher the basic requirements of plant cell/tissue culture.		
Carry different types of cultures for plant propagation.		
Transform plant cells by different methods.		
Be trained about the different applications of plant biotechnology.		

Course Title:	**OMICS: Genomics, Transcriptomics and Proteomics**	
Semester:	**6th**	
Course Code: BTG 622J3	**Credits:4**	**Total Contact Hours:60**
Distinguish genomes on basis of complexity.		
Do genome analysis – sequencing, assembly and annotation.		
Select and use different techniques used for transcriptome analysis.		
Identify the different techniques in-use for proteome study.		

Course Title:	**Molecular Genetics and Epigenetics**	
Semester:	**7th**	
Course Code: BTG 722J1	**Credits:3**	**Total Contact Hours:45**
Differentiate between different inheritance patterns.		
Distinguish between the different genetic diseases.		
Realize the different effects of chromatin modification		

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Course Title:	**Bioprocess Engineering and Technology**	
Semester:	**7th**	
Course Code: BTG 722J2	**Credits:4**	**Total Contact Hours:60**
Calculate different parameters of microbial growth and product formation.		
Be trained about different types of systems used in bioprocess technology.		
Identify the different components of a bioreactor.		
Employ different techniques for downstream processing.		

Course Title:	**Molecular Diagnosis and Drug Design**	
Semester:	**7th**	
Course Code: BTG 722J3	**Credits:4**	**Total Contact Hours:60**
Identify the different nucleic acid based molecular diagnostic methods.		
Employ different protein-based methods for identification of a disease.		
Familiar with the different steps of drug development and discovery.		
Realize the process from drug discovery to approved drug.		

Course Title:	**IPR, Bioethics and Biosafety**	
Semester:	**8th**	
Course Code: BTG 822J1	**Credits:3**	**Total Contact Hours:45**
Implement biosafety measures in laboratories and evaluate the risks associated with GMOs		
Identify different issues and bioethics related to molecular technology and research.		
Able to file patents(national/international)		

Course Title:	**Food Biotechnology and Nutrigenomics**

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Semester:	**8th**	
Course Code: BTG 822J2	**Credits:4**	**Total Contact Hours: 60**
Identify the different concerns regarding GM foods.		
Interpret the role of microorganisms and enzymes involved in food processing.		
Recognise the role of different neutraceuticals in human health.		
Correlate the relationship between different nutrients on genes i.e., nutrigenomics.		

Course Title:	**Cell Signalling and Cancer Biology**	
Semester:	**8th**	
Course Code: BTG 822J3	**Credits:4**	**Total Contact Hours: 60**
Distinguish between different types of signalling and the second messengers involved.		
Recognize the different signalling pathways in a cell.		
Identify the various types of cancers and the different causes.		
Be familiar with diagnosis and advances in cancer treatment.		

2.6.4. Department of Botany
Title: Bachelors with Major in Botany.
2.6.4a. Programme Learning Outcomes -Botany (BG)

PLOs	**After the completion of Bachelor degree in Biotechnology, the student should be able to;**
PLO-1: Knowledge and understanding	**Deep Understanding of Plant Diversity and Evolution** Students will gain a strong foundation in plant diversity—from microbes and algae to bryophytes, pteridophytes, gymnosperms and angiosperms—understanding how plants evolved, adapted and contributed to life on Earth.
PLO-2: Skills	**Mastery of Plant Structure, Function and Development** Learners will develop a clear understanding of plant anatomy, morphology, physiology and developmental biology, enabling them to appreciate how plants grow, function and interact with their environment.

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PLO-3: Application of knowledge and Skills	Competence in Modern Botanical Tools, Techniques and Biotechnology.
PLO-4: Critical thinking	Through biostatistics, biotechnology and laboratory-based practical, students will learn essential scientific tools, analytical techniques, and experimental skills needed in modern plant sciences and research.
PLO-5: Ethics	**Knowledge of Ecology, Conservation and Sustainable Practices** The programme will help students build awareness of ecological processes, conservation biology and applied ecology, enabling them to contribute meaningfully to environmental protection and sustainable development.
PLO-6: Communication	**Ability to Apply Genetics, Cyto-genetics and Molecular Biology Concepts-** Students will understand the principles of inheritance, chromosome behaviour and molecular mechanisms in plants, applying these concepts to areas such as breeding, conservation and biotechnology.
PLO-7: Life Long Learning	**Research Competence, Critical Thinking and Scientific Communication** Through project work, dissertation (for research mode), and continuous scientific exposure, learners will develop skills in research design, data interpretation, critical thinking and effective scientific communication—preparing them for higher studies, research careers and scientific employment.

2.6.4b Course Learning Outcomes (CLOs)
Programme: Bachelors degree in Botany (UG)

BOT124J/ N BOTANY _ MICROBES AND ALGAE CREDITS: THEORY: 04; PRACTICALS: 02)
The students will learn about basic concept, diversity, general characteristics of;
1. Viruses
2. Bacteria
3. Algae
4. The significance of algal blooms and economic importance of bacteria and algae.

BOT224J BOTANY _ MYCOLOGY AND PLANT PATHOLOGY (CREDITS: THEORY: 04; PRACTICALS: 02)
The students will be able to understand:
1. Principles of plant pathology and pathogenesis, role of enzymes, microbial toxins in pathogenesis,
2. Mechanism of defense mechanisms in plants against pathogen attack, develop an understanding about diagnosis, etiology, epidemiology
3. Management of plant diseases caused by microbial pathogens

4. Demonstrate skills in laboratory, field and glasshouse work related plant pathology

BOT324J: BOTANY ARCHEGONIATES: BRYOPHYTES, PTERIDOPHYTES, AND GYMNOSPERMS CREDITS: (THEORY: 4; PRACTICAL 02):
The students will learn about basic concept, diversity, general characteristics and economic importance of:
1. Bryophytes,
2. Pteridophytes,
3. Gymnosperms
4. Fossil species.

BOT422J1 BOTANY _ PLANT TAXONOMY (CREDITS: THEORY: 03; PRACTICALS: 01)
The students will develop an understanding about the concept, components and scope of:
1. Plant taxonomy,
2. Classification and identification of plants,
3. Importance of herbaria and botanical gardens,
4. Principles and rules of nomenclature.

BOT422J2 BOTANY _ PLANT PHYSIOLOGY CREDITS: THEORY: 04; PRACTICALS: 02)
1. To give students understanding about the concept and mechanism of various physiological processes
2. To understand water and nutrient uptake
3. Develop an understanding of transport and photosynthesis
4. Understand the mechanism of respiration and plant hormones
BOT522J3: BOTANY _ PLANT MOLECULAR BIOLOGY COURSE OBJECTIVES CREDITS: THEORY: 4; PRACTICALS: 2
Successful completion of the Molecular Biology course will allow students to:
1. Understand the chemical and molecular processes of life based on the genetic constituents of the cell.
2. They will learn to comprehend the properties of the heritable material along with all the enzymes involved for proper replication fidelity.
3. Employ scientific methods and design the experiments along with interpreting biological data 4. Communicate concepts of molecular biology to wider scientific community as well as general public.

BOT422J3 BOTANY _ PLANT BIOCHEMISTRY CREDITS: THEORY: 04; PRACTICALS: 02
1. Develop an understanding about the structure, properties, functions and synthesis of important biomolecules involved in various biochemical pathways, enzymes and their biological roles.
2. Study of carbohydrates
3. Study of lipids
4. Study of proteins and nucleic acids

BOT522J2: BOTANY -CELL BIOLOGY OBJECTIVES

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CREDITS: THEORY: 4; INTERNSHIP / PRACTICAL
This course will be able to demonstrate foundational knowledge in understanding of:
1. The relationship between the properties of macromolecules, their cellular activities and biological responses
2. Understanding of Cell metabolism, chemical composition, physiochemical and functional organization of organelle
3. Contemporary approaches in modern cell and molecular biology
4. Other aspects

BOT522J3: BOTANY- PLANT MOLECULAR BIOLOGY COURSE OBJECTIVES **CREDITS: THEORY: 4; PRACTICALS: 2**
Successful completion of the Molecular Biology course will allow students to understand:
1. The chemical and molecular processes of life based on the genetic constituents of the cell.
2. They will learn to comprehend the properties of the heritable material along with all the enzymes involved for proper replication fidelity.
3. Employ scientific methods and design the experiments along with interpreting biological data
4. Communicate concepts of molecular biology to wider scientific community as well as general public.

BOT624J1 BOTANY _ REPRODUCTIVE AND DEVELOPMENTAL BIOLOGY OF ANGIOSPERMS **CREDITS (THEORY: 3 PRACTICAL: 1)**
1. Students will gain a deep understanding of reproductive plant development, covering floral development and male gametophyte formation, emphasizing pathways, organ development, gynoecium development
2. Ovule initiation, female gametophyte development, pollination, embryogenesis, and seed development, encompassing self-incompatibility, transcriptional networks,
3. Seed component interactions.
4. This curriculum aims to provide a thorough understanding of the intricate processes governing plant reproduction, from floral induction to seed formation.
BOT622J2: BOTANY _ GENETICS & CYTOGENETICS **CREDITS: THEORY: 4; PRACTICALS: 2 COURSE OBJECTIVES:**
1. Understand the basic concepts of the chromosomes, their structural and functional aspects.
2. Acquaint with the fundamental principles of inheritance in plants and animals
3. Acquaint with the fundamentals of chromosomal and cytoplasmic inheritance,
4. Understand the key differences and similarities of sex determination in plants and animals

BOT622J3: BOTANY _ PLANT BREEDING COURSE OBJECTIVES: **CREDITS: THEORY: 4; PRACTICALS:**
1. Learn important breeding procedures in self- and cross-pollinated crops
2. Understand exploitation of heterosis utilizing male sterility and other methods
3. Know about the various population improvement programmes
4. Learn about hybrid breeding and its implications on crop improvement

BOT722J1: BOTANY _ PLANT ECOLOGY OBJECTIVES: **CREDITS: THEORY: 3; PRACTICALS:**
1. Appreciate the scope of scientific inquiry in the field of ecology in order to better understand the

natural world.
2. Develop an understanding of the structural and functional attributes of ecological entities at various levels of organizations, such as population, community and ecosystem.
3. Become familiar with the variety of ways that organisms interact and evolve, communities develop and ecosystems' function and respond to biotic and abiotic environment.
4. Learn techniques for collecting and analysing field data and conduct laboratory experiments on different aspects of ecology.

BOT722J2: BOTANY _ PLANT BIOTECHNOLOGY **CREDITS: THEORY: 4; PRACTICALS: 2**	
1.	Learn the basic concepts, principles and processes in plant biotechnology.
2.	Use basic biotechnological techniques to explore molecular biology of plants
3.	Explain how biotechnology is used for plant improvement
4.	Discuss the biosafety concern and ethical issue of that use.

BOT722J3: BOTANY _ BIOSTATISTICS AND BIOTECHNIQUES **CREDITS: THEORY: 4; PRACTICALS: 2**	
1.	The students will be able to comprehend the types, collection and analyze the data,
2.	Learn the sampling techniques, will be able to design experiments in biology,
3.	Test the hypothesis through statistical tests and will be able to understand the principles
4.	Application of various scientific techniques like chromatography, electrophoresis, centrifugation etc. in biology

BOT822J1: BOTANY _ ECONOMIC BOTANY COURSE OBJECTIVES: **CREDITS: THEORY: 3; PRACTICALS: 1**	
After completing this course students must be able to know	
1.	How plants are fundamental to survival of mankind on earth
2.	How plant species diversity is intricately involved in human welfare
3.	Economic development.
4.	Economic importance of major plant species

BOT822J2: BOTANY _ CONSERVATION BIOLOGY **CREDITS: THEORY: 4; PRACTICALS: 2**	
1.	The students will get familiarized with regional biodiversity,
2.	Develop an understanding of economic and ecological value for sustainable development
3.	The students will be trained in quantitative metrics of biodiversity, conservation strategies for threatened biodiversity
4.	Knowledge about policy tools for sustainable management of bioresources.

BOT822J3 BOTANY _ APPLIED AND EVOLUTIONARY ECOLOGY OBJECTIVES: **CREDITS: THEORY: 4; PRACTICAL: 2**	
1.	Develop an appreciation of environmental problems being faced by the human-beings and their causes and consequences.

2.	Understand the key factors and strategies for effective environmental monitoring, remediation and pollution abatement based on ecological principles.
3.	Appreciate the global response to environmental issues and multi-lateral international treaties and frameworks for their mitigation and adaptation.
4.	Advance their knowledge of current issues and approaches in evolutionary ecology, particularly those of relevance to global change.

TFP122S: HORTICULTURE TECHNOLOGY _ TEMPERATE FRUIT PRODUCTION: CREDITS: THEORY: 2; PRACTICAL: 2	
1.	Develop an understanding of the role and responsibilities of a temperate fruit grower
2.	Understanding the cultivation requirements and economic importance of different temperate fruits of J and K
3.	Learner will be able to identify different sources of disease free and certified plant material
4.	Recognize the types of fruit plants used for orchard establishment.

2.6.5. Department of Chemistry

Title: Bachelors with Major in Biotechnology.

2.6.5a. Programme Learning Outcomes – Chemistry (BG)

PLOs	Bachelor Degree
After the completion of Bachelor degree in Chemistry, the student should be able to:	
PLO-1: Knowledge and understanding	Students will be able to demonstrate comprehensive understanding of fundamental and advanced concepts in organic, inorganic, physical, analytical, and environmental chemistry, including interdisciplinary applications.
PLO-2: Skills	Graduates can effectively apply laboratory methods, techniques, and instrumentation for chemical analysis, synthesis, and problem-solving in practical settings.
PLO-3: Application of knowledge and Skills	Students will be able to utilize theoretical knowledge and practical skills to address real-world challenges in industries like pharmaceuticals, materials, and environmental science.
PLO-4: Critical thinking	The programme develops abilities to analyse complex chemical data, evaluate experimental results, and synthesize information for informed decisions.
PLO-5: Ethics	Graduates shall adhere to ethical standards in chemical research, handling hazardous materials, and professional conduct.
PLO-6: Communication	Students will be able to proficiently communicate scientific findings through reports, presentations, and discussions
PLO-7: Life Long Learning	The curriculum fosters continuous skill enhancement and adaptation to evolving chemical technologies
PLO-8: Environmental Awareness	Students will apply chemistry knowledge to environmental issues like pollution control and sustainable practices.
PLO-9: Digital Literacy	Graduates will use digital tools, software, and computational methods for chemical simulations and data analysis
PLO-10: Research Aptitude	Students will formulate research problems, conduct experiments, analyze data, and draw conclusions using advanced techniques.

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2.5b Course Learning Outcomes (CLOs) – Chemistry (BG)

Semester: First
Course Code: CHM123J/N
Title: FUNDAMENTALS OF CHEMISTRY AND CHEMICAL ANALYSIS-I
Credits: 4+2: Total Contact Hrs: 60+60
CLO 1: The students shall be able to understand the nature of different theories of chemical bonding, MO treatment of some molecules, bonding in electron deficient molecules, strength of forces between chemical constituents and different acid base concepts.
CLO 2: The students shall be able to understand how periodic trends affect the reaction chemistry, complexing ability of s-block elements.
CLO 3: The students shall be able to recognize the key reactive intermediates in organic chemistry and understand different aspects of stereochemistry.
CLO 4: The students shall be known the applications of s- block elements.

Title of the Programme: BACHELORS WITH CHEMISTRY AS MAJOR
Semester: Second
Course Code: CHM223J/N Title: CHEMISTRY _ FUNDAMENTALS OF CHEMISTRY AND CHEMICAL ANALYSIS-II
Credits: 4+2 Total Contact Hrs: 60+60
CLO 1: The students shall acquire and comprehend various aspects of p block elements
CLO 2: The students shall acquire and understand basic concepts of organic reaction mechanisms
CLO 3: The students shall acquire and describe the basic principles of thermodynamics.
CLO 4: The students shall be able to apply the principles of thermodynamics in chemical reactions.

Annexure B: Course Learning Outcomes (CLOs)
Title of the Programme: BACHELORS WITH CHEMISTRY AS MAJOR
Semester: Third
Course Code: CHM322J/N Title: FUNDAMENTALS OF CHEMISTRY AND CHEMICAL ANALYSIS-III Credits: 4+2 Total Contact Hrs: 60+60
CLO 1: Appreciate and contrast chemistry of transition elements
CLO 2: Understanding of electronic, magnetic, spectral and bonding properties of their complexes and their applications
CLO 3: Evaluate fundamentals of conduction, electrochemical cells and Kinetics.
CLO 4: Understand the kinetics of chemical processes.

Semester: Fourth
Course Code: CHM422J1/N Title: CONCEPTS IN ANALYTICAL CHEMISTRY Credits: 3+1 Total Contact Hrs: 45 +30
CLO 1: Analytical chemistry and its significance and scope.
CLO 2: Different types of separation methods and their scope and limitations.
CLO 3: Different types of separation methods and their scope and limitations.

CLO 4: Different methods of chromatography, its working and scope.

Semester: Fourth
Code: CHM422J2 Title: CHEMISTRY: SELECTED TOPICS IN INORGANIC CHEMISTRY
Credits: 4+2 Total Contact Hrs: 60 +60
CLO 1: Provide basic understanding of coordination compounds, their bonding and applications.
CLO 2: Importance of metal ions in biology and knowledge of various enzymes and their activities
CLO 3: Understand balancing of redox reactions, trends in standard potentials, redox indicators, nuclear forces and application of radioisotopes
CLO 4: Understanding of electronic, magnetic, and spectral properties of inner transition elements and applications of these elements

Semester: Fourth
Course Code: CHM422J3 Title: CHEMISTRY: STEREOCHEMISTRY AND REACTION MECHANISM Credits: 4+2 Total Contact Hrs: 60 +60
CLO 1: Students will be expected to gain knowledge about basic concept of symmetry and chirality in the molecules, their spatial arrangement
CLO 2: The students will also gain knowledge about reaction mechanism and stereochemistry involved in formation of products.
CLO 3: The knowledge about controlling the stereochemical pathways of the reaction is very useful in pharmaceutical industry.
CLO 4: The broad spectrum of pericyclic reactions involved in organic synthesis, mechanism and applications.

Semester: 5th	**Course Code: CHM522J1/N**
Title: CHEMISTRY _ ENVIRONMENTAL & GREEN CHEMISTRY	
Credits: (3+1	**Total Contact Hrs: 45 +15**
CLO 1: The students will acquire knowledge of Principles of green chemistry.	
CLO 2: Alternative reaction conditions and their applications	
CLO 3: Designing greener processes.	
CLO 4: Chemistry, monitoring and control of environmental contaminants	

Semester: Fifth	**Course Code: CHM522J2**
Title: CHEMISTRY _ SELECTED TOPICS IN PHYSICAL CHEMISTRY	
Credits: 4+2	**Total Contact Hrs: 60 + 60**
CLO 1: Students shall learn to derive some important equations of thermodynamics and understand the implications of these equations	
CLO 2: Students shall be able to make use of thermodynamic relations for the thermochemical estimations	

CLO 3: Students will understand the basic concepts of Phase transformations and Phase rule
CLO 4: Understand some basic concepts of surface chemistry, thermodynamic implications of equilibrium across solid/liquid, solid gas and liquid-air interfaces, like adsorption.

Semester: Fifth	**Course Code: CHM522J3**
Title: CHEMISTRY _ ADVANCED INORGANIC CHEMISTRY	
Credits: 4+2 Total Contact Hrs: 60 + 60	
CLO 1: Students shall learn the Importance of metal ions in biology and knowledge of various enzymes and their activities	
CLO 2: Students shall learn the advanced applications of bioinorganic chemistry in the field of medicine.	
CLO 3: Students will learn basic understanding of organometallic compounds, preparation, properties and structural analysis of pi-acid complexes	
CLO 4: Students will learn the knowledge of molecular symmetry and point groups.	

Semester: Sixth	**Course Code: CHM633J1/N**
Title: CHEMISTRY _ BIOLOGICAL CHEMISTRY	
Credits: 3+1 : Total Contact Hrs: 45 + 15	
CLO 1: Students shall learn Importance of metal ions in biology	
CLO 2: Students shall learn the Knowledge of various enzymes and their activities	
CLO 3: Students will learn advanced applications of bioinorganic chemistry in the field of medicine.	
CLO 4: Students will learn the knowledge of biological process in the realm of thermodynamics and ion transport.	

