St. Edmund's College
(Affiliated to North Eastern Hill University, Shillong)
Recognized by the University Grant Commission under 2 (f) and 12 (B) of UGC act 1956)
Laitumkhrah, Shillong - 793003, Meghalaya, India

E-mail: stedmundscollege@gmail.com Website: http://sec.edu.in

PROGRAM EDUCATIONAL OUTCOMES (PEOs), PROGRAM OUTCOMES (PO)& COURSE OUTCOMES (CO) OF ALL DEGREE COURSES OFFERED BY THE COLLEGE

VISION:

St. Edmund's College, Shillong has a vision that is enshrined in the motto of the College: "**Facta Non Verba**" which translates "*Deeds Not Words*". It aims at imparting equitable quality education grounded on the core values of excellence, competition, and ideals. The College also stands on the principles advocated by Edmund Ignatius Rice, the Founder of the Institution.

MISSION:

The College endeavours to create a stimulating environment in the Campus through various academic programmes and co-curricular activities to develop character, shape personality and build a sense of social responsibility among our young men and women. As the college prioritizes learning, teaching, and sharing of knowledge, education is therefore perceived as a potent vehicle that works towards transforming attitudes and mind-sets for the good of one and all in the society and the world at large.

Program Educational Outcomes (PEOs)

The graduates will:

PEO1	Have the confidence and tenacity it takes to be life-long learners, keeping abreast with Knowledge and Skills.
PEO2	Be looked up to, as young women and men, who can be counted on to be agents for transformation.
PEO3	In keeping with the principles of Blessed Edmund Rice, be humble and at home with 'kings' and 'paupers.
PEO4	Be generous in being able to give back to Society what they have received, by participating in various Health Missions.

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APPROVED BY GOVERNING BODY (19TH NOVEMBER 2021)

Br R Sequeira
President, GB

Departments Involved (UG)

Biochemistry	Biotechnology	Botany	Chemistry
Commerce	Computer Application	Computer Science	Economics
Electronics	English	Environmental Science	Geography
History	Khasi	Mathematics	Physics
Political Science	Sociology	Social Work (BSW)	Zoology

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PROGRAM OUTCOMES (PO) & COURSE OUTCOMES (CO)

SUBJECT: BIOCHEMISTRY (BIOCHEM)
(6th Semester, 2020 Batch)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

PROGRAMME OUTCOME FOR BIOCHEMISTRY		
PO1	Domain Expertise	1.1 Outline the major biomolecules; their structures and roles in biological systems. 1.2 Relate to the importance of physical laws and parameters that centres around energy flow and other parameters that governs the biochemical reactions. 1.3 Demonstrate an experiential learning and critical thinking of the cells as the basic unit of life, their components structure and function of both prokaryotic and eukaryotic cells; balances in growth and multiplication and their behaviour and interaction with the environment. 1.4 Outline enzymes per se and as biocatalysts that govern all biochemical pathways. 1.5 Microorganisms as life form that contributes directly or indirectly to health and diseases and human progression. 1.6 Relate to the application of statistical principles to questions and problems in biology, medicine or public health; 1.7 Outline of biochemical data analyses (e.g. in enzyme kinetics, molecular structure analysis and biological databases. 1.8 Outline the various aspects of human physiology 1.9 Relate to the significance of the various aspects of the immune system in terms of components and functions in health and diseases. 1.9.1 Relate to the larger aspects of molecular biology through knowledge of the DNA per se, how information is processed via replication, transcription and translation in both prokaryotes and eukaryotes. Get a glimpse of how the information is processed and regulated. 1.9.2. Relate to the various molecular biology techniques that helps in the understanding of the DNA and associated functions.
PO2	Skills	2.1 Carry out laboratory-orientated numerical calculations (e.g. inter-conversion of masses, moles, and molarity, preparation of solutions and accurate dilutions). 2.2 Relate to data visualization and analysis, including the application of data transformations (e.g. logarithmic, exponential). 2.3 Demonstrate an understanding of the principles, and have practical experience of, a wide range of biochemical techniques (e.g. basic molecular biology, cell biology and microbiology methods, spectrophotometry, the use of standards for quantification, enzyme kinetics; macromolecular purification, chromatography, electrophoresis, etc. 2.4 Develop basic professional skills pertaining to biochemical analysis, carrying out clinical diagnostic tests that may have applications in clinical, health, agriculture, community development, etc. 2.5 Develop conversational competence including communication and effective interaction with others, listening, speaking, and observational skills.