Semester: 6th	**Course Code: CHM633J2**
Title: CHEMISTRY _ SELECTED TOPICS IN ORGANIC CHEMISTRY	
Credits: 4+2 Total Contact Hrs: 60 + 60	
CLO 1: Understand the fundamentals of various types of organic reactions, their mechanism and applications.	
CLO 2: Students shall learn the Importance of heterocyclic chemistry and cyclization processes	
CLO 3: Students will learn advanced applications of bioorganic chemistry in the field of medicine.	
CLO 4: Students will learn to recognize the importance of the chemical aspects of rearrangements, natural products and chemistry involved in medicine.	
Semester: 6th:	**Course Code: CHM633J3**
Title: CHEMISTRY _ ADVANCED CONCEPTS IN PHYSICAL CHEMISTRY	
Credits: 4+2 Total Contact Hrs: 60 + 60	
CLO 1: Students shall learn what fast reactions are and how the kinetic investigations are carried out for such reactions.	
CLO 2: Students will learn about the ways a solvent shall affect the kinetics of reactions in solution.	
CLO 3: Students shall appreciate the difference between the solution and gas phase reactions.	
CLO 4: Students learn the basic concepts of X-Ray crystallography and how to interpret X-Ray diffractograms of simple crystalline solids.	

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Semester: 7th	**Course Code: CHM722J1/N**
Title: CHEMISTRY OF MATERIALS	
Credits: 3+1	**Total Contact Hrs: 45 + 15**
CLO 1: Students shall learn the properties of wide variety of materials used in electronics.	
CLO 2: Students will learn and know the chemistry of the ceramics and glasses used in our daily life.	
CLO 3: Students shall know the concept of the nanomaterials and their types along-with their applications.	
Semester: 7th	**Course Code: CHM722J2**
Title: CHEMISTRY _ QUANTUM MECHANICS AND SPECTROSCOPY	
Credits: 4+2	**Total Contact Hrs: 60 + 60**
CLO 1: Students shall learn and appreciate the importance of transition from classical to quantum mechanics for understanding atomic/molecular world.	
CLO 2: Students will learn and apply quantum mechanical formulations to simple systems so as to distinguish between the quantum results from the expected classical ones.	
CLO 3: Students shall learn and understand basics of spectroscopy and its power to understand structure and reactivity of molecules.	
CLO 4: Students shall know and understand and interpret the rotational, vibrational and electronic spectra of simple molecules under the realm of quantum mechanics.	

Semester: 7th	**Course Code: CHM722J3**
Title: CHEMISTRY _ COORDINATION CHEMISTRY AND INORGANIC REACTION MECHANISM	
Credits: 4+2	**Total Contact Hrs: 60 + 60**
CLO 1: Students shall learn and understanding of metal ligand equilibria in solution, stability of uncommon oxidation states.	
CLO 2: Students will learn and understanding of structure and bonding in transition metal nitrosyls, dinitrogen and dioxygen complexes	
CLO 3: Students shall learn and understand the basic reaction mechanism in coordination complexes.	
CLO 4: Students shall know and understand the stereochemistry and stability of lanthanide complexes.	

Semester: 8th	**Course Code: CHM822J1/N**
Title: CHEMISTRY _ APPLIED CHEMISTRY	**Credits: 3+1**
Total Contact Hrs: 45 + 15	
CLO 1: The students will acquire knowledge of chemistry involved in Batteries and their types.	
CLO 2: Students will learn and know about the Pharmaceuticals, and agrochemicals.	
CLO 3: Students shall know the different types of polymers and medicines used in day today life.	

Semester: 8th	**Course Code: CHM822J2**
Title: CHEMISTRY - SPECTROSCOPY OF ORGANIC COMPOUNDS	
Credits: 4+2	**Total Contact Hrs: 60 + 60**

CLO 1: Students will acquire the knowledge of IR range for functional groups, λ_{max} for polyenes and α, β-unsaturated carbonyl compounds which are helpful in structural.
CLO 2: Students will acquire the knowledge of fragmentation pattern in Mass spectrometry and its application in structural elucidation
CLO 3: Students will acquire the knowledge of Chemical shift values and their significance in NMR.
CLO 4: Students shall know and understand 2D NMR Techniques and applications.

Semester: 8th	**Course Code: CHM822J3**
Title: CHEMISTRY - INSTRUMENTAL METHODS IN CHEMISTRY	**Credits: 4+2**
Total Contact Hrs: 60 + 60	
CLO 1: Students shall learn the basic concepts of chromatography and various chromatographic techniques.	
CLO 2: Students shall learn how chromatography can be used for analytical investigations.	
CLO 3: Students will learn the basic concepts of atomic/absorption spectroscopy and X-ray diffraction methods and their use for chemical analysis.	
CLO 4: Students shall learn about different microscopic and thermal techniques to appreciate the power of these techniques for material characterization.	

2.6.6: Department of Clinical Biochemistry

Programme: Bachelors with Major in Biochemistry.

2.6.6a Programme Learning Outcomes (PLOs)- Biochemistry (BG)

PLOs	Description
PLO-1: Knowledge and understanding	Graduates will demonstrate comprehensive knowledge of core concepts in **biochemistry, cell biology, immunology, genetics, endocrinology, pathology, microbiology, metabolism, laboratory diagnostics, and clinical procedures**, including understanding biochemical mechanisms, structure–function relationships of biomolecules, metabolic pathways, molecular basis of diseases, laboratory instrumentation, and clinical interpretations used in health and disease assessment.
PLO-2: Skills	Graduates will acquire **competence in laboratory skills**, including accurate sample collection, handling, storage, biochemical estimations, ELISA, PCR, electrophoresis, microscopy, histopathological slide preparation, microbial culture and staining, metabolic assays, haematological analysis, and operation of clinical diagnostic equipment with appropriate calibration, maintenance, and quality control practices.
PLO-3: Application of Knowledge and Skills	Graduates will be able to **apply biochemical, molecular, genetic, and clinical knowledge** to diagnose, interpret, and troubleshoot findings related to metabolic disorders, endocrine dysfunctions, infections, haematological abnormalities, nutritional deficiencies, fetal health indicators, and organ function tests, enabling evidence-based clinical decision-making.
PLO-4: Critical Thinking	Graduates will develop the ability to **analyse laboratory data**, identify inconsistencies, interpret complex biochemical and pathological results, differentiate between normal and abnormal profiles, understand causative mechanisms of disorders, evaluate experimental outcomes, and propose

	corrective measures or alternative diagnostic approaches.
PLO-5: Ethics	Graduates will adhere to **professional ethics**, ensuring confidentiality of patient data, respect for human dignity, integrity in laboratory reporting, ethical sample handling, responsible use of biological materials, accuracy in documentation, avoidance of data manipulation, and compliance with biomedical safety, regulatory, and ethical standards.
PLO-6: Communication	Graduates will demonstrate effective **oral, written, and digital communication skills**, enabling them to document laboratory results clearly, prepare diagnostic reports, explain findings to healthcare professionals, interact with patients respectfully, and present scientific information in academic and clinical settings.
PLO-7: Life-Long Learning	Graduates will cultivate the ability to continuously **update knowledge and skills** in line with advancements in clinical diagnostics, molecular technologies, laboratory automation, medical research, and public health, demonstrating adaptability to new tools, techniques, and scientific developments.
PLO-8: Environmental Awareness	Graduates will exhibit understanding of **environmental safety** in laboratory practice, including biomedical waste segregation and disposal, chemical and reagent management, eco-friendly laboratory operations, and awareness of environmental impacts of clinical and research practices.
PLO-9: Digital Literacy	Gaduates will develop proficiency in **digital tools and laboratory informatics**, including the use of automated analyzers, laboratory information management systems (LIMS), bioinformatics platforms, online databases, digital microscopes, ELISA readers, and data analysis software for accurate interpretation and documentation.
PLO-10: Research Aptitude	Graduates will demonstrate basic **research competencies**, including hypothesis formulation, literature review, experimental design, data collection and analysis, understanding molecular research methodologies (PCR, electrophoresis, blotting, ELISA), and scientific writing, preparing them for higher studies and research careers in biomedical sciences.

2.6.6b. Course Learning Outcomes (CLOs)- Clinical Biochemistry (BG)

Semester 1		
Title of the Course: Fundamentals of Clinical Biochemistry		
Course Code: CBC123J	**Credits= Theory: 4; Practical: 2**	**Total Contact Hrs = Theory: 60 Hours; Practical: 60 Hours**
CLO 1	Students will be able to describe key concepts and applications of clinical biochemistry.	
CLO 2	Students will be able to demonstrate ethical and responsible conduct in laboratory settings.	
CLO 3	Students will be able to apply principles of lab management, quality assurance, and safe laboratory practices.	
CLO 4	Students will be able to perform accurate collection and handling of clinical specimens for diagnostic use.	

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Practical Component	Students will be able to perform essential clinical biochemistry laboratory skills, including biochemical calculations; preparation of buffers and pH measurement; operation and maintenance of common laboratory equipment; proper collection, colour-coded tube selection, preservation, and fractionation of blood samples.

Semester 3		
Title of the Course: Clinical Physiology and Diagnostics II		
Course Code: CBC322J	**Credits= Theory: 4; Practical: 2**	**Total Contact Hrs = Theory: 60 Hours; Practical: 60 Hours**
CLO 1	Students will be able to explain the fundamental principles of endocrinology and mechanism of hormone function and regulation.	
CLO 2	Students will be able to explain and interpret physiology and associated disorders of major endocrine hormones such as pituitary, thyroid and adrenal gland hormones.	
CLO 3	Students will be able to explain and interpret physiology and associated disorders of Parathyroid and pancreatic hormones.	
CLO 4	Students will be able to describe the metabolic roles of major vitamins.	
Practical Component	Students will be able to perform and interpret key biochemical assays, including serum glucose estimation, OGTT, serum vitamin D, calcium estimation, and thyroid profile (T3, T4, TSH), following proper clinical laboratory procedures.	

Semester 4		
Title of the Course: Medical Microbiology		
Course Code: CBC422J1	**Credits= Theory: 3; Practical: 1**	**Total Contact Hrs = Theory: 45 Hours; Practical: 30 Hours**
CLO 1	Students will be able to Explain the biological principles underlying infectious processes and emerging diseases.	
CLO 2	Students will be able to Describe host–vector relationships and the transmission cycles of major pathogens.	
CLO 3	Students will be able to Identify common food-borne and water-borne pathogens and their public-health relevance. Analyze significant infectious diseases and discuss general strategies for preventing pathogen transmission.	
Practical Component	Students will be able to perform essential microbiological techniques including sterilization, media preparation, culturing, gram staining, and antibiotic sensitivity testing with proper aseptic practices.	

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Title of the Course: Cell Biology and Associated Disorders		
Course Code: CBC422J2	**Credits= Theory: 4; Practical: 2**	**Total Contact Hrs = Theory: 60 Hours; Practical: 60 Hours**
CLO 1	Students will be able to describe the structure, composition and functions of plasma membranes, and organelles in prokaryotic and eukaryotic cells.	
CLO 2	Students will be able to explain how cellular components contribute to energy production and energy utilization.	
CLO 3	Students will be able to differentiate key features of prokaryotic and eukaryotic cell organization.	
CLO 4	Students will be able to apply cell biology concepts to interpret examples of altered or impaired cellular function.	
Practical Component	Students will be able to prepare, visualize, and interpret microscopic slides of plant and animal cells, stages of cell division, and perform differential centrifugation to separate cellular components using standard laboratory techniques.	

Title of the Course: Biomolecules, Metabolism and Clinical Relevance-I		
Course Code: CBC422J3	**Credits= Theory: 4; Practical: 2**	**Total Contact Hrs= Theory: 60 Hours; Practical: 60 Hours**
CLO 1	Students will be able to classify and describe the structure and and key properties of major biological macromolecules.	
CLO 2	Students will be able to explain how biomolecules interact to support and sustain living systems.	
CLO 3	Students will be able to relate biomolecular structure and function to fundamental metabolic pathways.	
CLO 4	Students will be able to apply understanding of biomolecules to interpret processes essential for life.	
Practical Component	Students will be able to perform qualitative and quantitative analyses of carbohydrates and lipids, determine iodine and saponification numbers, and estimate cholesterol levels using standard biochemical laboratory techniques.	

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Semester 5		
Title of the Course: Immunology and Immunopathology		
Course Code: CBC522J1	**Credits= Theory: 4; Practical: 2**	**Total Contact Hrs = Theory: 45 Hours; Practical: 30 Hours**
CLO 1	Students will be able to describe the major cellular components and functions of the immune system.	
CLO 2	Students will be able to explain the mechanisms and clinical implications of common immune system disorders.	
CLO 3	Students will be able to perform fundamental immunological techniques with accuracy and proper laboratory practice.	
CLO 4	Students will be able to interpret basic immunological test results relevant to the diagnosis of human diseases.	
Practical Component	Students will be able to perform basic immunological techniques including lymphocyte separation, qualitative estimation of CRP and RF, precipitation reactions (Ouchterlony diffusion), and demonstration of ELISA.	

Title of the Course: Cell Signalling and Disorders		
Course Code: CBC522J2	**Credits= Theory: 4; Practical: 2**	**Total Contact Hrs = Theory: 60 Hours; Practical: 60 Hours**
CLO Number	**Learning Outcome**	
CLO 1	Students will be able to explain the fundamental principles underlying cellular communication and signalling pathways.	
CLO 2	Students will be able to identify major signalling molecules and their roles in regulating cellular responses.	
CLO 3	Students will be able to explain the structure, functions and mechanisms of different types of receptors involved in signal transmission.	
CLO 4	Students will be able to interpret how intracellular and intercellular signalling components work together to coordinate cellular activities.	
Practical Component	Students will be able to apply cell signalling concepts through hands-on or virtual activities, including monitoring blood glucose, visualizing signalling pathways, preparing models/presentations, quantifying proteins using spectrophotometry, and understanding Western blotting in the context of signalling proteins.	

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Title of the Course: Biomolecules, Metabolism and Clinical Relevance-II		
Course Code: CBC522J3	**Credits= Theory: 4; Practical: 2**	**Total Contact Hrs = Theory: 60 Hours; Practical: 60 Hours**
CLO Number	**Learning Outcome**	
CLO 1	Students will be able to describe the structure and properties of major biological macromolecules.	
CLO 2	Students will be able to explain how biomolecules interact to support and sustain living systems.	
CLO 3	Students will be able to relate the structure and function of biomolecules to key metabolic pathways.	
CLO 4	Students will be able to apply knowledge of biomolecules to understand processes essential for cellular and organismal survival.	
Practical Component	Students will be able to perform qualitative analysis of amino acids and quantitatively estimate proteins and DNA using Lowry, spectrophotometric, and DPA-based methods with accuracy and laboratory proficiency.	

Semester 6		
Title of the Course: Molecular Diagnostics		
Course Code: CBC622J1	**Credits= Theory: 4; Practical: 2**	**Total Contact Hrs = Theory: 45 Hours; Practical: 30 Hours**
CLO Number	**Learning Outcome**	
CLO 1	Students will be able to explain major developments in molecular biology and molecular diagnostics.	
CLO 2	Students will be able to describe how genomic variations are utilized for detecting diseases and infectious pathogens.	
CLO 3	Students will be able to apply molecular diagnostic principles to diagnosis of genetic disease.	
CLO 4	Perform basic molecular diagnostic techniques, including nucleic acid isolation, accurately.	
Practical Component	Students will be able to perform nucleic acid isolation from blood samples, carry out PCR-based target amplification, and analyze genetic variations through RFLP techniques with proper laboratory skills and interpretation.	

Semester 6		
Title of the Course: Bioanalytical Techniques and Instrumentation		
Course Code:	**Credits= Theory: 4;**	**Total Contact Hrs = Theory: 60 Hours;**

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CBC622J2	Practical: 2	Practical: 60 Hours
CLO 1	Students will be able to explain the principles and applications of key bio-analytical techniques.	
CLO 2	Students will be able to demonstrate the use of diagnostic tools in practical settings.	
CLO 3	Students will be able to interpret results obtained from bio-analytical and diagnostic methods accurately.	
CLO 4	Students will be able to evaluate the strengths, limitations, and appropriate applications of various analytical and diagnostic techniques.	
Practical Component	Students will be able to separate mononuclear cells using centrifugation, perform chromatographic separation of amino acids and sugars, demonstrate Beer–Lambert's law, examine cell structure using microscopy, and record basic ECG with proper laboratory skills, accuracy, and interpretation.	

Semester 6: Title of the Course: Molecular Biology		
Course Code: CBC622J3	**Credits= Theory: 4; Practical: 2**	**Total Contact Hrs = Theory: 60 Hours; Practical: 60 Hours**
CLO Number	**Learning Outcome**	
CLO 1	Students will be able to explain the structure, function, and organization of nucleic acids as genetic material.	
CLO 2	Students will be able to describe the central dogma of molecular biology, including DNA replication and gene expression.	
CLO 3	Students will be able to perform basic molecular techniques such as DNA isolation, PCR, and nucleic acid quantification.	
CLO 4	Students will be able to analyze and differentiate genetic regulatory mechanisms at various molecular levels.	
Practical Component	Students will be able to isolate genomic and chromosomal DNA from biological samples, quantify DNA using spectrophotometry, separate nucleic acids using agarose gel electrophoresis, and demonstrate PCR workflows and thermal cycling with appropriate laboratory skills and interpretation.	

Semester 7: Title of the Course: Clinical Pathology		
Course Code: CBC722J1	**Credits= Theory: 4; Practical: 2**	**Total Contact Hrs = Theory: 45 Hours; Practical: 30 Hours**
CLO Number	**Learning Outcome**	

CLO 1	Students will be able to explain the scope and history of clinical pathology, describe mechanisms and causes of cellular injury, necrosis, and apoptosis.
CLO 2	Students will be able to describe the organismal response to tissue damage, including inflammation. Explain the mechanisms and clinical relevance of thrombosis, embolism, shock, infarction, and oedema.
CLO 3	Students will be able to demonstrate proper handling, processing, and sectioning of paraffin and frozen tissue specimens. Apply essential safety practices in a histopathology laboratory.
CLO 4	Students will be able to apply appropriate histological staining techniques for tissue analysis.
Practical Component	Students will be able to identify and use basic histopathology laboratory equipment, prepare tissue slides, perform H&E staining, and demonstrate immunohistochemical staining with proper technique and interpretation.

Semester 7: Title of the Course: Organ Systems and Associated Disorders-I		
Course Code: CBC722J2	**Credits= Theory: 4; Practical: 2**	**Total Contact Hrs = Theory: 60 Hours; Practical: 60 Hours**
CLO Number	**Learning Outcome**	
CLO 1	Students will be able to describe the structure, anatomy, and physiological functions of major human organs and body systems.	
CLO 2	Students will be able to explain the physiological roles of organs in maintaining health.	
CLO 3	Students will be able to Identify key clinical signs, symptoms, and structural changes associated with organ-specific diseases.	
CLO 4	Students will be able to Interpret relevant laboratory findings in the context of major organ system disorders.	
Practical Component	Students will be able to perform lipid profile analysis, conduct kidney and liver function tests, measure blood pressure and carry out urinalysis for proteins, reducing substances, and ketone bodies with accurate interpretation.	

Semester 7: Title of the Course: Enzymology - Function, Regulation and Diagnostics		
Course Code: CBC722J3	**Credits= Theory: 4; Practical: 2**	**Total Contact Hrs = Theory: 60 Hours; Practical: 60 Hours**

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CLO Number	Learning Outcome
CLO 1	Students will be able to explain the historical development and fundamental principles of enzymology, classify and analyze factors influencing enzyme activity.
CLO 2	Students will be able to explain the role of enzymes in physiological processes and disease mechanisms.
CLO 3	Students will be able to interpret enzyme-based diagnostic tests for various human diseases.
CLO 4	Students will be able to Integrate theoretical and diagnostic knowledge of enzymes in the context of organ system disorders.
Practical Component	Students will be able to assay enzyme activities, determine kinetic parameters by assessing substrate concentration and pH effects, and separate isoenzymes using gel electrophoresis with appropriate analytical skills and interpretation.

Semester 8: Title of the Course: Maternal and Foetal Health		
Course Code: CBC822J1	**Credits= Theory: 4; Practical: 2**	**Total Contact Hrs = Theory: 45 Hours; Practical: 30 Hours**
CLO Number	**Learning Outcome**	
CLO 1	After successful completion of this course, the learner will be able to explain the physiological changes that occur during pregnancy and their clinical significance. Describe foetal development and the importance of pre- and postnatal care for mother and newborn.	
CLO 2	After successful completion of this course, the learner will be able to able to analyze the role of nutrition, exercise, and stress-management practices in promoting a safe and healthy pregnancy.	
CLO 3	After successful completion of this course, the learner will be able to describe major pregnancy-related complications and outline basic management strategies.	
CLO 4	After successful completion of this course, the learner will be able to explain stages of prenatal and fetal development and evaluate the impact of lifestyle and environmental factors on fetal health.	
Practical Component	Perform basic laboratory and wellness assessments relevant to pregnancy, including blood grouping, anthropometry, and stress-reduction techniques	

Semester 8:	**Title of the Course: Organ Systems and Associated Disorders-II**	
Course Code: CBC822J2	**Credits= Theory: 4; Practical: 2**	**Total Contact Hrs = Theory: 60 Hours; Practical: 60 Hours**
CLO Number	**Learning Outcome**	
CLO 1	Students will be able to describe the classification and physiological roles of	

	hormones in maintaining homeostasis.
CLO 2	Students will be able to explain the pathogenesis, morphological changes, and complications associated with endocrine disorders.
CLO 3	Students will be able to describe the structure and physiology of nervous and musculoskeletal systems.
CLO 4	Students will be able to analyze the impact of neuro-muscular system disorders on human health.
Practical Component	Students will be able to perform hormonal assays (T3, T4, TSH) using ELISA/RIA, evaluate diabetic status through blood glucose and HbA1c, detect rheumatoid factor and C-reactive protein, and estimate serum calcium, magnesium, and vitamin D levels with proper laboratory skills and interpretation.

Semester 8: Title of the Course: Medical Genetics		
Course Code: CBC822J3	**Credits= Theory: 4; Practical: 2**	**Total Contact Hrs = Theory: 60 Hours; Practical: 60 Hours**
CLO Number	**Learning Outcome**	
CLO 1	Students will be able to explain the basic principles of genetics and the chemical basis of heredity.	
CLO 2	Students will be able to apply genetic principles in medical practice, construct and interpret pedigree charts, and analyze monogenic traits including autosomal dominant and recessive inheritance.	
CLO 3	Students will be able to describe epigenetic mechanisms and their role in regulating gene expression.	
CLO 4	Students will be able to Evaluate the contribution of epigenetic alterations to human diseases, including cancer.	
Practical Component	Students will be able to perform DNA extraction from body fluids, carry out karyotyping and chromosome analysis, identify Barr bodies, and differentiate methylated from unmethylated cytosines using methylation-specific PCR with proper laboratory skills and interpretation.	

SKILL ENHANCEMENT COURSE (SEC)- Biochemistry (BG)

CLINICAL DIAGNOSTICS: Semester 1		
Title of the Course: Clinical Diagnostics-I: Fundamentals of Clinical Diagnostics and Laboratory Skills		
Course Code: CBC125S	**Credits= Theory: 2; Practical: 2**	**Total Contact Hrs = Theory: 30 Hours; Practical: 30 Hours**
CLO Number	**Learning Outcome**	

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CLO 1	Students will be able to apply core biochemical principles in clinical laboratory analyses.
CLO 2	Students will be able to demonstrate safe handling of clinical samples and proper use of laboratory equipment.
CLO 3	Students will be able to explain key biochemical parameters and their clinical significance.
CLO 4	Students will be able to understand fundamental haematological concepts relevant to diagnostic practice.

Title of the Course: Clinical Diagnostics-I: Fundamentals of Clinical Diagnostics and Laboratory Skills		
Course Code: CBC125S	**Credits= Theory: 2; Practical: 2**	**Total Contact Hrs = Theory: 30 Hours; Practical: 30 Hours**
CLO Number	**Learning Outcome**	
CLO 1	Students will be able to apply core biochemical principles in clinical laboratory analyses.	
CLO 2	Students will be able to demonstrate safe handling of clinical samples and proper use of laboratory equipment.	
CLO 3	Students will be able to explain key biochemical parameters and their clinical significance.	
CLO 4	Students will be able to understand fundamental haematological concepts relevant to diagnostic practice.	

2nd SEMESTER **Title of the Course: Clinical Diagnostics-II - Organ Function Tests**		
Course Code: CBC225S	**Credits= Theory: 2; Practical: 2**	**Total Contact Hrs = Theory: 30 Hours; Practical: 30 Hours**
CLO Number	**Learning Outcome**	
CLO 1	Students will be able to analyze key biochemical parameters for assessing liver and kidney function.	
CLO 2	Students will be able to perform organ-specific diagnostic tests accurately.	

CLO 3	Students will be able to interpret biochemical test results in the context of clinical scenarios.
CLO 4	Students will be able to correlate laboratory findings with organ-specific disease conditions.

3rd SEMESTER **Title of the Course: Clinical Diagnostics–III- Laboratory and Point-of-Care Testing for Cardiometabolic Disorders**		
Course Code: CBC325S	**Credits= Theory: 2; Practical: 2**	**Total Contact Hrs = Theory: 30 Hours; Practical: 30 Hours**
CLO Number	**Learning Outcome**	
CLO 1	Students will be able to interpret biochemical markers associated with lipid disorders, cardiac diseases, and diabetes mellitus.	
CLO 2	Students will be able to apply point-of-care testing (POCT) for rapid screening and patient monitoring.	
CLO 3	Students will be able to analyze results from advanced diagnostic tests accurately.	
CLO 4	Students will be able to integrate biochemical findings into clinical decision-making for patient care.	

CLINICAL BIOCHEMISTRY - MULTIDISCIPLINARY COURSE **Semester 1st - 3rd**		
Title of the Course: Clinical Biochemistry-Fundamentals of Clinical Biochemistry		
Course Code: CBC025I	**Credits= Theory: 3**	**Total Contact Hrs = Theory: 45 Hours**
CLO Number	**Learning Outcome**	
CLO 1	Students will be able to explain the fundamentals and diagnostic significance of clinical biochemistry.	
CLO 2	Students will be able to demonstrate safe handling and processing of biological samples.	

CLO 3	Students will be able to Interpret liver and kidney function tests and key hematological parameters.
CLO 4	Students will be able to demonstrate correct procedures for collection, handling, preservation, and transport of blood, urine, feces, and other body fluids, including understanding tube additives and pre-analytical variables.

2.6.7. Department of Commerce
Title: Bachelors with Major in Acounting & Taxation (Commerce)

2.6.7a. Programme Learning Outcomes (PLOs) – Commerce (UG)

PLO-1 Knowledge & Understanding:	Demonstrate comprehensive knowledge of accounting principles, taxation laws, financial reporting standards and fundamental business concepts.
PLO-2 Skills:	Apply practical skills in bookkeeping, ledger maintenance, tax computation, GST returns filing and use of accounting software.
PLO-3 Application of Knowledge & Skills:	Analyse financial data, prepare financial statements, and apply tax provisions to real business scenarios for compliance and planning.
PLO-4 Critical Thinking:	Critically evaluate financial information, identify discrepancies, and provide reasoned solutions to accounting and tax problems.
PLO-5 Ethics:	Exhibit professional ethics, integrity and adherence to legal and regulatory frameworks in accounting and tax practice.
PLO-6 Communication:	Communicate financial and tax information clearly and effectively in both written reports and oral presentations.
PLO-7 Lifelong Learning:	Demonstrate readiness for continuous learning and professional development to keep up with evolving tax laws and accounting standards.
PLO-8 Environmental & Social Awareness:	Understand the broader economic, social and regulatory environment affecting businesses and the role of corporate compliance.
PLO-9 Digital Literacy:	Use digital tools, spreadsheets and accounting software to automate tasks, analyse data and produce reliable financial reports.
PLO-10 Research Aptitude:	Conduct basic applied research, interpret financial/tax

	data and prepare evidence-based recommendations for business or policy decisions.

2.6.7b. Course Learning Outcomes (CLOs) Commerce (UG)

Title of the Course: Fundamentals of Accounting
Semester: 1st
Course Code: ATT122J Title Credits: 4+2 Total Contact Hours: 90
After completing this course, the student will be able to:
CLO1: Explain basic accounting principles, concepts, and conventions.
CLO2: Record business transactions using journal, ledger, and subsidiary books.
CLO3: Prepare the trial balance, rectify errors, and prepare the bank reconciliation statement.
CLO4: Prepare financial statements including Trading, P&L Account, and Balance Sheet.
CLO5: Apply computerized accounting tools (Tally) to generate ledgers, vouchers, and reports.

Title of the Course: Principles and Practice of Management.
Semester: - I
Course Code: MGT124J Title Credits: 4+2 Total Contact Hours: 90
After completing this course, the student will be able to:
CLO1: Acquire the basic knowledge of business
CLO2: Acquire the knowledge on evolution of management
CLO3: Understand the concept of coordination and control
CLO4: Develop coordinating and controlling skills
CLO5: Be aware of fair-trade practices, learn about the concept of Accountability and responsibility

Title of the Course: Personal Selling and Sales Management
Semester - I
Course Code: COM122S Title Credits: 2+2 Total Contact Hours: 60
After completing this course, the student will be able to:
CLO1: Understand the fundamentals of personal selling, including its nature, importance, types of salespersons, selling situations, and career opportunities in selling.
CLO2: To understand and to be able to summarize sales process and steps in it.
CLO3: To understand the concept of formal and informal sales and the organizations involve in it.
CL04: Explain buying motives and the role of motivation in personal selling using concepts such

as Maslow's hierarchy of needs.

Title of the Course: Partnership Accounting
Semester: - II
Course Code: AAT222J Title Credits: 4+2 Total Contact Hours: 90
After completing this course, the student will be able to:
CLO1: Explain the fundamental concepts of partnership accounting, including partnership deed, profit and loss appropriation, fluctuating and fixed capital systems, and past adjustments.
CLO2: Prepare and analyse goodwill valuation and revaluation accounts using methods such as average profit, super profit, and capitalization, and apply adjustments arising from changes in profit-sharing ratios.
CLO3: Compute adjustments relating to admission, retirement, and death of a partner, including goodwill treatment, revaluation of assets and liabilities, accumulated profits/losses, and preparation of capital accounts.
CLO4: Prepare accounts related to dissolution of partnership firms—realisation account, partner's capital/current accounts, loan accounts—and apply rules for settlement of claims and distribution of assets, including insolvency situations.

Title of the Course: Fundamentals of Marketing
Semester: - II
Course Code: MGT2224N Title Credits: 4+2 Total Contact Hours: 90
After completing this course, the student will be able to:
CLO1: Understand the fundamental concepts and functions of marketing, including marketing mix and market segmentation.
CLO2: Explain consumer behaviour and the consumer decision-making process for effective marketing decisions.
CLO3: Analyse product, pricing, and distribution strategies, including product life cycle and types of distribution channels.
CLO4: Understand and apply promotional tools and communication strategies for effective marketing promotion.

Title of the Course: E-Commerce
Semester: II
Course Code: COM222S Title Credits: 2+2 Total Contact Hours: 60
After completing this course, the student will be able to:
CLO1: Understand the concepts, types, advantages, and business models of E-Commerce, along with the technologies supporting online business.
CLO2: Explain the functioning of e-payment systems, including digital signatures, payment gateways, smart cards, online banking, and security risks.
CLO3: Analyse online business transactions, their benefits and limitations, and the application of e-commerce in sectors like banking, insurance, utilities, and marketing.
CLO4: Develop practical skills in website creation, internet usage, HTML basics, and electronic

payment methods, enabling students to conduct business transactions electronically.

Title of the Course: Income Tax Law and Practice Part I
Semester: III
Course Code: ATT322J Title Credits: 4+2 Total Contact Hours: 90
After completing this course, the student will be able to:
CLO1: Explain the fundamental concepts of Income Tax, including assessed, assessment year, previous year, types of income, natural meaning of income, doctrine of mutuality, and income vs. capital.
CLO2: Analyse the residential status of different assesses—Individual, HUF, Firm, AOP/BOI, and Company—and determine their tax incidence based on accrual, receipt, and deemed accrual of income.
CLO3: Identify various categories of exempted income under the Income Tax Act, including exemptions u/s 10, export-oriented undertakings, artistic exports, charity-related income, political party income, and electoral trust income.
CLO4: Evaluate agricultural income and its tax liability by applying provisions related to agricultural operations, partial integration of agricultural and non-agricultural income, and the burden of proof requirements under the Income Tax Act.

Title of the Course:
Semester: III
Course Code: MGT322N Title Credits: 4+2 Total Contact Hours: 90
After completing this course, the student will be able to:
CLO1: Explain basic accounting principles, concepts, and conventions.
CLO2: Record business transactions using journal, ledger, and subsidiary books.
CLO3: Prepare the trial balance, rectify errors, and prepare the bank reconciliation statement.
CLO4: Prepare financial statements including Trading, P&L Account, and Balance Sheet.
CLO5: Apply computerized accounting tools (Tally) to generate ledgers, vouchers, and reports.

Title of the Course: Computerized Accounting
Semester: III
Course Code: COM322S Title Credits: 2+2 Total Contact Hours: 60
After completing this course, the student will be able to:
CLO1: Understand the concept, components, and need for Computerised Accounting Systems and identify their advantages and limitations.
CLO2: Use spreadsheets for preparing and analysing business data, including formulas, error rectification, payroll calculations, depreciation, loan schedules, and graphical presentation

CLO3: Apply computerized tools to prepare essential accounting records such as journals, ledgers, subsidiary books, trial balance, income statements, and balance sheets using Tally software.
CLO4: Develop practical skills in computerised accounting by generating business reports and financial statements, and by handling business transactions in a simulated accounting environment

MD (1st to 3rd semester)

Title of the Course: Introduction to Finance
Semester: 1st to 3rd
Course Code: FIN022I Title Credits: 3 Total Contact Hours: 45
After completing this course, the student will be able to:
CLO1: Explain different forms of business organisations and various sources of finance available to business entities, including long-term financing instruments such as shares, debentures, and term loans.
CLO2: Identify and evaluate various investment alternatives by applying basic investment criteria and comparing financial instruments such as equity shares, ADRs/GDRs, debentures, deposits, life insurance, and bullion market options.
CLO3: Grasp key financial principles and to apply them
CLO4: Understand the impact of social and ethical responsibilities on business and financial decision making.

Title of the Course: Higher Accounting
Semester: - IV
Course Code: AAT422J1 Title Credits: 3+1 Total Contact Hours: 60
After completing this course, the student will be able to:
CLO1: Understand and record accounting transactions under the Hire Purchase and Instalment Systems.
CLO2: Prepare and analyze Royalty and Lease Accounts including minimum rent and short-workings.
CLO3: Prepare accounts for Branches and Departments, including inter-branch and departmental allocations.
CLO4: Prepare accounts for Non-Profit Organizations, Consignments, and Joint Ventures using appropriate accounting methods.

Title of the Course: Income Tax Law and Practices Part II
Semester: - IV
Course Code: AAT422J2 Title Credits: 4+2 Total Contact Hours: 90
After completing this course, the student will be able to:
CLO1: Compute taxable income under the head salaries by applying rules related to allowances, perquisites, provident fund, gratuity, pension, reliefs, and deductions.
CLO2: Determine taxable income from House Property using provisions relating to annual value,

deductions under section 24, unrealized rent, and arrears of rent.
CLO3: Analyse and compute income from Business and Profession by applying rules of admissible and inadmissible expenses, depreciation, specific deductions, and tax audit requirements.
CLO4: Compute taxable income under Capital Gains and Income from Other Sources, including computation of short-term/long-term capital gains, indexation, exemptions, casual income, deemed income, and specific deductions.

Title of the Course: Company Law
Semester: IV
Course Code: AAT422J3 Title Credits: 4+2 Total Contact Hours: 90
After completing this course, the student will be able to:
CLO1: Understand the legal framework of company formation, including types of companies, incorporation procedures, MOA/AOA provisions, and doctrines such as corporate veil and ultra vires.
CLO2: Explain the roles, rights, and responsibilities of company members and managerial personnel, including procedures for appointment, removal, remuneration, DIN, and compliance requirements.
CLO3: Analyse the procedures and legal provisions related to company meetings, including board meetings, general meetings, class meetings, resolutions, notices, voting methods, and post-meeting formalities.
CLO4: Apply the provisions of the Companies Act, 2013 to practical aspects of company operations, including dispute resolution, disclosures, electronic filings, and corporate governance compliance

Title of the Course: Behaviour In Organization
Semester: IV
Course Code: MGT422N Title Credits: 3+1 Total Contact Hours: 60
After completing this course, the student will be able to:
CLO1: Understand the fundamental concepts, roles, and historical development of Organizational Behaviour and its relevance in business decision-making.
CLO2: Explain individual differences in organizations by analysing personality, attitudes, values, and emotional intelligence and their impact on workplace behaviour.
CLO3: Interpret key theories and processes related to perception, learning, and motivation, and apply them to employee behaviour and performance.
CLO4: Apply organizational behaviour principles to understand and manage employee actions, interpersonal relations, and workplace dynamics effectively.

Title of the Course: Corporate Accounting Part I
Semester: V
Course Code: AAT522J1 Title Credits: 3+1 Total Contact Hours: 60
After completing this course, the student will be able to:
CLO1: Explain the concepts and procedures related to issue, forfeiture, and reissue of shares and debentures.
CLO2: Prepare and analyze financial statements of joint stock companies as per the Companies Act 2013.

CLO3: Prepare financial statements of banking and insurance companies in accordance with relevant laws.
CLO4: Apply accounting adjustments such as calls in arrears/advance, discount/loss on issue, and redemption procedures.

Title of the Course: Income Tax Law and Practice Part III
Semester: - V
Course Code: ATT522J2 Title Credits: 4+2 Total Contact Hours: 90
After completing this course, the student will be able to:
CLO1: Apply provisions of the Income Tax Act to compute set-off and carry-forward of losses, and determine allowable deductions in computing total income.
CLO2: Compute the total income and tax liability of individuals and Hindu Undivided Families (HUFs), including special provisions related to creation, assessment, partition, and member remuneration.
CLO3: Assess the taxable income of partnership firms and partners under normal provisions, including changes in constitution, succession, dissolution, and liability determination under relevant sections.

Title of the Course: Auditing
Semester: V
Course Code: AAT522J3 Title Credits: 4+2 Total Contact Hours: 90
After completing this course, the student will be able to:
CLO1: Understand the accounting system and principles
CLO2: Gain knowledge about the internal control.
CLO3: Know about the auditor's rights, qualifications, duties
CLO4: Learn valuation, Vouching and verification and pursue professional courses like CA, ICWA and CS

Title of the Course: Consumer Behaviour
Semester: - V
Course Code: MGT522N Title Credits: 3+1 Total Contact Hours: 60
After completing this course, the student will be able to:
CLO1: Understand the fundamental concepts, models, and relevance of consumer behaviour in marketing decision-making.
CLO2: Analyse the individual determinants of consumer behaviour such as motivation, perception, learning, personality, and attitudes.
CLO3: Explain the group determinants of consumer behaviour including family, reference groups, social class, and cultural influences.
CLO4: Apply consumer behaviour insights to develop effective marketing strategies and predict consumer decision-making patterns.

Title of the Course: Corporate Accounting Part II

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Semester: - VI
Course Code AAT522J1 Title Credits: 3+1 Total Contact Hours: 60
After completing this course, the student will be able to:
CLO1: Explain the concepts, methods, and legal implications of amalgamation, absorption, and internal reconstruction.
CLO2: Prepare accounts of holding companies including consolidation of balance sheets.
CLO3: Differentiate between government accounting and commercial accounting in the context of the Double Account System.
CLO4: Prepare final statements for companies undergoing liquidation, including liquidator's final statement.

Title of the Course: Cost Accounting I
Semester: - VI
Course Code: AAT622J2 Title Credits: 4+2 Total Contact Hours: 90
After completing this course, the student will be able to:
CLO1: Understand the basic concepts, objectives, and techniques of Cost Accounting, including cost classification, cost units, and cost centres.
CLO2: Apply methods of Material Control such as purchasing, storekeeping, inventory control, and pricing methods (FIFO, LIFO, Simple Average, Weighted Average).
CLO3: Analyse and compute various aspects of Labour Cost, including labour turnover, overtime, idle time, wage payment methods, and accounting for labour.
CLO4: Explain and apply the principles of Overheads, including their allocation, apportionment, absorption, and preparation of cost accounting records related to overheads

Title of the Course: Advanced Auditing
Semester: - VI
Course Code: AAT622J3 Title Credits: 4+2 Total Contact Hours: 90
After completing this course, the student will be able to:
CLO1: To develop advanced technical skills.
CLO2: To master audit planning and execution
CLO3: Improve drafting of professional reports and apply high standards of ethics in auditing.
CLO4: Understand the importance of technology in audit and fraud detection.