PO3	Personal Competence	3.1 Develop curiosity and ability to formulate biochemistry related problems and using appropriate concepts and methods to solve them. 3.2 Develop articulation of ideas, scientific writing and authentic reporting, effective presentation skills. 3.3. Relate and articulate with clarity and critical thinking of one's position as a biochemistry graduate as a citizen of the country and the world. 3.4 Demonstrate creativity, innovation and risk-taking ability.
PO4	Effective Tool Usage	4.1 Demonstrate the ability to use various e-resources in order to solve challenges related to biochemistry. 4.2 Demonstrate an understanding of the principles, and have practical experience of, a wide range of biochemical techniques (e.g. basic molecular biology, cell biology and microbiology methods, spectrophotometry, the use of standards for quantification, enzyme kinetics; macromolecular purification, chromatography, electrophoresis, etc.).
PO5	Entrepreneur-ial and Social Contribution	5.1 Demonstrate basic professional skills pertaining to biochemical analysis, carrying out clinical diagnostic tests and to contribute in specific areas related to biochemistry such as industrial production, clinical, health, agriculture, community development, etc. 5.2 Grasp ideas and to turn ideas into action related to biochemical mechanisms and processes related to industries, industrial production, health, agriculture, etc 5.3 Extend collaboration, cooperation and realizing the power of groups and community, ability to work in a group, community

COURSE OUTCOMES: CO BCHEM-601 (MICROBIOLOGY SECTION)

COBCHEM-601.1	1.1 Classify the types of microorganisms: and their general characteristics. 1.2 Understand the criteria used in the classification of bacteria.
COBCHEM-601.2	Understand growth curve and use of selection media in bacterial cultivation.
COBCHEM-601.3	3.1 Outline the role of microorganisms: in food spoilage and food-borne infections.
COBCHEM-601.4	4.1 Explain the process of transformation, conjugation transduction and transfection in microbial genetics with added emphasis on plasmids.
COBCHEM-601.5	5.1 Experiment with the isolation of microbes from water and soil using selective media. This experiment provides one with both qualitative and quantitative information on microbial content in the sample source(s). 5.2 Determine kinetics of bacterial growth to obtain information on the type of microbes and media characteristics. 5.3 Examine the effect of antibiotic on bacterial growth, to gain an insight into the significances of antibiotics in disease control.

COURSE OUTCOMES: CO601B (IMMUNOLOGY SECTION)

COBCHEM-601.1	1.1 Outline the basic concept of innate and adaptive immunity 1.2 Outline the cells and organs associated with the immune system
COBCHEM-601.2	2.1 Relate to the structure and functions of different classes of immunoglobulins, the genetic basis of antibody diversity and the importance of humoral, cell-mediated and innate immune responses in combating pathogens 2.2 Describe the classes of antibodies; Antigens- Nature of antigens; Antigen-antibody interactions; Immunogens; Haptens; Adjuvants
COBCHEM-601.3	3.1 Outline the haematopoietic stem cells, and relate to the clonal selection theory 3.2 Outline the structure and function of MHC molecules 3.3 Outline the basis of genetic diversity
COBCHEM-601.4	4.1 Outline complement fixation and also relate to hypersensitivity, allergy and types of autoimmune diseases; 4.2 Associate monoclonal antibody and its application in biology and development of vaccines.
COBCHEM-601.5	5.1 Determine antigen-antibody interaction through Ouchterlony Double Immunodiffusion (ODD) method, a

	visibly indispensible tool in immunology 5.2 Determine assays base on agglutination reaction especially blood typing (ABO and Rh blood groups), an important tool in determining phenotypic differences between individuals.

COURSE OUTCOMES: CO602 (MOLECULAR BIOLOGY)

CO BCHEM-602.1	1.1 Relate to Nucleic acids as genetic material backed by experimental evidences (bacterial genetic transformation and Hershey-Chase Experiment); 1.2 Outline the salient features of viral, prokaryotic and eukaryotic genomes 1.3 Outline Repetitive DNA sequences.
CO BCHEM-602.2	2.1 Outline DNA replication in prokaryotes with evidences of semi conservative, semi-discontinuous mode and contrast it with that of eukaryotes. Illustrate the effect of inhibitors of DNA replication.
CO BCHEM-602.3	3.1 Outline the mechanism of transcription in prokaryotes and relate to the effect of inhibitors of transcription. 3.2 Explain regulatory RNA (miRNA), Catalytic RNAs; and compare the salient differences in eukaryotes.
CO BCHEM-602.4	4.1 Outline the basic features of the genetic code and explain the Wobble hypothesis. 4.2 Outline the mechanism of prokaryotic translation and compare the salient differences in eukaryotes with emphasis on signal sequences. 4.3 Explain the regulation of gene expression in prokaryotes and outline the Operon concept using lac operon and trp operon as classic examples 4.4 Outline the general approach of molecular cloning through the application of recombinant DNA technology such as PCR, RT-PCR and qPCR. 4.5 Outline an introduction to bioinformatics with due emphasis on gene & protein databases.
CO BCHEM-602.5	5.1 Experiment with isolation of DNA from animal tissue to gain insight into the significances of this technique in molecular biology experiments 5.2 Analyze qualitatively and quantitatively DNA sample(s) using agarose gel electrophoresis, an indispensable tool in molecular biology. 5.3 Measure the melting temperature (Tm) of commercial DNA sample and hence distinguish DNA on GC=AT content. 5.4 Determine the amplification of DNA using PCR technique and relate the potential of this technique in various scientific advancements in medical and related sciences.

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PROGRAM OUTCOMES (PO) & COURSE OUTCOMES (CO)

SUBJECT: BIOTECHNOLOGY (BT)
(6th Semester, 2020 Batch)

Program Outcomes (POs)

At the end of the Biotechnology honours Programme, the graduates will be able to:

Program Outcomes for Biotechnology	
PO1	**Domain Expertise:** Apply knowledge of Bio-techniques and experiments at an appropriate level to the discipline
PO2	**Skills and Ethics:** Analyse a problem and define the Biological requirements, appropriate to its solution
PO3	**Lifelong learning:** Understand new concepts and be articulate while executing knowledge with peers
PO4	**Social Contribution:** Follow passionate thinking for implementing the technology for the larger benefit of the society
PO5	**Ethics:** Recognise social and ethical responsibilities of a professional working in the discipline

Course Outcomes for Paper VII-Animal and Plant Biotechnology (COBT1250.1)	
COBT1250.1	Rank the information gathered to assist in Critical Thinking
COBT1250.2	Reason Step by step and have the ability to solve problems
COCT1250.3	Differentiate various types of practical skills and need based applications
COBT1250.4	Grasp the concept and create new fields for research
COBT1250.5	Compare and contrast the results of various analysis

Course Outcomes for Paper VIII- Genomics, Proteomics and Computer Applications (COBT1260.1)	
CO BT1260.1	Apply skills required for a particular problem
CO1BT260.2	Reason out a problem and have the ability to solve it
COBT1260.3	Design tools to justify the robustness in analysing the results
COBT1260.4	Ability to troubleshoot when faced with a challenge and act ethically
COBT1260.5	Measure and select the suitable parameters for solving a problem

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PROGRAM OUTCOMES (PO) & COURSE OUTCOMES (CO)

SUBJECT: BOTANY (BOTA)
(6th Semester, 2020 Batch)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for Botany

PO1	**Core competency:** Acquire core competency in the subject Botany, and in allied subject areas.
PO2	**Application:** Apply the knowledge they have learned and understood, for their higher studies, competitive examinations and in discipline-related jobs.
PO3	**Value addition:** Apply their additional skills acquired from this programme through extra-curricular vocational and value-added courses.
PO4	**Personality development:** Manifest social traits such as public speaking, team work, leadership skills, ethical and moral values.
PO5	**Knowledge sharing:** Share and propagate their knowledge and experiences with others.

Course Outcomes for Paper Genetics, Plant Breeding and Molecular Biology (CO BOTA 601)

CO BOTA 601.1	Have conceptual understanding of the laws of inheritance at the genetic, chromosomal, and cellular level
CO BOTA 601.2	Comprehend the effect of chromosomal abnormalities in numerical as well as structural changes leading to genetic disorders
CO BOTA 601.3	Understand the various concepts and methods used in crop improvement
CO BOTA 601.4	Understand the structure, function and synthesis of DNA, RNA, and proteins
CO BOTA 601.5	Have a conceptual understanding of regulation of gene expression and genetic recombination in prokaryotes

Course Outcomes for Paper Plant Reproductive Biology and Plant Biotechnology (CO BOTA 602)

CO BOTA 602.1	Understand the development of gametophytes and embryos in angiosperms
CO BOTA 602.2	Understand the role of pollen grains in pollination, sexual reproduction, taxonomy, and allergies
CO BOTA 602.3	Conceptually understand and perform plant tissue culture techniques
CO BOTA 602.4	Conceptually understand the technique of genetic engineering and its applications
CO BOTA 602.5	Analyze nucleic acid and amino acid sequences using online public databases