Title of the Course: Human Resource Management
Semester: VI
Course Code: MGT622N Title Credits: 3+1 Total Contact Hours: 60
After completing this course, the student will be able to:
CLO1: Understand the fundamental concepts, functions, and importance of Human Resource Management, including its role in organizational success and emerging HR trends.
CLO2: Analyse key HR practices such as training and development, performance appraisal, career planning, and compensation management.
CLO3: Explain and apply the processes of Human Resource Planning, including job analysis, forecasting techniques, recruitment, selection, and orientation.
CLO4: Apply HRM concepts to real workplace situations by understanding employee needs, job evaluation, incentives, and benefits to support effective HR decision-making
Title of the Course: Goods and Service Tax (GST I)
Semester: - VII

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Course Code: AAT722J1 Title Credits: 3+1 Total Contact Hours: 60
After completing this course, the student will be able to:
CLO1: Understand the fundamental concepts, functions, and importance of GST.
CLO2: Provide comprehensive understanding of legal framework, practical compliance procedures.
CLO3: Explain the concept of time supply and apply the concept relating to time of supply of goods
CLO4: Understand the concept of custom duty and to apply the concept of tax planning

Title of the Course: Customs Law & Practice
Semester: - VII
Course Code: AAT722J2 Title Credits: 4+2 Total Contact Hours: 90
After completing this course, the student will be able to:
CLO1: Explain the fundamental concepts, historical background, and statutory framework of the Customs Act, 1962, including territorial waters, levy, exemptions, and the classification of goods.
CLO2: Analyse the various types of customs duties, including basic, additional, protective, safeguard, anti-dumping, and emergency duties, and interpret their application in practical scenarios.
CLO3: Evaluate the classification, valuation, and assessment of imported and exported goods using customs tariff schedules, valuation rules, and legal provisions governing imports and exports
CLO4: Apply the procedural requirements related to import, export, and baggage rules, including clearance processes, documentation, warehousing, and special regulations, to solve practical customs-related problems.

Title of the Course: Cost Accounting II
Semester: - VII
Course Code: AAT722J3 Title Credits: 4+2 Total Contact Hours: 90
After completing this course, the student will be able to:
CLO1: Understand the fundamental concepts, functions, and importance of GST.
CLO2: Provide comprehensive understanding of legal framework, practical compliance procedures.
CLO3: Explain the concept of time supply and Apply the concept relating to time of supply of goods
CLO4: Understand the concept of custom duty and to apply the concept of tax planning

Title of the Course: Managerial Communication
Semester: - VII
Course Code: MGT722N Title Credits: 3+1 Total Contact Hours: 60
After completing this course, the student will be able to:
CLO1: Explain the concepts and methods of output costing, including cost ascertainment, cost sheet preparation, and estimation of costs for tenders and quotations.
CLO2: Apply the principles of job costing, batch costing, and contract costing to compute job/batch costs, contract costs, escalation adjustments, and profit recognition.
CLO3: Analyse process costing procedures, including normal/abnormal loss and gain, valuation of work-in-progress, equivalent units, joint products, and by-products.
CLO4: Evaluate and prepare service costing and reconciliation statements by determining service cost per unit and reconciling cost accounts with financial accounts.
Title of the Course: Goods and Services Tax (GST II)
Semester: VIII
Course Code: AAT7822J1 Title Credits: 3+1 Total Contact Hours: 60
After completing this course, the student will be able to:
CLO1: Explain the concept and application of the Reverse Charge Mechanism (RCM) under GST and

analyse its implications on transactions involving registered and unregistered persons.
CLO2: Demonstrate the eligibility, computation, and utilisation of Input Tax Credit (ITC) including apportionment, reversal, and distribution by Input Service Distributor (ISD) in compliance with GST provisions.
CLO3: Evaluate the Composition Scheme by determining taxpayer eligibility, applicable rates, conditions, and compliances, including preparation of basic computations relating to composition levy.
CLO4: Prepare and interpret GST documents such as tax invoices, bills of supply, debit/credit notes, and assess procedures related to GST returns, tax payments, and interest/penalties applicable under GST law.

Title of the Course: Accounting Software- Tally ERP9
Semester: - VIII
Course Code: AAT822J2 Title Credits: 4+2 Total Contact Hours: 90
After completing this course, the student will be able to:
CLO1: Explain the basic features, setup, and functions of Tally ERP-9 for creating and managing company accounts.
CLO2: Record and process accounting and inventory transactions using vouchers, ledgers, stock items, and reconciliation tools in Tally ERP-9.
CLO3: Apply taxation and technology features such as GST, TDS, TCS, Tally Audit, security controls, and data import/export in Tally ERP-9.
CLO4: Generate payroll, financial statements, and statutory reports and interpret them for business decision-making through Tally ERP-9.

Title of the Course: Accounting Theory
Semester: - VIII
Course Code: AAT822J3 Title Credits: 4+2 Total Contact Hours: 90
After completing this course, the student will be able to:
CLO1: Explain the emergence, nature, and approaches of accounting theory and analyse its role in the economic, social, legal, and professional environment.
CLO2: Evaluate the need for harmonisation and global convergence of accounting standards and describe the processes and challenges involved at international and national levels.
CLO3: Interpret and apply key Indian Accounting Standards (Ind AS) by understanding their definitions, objectives, scope, and practical relevance.
CLO4: Analyse advanced Ind AS frameworks by assessing their application in organisations and demonstrating the ability to compare and apply multiple standards in practical scenarios.

Title of the Course: Statistics in Management
Semester: VIII
Course Code: MGT8 22N Title Credits: 3+1 Total Contact Hours: 60
After completing this course, the student will be able to:
CLO1: Collect, classify, and tabulate business data using appropriate statistical methods for managerial applications.
CLO2: Apply measures of central tendency, dispersion, and skewness to summarise and analyse

business data effectively.
CLO3: Use correlation techniques to study relationships between business variables and interpret their managerial significance.
CLO4: Apply regression methods to predict business outcomes and support data-driven decision-making.

2.6.8. Department of Computer Applications:

Programme: Bachelors with Major in Computer Applications
2.6.8a Programme Learning Outcomes (PLOs)

PLOs	Bachelor Degree
After the completion of Bachelor degree in Computer Applications, the student should be able to:	
PLO-1: Knowledge and understanding	Acquire an understanding of the design, architecture and operating mechanisms of computing systems, hardware and software components.
PLO-2: Skills	Write, build and debug programs in multiple programming languages and paradigms and for multiple platforms.
PLO-3: Application of knowledge and Skills	Evaluate and apply data structures, algorithms, storage structures and system architectures for solving real world problems. Should also be able to design and build software/hardware solutions for real-world problems.
PLO-4: Critical thinking	Develop critical thinking abilities so as to be able to find novel solutions to problems, and to improve the performance and efficiency of existing solutions.
PLO-5: Ethics	Know how to use digital systems in ways that are ethical and moral, and to be able to distinguish and avoid malpractices while working with digital systems.
PLO-6: Communication	Have technical communication skills and be clear, concise and effective in their professional communication practices.
PLO-7: Life Long Learning	Develop the ability to update their knowledge and skills even after completing their formal education, and also to have a sufficiently broad base in computer science which will enable them to pursue specialization in any specific CS/IT discipline.
PLO-8: Environmental Awareness	Recognize the environmental impact of digital systems and recognize their environmental responsibilities as a professional.
PLO-9: Digital Literacy	Utilize computing resources, tools and techniques effectively for routine tasks at work.
PLO-10: Research Aptitude	Acquire a basic ability to recognize, formulate and analyse complex problems, review research literature, perform data analysis, reaching substantiated conclusions using principles of mathematics and sciences. To be able to work with datasets and to present and visualize the results of experiments.

2.6.8b. Course Learning Outcomes (CLOs)
Computer Fundamentals
Semester: 1st **Course Code: CAP122J**
Total Credits: Theory (4) + Practical (2) **Total Contact Hours: 60 + 60**

After completing this course, the student will be able to:

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CLO No.	Course Learning Outcome
CLO-1	To introduce to the students the basic understanding of the working of a computer system. To familiarize the students with the basic notations and data representation methods used.
CLO-2	To familiarize the students with the various software and hardware aspects of computers.
CLO-3	To make the students understand the need and working of the interconnection and communication between computers.
CLO-4	To make the students familiar with the basic internet technology and concepts.

Programming with C (Basic)
Semester: 3rd / SEC Course Code: JSD122S
Title Credits: Theory (2) + Practical (2) Total Contact Hours: 90

CLO No.	Course Learning Outcome
CLO-1	Understand the fundamentals of C language including data types, variables, and operators.
CLO-2	Apply conditional and looping statements to solve basic programming problems.
CLO-3	Use arrays, strings, and built-in functions for data manipulation.
CLO-4	Implement modular programming using user-defined and recursive functions.
CLO-5	Develop and execute basic C programs for simple problem-solving tasks.

Internet Basics and HTML
Semester: 3rd / SEC Course Code: WDP122S
Title Credits: Theory (2) + Practical (2) Total Contact Hours: 90

CLO No.	Course Learning Outcome
CLO-1	To understand the fundamental concepts of internet and world wide web
CLO-2	To familiarize with the syntax and semantics of HTML
CLO-3	To be able to understand the structure of web pages and to be able to build basic web pages

Introduction to Computers (Multi-Disciplinary Course)
Semester: 1st–3rd Course Code: CAP022I
Title Credits: 3 Total Contact Hours: 60

CLO No.	Course Learning Outcome
CLO-1	To introduce the fundamentals of computing devices and reinforce computer vocabulary, particularly with respect to personal use of computer hardware and software, the Internet, networking and mobile computing.

CLO-2	To provide hands-on use of Microsoft Office 2013 applications Word, Excel, Access and PowerPoint. Completion of the assignments will result in MS Office applications knowledge and skills.
CLO-3	To describe the organization and operation of a computer processor, primary and secondary memory, peripheral devices and to give computer specifications

Digital and Technological Solutions (Value Added Course)
Semester: 1st–2nd Course Code: DTS024V
Title Credits: 2 Total Contact Hours: 30

CLO No.	Course Learning Outcome
CLO-1	To gain familiarity with digital paradigms. To sensitize about role & significance of digital technology. To provide know-how of communications & networks.
CLO-2	To bring awareness about the e-governance and Digital India initiatives. To provide a flavour of emerging technologies - Cloud, Big Data, AI, 3D printing.
CLO-3	To provide an understanding of use & applications of digital technology. To Provide Basic knowledge of machine learning and big data.
CLO-4	To provide Realization of importance of digital technology, digital financial tools, e-commerce. To provide Familiarity with the e-governance and Digital India initiatives.

Programming Fundamentals Through C (CAP222J)
Semester: 2nd Course Code: CAP222J
Title Credits: 4T + 2P Total Contact Hrs: As per syllabus

CLO No.	Course Learning Outcome
CLO 1	To demonstrate the use of flowcharts and algorithms for problem solving
CLO 2	To introduce the concepts of structured programming
CLO 3	To familiarize the student with the syntactic constructs of C
CLO 4	To enable to the students to translate algorithms into C programs

Web Designing (ACP222N)
Semester: 2nd Course Code: ACP222N
Title Credits: 4T + 2P Total Contact Hrs: As per syllabus

CLO No.	Course Learning Outcome
CLO 1	Create structured HTML5 webpages using tags, tables, lists, forms, multimedia, and DOM concepts.
CLO 2	Apply CSS selectors, box model, layout techniques, positioning, and Bootstrap for responsive design.
CLO 3	Develop JavaScript programs using variables, operators, conditionals, loops, and functions.
CLO 4	Manipulate DOM, handle browser events, and use arrays/objects to build dynamic, interactive web pages.

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Programming Fundamentals Through C (CAP222N - Minor)
Semester: 2nd Course Code: CAP222N
Title Credits: 4T + 2P Total Contact Hrs: As per syllabus

CLO No.	Course Learning Outcome
CLO 1	To demonstrate the use of flowcharts and algorithms for problem solving
CLO 2	To familiarize the student with the syntactic constructs of C
CLO 3	To introduce the concepts of structured programming 3. 4. To enable to the students to translate algorithms into C programs

PHP Programming (CAP222S)
Semester: 2nd Course Code: CAP222S
Title Credits: 2T + 2P Total Contact Hrs: As per syllabus

CLO No.	Course Learning Outcome
CLO 1	Understand PHP syntax, variables, datatypes, operators, and configuration environment.
CLO 2	Handle HTML forms with GET/POST, validate input, and implement redirection and multi-value fields.
CLO 3	Apply PHP control structures, loops, functions (value/ref), and flow control statements.
CLO 4	Perform string manipulation, regular expressions, and array operations using PHP libraries.

Programming with Python (JSD222S)
Semester: 2nd Course Code: JSD222S
Title Credits: 2T + 2P Total Contact Hrs: As per syllabus

CLO No.	Course Learning Outcome
CLO 1	Understand Python syntax, datatypes, operators, decision control, loops, and scripting basics.
CLO 2	Manipulate lists, tuples, dictionaries, strings, slicing, and comprehensions.
CLO 3	Use files (read/write), file modes, directory operations, and OS package utilities.
CLO 4	Implement functions with parameters, return values, and variable scope rules.

JavaScript & CSS Basics (WDP222S)
Semester: 2nd Course Code: WDP222S

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Title Credits: 2T + 2P Total Contact Hrs: As per syllabus

CLO No.	Course Learning Outcome
CLO 1	Use JavaScript variables, datatypes, expressions, conditionals, loops, arrays, and functions.
CLO 2	Handle browser, window, and document objects, including event-based scripting.
CLO 3	Apply CSS styling: fonts, text, color, backgrounds, box model, display, whitespace, and units.
CLO 4	Implement dynamic HTML (DHTML), layering, absolute/relative positioning, and event-driven CSS.

Data Communication & Computer Networks (CAP322J)

Semester: 3 Course Code: CAP322J
Title Credits: Theory (4), Practical (2) Total Contact Hours: As per syllabus

CLO No.	Course Learning Outcome
CLO 1	To Understand the Rudiments of How computers communicate
CLO 2	To understand the operation on the components in a data communication systems and functional relationship of these components
CLO 3	To introduce the fundamental concepts of computer Network, topologies, protocols and functioning & significance of networking standards.
CLO 4	To provide knowledge of protocols, IP addressing and error detection & correction mechanisms.

Cryptography & Network Security (ACP323N)
Semester: 3 Course Code: ACP323N
Title Credits: Theory (4), Practical (2) Total Contact Hours: As per syllabus

CLO No.	Course Learning Outcome
CLO 1	Understand the fundamentals of cryptography, including classical ciphers, symmetric key cryptography, and public key cryptography.
CLO 2	Apply cryptographic techniques to ensure message authentication and integrity.
CLO 3	Comprehend the principles and applications of digital signatures
CLO 4	Understand the fundamental principles of network security and implement network security mechanisms.
CLO 5	Analyse and mitigate network security threats and employ network security tools and techniques.
CLO 6	Use Cryptool 2 to implement, analyse and understand various cryptographic procedures.

Android Programming (CAP322S)
Semester: 3 Course Code: CAP322S
Title Credits: Theory (2), Practical (2) Total Contact Hours: As per syllabus

CLO No.	Course Learning Outcome
CLO 1	Explain Android architecture and development environment including JDK, SDK,

	Android Studio, AVD, and Emulator.
CLO 2	Design Android UIs using Activities, Intents, Fragments, RecyclerView, and UI components.
CLO 3	Develop event-driven apps using component interactions, implicit/explicit intents, and navigation.
CLO 4	Apply core programming constructs and OOP principles to build functional multi-screen apps.
CLO 5	Use debugging, input validation, layout manipulation, logs, and emulator-based testing.

Advanced Programming with Python (JSD322S)

Semester: 3 Course Code: JSD322S

Title Credits: Theory (2), Practical (2) Total Contact Hours: As per syllabus

CLO No.	Course Learning Outcome
CLO 1	Apply advanced Python constructs including comprehensions, lambda functions, iterators, generators, and itertools.
CLO 2	Design modular OOP-based Python applications with inheritance, operator overloading, and robust exception handling.
CLO 3	Implement multithreading, basic networking, client/server communication, CGI form handling, and introductory Django concepts.
CLO 4	Use NumPy, Pandas, Matplotlib, and Seaborn for scientific computing, data manipulation, and visualization.
CLO 5	Develop GUI applications using Tkinter including forms, widgets, layouts, and event handling.
CLO 6	Apply advanced Python techniques through hands-on tasks involving threading, visualization, operator overloading, and GUI development.

Introduction to Computers (CAP022I)

Semester: 1st–3rd Course Code: CAP022I

Title Credits: 3 Total Contact Hrs: As per syllabus

CLO No.	Course Learning Outcome
CLO 1	Describe computer characteristics, components, applications, memory, and I/O devices.
CLO 2	Understand OS concepts, system vs application software, translators, and programming languages.
CLO 3	Use MS Word, Excel, and PowerPoint to create professional documents, spreadsheets, and presentations.
CLO 4	Apply editing, formatting, formulas, templates, mail merge, and design tools in MS Office.

APPLIED COMPUTING – IoT FUNDAMENTALS

Semester: 4th Course Code: ACP422N

Title Credits: Theory (3) + Practical (1) Total Contact Hours: As per syllabus

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CLO No.	Course Learning Outcome
CLO-1	Understand the fundamental characteristics of IOT, including its physical design, basic components, and the concepts of things, sensing, and actuators.
CLO-2	Explore various application areas of IoT such as home automation, smart cities, medical, logistics, environment, analytics, and smart grids.
CLO-3	Gain insights into IoT protocols used for communication and data exchange within IoT ecosystems.
CLO-4	Develop hands-on skills in working with hardware platforms like Raspberry Pi and Arduino, and learn how to implement basic sensors for monitoring temperature, humidity, proximity, gas, air quality, and ultrasonic sensors.

COMPUTER APPLICATIONS – DBMS

Semester: 4th
Course Code: CAP422J1
Title Credits: Theory (3) + Practical (1)
Total Contact Hours: As per syllabus

CLO No.	**Course Learning Outcome**
CLO-1	To introduce the core concept of Relational Database. CREDITS: THEORY (3) PRACTICAL (1) To enable the student to learn DML, DDL, DCL commands using SQL
CLO-2	To enable students to design the databases for a wide variety of Real-World problems
CLO-3	To introduce the concept and process of Database Normalization
CLO-4	To enable the student to learn DML, DDL, DCL commands using SQL

OOPs with C++

Semester: 4th
Course Code: CAP422J2
Title Credits: Theory (4) + Practical (2)
Total Contact Hours: 60 + 60

CLO No.	Course Learning Outcome

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CLO-1	Be able to explain the difference between object-oriented programming and procedural programming.
CLO-2	Be able to program using C++ features such as composition of objects, operator overloading, inheritance and polymorphism, file I/O, etc.
CLO-3	Be able to build C++ classes using appropriate encapsulation and design principles.
CLO-4	Be able to apply object-oriented techniques to solve bigger computing problems.

COMPUTING MATHEMATICS

Semester: 4th — Course Code: CAP422J3

Title Credits: Theory (4) + Practical (2) — Total Contact Hours: 60 + 60

CLO No.	Course Learning Outcome
CLO-1	To introduce elements of 10+2 level mathematics to students of Computer Applications who are from a medical or arts
CLO-2	To cover fundamental concepts of matrices and determinants
CLO-3	To cover fundamental concepts of calculus.
CLO-4	To acquire fundamental knowledge regarding the problems of approximation and errors in Computer based numerical problems solving.

Data Structures Using C

Semester: 5th — Course Code: CAP522J2

Title Credits: Theory (4) + Practical (2) — Total Contact Hours: 60 + 60

CLO No.	Course Learning Outcome
CLO-1	To introduce the fundamentals of Data Structures, Abstract concepts and how these concepts are useful in problem solving.
CLO-2	To learn the linear and non-linear data structures.
CLO-3	To explore the applications of linear and non-linear data structures. To learn the basic sorting and searching algorithms.
CLO-4	To learn to represent data using tree and graph data structure.
CLO-5	To write programs for different Data Structures and Algorithms

Operating System

Semester: 5th — Course Code: CAP522J1

Title Credits: Theory (3) + Practical (1) — Total Contact Hours: 45 + 30

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CLO No.	Course Learning Outcome
CLO-1	To learn and understand the concepts of operating system and functions of operating system.
CLO-2	Explain process management, processor scheduling, and concurrent programming.
CLO-3	Understand the concept of deadlocks and synchronization.
CLO-4	Learn memory management, file management. I/O systems, and disk scheduling.
CLO-5	Distinguish main memory and virtual memory.
CLO-6	Leam basic Unix commands and shell programming.