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PROGRAM OUTCOMES (PO) & COURSE OUTCOMES (CO)

SUBJECT: SOCIAL WORK - UG (BSW)
(6th Semester, 2020 Batch)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for Social Work - UG

PO1	Identify and Reproduce knowledge and skills related to their professional development.
PO2	Articulate skills, tools and techniques in areas related to one's specialization and current developments in the academic field of study.
PO3	Use of ethical code of conduct for social work practice
PO4	To apply the different methods of social work practice in the context of problem identification and evaluation
PO5	Accepting criticism about self (positive and negative comments) and taking responsibility for learning

Course Outcomes for Paper on Integrated Social Work Practices 602 (CO SW 602)

CO SW602.1	**Trace and Review** on the generalist perspective of Social Work Practice.
CO SW602.2	**Discover and explore** different approaches and strategies of Social Work Intervention.
CO SW602.3	**Correlate, Diagnose and Document** the micro, mezzo, and macro levels of intervention
CO SW602.4	**Assess and interpret** the social workers' role at each phase of social work practice.
CO SW602.5	**Design and explain** the different approaches of social work practice

Course Outcomes for Paper Field Work 603 (CO SW 603)

CO SW603.1	**Study** the problems and **draw** an understanding on social work interventions.
CO SW603.2	**Apply and Exercise** problem solving skills.
CO SW603.3	**Identify and examine** the professional development and commitment in the field
CO SW603.4	**Train** students in utilizing field instructions.
CO SW603.5	**Assess and evaluate** about self-development

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PROGRAM OUTCOMES (PO) & COURSE OUTCOMES (CO)

SUBJECT: CHEMISTRY (BCA)
(6th Semester, 2020 Batch)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for Chemistry

PO1	Demonstrate in-depth knowledge and understand about the fundamental concepts, principles and processes underlying the chemistry and its different subfields (analytical, inorganic, organic and physical) and its linkages with related disciplinary areas/subjects.
PO2	Use of IR, NMR, and other spectroscopic techniques in the identification of inorganic and organic compounds at semi-micro level.
PO3	Employ chemical techniques relevant to academia, industry and government and generic skills and global competencies, including relevant disciplinary knowledge and skill that enable students to undertake further studies in the field of chemistry or multi-disciplinary areas involving chemistry.
PO4	Undertake hands on lab work and activities that help develop in students' practical knowledge and skills for working safely and competently in the laboratory.
PO5	Recognize and appreciate the importance of the chemical sciences and its application in academic, industrial, economic, environmental, and social contexts.

Course Outcomes for Paper Chemistry 601 (CO CHEM 601)

CO CHEM 601.1	Assess the bioinorganic chemistry of metals in biological systems.
CO CHEM 601.2	Recognize the role played by transition metal complexes in Inorganic Chemistry.
CO CHEM 601.3	Interpretation of FTIR, NMR and UV-Vis data of given material.
CO CHEM 601.4	Discuss the method of preparation of nanomaterials and its applications.
CO CHEM 601.5	Formulate the synthesis of different natural products.

Course Outcomes for Paper Chemistry 602 (CO CHEM 601)

CO CHEM 602.1	Derive the relationships between thermodynamic quantities.
CO CHEM 602.2	Use of Maxwell equations and other thermodynamic relations to compute thermodynamic quantities from thermodynamic data tables.
CO CHEM 602.3	Elucidate the atomic structure and the application of the concept of quantization of energy of different orbitals.
CO CHEM 602.4	Reveal the basic principle of chemical cells and its function.
CO CHEM 602.5	Demonstrate analytical skills to deal with the detection, identification, separation, and estimation of atomic, molecular, and ionic species.

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PROGRAM OUTCOMES (PO) & COURSE OUTCOMES (CO)

SUBJECT: COMMERCE (COM)
(6th Semester, 2020 Batch)

Program Outcomes (POs)

Program Outcomes for Commerce

PO1	Domain Expertise Demonstrate a fundamental comprehension of business opportunity.
PO2	Skills and Ethics Demonstrate extemporaneous speaking skill developed through in class discussion of text materials, case study and analysis, and current entrepreneurship related issues.
PO3	Lifelong Learning Assess their own personal work products and critique those of their colleagues about thoroughness and creativity; and, how those could be applied in their real life and future business ventures.
PO4	Modern Tool Usage Demonstrate basic computer proficiency including the use of word processing, presentation, and spreadsheet software packages; as well as basic facility with the internet and other research tools.
PO5	Social Contribution Evaluate the business opportunity from perspective of a prospective investor.