Discrete Mathematics

Semester: 5th
Course Code: CAP522J3
Title Credits: Theory (4) + Practical (2)
Total Contact Hours: 60 + 60

CLO No.	Course Learning Outcome
CLO-1	To be able to understand mathematical reasoning in order to read, comprehend, and construct mathematical arguments.
CLO-2	To be able to count or enumerate objects, and use basic techniques of counting to solve counting problems.
CLO-3	To be able to work with discrete structures such as sets, permutations, relations, graphs, and trees, and use them to represent discrete objects and the relationships between these objects.

Theory of Computation

Semester: 5th
Course Code: CAP522N
Title Credits: Theory (3) + Practical (1)
Total Contact Hours: 45 + 30

CLO No.	Course Learning Outcome
CLO-1	Understand the basic concepts of complexity theory, computability theory, and automata theory.
CLO-2	Apply different types of proof techniques, such as proof by construction, proof by contradiction, and proof by induction.
CLO-3	Design and analyze finite automata and regular expressions to recognize and generate regular languages.
CLO 4	Design and analyze pushdown automata and context-free grammars to recognize and generate context-free languages.

Python Programming

Semester: 6th
Course Code: CAP622J1

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Title Credits: Theory (3) + Practical (1) Total Contact Hours: 45 + 30

CLO No.	Course Learning Outcome
CLO-1	Understand the fundamentals of programming through Python. Transform a solution from a subjective world into an objective world.
CLO-2	Work with and manipulate different basic data structures available in Python. Use the List comprehensions and generators in their programs
CLO-3	Apply basic object-oriented concepts to design classes and objects in Python. Use concepts of Inheritance and Polymorphism in their programs
CLO-4	Perform basic file operations for text and CSV files 8. Use existing inbuilt Python modules.
CLO-5	Develop custom modules. Use basic functionalities provided by packages Numpy and Pandas. Develop visualizations using different plotting functions available in matplotlib.

Computer Organization & Architecture

Semester: 6th Course Code: CAP622J2

Title Credits: Theory (4) + Practical (2) Total Contact Hours: 60 + 60

CLO No.	**Course Learning Outcome**
CLO-1	Explain design of the various functional units and components of computers. Explain the basics of organizational and architectural issues of a digital computer and classify and compute the performance of machines.
CLO-2	Explain principles of computer organization and the basic architectural concepts.
CLO-3	Demonstrate memory management and I/O techniques.
CLO-4	To have better idea on how to write assemble language programs.
CLO-5	Explain key aspects of Computer Organization & Architecture by enabling them to perform the experiments with support of a design and simulation.

Probability and Statistics

Semester: 6th Course Code: CAP622J3

Title Credits: Theory (4) + Practical (2) Total Contact Hours: 60 + 60

CLO No.	**Course Learning Outcome**
CLO-1	Learn the language and core concepts of probability theory.
CLO-2	Understand basic principles of statistical inference.
CLO-3	Become an informed consumer of statistical information and have a good knowledge of what expectation and variance mean and be able to compute them.

Artificial Intelligence

Semester: 6th Course Code: ACP622N

Title Credits: Theory (3) + Practical (1) Total Contact Hours: 45 + 30

CLO No.	Course Learning Outcome
CLO-1	Study the concepts of Artificial Intelligence.
CLO-2	Learn the methods of solving problems using Artificial Intelligence.
CLO-3	Learn the knowledge representation techniques, reasoning techniques and planning.

2.6.9. Department of Economics

2.6.9a Programme Learning Outcomes (PLOs) Bachelor's degree in Economics (UG)

After the completion of Bachelor degree, the student should be able to:

PLOs	Bachelor Degree
PLO-1: Knowledge and understanding	Demonstrate a comprehensive understanding of foundational and advanced economic concepts, theories, principles, and models, including microeconomics, macroeconomics, development economics, public finance, international economics, and quantitative techniques.
PLO-2: Skills	Develop analytical, quantitative, computational, and problem-solving skills necessary to interpret economic data, use statistical/econometric tools, and analyze real-world economic issues effectively.
PLO-3: Application of knowledge and Skills	Apply economic theories, data analysis techniques, and empirical methods to evaluate policies, assess market outcomes, understand economic behavior, and propose evidence-based solutions to socio-economic challenges.
PLO-4: Critical thinking	Critically analyze economic problems, evaluate alternative approaches, interpret complex socio-economic issues, and make informed judgments using logical reasoning and scientific evidence.
PLO-5: Ethics	Demonstrate ethical responsibility in academic work, data handling, policy evaluation, and economic decision-making while upholding integrity, transparency, fairness, and respect for societal welfare.
PLO-6: Communication	Communicate economic ideas, research findings, and policy analyses clearly and effectively through written reports, presentations, graphical representations, and data-driven arguments suited to diverse audiences.
PLO-7: Life Long Learning	Recognize the importance of continuous learning in the evolving field of economics and develop the ability to independently upgrade skills, adapt to new knowledge, and engage in ongoing personal and professional development.
PLO-8: Environmental Awareness	Understand the economic dimensions of environmental issues, sustainable development, climate change, and resource management, and evaluate policies promoting ecological balance and green growth.

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PLO-9: Digital Literacy	Use modern digital tools, economic databases, statistical software, and ICT resources effectively for data analysis, research, visualization, and academic communication in the field of economics.
PLO-10: Research Aptitude	Develop foundational research skills including literature review, hypothesis formulation, data collection, econometric analysis, interpretation of results, and preparation of research reports in economics.

2.6.9b Course Learning Outcomes (CLOs)

Title of the Programme: BASIC MICROECONOMICS
Semester: First
Course Code: ECO122J **Title Credits: 4+2 Total Contact Hrs: 90**
CLO 1: ---------- Understand and explain the fundamental concepts of microeconomics
CLO 2: ---------- Analyze how markets function through price determination, equilibrium, and the impact of shifts in demand and supply using graphical and mathematical tools.
CLO 3: ---------- Apply microeconomic principles to real-life situations including consumer choice, production decisions, cost analysis.
CLO 4: ---------- Acquire the skills to calculate revenue and cost functions of a firm.

Title of the Programme: BASIC MACROECONOMICS
Semester: Second
Course Code: ECO222J **Title Credits: 4+2 Total Contact Hrs: 90**
CLO 1: ---------- Understand the fundamental concepts macroeconomics
CLO 2: ---------- Analyze the determinants of aggregate demand and aggregate supply and explain how macroeconomic equilibrium is achieved in different theoretical frameworks. **-**
CLO 3: ---------- Examine the role of fiscal and monetary policy in regulating economic activity, stabilizing the economy, and addressing key macroeconomic issues.
CLO 4: ---------- Acquire skills to calculate price change through different indices.

Title of the Programme: MONETARY ECONOMICS
Semester: Third
Course Code: ECO322J **Title Credits: 4+2 Total Contact Hrs:90**
CLO 1: ---------- Understand the nature, functions, types of money, and the role of the monetary system in the modern economy.
CLO 3: ---------- Analyze the process of money supply, credit creation and functioning of the central bank in regulating economy
CLO 3: ---------- Examine key monetary theories, including classical, Keynesian, and modern approaches, and evaluate their relevance in contemporary economic conditions.
CLO 4: ---------- Evaluate the role of the Reserve Bank of India in conducting monetary policy.

Title of the Programme: ECONOMICS OF DEVELOPMENT

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Semester: Fourth
Course Code: ECO422J1 **Title Credits: 3+1 Total Contact Hrs:60**
CLO 1: ---------- Understand the fundamental concepts of economic development
CLO 2: ---------- Analyze various theories and models of economic development—classical, neoclassical, Keynesian, and contemporary models—and assess their relevance to developing economies.
CLO 3: ---------- Examine the role of institutions, demographics, technology, capital formation, and globalization in influencing development processes and outcomes.
CLO 4: ---------- Understand the role of labour and migration in the process of economic development

Title of the Programme: MATHEMATICS FOR ECONOMICS
Semester: Fourth
Course Code: ECO422J2 **Title Credits: 3+1 Total Contact Hrs: 60**
CLO 1: ---------- Understand fundamental mathematical concepts used in economics,
CLO 2: ---------- Apply differential calculus, integral calculus, and matrix algebra to analyze economic relationships, model economic behavior, and solve standard economic problems.
CLO 3: ---------- Use mathematical tools to study consumer and producer optimization, equilibrium analysis, growth models, and comparative statics in both micro and macroeconomic contexts.
CLO 4: ---------- Develop the ability to interpret mathematical results, construct economic models, and use quantitative reasoning to support economic arguments and decision-making.

Title of the Programme: HISTORY OF ECONOMIC THOUGHT
Semester: Fourth
Course Code: ECO422J3 **Title Credits: 3+1 Total Contact Hrs:60**
CLO 1: ---------- Understand the evolution of economic ideas from ancient, medieval, classical, neoclassical, and modern schools of economic thought.
CLO 2: ---------- Analyze the contributions of major economists—such as Adam Smith, Ricardo, Malthus, Marx, Marshall, Keynes, and others—and their influence on economic theory and policy.
CLO 3: ---------- Compare different schools of thought and evaluate their theoretical foundations, assumptions, and relevance for contemporary economic issues.
CLO 4: ---------- Develop the ability to critically interpret historical economic debates, connect them with modern economic thinking, and appreciate the intellectual roots of current economic policies.

Annexure B: Course Learning Outcomes (CLOs)
Title of the Programme: INTERNATIONAL TRADE
Semester: Fifth
Course Code: ECO522J1 **Title Credits: 3+1 Total Contact Hrs:60**

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CLO 1: ---------- Understand the fundamental concepts, principles, and theories of international trade, including absolute advantage, comparative advantage, and modern trade theories.
CLO 2: ---------- Analyze trade patterns, gains from trade, and the effects of tariffs, quotas, subsidies, and other trade policies using theoretical and graphical tools.
CLO 3: ---------- Examine the role of international organizations such as WTO, IMF, and World Bank, and evaluate the impact of regional trade agreements on global trade dynamics.
CLO 4: ---------- Assess contemporary issues in international trade, including globalization, trade disputes, balance of payments, foreign exchange markets, and their implications for developing economies.

Title of the Programme: MICROECONOMICS - I
Semester: Fifth
Course Code: ECO522J2 **Title Credits: 4+2 Total Contact Hrs:90**
CLO 1: ---------- Understand the basic principles, assumptions, and analytical tools of microeconomic theory, including consumer behavior, utility analysis, and demand theory.
CLO 2: ---------- Analyze the behavior of firms through production theory, cost concepts, and supply decisions, using diagrams and mathematical relationships where appropriate.
CLO 3: ---------- Examine different market structures—perfect competition, monopoly, and imperfect competition—and evaluate how prices and outputs are determined under each.
CLO 4: ----------Examine competitive and monopoly market dynamics, including price discrimination, and understand dead weight loss implications

Annexure B: Course Learning Outcomes (CLOs)
Title of the Programme: INDIAN FINANCIAL SYSTEM
Semester: Fifth
Course Code: ECO522J3 **Title Credits: 4+2 Total Contact Hrs:90**
CLO 1: ---------- Understand the structure, components, and functioning of the Indian financial system, including financial markets, financial institutions, financial instruments, and regulatory bodies.
CLO 2: ---------- Analyze the role and operations of banking and non-banking financial institutions, capital markets, money markets, and insurance markets in India's economic development.
CLO 3: ---------- Examine the regulatory framework governing the financial system—RBI, SEBI, IRDAI, and other agencies—and evaluate their role in maintaining financial stability and promoting efficient markets.
CLO 4: ---------- Assess contemporary issues in the Indian financial system such as financial inclusion, digital finance, fintech innovations, monetary reforms, and the challenges of financial sector growth.

Annexure B: Course Learning Outcomes (CLOs)
Title of the Programme: INDIAN ECONOMY

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Semester: Sixth
Course Code: ECO622J1 **Title Credits: 4+2 Total Contact Hrs: 90**
CLO 1: ---------- Understand the structural features of the Indian economy, including demographic trends, sectoral composition, national income, and economic reforms since independence.
CLO 2: ---------- Analyze the performance of key sectors of the Indian economy—agriculture, industry, and services—and evaluate the major policies influencing their growth and development.
CLO 3: Examine major macroeconomic issues in India such as poverty, unemployment, inflation, fiscal policy, monetary policy, and external sector challenges using analytical tools and empirical data.
CLO 4: ---------- Evaluate contemporary economic reforms, government initiatives, and policy measures related to inclusive growth, sustainable development, digital transformation, and India's integration into the global economy.

Annexure B: Course Learning Outcomes (CLOs)
Title of the Programme: MACROECONOMICS-I
Semester: Sixth
Course Code: ECO622J2 **Title Credits: 4+2 Total Contact Hrs: 90**
CLO 1: Understand advanced macroeconomic concepts, including national income accounting, macroeconomic equilibrium, consumption and investment theories, and the functioning of monetary and fiscal sectors.
CLO 2: Analyse macroeconomic models such as IS–LM, AD–AS, Phillips Curve, and contemporary frameworks to study output, employment, inflation, interest rates, and economic fluctuations.
CLO 3: Evaluate the role and effectiveness of fiscal and monetary policies in stabilizing the economy, promoting growth, and addressing macroeconomic challenges.
CLO 4: Examine current macroeconomic issues such as inflationary trends, unemployment patterns, public debt, external sector imbalances, and global economic shocks using theoretical and empirical tools.

Title of the Programme: STATISTICAL METHODS FOR ECONOMICS
Semester: Sixth
Course Code: ECO622J3 **Title Credits: 4+2 Total Contact Hrs: 90**
CLO 1: Understand the fundamental concepts of descriptive and inferential statistics, including data types, measures of central tendency, dispersion, correlation, and probability distributions relevant to economic analysis.
CLO 2: Apply statistical tools such as correlation, regression, index numbers, time-series analysis, and probability theory to analyze economic data and interpret economic relationships.
CLO 3: Use sampling techniques, hypothesis testing, and estimation methods to conduct basic statistical inferences and evaluate empirical economic problems.
CLO 4: Employ statistical software or digital tools (as applicable) for data handling, presentation, and interpretation, enabling evidence-based decision-making in economic research and policy analysis.

2.6.10. Department of English
Programme: Bachelor of English (UG)

2.6.10a Programme Learning Outcomes (PLOs)

PLOs	BA in English

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After the completion of ***Bachelor of Arts in English*** the student should be able to:	
PLO-1: Knowledge and understanding	Acquire in-depth knowledge of major literary periods, authors, genres, movements, and theories in English Literature along with their historical and cultural contexts.
PLO-2: Literary Skills	Develop analytical, interpretative, linguistic and academic writing skills required for literary study.
PLO-3: Application of Knowledge	Apply critical approaches, theoretical concepts, and literary methods to analyse, interpret, and evaluate texts across genres and time periods.
PLO-4: Critical thinking	Critically examine themes, narrative techniques, ideologies, and cultural contexts in literature and form independent academic opinions supported by textual evidence.
PLO-5: Ethics	Demonstrate sensitivity toward human values, cultural diversity, gender issues, social justice, and moral perspectives presented in literature.
PLO-6: Life Long Learning	Engage in continuous learning through reading, research, and exploration of new literary works, theories and perspectives.
PLO-7: Environmental Awareness	Recognise ecological concerns in literature and develop awareness of human environment relationships through literally interpretations.
PLO-8: Digital Literacy	Utilise digital platforms, tools and technologies responsibly and efficiently.
PLO-9: Research Aptitude	Develop a sense of inquiry to explore topics related to languages, literatures, and cultural
	studies by inculcating analytical and interpretative skills.

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PLO-10: Communication	Apply understanding of language to suit the purpose of the conversation and its audience. Write texts with accuracy, correct spelling, punctuation, and grammar with varying complexity. Use current technology related to the field of communication. Respond effectively to cultural communication differences and communicate ethically. Demonstrate positive group communication exchanges.
PLO-12: Language Skills and Personality Development	Display competence in oral, written, and visual communication. Understand opportunities in the field of English Language and English Studies. Read a range of different types of texts confidently, fluently, and symptomatically. Establish a solid foundation for further English language learning. Demonstrate improved intonation, stress patterns, and fluency in spoken English.

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2. 6.10b. Course Learning Outcomes for various Courses

Programme: Bachelor of English (UG)

Title of the Programme: Introduction to Communication Skills-1		
Semester: 1st		
Course Code: FEN122N	**Total Credits: 6**	**Total Contact Hrs: 90**
CLO 1: Understand the fundamental concepts and scope of Functional English, including its role as a global link language and its varieties (British, American, and Indian)		
CLO 2: Demonstrate basic knowledge of phonetics, including the speech mechanism, English phonetic sounds, phonetic symbols, vowels, diphthongs, and consonants.		
CLO 3: Apply effective communication skills in everyday situations such as greetings, making requests, seeking permission, giving and receiving information, complimenting, apologizing, and describing people. Participate confidently in role-play activities, telephonic conversations, and situational dialogues to enhance practical communication skills.		
CLO 4: Demonstrate command over vocabulary via the use of prefixes and suffixes, idioms, phrases, collocations, antonyms, and synonyms.		

Title of the Programme: Soft Skills		
Semester: 5th		
Course Code: FEN522N	**Total Credits: 4**	**Total Contact Hrs: 60**
CLO 1: Effectively communicate through verbal/oral communication and improve language skills.		
CLO 2: Write precise briefs or reports and technical documents and actively participate in group discussions/meetings/interviews.		
CLO 3: Become an effective individual through goal/target setting, self-motivation, and practicing creative thinking.		
CLO 4: Function effectively in multi-disciplinary and heterogeneous teams through the knowledge of teamwork, Interpersonal relationships, and leadership quality.		

Title of the Programme: Short Story Across Cultures		
Semester: 3rd		
Course Code: ELR522J1	**Total Credits: 4**	**Total Contact Hrs: 60**
CLO 1: The student will understand the importance of the short story as a literary genre.		
CLO 2: The student will have learnt the distinct features of the short story.		
CLO 3: The student will understand the various traditions of Short Story writing.		
CLO 4: The student will be able to identify stylistic and narrative strategies used in the select texts.		

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Title of the Programme: Multidisciplinary Introductory Course
Semester: 1st -3rd
Course Code: ELR022I Title Credits: 3 Total Contact Hrs: 45
CLO1: The students will be able to understand and identify key themes, narrative techniques, and poetic devices in the prescribed short stories and poems.
CLO2: The students will be able to critically analyse the texts in relation to their social, psychological, historical, and political contexts, including gender, colonialism, and identity.
CLO3: The students will perform close textual analysis of the given stories and poems, interpreting imagery, symbolism, themes, tone, and narrative voice.
CLO4: The students will be able to apply literary theories and critical frameworks (such as feminism, postcolonialism, ecocriticisetc.) to interpret poems, stories, and plays

Title of the Programme: BACHELORS WITH GENERAL ENGLISH AS MINOR
Semester: 1ST
Course Code: GEN122N: Credits: 6: Total Contact Hrs: 90
CLO 1: The students will be able to comprehend, interpret, and critically analyse texts across genres, themes, and cultural backgrounds.
CLO 2: The students will acquire a strong functional vocabulary, improved grammar usage, and refined stylistic skills that enhance overall language proficiency.
CLO 3: The students will develop critical thinking and gain insights into cultural, social, and ethical issues reflected in English literature and global communication.
CLO 4: The students will develop clear, accurate, and effective communication skills in spoken and written English, suitable for academic, social, *and professional contexts*.

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6.2.11 Programme: **BACHELORS WITH ENGLISH LITERATURE AS MAJOR**

6.2.11a ……Course Learning Outcomes (CLO's)

Title of the course: ENGLISH LITERATURE
Semester:1st
Course Code: ELR122N. Title Credits (04+02). Total Contact: Hours: 01 Hr/Week
CLO 1 — Understanding Foundations of Poetry, Students will be able to identify and explain major poetic forms (lyric, sonnet, elegy, ode, epic, ballad) and analyze essential elements of poetry such as metre, rhyme, structure, stanza types, and key poetic devices (metaphor, simile, symbolism, imagery, alliteration, personification, irony, assonance).
CLO 2 — Analyzing English Poetry (Shakespeare & Milton) Students will be able to interpret and critically evaluate selected poems and sonnets by Shakespeare and Milton, demonstrating an understanding of themes, style, structure, and the historical-literary contexts that shaped early English poetry.
CLO 3 — Understanding the Evolution of English Drama Students will be able to explain the development of English drama from its origins to early modern theatre, identify different dramatic types (tragedy, comedy, tragicomedy, farce, melodrama, heroic drama), and analyze elements of drama such as plot, character, setting, dialogue, conflict, theme, and spectacle.
CLO 4 — Critical Interpretation of Shakespearean Drama. Students will be able to critically analyze Shakespeare's *Othello*, focusing on character development, dramatic techniques, themes, and the play's social, moral, and psychological dimensions, while also understanding its significance in the history of English drama.

Title of the course: ENGLISH LITERATURE (Major)
Semester:1st
Course Code: ELR122J Title Credits (04+02) Contact: Hours: 01 Hr/Week
CLO 1 — Advanced Understanding of Poetic Theory and Literary Devices **Students will be able to**: 1. Demonstrate an advanced understanding of major poetic forms (sonnet, lyric, elegy, ballad, ode, epic) and their evolution. 2. Critically analyze how metre, rhyme, stanzaic structure, imagery, symbolism, irony, and other devices shape the meaning and aesthetics of poetry. 3. Apply theoretical frameworks (formalism 4. structuralism, rhetoric) to interpret poetic texts.

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CLO 2 — Critical Interpretation of English Poetry (Shakespeare & Milton)
Students will be able to:

1. Provide in-depth critical readings of Shakespeare's Sonnets (18, 66, 116) and Milton's *Lycidas* using analytical and comparative approaches.
2. Examine themes such as love, mortality, artistic creation, faith, loss, and Renaissance humanism.
3. Contextualize the poems within their historical, cultural, and literary movements (Renaissance, metaphysical tradition, pastoral elegy).
4. Construct well-argued interpretations

supported by textual evidence and scholarly perspectives.

CLO 3 — Analytical Understanding of the Development of English Drama
Students will be able to:

1. Evaluate the historical transformation of English drama from classical influences to early modern theatre.
2. Distinguish critically between dramatic types (tragedy, comedy, tragicomedy, farce, melodrama, heroic drama) and their structural conventions.
3. Analyze dramatic elements—plot, character, setting, dialogue, conflict, theme, spectacle—through theoretical lenses (Aristotelian poetics, Brechtian theory, performance studies).

Reflect on the socio-political and cultural forces that shaped dramatic forms.

CLO 4 — Advanced Critical Study of Shakespearean Tragedy (*Othello*)
Students will be able to:

1. Examine *Othello* as a complex work of Shakespearean tragedy, integrating themes of race, power, jealousy, manipulation, colonial discourse, and gender.
2. Analyze Shakespeare's use of dramatic structure, characterization, soliloquy, stagecraft, and rhetoric.
3. Engage with major critical viewpoints (postcolonial, feminist, psychoanalytic, new historicist) to produce academically rigorous interpretations.

Demonstrate the ability to connect the play to broader discussions in literary studies and performance practice.

Semester: 5th		
Course Code: ELR522J3	**Title Credits: 6**	**Total Contact Hrs: 90**
CLO 1: The student will have achieved a fair understanding of American history, especially with reference to Afro-Americans.		
***CLO 2**: The students will learn about the evolution of an important body of American literature, that is, Afro-American literature.*		

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***CLO 3**: The student will have gained an understanding of the interrelationship between literary expression and cultural identity.*
***CLO 4**: The students will be familiar with important Afro-American writers and evaluate them critically.*

Title of the Course: INDIAN WRITING IN ENGLISH
Semester:5th
Course Code: ELR522J2 Title Credits (04+02) Contact: Hours: 01 Hr/Week
CLO 1 – Mulk Raj Anand: Untouchable Learning Outcomes After completing this unit, students will be able to: 1. Explain the socio-political and caste-based realities represented in Untouchable. 2. Analyze Anand's humanistic concerns and critique of untouchability and social oppression. 3. Evaluate how the novel employs realism, characterization, and narrative technique to portray marginalized lives. 4. Discuss the themes of identity, discrimination, and reform within the colonial Indian context. Interpret the novel in relation to social justice movements and Dalit discourse in Indian English literature.
CLO 2– Anita Desai: Clear Light of Day Learning Outcomes Students will be able to: 1. Understand the psychological depth and interiority in Anita Desai's narrative style. 2. Examine themes such as memory, trauma, childhood, and family relationships. 3. Analyze the symbolic use of time, space, and silence in the novel. 4. Interpret post-Partition social and emotional fragmentation reflected in the text. Evaluate Desai's contribution to modern Indian English fiction, particularly women-centered narratives.
CLO 3– Poetry **A. Nissim Ezekiel – "Background, Casually" Learning Outcomes** **Students will be able to:** 1. Discuss Ezekiel's autobiographical elements and his negotiation of identity. 2. Analyze themes of exile, belonging, and cultural hybridity. 3. Understand the poem's ironic tone and conversational style. **B. Arun Kolatkar – "Enterprise" & "The Bus" & "An Old Woman"** **Learning Outcomes** Students will be able to: 1. Interpret Kolhatkar's use of everyday experiences as metaphors for spiritual and social journeys. 2. Analyze his minimalist style and the blend of irony, humor, and social observation. 3. Examine how Kolhatkar critiques urban life, pilgrimage, and human relationships. **C. Eunice de Souza – "Marriages are Made" & "Advice to Women"**

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Title of the Programme: Introduction to English Language Teaching (ELT)
Semester: 3rd
Course Code: FEN322N **Total Credits: 6** **Total Contact Hrs: 90**
CLO 1: Students will have learnt about the evolution of English in India.
CLO 2: Students will be able to distinguish between varieties of English.
CLO 3: Students will be familiar with different approaches and methodologies of teaching language.
CLO 4: Students will be equipped to frame curriculum and tests for language evaluation.

Learning Outcomes

Students will be able to:

1. Understand de Souza's feminist perspective and critique of patriarchal norms.
2. Analyze the poet's sharp tone, satire, and condensed poetic style.

Discuss themes such as marriage, womanhood, autonomy, and societal expectations.

Girish Karnad: Tughlaq Learning Outcomes

Students will be able to:

1. Explain how Tughlaq adapts historical events into modern political allegory.
2. Analyze the complexities of Sultan Muhammad bin Tughlaq's character— idealism vs. tyranny.
3. Discuss themes of power, governance, religious conflict, and political transformation.
4. Evaluate Karnad's dramaturgy, symbolism, and use of myth-history.

stand how the play reflects post- independence Indian concerns through medieval history.

Title of the Programme: Communication Skills Course (AEC)
Semester: 3rd
Course Code: CNS122A **Total Credits: 3** **Total Contact Hrs: 45**
CLO 1: Develop a comprehensive understanding of communication concepts, processes, and barriers, enabling effective verbal and non-verbal communication in diverse contexts.
CLO 2: Students shall be able to demonstrate enhanced essential soft skills, including personality development, emotional intelligence, time management, leadership, and public speaking, to improve interpersonal relationships and professional interactions.
CLO 3: Students would have gained proficiency in various writing skills, including formal and informal letter writing, including formal and informal letter writing, CV and email drafting, report writing, notice and memorandum preparation, and delivering short speeches.

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2.6.12. Department of Environmental Science
Programme: Bachelors in Environmental Science

2.6.12a Course Learning Outcomes (CLO's)

Semester:	**1st to 3rd**
Course Title	**Environmental Issues and Sustainability (MD)**
Course Code:	**EVS0221**
Total Credits:	**03**
Total Contact Hrs:	**45**
CLO 1:	Describe major global environmental issues such as climate change, biodiversity loss, ozone depletion, desertification, acid precipitation, and human population growth.
CLO 2:	Explain the concepts of environmental governance, environmental literacy, and the role of institutions, NGOs, and corporations in environmental policy and decision-making.
CLO 3:	Analyse constitutional provisions for environmental protection in India, including Articles 21, 48A, and 51A(g), and understand key national environmental policies.

Title of the Programme:	**Bachelors in Environmental Science**
Semester:	**1st to 2nd**
Course Title	**Environmental Science Education**
Course Code:	**ESE024V**
Total Credits:	**02**
Total Contact Hrs:	**30**
CLO 1:	Analyse the fundamental concepts of environment, ecosystems, biodiversity, and natural resources, and evaluate their importance, threats, and conservation strategies in the context of sustainability and environmental ethics.
CLO 2:	Assess the causes, consequences, and control measures of environmental pollution and climate change, and propose effective waste management and resource conservation practices aligned with the principles of environmental education.

Title of the Programme:	**Bachelors in Environmental Science**
Semester:	**7th**

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Course Title	**Environmental Impact Assessment and Auditing**
Course Code:	**EVS722J1**
Total Credits:	**04 (03+01)**
Total Contact Hrs:	**45+30**
CLO 1:	Explain the fundamental concepts, principles, history, and objectives of Environmental Impact Assessment (EIA), including regulatory guidelines such as EIA Notification 2006.
CLO 2:	Apply appropriate EIA methodologies for predicting impacts on air, water, soil, ecology, and society, and interpret environmental modelling outputs.
CLO 3:	Evaluate EIA reports, prepare environmental management plans, and undertake environmental auditing following ISO 14000 guidelines.

Title of the Programme:	**Bachelors in Environmental Science**
Semester:	**7th**
Course Title	**Environmental Engineering**
Course Code:	**EVS722J2**
Total Credits:	**06 (4+2)**
Total Contact Hrs:	**60 + 60**
CLO 1:	Describe the scope, concepts, and principles of environmental engineering including sanitation, water supply, green buildings, and sustainable engineering practices.
CLO 2:	Demonstrate knowledge of water treatment processes such as coagulation, filtration, sedimentation, and disinfection for public water supply systems.
CLO 3:	Analyse wastewater characteristics and apply treatment methods (primary, secondary, tertiary, and advanced) including sludge management and design considerations.
CLO 4:	Apply engineering solutions for air pollution control, noise abatement, soil remediation, landfill operation, recycling, and waste-to-energy technologies.

Title of the Programme:	**Bachelors in Environmental Science**
Semester:	**7th**
Course Title	**Environmental Planning, Remote Sensing and GIS**
Course Code:	**EVS722J3**
Total Credits:	**04+02**
Total Contact Hrs:	**60+60**

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CLO 1:	Explain the principles, objectives, and importance of environmental planning including land-use planning, zoning, and smart city concepts.
CLO 2:	Demonstrate understanding of remote sensing concepts such as EMR, resolution types, satellite systems (LANDSAT & IRS), and interpretation of aerial photographs.
CLO 3:	Use GIS tools for spatial data handling, geospatial data models, GPS-based mapping, and basic geospatial analysis.
CLO 4:	Apply remote sensing and GIS in environmental assessment applications such as biodiversity conservation, watershed management, land-use planning, and disaster management.

Title of the Programme:	**Bachelors in Environmental Science**
Semester:	**8th**
Course Title	**Climate Change**
Course Code:	**EVS822J1**
Total Credits:	**04 (03+01)**
Total Contact Hrs:	**45+30**
CLO 1:	Explain the science of climate systems, greenhouse gases, radiative forcing, climate indicators, and extreme weather events.
CLO 2:	Analyse international climate governance frameworks including UNFCCC, IPCC, Kyoto Protocol, Paris Agreement, and Clean Development Mechanism (CDM).
CLO 3:	Evaluate climate change mitigation and adaptation strategies across various sectors, including national initiatives such as NAPCC and NDCs.

Title of the Programme:	**Bachelors in Environmental Science**
Semester:	**8th**
Course Title	**Environmental Toxicology**
Course Code:	**EVS822J2**
Total Credits:	**06 (4+2)**
Total Contact Hrs:	**60 + 60**
CLO 1:	escribe the fundamental concepts, scope, goals, and interaction mechanisms in toxicology, along with dose–response relationships.
CLO 2:	Explain ecotoxicological principles, including fate, transport, and testing of toxic substances, along with ethical considerations.
CLO 3:	Analyse toxicokinetic processes such as absorption, distribution, biotransformation, excretion, and mechanisms of

	bioaccumulation, bioconcentration, and biomagnification.
CLO 4:	Assess the health and environmental impacts of pesticides, heavy metals, food additives, automobile emissions, and occupational toxicants.

Title of the Programme:	**Bachelors in Environmental Science**
Semester:	**8th**
Course Title	**Environmental Microbiology and Biotechnology**
Course Code:	**EVS822J3**
Total Credits:	04+02
Total Contact Hrs:	60+60
CLO 1:	Describe the diversity, distribution, and ecological roles of microorganisms in various habitats and their participation in biogeochemical cycles.
CLO 2:	Explain microbial contributions to human health, including airborne, waterborne, soilborne, and foodborne diseases.
CLO 3:	Apply microbial biotechnological processes such as bioremediation, biocomposting, biofuel production, and biofertilizer development.
CLO 4:	Analyse the environmental applications and implications of genetic engineering, GMOs, environmental genomics, and metagenomics.

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2.6.13 Department of Geology
Programme: Bachelors In Geology (UG)

2.6.13a Programme Learning Outcomes: (PLO's)

After the completion of Bachelor degree in Geology, the students should be able to:	
PLO-1: Knowledge and understanding	Origin and Evolution of the universe from the Big Bang to Present day and its future. Availability and Exploration Resources for present and future generations Understanding of the Forces of Nature within and Outside the Dynamic Earth System Science, Resources availability on earth and extra-terrestrial planets and space. Resulting Hazards, Threats and Disasters and Mitigation measures
PLO-2: Skills	Hands on Training on Megascopic Identification of Rocks and Minerals
PLO-3: Application of knowledge and skills	Resource Identification and exploration- Solid, Liquid and Gaseous Mineral Identification through Megascopic, Mesoscopic and Microscopic Techniques. Metals, Non-Metals, Petrol cum Products; Surface and Ground water Resources; Glaciers and Atmosphere; Geothermal, Solar, Tidal and Hydroelectric Energy aspects
Plo-4: Critical thinking	To analyse geological problems scientifically To evaluate and interpret geological data Solve real world geological problems Evaluate reliability of data To interpret data and knowledge from domains OF Geology
PLO-5:Ethics	To display integrity and honesty in scientific work Have a cautious approach towards environment and promote sustainable use of earth resources To follow professional and safety guidelines during the course of investigation To use geological knowledge efficiently and responsibly for society To identify ethical issues in environmental and resource investigations
PLO-6: Communication	The students will be able to communicate geological information effectively and clearly by using written, oral, visual and digital formats. They will also learn to explain scientific concepts in simple language, prepare geological reports, present field and laboratory findings confidently and utilize maps, diagrams and data visualization to support their interpretations.
PLO-7: Lifelong Learning	The students will possess the knowledge, skills, and lifelong learning mindset necessary to continuously adapt to advancements in geosciences, integrate new technologies, contribute responsibly to society, and pursue ongoing personal and professional development in a dynamic, evolving field.

PLO-8: Environmental Awareness	To understand Earth systems and major environmental issues linked to geological processes. Students evaluate natural resources and propose environmentally responsible management and mitigation strategies. To analyze environmental problems using geological data and design sustainable solutions. Students apply environmental ethics, laws, and policies, and communicate geological–environmental information effectively. Students conduct field investigations with minimal ecological impact and assess environmental hazards. To perform research on geological–environmental topics and stay updated on emerging sustainability issues. Students collaborate in multidisciplinary teams and participate in environmental awareness and conservation initiatives.
PLO-9: Digital Literacy	Apply digital tools for geological data collection and management. Demonstrate competence in GIS and spatial data analysis. Interpret geological features using remote sensing and imagery. Build and analyze geological models using digital simulation software. Use computational and statistical methods for geoscientific data analysis. Apply digital technologies to enhance fieldwork accuracy and documentation. Locate, evaluate, and use digital scientific resources ethically and effectively. Communicate geological findings through digital visualization tools. Uphold ethical standards in digital data use and research. Collaborate effectively in digitally enabled geosciences environments.
PLO-10: Research Aptitude	The students are expected to develop a solid understanding of geological principles and processes, identify researchable problems, and design scientifically sound investigations. They should be able to critically review literature, collect and analyze field and laboratory data using modern tools and computational methods, and interpret results effectively. Emphasis is placed on problem-solving, critical thinking, innovation, and ethical conduct in research. Students are also expected to communicate findings clearly through reports, presentations, and maps, work collaboratively in teams, and apply research insights to address real-world geological and environmental challenges.

2.6.13b. Course Learning Outcomes (CLOs): Bachelors in Geology (UG)

Title of the Course: Fundamentals of Geology
Semester: Ist
Course Code: GLY122J
CLO 1: The study of this course will greatly strengthen student's conceptual foundation with respect to understanding the essentials of the structural dynamics of the earth.
CLO 2: The students will understand the origin of our solar system and planets, including earth.

CLO 3: The students will understand the different surface processes and geomorphological features and their development.
CLO 4: Besides, studying the basics of mineralogy will help the students in understanding and building the overall knowledge in Geology

Title of the Course: Crystallography & Petrology
Semester: 2nd
Course Code: GLY222J
CLO 1: The course will help the students to exhibit an improved understanding of crystallography and fundamental petrologic processes and common rock types.
CLO 2: The students will gain an understanding of the processes involved in the formation of igneous and metamorphic rocks, their textures, structures, classifications and their importance.
CLO 3: The students will also learn to identify, describe and classify rocks using hand specimens and under petrological microscope.
CLO 4: The study will inculcate the students the basics of rock differentiation and characterization,

Title of the Course: Sedimentology
Semester: 3rd
Course Code: GLY322J
CLO 1: Upon studying this course, the students will gain an understanding of the processes involved in the formation of sedimentary rocks, their textures, structures, classifications and their importance.
CLO 2: They will also be able to identify primary and secondary sedimentary structures and their depositional environments.
CLO 3: The students will be able to identify sedimentary rocks and their depositional environments with stratigraphic sequence aspects.
CLO 4: The study will help the students to analyse the paleoclimate and paleocurrent data.

Title of the Course: Paleontology & Stratigraphy
Semester: 4th J1
Course Code: GLY422J1
CLO 1: The study of Paleontology and Stratigraphy encompasses the aspects of the age of the earth, the chronological arrangement of rocks, and the appearance and evolution of life through geologic time.
CLO 2: The concepts of stratigraphy, correlation, and paleontology would enable the students to understand the changes that occurred in the history of the earth and relate them to their field observations and also, to understand the framework of the stratigraphy of India.
CLO 3: The students will be exposed to the principles of stratigraphy including order of superposition
CLO 4: The study will able to analyze and correlate stratigraphic units using lithologic biostratigraphic and chronostratigraphic principles to reconstruct earths depositional

history and geological time scale.

Title of the Course: Engineering Geology
Semester: 4th
Course Code: GLY422J2
CLO 1: The students will learn the skills of identifying and mapping different geological structures and the alignment of engineering projects and their environmental effects.
CLO 2: This course will also help students to comprehend the dynamic nature of earths lithosphere
CLO 3: In addition reading geological maps and solving simple map problems using strike and preparation of cross sections useful in engineering projects are also the focus so the course.
CLO 4: The students will be able to identify and evaluate materials, structures and processes to assess site suitability and propose safe, sustainable and engineering solutions.

Title of the Course: Medical Geology
Semester: 4th
Course Code: GLY422J3
CLO 1: The students will be able to understand the distribution of trace elements and their cyclic movement through the biotic and abiotic environment and their influence on human heath, flora and fauna.
CLO 2: This course is designed to include the basic concept of medical geology and the interaction between abundance of elements and isotopes and the health of humans and plants.
CLO 3: The course provides basic understanding of geogenic and anthropogenic, distribution of trace elements, their toxic effects on human health and flora and fauna.
CLO 4: After studying the course, students will be able to analyse the link between natural environment and human health for the betterment of global society.
Title of the Course: Geochemistry & Geophysics
Semester: 5th
Course Code: GLY522J1
CLO 1: This course deals with extracting geological information out of geochemical and geophysical datasets
CLO 2: The student will acquire skills to use various geochemical and geophysical methods and basic principles of radioactivity for age determination the composition and age of rocks, and mineral exploration.
CLO 3: The students will be able to apply geophysical principles and methods to investigate subsurface structures, interpret geophysical data, and solve geological and environmental problems.
CLO 4: It will help the students to select and use appropriate geophysical instruments, acquire filed data and evaluate the accuracy and limitations of different geophysical techniques.

Title of the Course: Remote Sensing and Geological Hazards
Semester: 5th
Course Code: GLY522J2
CLO 1: The course is meant to address the fundamental techniques used for remote sensing. At the end of this course, the student will be appraised with all the theoretical knowledge, information and skills to use remotely sensed data for geological applications
CLO 2: This course intends to introduce students to the fundamental principles and techniques

of remote sensing, the basic properties of electromagnetic radiation and its interaction with matter.
CLO 3: It will also include topics like instruments and platforms used for remote sensing and the ways those systems can be used to determine the geological structure and rock types.
CLO 4: After completion of this course, the student will be well-versed in the world of remote sensing and the applications and interpretation of data related to geosciences.