At the end of the honours Programme, the graduates will be able to:

Course Outcomes for Paper on Direct Taxes Law & Practice 603 (CO BC 603)

CO BC 603.1	Introduce themselves to the basic concepts of Income Tax.
CO BC 603.2	Build an idea about Income from House Property and Salaries as a concept.
CO BC 603.3	Familiarize on the different know how and heads of income along with their components
CO BC 603.4	Gain knowledge about the computation of total income for different categories of assesses and deliberate on the various deductions and rebates.
CO BC 603.5	Apprehend the hierarchy of Income-tax Authorities along with and their powers and functions.

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Course Outcomes for Paper on Entrepreneurship Development 602 (CO BC 602)

CO BC 602.1	Explain the concept of entrepreneurship and its start-up process.
CO BC 602.2	Understand the concept of Micro, Small and Medium Enterprises (MSMEs) and also the environment surrounding them.
CO BC 602.3	Develop an entrepreneurial culture among them as well as spark innovation and creativity in their minds so that they become problem solving agents in the society.
CO BC 602.4	Explain the process of project identification, formulation, and evaluation; and assist others in formulation of the same.
CO BC 602.5	Describe special institutions for entrepreneurial development in India as well as assistance provided by them.

Course Outcomes for Paper on Small Enterprise Management 604 (CO BC 604)

CO BC 604.1	Understand the various sources of funding and financing business start-ups and /or business expansion.
CO BC 604.2	Acquire the knowledge about employer-employee relation in organization and its significance in smooth running of the organization; along with all the other related aspects of human resource.
CO BC 604.3	Acquire the knowledge about production process in organization and all other related aspects.
CO BC 604.4	Understand the importance of selling and distribution function in an organisation.
CO BC 604.5	Acquire knowledge on maintenance of books of accounts, analysis of ratios from the accounts prepared and interpretation of results to understand the short-term and long-term position of business.

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PROGRAM OUTCOMES (PO) & COURSE OUTCOMES (CO)

SUBJECT: COMPUTER SCIENCE (CS)
(6th Semester, 2020 Batch)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for Computer Science

PO1	**Domain Expertise:** Display the knowledge of appropriate theory, practices and tools for the specification, design, implementation
PO2	**Skills and Ethics:** Demonstrate the aptitude of Computer Programming and Computer based problem solving skills
PO3	**Lifelong Learning:** Ability to pursue higher studies of specialization and to take up technical employment
PO4	**Modern Tool Usage:** Ability to formulate, to model, to design solutions, procedure and to use software tools to solve real world problems and evaluate
PO5	**Social Contribution:** Ability to operate, manage, deploy, configure computer network, hardware, software operation of an organization

Course Outcomes for Paper on Software Engineering 601 (CO CS 601)

CO CS601.1	Basic knowledge and understanding of the analysis and design of complex systems.
CO CS601.2	Ability to apply software engineering principles and techniques.
CO CS601.3	To produce efficient, reliable, robust and cost-effective software solutions.
CO CS601.4	To manage time, processes and resources effectively by prioritising competing demands to achieve personal and team goals Identify and analyses the common threats in each domain.
CO CS601.5	Ability to work as an effective member or leader of software engineering teams.

Course Outcomes for Paper Data Mining 602 (CO CS 602)

CO CS602.1	Demonstrate advanced knowledge of data mining concepts and techniques
CO CS602.2	Apply the techniques of clustering, classification, association finding, feature selection and visualisation on real world data
CO CS602.3	Determine whether a real world problem has a data mining solution and apply data mining software and toolkits in a range of applications
CO CS602.4	Set up a data mining process for an application, including data preparation, modelling and evaluation
CO CS602.5	Demonstrate knowledge of the ethical considerations involved in data mining

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PROGRAM OUTCOMES (PO) & COURSE OUTCOMES (CO)

SUBJECT: ECONOMICS (ECO)
(6th Semester, 2020 Batch)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for Economics

PO1	Domain Expertise: Students will have the ability to EXPLAIN core economic terms, concepts, and theories and key indicators.
PO2	Skills and Ethics: Use critical thinking skills on economic matters by applying economic theories to ANALYZE economic problems
PO3	Lifelong Learning: DEMONSTRATE the ability to collect, process, and interpret data, including statistical inference of real situations in the economy.
PO4	Modern Tool Usage: Students learn the techniques of preparation of a questionnaire to collect primary and secondary data and disseminate information using EQUATIONS AND GRAPHS. They can demonstrate quantitative reasoning skills.
PO5	Social Contribution: Students will be able to assess economic situations using appropriate analytical tools, PROVIDE ALTERNATIVE SOLUTIONS and defend their solutions.