Title of the Course: Advanced Geochemistry
Semester: 5th
Course Code: GLY522J3
CLO 1: The course provides a forum to introduce the concept of isotopes to graduate students and the use of radiogenic and stable isotopes in geosciences. Radiogenic and stable nuclides are critical tools for dating materials, understanding planetary differentiation, and tracing provenance and processes in all spheres of the Earth.
CLO 2: This course examines the theory and application of isotope geochemistry to a broad range of geologic topics.
CLO 3: At the end of the course, the students will be appraised about the world of isotopes and their use in dating or geochemical tracing.
CLO 4: The students will be able to analyse and interpret the geochemical behavior of major, trace and isotopic elements to understand Earths processes and evaluate geological materials.

Title of the Course: Structural Geology and Tectonics
Semester: 6th
Course Code: GLY622J1
CLO 1: The course deals with geological structures resulting from the action of these forces on rocks. The student will gain knowledge of the geometry of the rock structures, and understand the mechanism of the evolution of rock structures and its application in the field.
CLO 2: The students learn the skills of identifying different structures and measurements using Brunton compass.
CLO 3: This course also helps to know how to use structures and helps students appreciate the dynamic nature of the Earth's lithosphere. Learn how to read geologic maps and solve simple map problems using strike and preparations of cross sections.
CLO 4: The course will help to explain the processes and dynamics of plate tectonics and anaylse geological structures to interpret the evolution of Earths lithosphere.

Title of the Course: Hydrogeology and Environmental Geology
Semester: 6th
Course Code: GLY622J2
CLO 1: This course deals with information on hydrology and various process associated with it
CLO 2: The student will acquire skills to understand various processes determining the movement of groundwater.
CLO 3: The students will also gain an understanding of the impact of climate change on water resources, including the cryosphere. Also, water rock interaction and its effects on water chemistry as well as procedures for checking the quality of water for various purposes will be taken into account.

CLO 4: Besides, the student will understand the hydrological processes acting on and below the surface of the earth.

Title of the Course: Mining and Exploration Geology
Semester: 6th
Course Code: GLY622J3
CLO 1: The course provides the student with essential and basic concepts of mineral expiration techniques and the art and science of mining mineral resources
CLO 2: The course envisages exposing the students to the topics such as geology in the mining industry, methods of exploration, sampling principles, methods, estimation of reserves, ore dressing and beneficiation.
CLO 3: This course tries to impart skills related to Geology in mining and enable him/her to perform the duties of a geologist at the mining site.
CLO 4: It will help students in applying geological, geochemical and geophysical methods to identify, evaluate and model mineral and energy resource prospects.

Title of the Course: GEOLOGY _ ADVANCED STRUCTURAL GEOLOGY
Semester: 7th
Course Code: GLY722J1
CLO 1: This course the students will be able to explain stress-strain concepts, failure criteria, and methods of strain analysis in naturally deformed rocks.
CLO 2: The students will be able analyse brittle deformation features including faults, fractures, joints, and shear zones, and their tectonic significance.
CLO 3: This course will help the students to Interpret ductile deformation structures such as folds, boudinages, and superposed folding patterns using geometric and kinematic principles.
CLO 4: Students will be able to analyse complex geological structures using advanced geometric, kinematic and dynamic techniques to interpret deformational histories and crustal evolution.

Title of the Course: GEOLOGY _ PALEOBIOLOGY & STRATIGRAPHY
Semester: 7th
Course Code: GLY722J2
CLO 1: The course deals with the origin and evolution of life, key fossil groups, and their applications in biostratigraphy and paleoenvironmental reconstruction.
CLO 2: It helps to Interpret vertebrate, microfossil, and plant fossil records for palaeoecological, paleoclimatic, and hydrocarbon studies
CLO 3: This course will help the students to explain the principles of stratigraphy in outlining and understanding the geological evolution of Indian cratons and Proterozoic basins.
CLO 4: The course summarizes the stratigraphy of major Indian type sections and address boundary problems using regional case studies.

Title of the Course: GEOLOGY _ APPLIED CRYSTALLOGRAPHY & MINERALOGY

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Semester: 7th
Course Code: GLY722J3
CLO 1: The students will be able to classify crystals into 32 crystal classes and interpret crystal projections using stereographic techniques.
CLO 2: It will help in explaining in depths the principles of space groups, reciprocal lattices, and X-ray crystallography in mineral analysis.
CLO 3: This course will help the students describe mineral chemistry, bonding, and classification of silicate and non-silicate mineral groups.
CLO 4: The course guides in the application of optical mineralogy concepts to identify minerals using interference figures, optic signs, and universal stage techniques.

Title of the Course: GEOLOGY _ APPLIED SEDIMENTOLOGY
Semester: 8th
Course Code: GLY822J1
CLO 1: The students will be able to Identify and classify sedimentary rocks based on texture, structure, and mineral composition, and understand their tectonic and economic significance.
CLO 2: To Interpret sedimentary processes using flow dynamics, compositional maturity, and paleocurrents analysis for provenance and basin evolution.
CLO 3: The course helps to reconstruct sedimentary environments through facies analysis and apply Walther's Law to infer depositional settings and digenetic changes.
CLO 4: The course helps students in reconstruction of paleoclimatic and paleographic conditions and understands their role in basin evolution.

Title of the Course: GEOLOGY _ GLOBAL TECTONICS & IGNEOUS PETROLOGY
Semester: 8th
Course Code: GLY822J2
CLO 1: Students will be able to explain the assembly and breakup of supercontinents and analyse plate tectonic processes using geological and geophysical evidence.
CLO 2: To Interpret geomagnetic data, mantle dynamics, and hotspot activity in the context of tectonic evolution and magmatism.
CLO 3: The course will help students in deciphering magma generation and evolution processes, and relate them to different tectonic settings and mantle characteristics.
CLO 4: It is helpful in application of geochemical and isotopic tools to evaluate magma evolution, igneous petrogenesis, and metallogeny.

Title of the Course: GEOLOGY _ METAMORPHIC PETROLOGY & GEMMOLOGY
Semester: 8th
Course Code: GLY822J3
CLO 1: The course is helpful in giving a detailed explanation of metamorphic processes, types, and controlling factors, and analyse metamorphic textures and structures.
CLO 2: Helpful in classifying metamorphic facies and reactions, and apply geothermobarometric to interpret metamorphic conditions..
CLO 3: The students able to Interpret P-T-t paths, petrogenetic grids, and the tectonic context of regional and extreme metamorphism.
CLO 4: The course gives a hand on experience in describing key gemological properties and evaluates the quality, origin, and characteristics of major gemstones.

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2.6.14. Department of History
Programme: Bachelors in Histroy (UG)

2.6.14a Programme Learning Outcomes (PLOs) Bachelors in History

PLO -1: Knowledge and Understanding
➢ Demonstrate comprehensive knowledge of Ancient, Medieval and Modern Indian history, including regional histories such as Kashmir.
PLO-2: Skills
➢ Develop analytical, interpretative and comparative skills for understanding historical events, institutions, cultures and processes.
PLO-3: Application of Knowledge and Skills
➢ Apply historical methods such as source criticism, chronology, contextual analysis and interpretation to study past societies.
PLO-4: Critical Thinking
➢ Evaluate historical arguments, challenge biased narratives, and form evidence-based conclusions.
PLO-5: Ethics
➢ Demonstrate ethical understanding in the use of sources, interpretation of the past, and representation of people and cultures.
PLO-6: Communication
➢ Communicate historical knowledge effectively in both oral and written forms using academic conventions.
PLO-7: Life-Long Learning
➢ Cultivate interest in continuous study of history, heritage preservation and socio-cultural understanding.
PLO-8: Environmental Awareness
➢ Understand historical interactions between environment and society, including ecological transformations in different periods.
PLO-9: Digital Literacy
➢ Use digital tools for historical research—archives, databases, mapping tools, online repositories and digital documentation.
PLO-10: Research Aptitude

- Develop the ability to formulate research questions, collect and analyze historical data, and prepare research-based assignments or projects.

2.6.14b. Course Learning Outcomes (CLOs)

SEMESTER 1 – MAJOR
Course: History of Ancient India **Credits: Theory 4, Tutorial :2**
Total Hours: 90

CLO-1
- Understand the major sources (archaeological, literary, numismatic, epigraphic) for reconstructing early Indian history.

CLO-2
- Explain the political evolution from the Indus Valley Civilization to the Mauryan and Post-Mauryan periods.

CLO-3
- Analyze socio-economic structures, religions (Vedic, Buddhist, Jain), and cultural developments in Ancient India.

CLO-4
- Evaluate historical debates on state formation, urbanization and early Indian society.

SEMESTER 2 – MAJOR
Course: History of Medieval India **Credits: Theory 4, Tutorial :2**
Total Hours: 90

- **CLO-1**

Describe the rise of early medieval kingdoms and the establishment of Delhi Sultanate and Mughal Empire.

- **CLO-2**

Understand administrative systems, legal structures, revenue policies and military reforms of the Medieval period.

- **CLO-3**

Examine Bhakti and Sufi movements, regional cultures and art-architecture.

- **CLO-4**

Assess economic trends, social hierarchies and patterns of urbanization during Medieval India.

SEMESTER 3 – MAJOR
Course: History of Modern India **Credits: Theory 4, Tutorial :2**
Total Hours: 90

CLO-1
- Explain the advent of European powers and the establishment of British colonial rule.

CLO-2
- Analyze social and economic changes under British rule, including land revenue systems and industrial impact.

CLO-3
- Understand reformist movements, socio-religious awakening and modern political consciousness.

CLO-4

- Assess the major events leading to nationalist movements and India's path to independence.

SEMESTER 4 – MAJOR PAPERS

Major 1: Ancient Kashmir History **Credits: Theory 3, Tutorial :1**
Total Hours: 60

CLO-1
- Identify major sources for the study of Kashmir's ancient past (literary, archaeology, inscriptions).

CLO-2
- Trace political dynasties, state formation and administrative patterns in Ancient Kashmir.

CLO-3
- Examine socio-religious developments: Buddhism, Hinduism, Shaivism and local traditions.

CLO-4
- Evaluate cultural, literary and architectural contributions of Ancient Kashmir.

Major 2: Socio-Economic History of Ancient India **Credits: Theory 4, Tutorial :2**
Total Hours: 90

CLO-1
- Understand major economic structures—agriculture, trade, crafts and taxation in Ancient India.

CLO-2
- Analyze social institutions—varna, jati, family, gender, and education.

CLO-3
- Explain urbanization patterns and development of trade routes.

CLO-4
- Evaluate changing socio-economic conditions across different dynastic periods.

Major 3: Economic History of Ancient India **Credits: Theory 4, Tutorial :2**
Total Hours: 90

CLO-1
- Explain early economic systems including subsistence patterns and agrarian organization.

CLO-2
- Analyze the evolution of trade networks, market systems, guilds and coinage.

CLO-3
- Evaluate state policies impacting economy during Mauryan, Gupta and other empires.

CLO-4
- Understand technological changes and their economic impact.

SEMESTER 5 – MAJOR PAPERS

Major 1: History of Medieval Kashmir **Credits: Theory 3, Tutorial :1**
Total Hours: 60

CLO-1
- Trace political history from the Lalitaditya era to the Shahmirs, Chaks, and Mughal annexation.

CLO-2
- Understand administrative systems, land revenue and socio-political structures.

CLO-3
- Examine Sufi traditions, Persian influence and cultural transformation.

CLO-4
- Analyze economic and social developments in Medieval Kashmir.

Major 2: Socio-Cultural History of Medieval India **Credits: Theory 4, Tutorial :2**
Total Hours: 90

CLO-1
- Understand social structures, caste, gender and everyday life in Medieval India.

CLO-2
- Examine cultural developments—art, architecture, language, literature, music.

CLO-3
- Analyze Bhakti, Sufi movements and their impact on Indian society.

CLO-4
- Evaluate interaction of different cultural groups and emergence of composite culture.

Major 3: Economic History of Medieval India **Credits: Theory 4, Tutorial :2**
Total Hours: 90

CLO-1
- Describe agrarian economy, land systems and irrigation developments.

CLO-2
- Explain growth of trade centers, markets, guilds and Indo-Islamic economic institutions.

CLO-3
- Analyze revenue policies of Sultanate and Mughal regimes.

CLO-4
- Evaluate internal and external trade patterns during Medieval India.

SEMESTER 6 – MAJOR PAPERS

Major 1: History of Modern Kashmir **Credits: Theory 3, Tutorial :1**
Total Hours: 60

CLO-1
- Understand political changes from Afghan rule to Sikh and Dogra regimes.

CLO-2
- Analyze social and economic conditions under Dogra state.

CLO-3
- Examine reforms, movements, and rise of political consciousness in modern Kashmir.

CLO-4
- Evaluate the role of Kashmir in modern Indian history.

Major 2: Indian National Movement **Credits: Theory 4, Tutorial :2**
Total Hours: 90

CLO-1
- Explain early resistance movements and emergence of Indian nationalism.

CLO-2
- Analyze the role of moderate, extremist, revolutionary and Gandhian phases.

CLO-3
- Understand contributions of major leaders, parties, and social groups.

CLO-4

- Evaluate the role of mass movements and events leading to independence.

Major 3: Economy and Society of Modern India **Credits: Theory 4, Tutorial :2**
Total Hours: 90

CLO-1
- Understand impact of British economic policies—land revenue systems, deindustrialization, commercialization.

CLO-2
- Analyze changes in social structures—caste, class, gender and reform movements.

CLO-3
- Explain emergence of new economic classes, industries, transport and communication.

CLO-4
- Evaluate economic nationalism and early development planning.

2.6.15. Department of Islamic Studies
Programme: Bachelors In Islamic Studies

2.6.15a Programme Learning Outcomes (PLOs) Bachelor Degree (UG)

The program is structured across eight semesters as a Four-Year Undergraduate Programme (FYUGP) under the National Education Policy (NEP) 2020. Below are the programme learning outcomes:

1. Provide foundational knowledge of Islamic Studies as an academic discipline, including its nature, scope, and interdisciplinary connections to fields like psychology, sociology, economics, politics, history, and philosophy.

2. Introduce core Islamic doctrines, rituals (ibadah), and historical developments from pre-Islamic Arabia through the early caliphates, Abbasid era, Muslim Spain, and regional contexts like Kashmir and South Asia.

3. Develop critical analytical skills for interpreting primary sources (Qur'an, Hadith, Fiqh) and secondary scholarly works, fostering abilities in research, ethical reasoning, and contemporary application.

4. Equip students with insights into Islam's societal relevance, including ethics, human rights, social justice, environmental stewardship, bioethics, business practices, and da'wah strategies in modern global and regional contexts.

5. Cultivate communication, presentation, and interdisciplinary skills through group discussions, book reviews, site visits, and projects, preparing graduates for careers in academia, education, counselling. media, NGOs, and public service.

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2.6.15a Course Learning Outcomes (CLOs)

Course Title:	**An Introduction to Islamic Civilization - I**	
Semester:	**1st**	
Course Code: IST122J/ IS122N	**Credits:4**	**Total Contact Hours:60**
Students will gain basic knowledge of Islamic Studies as an interdisciplinary field (e.g., its definition, scope, and global institutions). They understand pre-Islamic Jahiliyyah Arabia's socio-religious context and Prophet Muhammad's (PBUH) life, da'wah strategies at Makkah, and establishment of a welfare- Islamic society in Madinah. This promotes appreciation for Islam's transformative role in society.		

Course Title:	**An Introduction to Islamic Civilization - II**	
Semester:	**2nd**	
Course code: IST222J/ IS222N	**Credits:4**	**Total Contact Hours:60**
Students will gain knowledge of the Khalifah al-Rashidah (Rightly Guided Caliphs) and Banu Umayyah periods, focusing on administrative reforms, societal structures, educational systems, and intellectual advancements. Outcomes include critical evaluation of political consolidation, social life, and decline factors.		

Course Title:	**Islamic Civilization under the Abbasids and the Muslim Spain**	
Semester:	**3rd**	
Course Code: IST322J/IST322N	**Credits:4**	**Total Contact Hours:60**
Students will gain knowledge of polity, society, education, and sciences during the Abbasid period and Muslim rule in Spain Outcomes include recognition of Islam's intellectual heritage and its Western influences, with skills in analyzing architectural and scientific legacies.		

Course Title:	**Introduction to Qur'an and Ulum al-Qur'an**
Semester:	**4th**

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Course Code: IST422J1 / IST422N	**Credits:3**	**Total Contact Hours:45**
Students will gain knowledge of Qur'anic sciences and tafsir (exegesis) methodologies. Students learn to approach Divine knowledge ethically, studying works by prominent mufassirun like Ibn Kathir and Abul Kalam Azad, building interpretive skills through reviews.		

Title:	**Introduction to Hadith and Ulum al-Hadith**	
Semester:	**4th**	
Course Code: IST422J2	**Credits:4**	**Total Contact Hours:60**
Students will gain knowledge of the role of Hadith as a source of Shari'ah. They will learn its classification as sahih/da'eef, sciences like jarh wa ta'dil/criticism and authentication. Outcomes include appreciation for Prophetic guidance in law and ethics, with knowledge of collections like Sihah-i-Sittah and Indian scholars like Shah Waliullah and Nazir Hussian Dehlavi.		

Course Title:	**Islamic Culture and Society in Kashmir**	
Semester:	**4th**	
Course Code: IST422J3	**Credits:4**	**Total Contact Hours:60**
Students will gain insight into Islam's advent in Kashmir (12th-14th centuries), sultanate-era developments (e.g., Zain ul-Abidin's Golden Age), and influences of Sufis/Rishis (e.g., Sayyid Ali Hamadani, Shaykh Nur al-Din). They will learn the explicit influence of Central Asia and Iran on Kashmir society.		

Course Title:	**Introduction to Islamic Jurisprudence (Fiqh)**	
Semester:	**5th**	
Course Code: IST522J1 / IST522N	**Credits:3**	**Total Contact Hours:45**

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Students will gain foundational knowledge of Fiqh, usul al-fiqh and its sources. Outcomes include comparative understanding of madhhabs and role of ijtihad with skills in applying Fiqh to modern issues.

Course Title:	**Muslim Philosophy and Sufism.**	
Semester:	**5th**	
Course Code: IST522J2	**Credits:4**	**Total Contact Hours:60**
Students will gain knowledge of ilm al-kalam (scholastic theology) and philosophers like Al-Ghazzali, Ibn Rushd) reconciling reason and revelation; Sufism's evolution, early sufis like Hasan al-Basri and Rabia Basri; silsilas like Chishti, Naqshbandi. Students gain ethical and spiritual insights for contemporary relevance.		

Course Title:	**Islam in the Modern World: Thinkers and Movements in South Asia**	
Semester:	**5th**	
Course Code: IST522J3	**Credits:4**	**Total Contact Hours:60**
Students will gain knowledge of modernism, tajdid (renewal), and reform (e.g., Aligarh Movement, Deoband, Nadwatul Ulama). Outcomes include critical views on scholars like Sir Syed Ahmad Khan and movements like Khilafat, fostering discourse on South Asian Muslim challenges.		

Course Title:	**Ethics and Human Rights in Islam**	
Semester:	**6th**	
Course Code: IST622J1 / IST622N	**Credits:3**	**Total Contact Hours:45**
Students will gain knowledge of Islamic ethical principles (e.g., akhlaq from Qur'an/Hadith) and human rights. Students address bioethics, environmental ethics, and issues like child labor, building advocacy skills through comparative studies		

Course Title:	**Islamic Social Sciences**	
Semester:	**6th**	
Course Code: ITS622J2	**Credits:4**	**Total Contact Hours:60**

Students will gain knowledge of the Integration of Islam with politics (e.g., shura-democracy), history, sociology, and psychology (e.g., mental health counseling). Outcomes include critical thinking on human-environment interactions.

Course Title:	**Da'wah and its Practices**	
Semester:	**6th**	
Course Code: IST622J3	**Credits:4**	**Total Contact Hours:60**
Students will gain knowledge of Qur'anic/Prophetic basis of da'wah, methods and contemporary approaches of da'wah in keeping consideration of human psyche and pluralism.		