Course Outcomes for Paper on Public Economics F2230 (CO ECO F2230)

CO ECO F2230.1	Students will be able to DEFINE concepts, identify different types of data, describe the process needed and tabulate problems
CO ECO F2230.2	They will be able to DIFFERENTIATE as well as do comparative studies involving different series of data and interpret the results
CO ECO F2230.3	Students will be able to APPLY their knowledge to incomplete data, modify and calculate
CO ECO F2230.4	Students should be able to explain the reason/s for selecting or rejecting a tool for analysis and INFER generalized or conclusions
CO ECO F2230.5	Students should be able to TEST/support/reject real life situations and explain the reasons for their occurrence

Course Outcomes for Paper on Public Economics F2220 (CO ECO F2220)

CO ECO F2220.1	Students will be able to DESCRIBE issues related to public policy. They will be able to DIFFERNTIATE between types of goods; problems associated with their usage and provide solutions to arising in their usage.
CO ECO F2220.2	Students will be able to CLASSIFY taxes and differentiate between the canons of taxation and discover the ongoing tax reforms.
CO ECO F2220.3	They will be able to COMPARE various theories related to public expenditure and ANALYSE the trends of public expenditure in India
CO ECO F2220.4	They will be able to EXPLAIN the objectives of fiscal policy and nature of fiscal federalism in India and how resources are transferred between the Centre and States
CO ECO F2220.5	On the subject of Public Debt, students will be able to FORMULATE the reasons behind India's growing public debt, suggest ways to lessen the burden. They will be able to prepare different types of budgets and compare them.

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PROGRAM OUTCOMES (PO) & COURSE OUTCOMES (CO)

SUBJECT: ELECTRONICS (ELEC)
(6th Semester, 2020 Batch)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for Electronics

PO1	Domain Expertise: Apply mathematics and science in solving electronics related problems.
PO2	Skills and Ethics: Design, conduct electronics experiment & manage electronics systems or processes that conforms to a given specification within ethical and economic constrains.
PO3	Lifelong Learning: Recognize the need for , and have the preparation and ability to engage in lifelong learning independently , with commitment to improve knowledge and competence continuously
PO4	Modern Tool Usage: Learn and apply appropriate techniques, resources, modern engineering and IT tools to study/analyze complex scientific/technological activities .
PO5	Social Contribution: Acquire professional and intellectual integrity and an understanding of responsibility to contribute to the community for sustainable development of the society as a whole.

Course Outcomes for Paper on Antenna, transmission line, wave guides & controlled system 601 (CO EC 601)

CO EC601.1	Understand different types of antennas & their radiation pattern.
CO EC601.2	Explain the phenomenon of transmission line and its types. & Understand the modes of propagation in waveguides.
CO EC601.3	Calculate the reflection and transmission coefficients, finding out performance parameters of transmission lines , input impedance and reflection coefficientof a transmission line .
CO EC601.4	Understand the concepts of closed loop control systems and Analyze the stability of closed loop systems.
CO EC601.5	Apply the control techniques to any electrical systems and design a control system for an electrical/electronic system.

Course Outcomes for Paper on Vector analysis, electro dynamics & quantum mechanics 602 (CO EC 602)

CO EC602.1	Understand the fundamentals of Electromagnetic Theory and have the ability to apply Vector Differential and Integral operators in Electromagnetic Theory problems.
CO EC602.2	Interpret & differentiate Maxwell's equations in differential and integral forms, both in time and frequency domains..
CO EC602.3	Explain where are the limitations of Classical Physics and understand basic concepts of Quantum Physics.
CO EC602.4	Formulate Equation of motion of matter wave and application on specific problems.
CO EC602.5	Survey and study of published literature on the assigned topic and prepare a written report on the study conducted for presentation.

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PROGRAM OUTCOMES (PO) & COURSE OUTCOMES (CO)

SUBJECT: ENGLISH (ENG)
(6th Semester, 2020 Batch)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for English

PO1	Demonstrate a coherent and systematic knowledge and understanding of the field of literary and theoretical developments in the field of English Studies. This would also include the student's ability to identify, speak and write about genres, forms, periods, movements, and conventions of writing as well as the ability to understand and engage with literary-critical concepts, theories, and categories
PO2	Demonstrate the ability to understand the role of literature in a changing world from the disciplinary perspective as well as in relation to its professional and everyday use.
PO3	Estimate the scope of English studies in terms of career opportunities, employment and lifelong engagement in teaching, publishing, translation, communication, media, soft skills, and other allied fields
PO4	Interpret the impact of the major texts and traditions of literature written in English in their social, cultural, and historical context.
PO5	Identify and explain the historical, cultural, and literary connections between texts, analyze, interpret, and describe the critical ideas, values and themes that appear in literary and cultural texts and understand the way these ideas, values and themes inform and impact culture and society, both now and in the past

Course Outcomes for Paper on LITERARY CRITICISM F2010 (CO ENG G2010)

CO ENG F2010.1	To be able to understand and to explain the meaning, elements, and characteristic of literature.
CO ENG F2010.2	To demonstrate a knowledge of the techniques of early literary criticism
CO ENG F2010.3	To assess the relations among culture, history, and the text.
CO ENG F2010.4	To identify the principles and steps in writing a well-organized literary analysis.
CO ENG F2010.5	To be able to summarize major literary works, genre, period etc.

Course Outcomes for Paper on INDIAN WRITING IN ENGLISH F 2030 (CO ENG 2030)

CO ENG F2030.1	Identifying and recognizing the autobiographical aspects reflected in the selected novels.
CO ENG F2030.2	Assessing the depicted Indian tradition.
CO ENG F2030.3	Demonstrating and understanding that boundaries do not restrict the people, it is only a demarcation to proclaim the political n geographical power.
CO ENG F2030.4	Explaining migration in the context of globalization and the twenty first century dynamics between the global and the local/ and vice versa.
CO ENG F2030.5	Illustrate A.K. Ramanujan's structured poetic style; Mahapatra's use of romantic images and themes of selected poets

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PROGRAM OUTCOMES (PO) & COURSE OUTCOMES (CO)

SUBJECT: ENVIRONMENTAL SCIENCE (EVS)
(6th Semester, 2020 Batch)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for Environmental Science

PO1	Domain Expertise: Apply knowledge of science and experiments at an appropriate level to the discipline
PO2	Skills and Ethics: Analyze a problem and define the scientific requirements, appropriate to its solution.
PO3	Lifelong Learning: Understand new concepts and be articulate while executing knowledge with peers.
PO4	Modern Tool Usage: Use current techniques, skills, and tools necessary for scientific research.
PO5	Social Contribution: Follow current thinking for implementing the technology for the larger benefit of the society.

Course Outcomes for Paper on Environmental Chemistry 611 (CO EVS 611)

CO EVS611.1	Examine the role of Microorganisms as catalysts in chemical reaction.
CO EVS611.2	Give a schematic classification of pesticides.
CO EVS611.3	Assess the impact of photochemical smog in environment.
CO EVS611.4	Recommend an appropriate method of treatment of wastewater.
CO EVS611.5	Classify the different elements of the earth.

Course Outcomes for Paper on Environment Economics & Laws 613 (CO EVS 613)

CO EVS613.1	Discuss the concept and principles of Environmental Impact assessment (EIA).
CO EVS613.2	Compare the EIA Notification of 1994 and 2006.
CO EVS613.3	Prepare the different steps of carrying out Environmental Impact Assessment of a project.
CO EVS613.4	Examine the process and implementation of Environmental Audit.
CO EVS613.5	Illustrate the steps involved in registration and certification process of ISO.

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PROGRAM OUTCOMES (PO) & COURSE OUTCOMES (CO)

SUBJECT: GEOGRAPHY (GEOG)
(6th Semester, 2020 Batch)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for Geography

PO1	Domain Expertise: Formulate knowledge and ideas on how to carry out experiments at an appropriate level to the discipline.
PO2	Skills and Ethics: To connect to a problem and finding appropriate solutions.
PO3	Lifelong Learning: To discover new concepts and to enhance the knowledge with peers.
PO4	Modern Tool Usage: Use the latest tools and techniques for any scientific research.
PO5	Social Contribution: To support the society with the knowledge acquired from research analysis.