2.6.16 Department of Persia
Programme: Bachelors In Persian (UG)

2.6.16a Course Learning Outcomes (CLOs)

PLO-1: Knowledge and understanding	In Persian, "knowledge" is دانش (\(dāneš\)) and "understanding" is فهم (\(fahm\)) or درک (\(darak\)). Dāneš refers to the accumulation of facts, information, and skills, while fahm or darak refers to the ability to comprehend and grasp the meaning of something. Knowledge (\(-dāneš\)):This word refers to information, facts, and skills acquired through education or experience.A related verb is دانستن (\(dānestan\)), meaning "to know".Understanding (\(-fahm\) or \(-darak\)):This refers to the cognitive ability to comprehend something, to grasp its meaning and significance.Fahm and darak can be used interchangeably to mean understanding or comprehension.
PLO-2: Skills	In Persian, the primary word for "skill" is مهارت (mahārat), meaning proficiency or expertise, but other words like توانایی (tavānāyi) for capability, عرضه (arzesh) for competence/knack, and استعداد (est'edād) for talent are also used, depending on the nuance. Key Persian words for skill: مهارت (Mahārat): The most common and direct translation, referring to a learned ability or expertise in a specific task (e.g., programming skill, language skill). ** توانایی (Tavānāyi):** Means ability, capability, or capacity to do something, a broader term. ** عرضه (Arzesh):** Implies competence, resourcefulness, or the knack/know-how to get something done well. استعداد (Est'edād): Refers to natural talent or aptitude, an innate ability. ** کاردانی (Kārdāni):** Denotes dexterity, workmanship, or proficiency in a craft. Example Usage: "He has a good مهارت in English." (He has good English skills). "She has the توانایی to solve problems." (She has the ability/capability).

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PLO-3: Application of knowledge and Skills	In Persian, the concept of applying knowledge and skills (کاربرد دانش و مهارت‌ها) involves using learned information and abilities in real-world tasks, like understanding context and grammar for communication, often called pragmatics or functional use, focusing on doing tasks (explaining, agreeing) rather than just memorizing, a key aspect of applied language learning. Key Persian Terms & Concepts کاربرد دانش و مهارت‌ها (Kārbord-e Dānesh va Mahārat-hā): This directly translates to "Application of Knowledge and Skills". مهارت‌های زبانی (Mahārat-hā-ye Zabānī): Language skills (reading, writing, listening, speaking). ** کاربرد عملی (Kārbord-e Amali):** Practical application. ** یادگیری کاربردی (Yādgiri-ye Kārbor-dī):** Applied learning, where grammar is used in tasks like agreeing, disagreeing, explaining. In the Context of Language Learning Pragmatics (کاربردشناسی): Understanding how language is used in context, considering speaker intent, world knowledge, and social situations, not just surface grammar. ** استفاده از دانش (Estefāde az Dānesh):** Using knowledge, often through technology like intelligent feedback systems, to improve grammar and fluency in real interaction. ** توسعه مهارت‌ها (Tose'e-ye Mahārat-hā):** Skill development, moving beyond knowing words to being able to use them functionally in conversation and tasks. Essentially, it's the shift from knowing about something (theory) to knowing how to do something (practice) in the Persian language context.
PLO-4: Critical thinking	Critical thinking" in Persian is "تفکر انتقادی" (tafakkor-e enteqādi) or "تفکر نقادانه" (tafakkor-e naqqādāneh). It refers to the process of analyzing, questioning, and evaluating information to form a judgment, rather than accepting information at face value. This type of thinking involves actively and skillfully conceptualizing, applying, analyzing, and evaluating information to guide one's beliefs and actions. Definition: The intellectual process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from observation, experience, reflection, reasoning, or communication to guide belief and action. Key actions: It involves questioning, analyzing, interpreting, and evaluating information to make a judgment. Synonyms: Other related terms include "تفکر نقادانه" (tafakkor-e naqqādāneh) and phrases like "تحلیل منطقی" (tahlil-e manteqi - logical analysis) and "تفکر مستقل" (tafakkor-e mostaqel - independent thinking). Goal: The goal is to form good beliefs that are truthful, useful, and rational by assessing reasons to evaluate statements, assumptions, and arguments. What is Critical Thinking? - University of Louisville Critical thinking is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating inf... University of Louisville معنی تخصصی در دیکشنری آبادیس - critical thinking حسین کتابدار ۰۱:۲۹ - ۱۴۰۱/۱۰/۲۰ Critical thinking is a kind of thinking in which you question, analyse, interpret, evaluate and make a judgement about what you . دیکشنری آنلاین آبادی - Abadis Dictionary معنی critical thinking به فارسی +جمله‌ها با تلفظ - فست دیکشنری 6 Nov 2025 — critical thinking - معنی و نمونه جمله همراه با مترادف و متضاد، تلفظ صوتی ... آمریکایی و بریتانیایی، تفکر انتقادی، تفکر نقادانه)فرآیند تفکر دقیق

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	Fastdic Critical Thinking | Internet Encyclopedia of Philosophy Critical Thinking is the process of using and assessing reasons to evaluate statements, assumptions, and arguments in ordinary situations. The goal of this proc... Internet Encyclopedia of Philosophy Top 10 Positive Synonyms for “Critical Thinking” (With Meanings ... 28 Mar 2024 — The top 10 positive & impactful synonyms for “critical thinking” are analytical reasoning, insightful analysis, reflective judgment, strategic though...
PLO-5: Ethics	In Persian, the word for "ethics" is اخلاق (akhlaq), which refers to moral principles, character, and conduct, often deeply tied to spiritual growth, love (for God and humanity), and achieving perfection, as seen in rich Persian literature, especially Sufi poetry, focusing on virtues like courage and compassion to reach higher understanding. Key Persian Terms:) اخلاقAkhlāq): The primary word for ethics, morals, character.) اصول اخلاقOsul-e Akhlāq): Ethical principles, the foundations of ethics.) اخلاقیAkhlāqi): Adjective form, meaning "ethical" or "moral ." Core Concepts in Persian Ethics: Spiritual Growth (تکامل): Ethics aims for human perfection, often seen as drawing closer to God. Love (عشق - Eshq): A central theme, bridging man and God, the source of all ethical flow. Virtue (فضیلت - Fazilat): Cultivating good traits like courage, with extremes (vices) being deficiency (cowardice) and excess (recklessness). Practical Morality: A rich tradition of moral guidance in Persian prose and poetry. In essence, Persian ethics, influenced heavily by Islamic thought and Sufism, views morality not just as rules but as a path to spiritual fulfillment, emphasizing inner character and love.
PLO-6: Communication	The definition of "communication" in Persian is ارتباطات (ertebātāt), which is the process of exchanging information, ideas, or feelings between individuals or groups. The term can be broken down further into different contexts, such as using the verb "ابلاغ کردن" (eblāgh kardan), meaning to convey or report, especially in a formal or hierarchical setting, according to Abadis Dictionary.) ارتباطاتertebātāt): This is the general and most common translation for the noun "communication." Meaning: It refers to the act of conveying information, thoughts, and emotions from one party to another, using various methods like speech, writing, or other non-verbal cues. Contextual meaning: In formal or business contexts, the verb form of "communication" can be translated as ابلاغ کردن (eblāgh kardan), which means to inform, notify, or officially report something up or down a hierarchy, notes Abadis Dictionary. Example: While "communication" is ارتباطات, a person who is good at communicating might be described as having strong ارتباطات or being ارتباطی (ertebāṭi).
PLO-7: Life Long Learning	In Persian, "lifelong learning" is often translated as یادگیری مادام‌العمر (Yâdgiri-ye Mâdâm-ol-'Omr) or آموزش مادام‌العمر (Âmuzesh-e Mâdâm-ol-'Omr), meaning

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	"learning/education from cradle to grave," emphasizing a continuous, self-directed process of acquiring skills and knowledge throughout life for personal growth, encompassing formal/informal settings. Key Persian Terms: یادگیری مادام العمر (Yâdgiri-ye Mâdâm-ol-'Omr): Lifelong Learning (emphasizing the act of learning(آموزش مادام العمر (Âmuzesh-e Mâdâm-ol-'Omr): Lifelong Education (emphasizing the educational system/process(Core Concepts in Persian Context: یادگیری برای زندگی (Yâdgiri barâye Zendegi): Learning for life, a broader concept. یادگیری در طول زندگی (Yâdgiri dar tul-e Zendegi): Learning throughout life. یادگیری خودراهبر (Yâdgiri-ye Khod-râh-bar): Self-directed learning . Definition Essence: It's about a dynamic, ongoing journey of acquiring knowledge, values, and skills, driven by personal motivation and the need to adapt in various life roles and environments, from early childhood to old age, say researchers via ScienceDirect and via National Institutes of Health (.gov).
PLO-7: Life Long Learning	In Persian, "lifelong learning" is often translated as یادگیری مادام‌العمر (Yâdgiri-ye Mâdâm-ol-'Omr) or آموزش مادام‌العمر (Âmuzesh-e Mâdâm-ol-'Omr), meaning "learning/education from cradle to grave," emphasizing a continuous, self-directed process of acquiring skills and knowledge throughout life for personal growth, encompassing formal/informal settings. Key Persian Terms: یادگیری مادام العمر (Yâdgiri-ye Mâdâm-ol-'Omr): Lifelong Learning (emphasizing the act of learning(آموزش مادام العمر (Âmuzesh-e Mâdâm-ol-'Omr): Lifelong Education (emphasizing the educational system/process(Core Concepts in Persian Context: یادگیری برای زندگی (Yâdgiri barâye Zendegi): Learning for life, a broader concept. یادگیری در طول زندگی (Yâdgiri dar tul-e Zendegi): Learning throughout life. یادگیری خودراهبر (Yâdgiri-ye Khod-râh-bar): Self-directed learning . Definition Essence: It's about a dynamic, ongoing journey of acquiring knowledge, values, and skills, driven by personal motivation and the need to adapt in various life roles and environments, from early childhood to old age, say researchers via ScienceDirect and via National Institutes of Health (.gov).
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2.6.16. Department of Physics
Programme: Bachelors (UG) Physics

2.6.16a. PROGRAMME LEARNING OUTCOMES (PLOs)

PLO-1	Develop a coherent understanding of fundamental and applied areas of Physics.
PLO-2	Acquire laboratory, computational, and mathematical skills essential for Physics.
PLO-3	Apply physical principles and modeling techniques to solve problems.
PLO-4	Analyze systems, interpret data, and evaluate physical phenomena.
PLO-5	Demonstrate ethical scientific conduct and safe laboratory practices.
PLO-6	Communicate physics concepts and results effectively.
PLO-7	Pursue higher studies and continuous learning.
PLO-8	Understand environmental impact and promote sustainability.
PLO-9	Use ICT tools, programming, and simulations for learning and research.
PLO-10	Acquire basic research skills including experimental design and analysis.

2.6.16b. COURSE LEARNING OUTCOMES (CLOs) – PHY122M: PHYSICS (MECHANICS)

CLO-1	Explain and apply Cartesian, spherical and cylindrical coordinate systems; distinguish inertial and non-inertial frames; apply Newton’s laws to particle motion.

CLO-2	Apply conservation laws for momentum and energy; analyze rotational motion and rocket propulsion; understand Lorentz transformations, time dilation, length contraction, and relativistic velocity addition.
CLO-3	Apply Newton's law of gravitation, central force motion, Kepler's laws, GPS concepts; solve SHM differential equation, analyze energy in oscillations and damping.
CLO-4	Explain elasticity, Hooke's law, stress–strain behavior, Poisson's ratio, torsion; analyze viscous flow, Poiseuille's equation, Stokes' law, temperature dependence of viscosity.

PRACTICAL LEARNING OUTCOMES

CLO-P1	Measure length, diameter and small differences using Vernier caliper, screw gauge, and travelling microscope.
CLO-P2	Determine acceleration due to gravity using Bar and Kater's Pendulum.
CLO-P3	Determine Young's modulus, rigidity modulus, and elastic constants using Maxwell's needle, Searle's method, and optical lever.
CLO-P4	Study viscosity of fluids and verify Poiseuille's equation.

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Department of Urdu

Govt. Degree College Pulwama

Programme Learning Outcomes(PLOs)

And

Course Learning Outcomes (CLOs)

Programme Learning Outcome:

۱۔شعبہ اردو، ڈگری کالج پلوامہ کا مقصد طلبہ میں اردو زبان و ادب کی تاریخ، ساخت اور اس کی فکری، تخلیقی اور تنقیدی جہتوں تک طلبہ کی رسائی ممکن بنانا ہے تا کہ وہ اپنی صلاحیتوں کو بروئے کار لا کر علمی و ادبی خدمات انجام دے سکیں۔

۲۔یہ پروگرام طلبہ کو اردو زبان کی تدریس، تحقیق، ترجمہ اور تخلیق کے میدان میں خود کفیل اور ہنر مند بناتا ہے۔

۳۔شامل نصاب اصناف روایتی اور جدید ادب کی تفہیم کے ساتھ ساتھ زبان دانی، لسانیات اور صحافت کے اسرار و رموز کی تہہ تک پہنچنے کی بنیاد فراہم کرتا ہے۔

۴۔یہ پروگرام طلبہ میں تہذیبی شعور، ادبی تنقید اور تحقیقی مہارت پیدا کرنے کے وسایل فراہم کرتا ہے تا کہ وہ معاشرت اور ثقافت کی ادبی منظر نامے میں اہمیت کو سمجھ سکیں۔

۵۔اس پروگرام کے تحت ایک ایسا ماحول فراہم کرنے کی کوشش کی جاتی ہے جہاں طلبا کو نہ صرف مستقبل میں روزگار کے مواقع میسر ہوں بلکہ وہ اعلی انسانی اقدار جیسے انسانی ہمدردی، اخلاقی سوچ اور بھائی چارہ وغیرہ سے متصف ہوں تا کہ مستقبل کے کامیاب شہری بن کر اپنے ملک و قوم کی خدمت کر سکیں۔

GOVERNMENT DEGREE COLLEGE PULWAMA

Course Learning Outcome

سمسٹر اول

Course Code: URL122J

Course Title: Urdu Ghazal and Nazim

اردو غزل و نظم

Credits :04 **Hours: 60**

Course Learning Outcome(CLO):

یہ پرچہ مکمل کرنے کے بعد طلبا میں اردو غزل اور نظم کے فن پر اظہار خیال کرنے کے ساتھ ساتھ شعر فہمی کی بھی قابلیت پیدا ہو جائیگی۔

سمسٹر دوم

Course Code: URL222J

Course Title: Classical Genres of Urdu Poetry

کلاسکی اصناف شعر

Credits :04 **Hours: 60**

Course Learning Outcome:

اس پرچے کو کامیاب کرنے کے بعد طلاب روایتی اصناف شعر کی مختلف ہیتوں میں فرق کرنے کے ساتھ ساتھ ان اصناف کی موضوعی اور فنی خصوصیات سے کما حقہ واقفیت حاصل کرنے کے اہل ہونگے۔

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یہ پرچہ کامیاب کرنے کے بعد طلبہ غیر افسانوی نثر جیسے مضمون نگاری، سفرنامہ، مکتوب نگاری وغیرہ سے فنی واقفیت حاصل کرنے کے قابل ہو جائینگے نیز اردو ادب میں ان اصناف کے آغاز وارتقا کے بارے میں آگاہ ہو جائینگے ۔

کورس کوڈ URL422J3

کورس ٹائیٹل: جموں وکشمیر میں اردو زبان وادب Urdu Language and Literature in Jammu and Kashmir

کریڈٹس :04 HOURS :60

Course Learning Outcome

اس پرچہ کو مکمل کرنے کے بعد طلبہ نہ صرف جموں کشمیر میں اردو زبان کی درجہ بدرجہ نشوونما کی اہم منازل سے واقف ہو جایے گے بلکہ اس خطے سے تعلق رکھنے والے شعرا اور ادبا کی اہم تخلیقات کے ساتھ ساتھ یہاں کے مقامی اردو اخبارات اور ان سے وابستہ صحافیوں کے بارے میں بھی جانکاری حاصل کرنے کے قابل ہو جائینگے۔

سمسٹر پنجم

Course Code: URL522J1

Course Title: Modern Urdu Fiction (Novel/Short Story)

جدید اردو فکشن (ناول، مختصر افسانہ)

Credits :03 Hours: 45

Course Learning Outcome:

اس سمسٹر کی کامیابی کے بعد طلبہ افسانوی نثر بالخصوص ناول اور افسانہ کے فن کو سمجھنے کے علاوہ اس کی روایت سے بھی جانکاری حاصل کرینگے ۔مزید براں بین الاقوامی سطح بالخصوص انگریزی فکشن کے اردو فکشن پر اثرات کے حوالے سے بھی آگاہ ہو جائینگے۔

GOVERNMENT DEGREE COLLEGE PULWAMA

Course Code: URL322J

Course Title: History of Urdu Language and Literature

اردو زبان وادب کی تاریخ

Credits :04 Hours: 60

Course Learning Outcome:

اس سمسٹر کی کامیاب تکمیل کے بعد طلبہ اردو زبان وادب کے آغاز وارتقا اور اردو زبان کی ابتد سے متعلق نظریات سے واقف ہونے کے ساتھ ساتھ دبستان دہلی اور دبستان لکھنو کی خصوصیات اور اردو زبان وادب کے تئیں مختلف اداروں جیسے فورٹ ولیم کالج اور دلی کالج کی ادبی خدمات سے بھی مکمل آگاہی حاصل کرے گے۔

سمسٹر: چہارم

کورس کوڈ: URL422J1

کورس ٹائیٹل: کلاسکی اردو فکشن (داستان، ڈرامہ (Dastan ,Drama) Classical Urdu Fiction

کریڈٹس : 03 HOURS :45

Course Learning Outcome

یہ پرچہ مکمل کرنے کے بعد طلبا سے توقع کی جاتی ہے کہ وہ کلاسکی افسانوی نثر یعنی داستان کی لسانی خصوصیات اور ثقافتی اہمیت سے واقف ہو جائینگے۔ بنابرایں داستان اور ڈرامہ کی فنی خصوصیات سے آگاہی حاصل کرنے کے علاوہ طلبہ میں داستان اور ڈرامہ کے متن کا تنقیدی مطالعہ کرنے کی صلاحیت پیدا ہو جائے گی۔

کورس کوڈ URL422J2

کورس ٹائیٹل: اردو کی غیر افسانوی نثر Non Fictional Prose in Urdu

کریڈٹس :04 HOURS :60

GOVERNMENT DEGREE COLLEGE PULWAMA

Course Code: URL522J2

Course Title: The Art of Translation

ترجمے کا فن

Credits :04 Hours: 60

Course Learning Outcome:

اس پرچہ کو مکمل کرنے کے بعد طلبہ سے توقع کی جاتی ہے کہ وہ ترجمہ کے فن اور اس کے اصولوں سے واقف ہو چکے ہونگے۔ یہ ترجمے کی تکنیکی اور موضوعی اقسام سے واقفیت حاصل کرنے کے قابل ہو جائینگے۔

Course Code: URL522J3

Course Title: Print Media in Urdu

اردو میں پرنٹ میڈیا

Credits :04 Hours: 60

Course Learning Outcome:

اس سمسٹر کی کامیابی کے بعد طالب علم پرنٹ میڈیا اور اس کے اصول وضوابط کے بارے میں جانکاری حاصل کرنے کے اہل ہونگے۔ بنابرایں پرنٹ میڈیا کے مختلف ذرائع اور موجودہ دور میں اس کی اہمیت سے آگاہ ہونگے۔

سمسٹر ششم

Course Code: URL622J1

Course Title: Urdu Humour and Satire

اردو طنز و مزاح

Credits :03 Hours: 45

GOVERNMENT DEGREE COLLEGE PULWAMA

Course Code: URL622J2

Course Title:Aligarh Movement and Urdu Literature

علی گڑھ تحریک اور اردو ادب

Credits :04 Hours: 60

Course Learning Outcome:

اس سمسٹر میں پاس ہونے کے بعد طالبان علم علی گڑھ تحریک کی سماجی اور ادبی خدمات نیز سرسید کی تصانیف کی اہمیت کے حوالے سے جانکاری حاصل کرنے کے اہل ہو جائینگے۔

Course Code: URL622J3

Course Title: Electronic Media in Urdu

اردو میں برقی مواصلات

Credits :04 Hours: 60

Course Learning Outcome:

اس پرچے کی تکمیل کامیابی کے بعد طالب علموں میں الیکٹرانک میڈیا اور پرنٹ میڈیا کو سمجھنے، موجودہ دور میں اس کی اہمیت اور اس کے فواید اور نقصانات کے بارے میں آگاہی حاصل ہونے کے ساتھ ساتھ اردو زبان کو ڈیجیٹل ورلڈ (Digital world) کے ساتھ ملانے اور ترسیل و ابلاغ کے دو مستحکم وسایل یعنی ریڈیو اور ٹی وی کی اہمیت کے حوالے سے جانکاری حاصل ہونے کی صلاحیت پیدا ہو جائیگی۔

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