Course Outcomes for Paper on Geography of Resources 601 (CO GE 601)

CO GE 601.1	Relation between population and natural resource
CO GE 601.2	Identify the global availability and distribution of natural resource
CO GE 601.3	Resource consumption and environmental consequences
CO GE 601.4	Global Human Resource Development
CO GE 601.5	Principles of Resource Conservation

Course Outcomes for Paper on Biogeography 602 (CO GE 602)

CO GE 602.1	Scope and significance of Biogeography
CO GE 602.2	Geographical Distribution of Plants and Animals
CO GE 602.3	Concept and types of Ecosystems
CO GE 602.4	Status of Biodiversity of the world with special reference to NE India
CO GE 602.5	Conservation and Management of Ecological Regions

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PROGRAM OUTCOMES (PO) & COURSE OUTCOMES (CO)

SUBJECT: HISTORY (HIS)
(6th Semester, 2020 Batch)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for History

PO1	To learn a basic narrative of historical events in a specific region of the world in a specific time frame.
PO2	The ability to use bibliographical tools for the advanced study of history.
PO3	To understand & evaluate different historical ideas, various arguments, and point of view
PO4	To develop an appreciation of themselves & of other through the study of the past in local, regional, national and global context.
PO5	To articulate factual & contextual knowledge of specific places & times, to make careful comparisons (across time, space & culture).

Course Outcomes for Paper on History of China & Japan 2240 (CO HIS 2240)

CO HIS 2240.1	After the completion of this paper, students are expected to:
CO HIS 2240.2	Identify the beginning and growth of modernization in China and Japan during the period 1839-1949.
CO HIS 2240.3	Describe and to estimate the significance of historical changes taking place in China and Japan during the period of study.
CO HIS 2240.4	Explain the pattern of contributions made by China and Japan to history.
CO HIS 2240.5	Formulate a critical approach to the area of study.

Course Outcomes for Paper on North East India 2290 (CO HIS 2290)

CO HIS 2290.1	Identify the major trends of the political, social and economic developments in North East India from 1824 to 1972.
CO HIS 2290.2	Discuss the contributions of North East India to the development of Indian history, an area which is usually unknown to many.
CO HIS 2290.3	Illustrate the different personalities who took active part in the historical events, which throw light to many undiscovered facts.
CO HIS 2290.4	Explain the contribution of Northeast India into Indian history.
CO HIS 2290.5	Formulate a certain area of research in the future and an assessment of this paper on northeast India will test the knowledge of the student on the same.

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PROGRAM OUTCOMES (PO) & COURSE OUTCOMES (CO)

SUBJECT: KHASI (KH)
(6th Semester, 2020 Batch)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for Khasi

PO1	Domain Expertise: Understand the different aspects of the society such as culture, language, literature, and current trends
PO2	Skills and Ethics: Acquire the methods of well-structured, well-argued prose, using sound argumentation, effective supporting evidence, and strong synthesis of points
PO3	Lifelong Learning: Critically analyze research processes, products, and practices with a view to strategic use of data in social change
PO4	Modern Tools Usage: There is an evaluation based on additional experiences (e.g., placements, internships, events, thesis, research work)
PO5	Social Contribution: Formulate an understanding of various performing arts and addressing technical and aesthetic elements in a balanced, accurate and effective manner

Course Outcomes for Paper on Translation in Khasi Literature 2050 (CO KH 2050)

CO KH 2050.1	Understand the basic concepts of culture and its dimensions, the concept of translation and how important of translation
CO KH 2050.2	Describe the characteristics of various characters in the fiction, drama, and Poetry
CO KH 2050.3	Define the genre of Khasi Literature in relevant with other western literature
CO KH 2050.4	Discuss the major theories and concept of the field
CO KH 2050.5	Analyze and understand the role of prominent Khasi Authors and their works

Course Outcomes for Paper on Khasi poetry 2060 (CO KH 2060)

CO KH 2060.1	Understand the basic concepts of the genre of Poetry like lyrics, ballad, sonnet, epic, elegy, allegory etc.
CO KH 2060.2	Analyse the hidden meaning of the poems, its structure and themes
CO KH 2060.3	Compare the style of Khasi Poetry with other western poetry
CO KH 2060.4	Explain the dictions or the language of the poem, and enrich the language by using a coined term of a poem
CO KH 2060.5	Apply the theories and concepts in the field and also to extract a poem with relevant to the current trends

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PROGRAM OUTCOMES (PO) & COURSE OUTCOMES (CO)

SUBJECT: MATHEMATICS (MATH)
(6th Semester, 2020 Batch)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for Mathematics

PO1	Bachelor's degree in Mathematics is the culmination of depth knowledge algebra, calculus geometry, differential equations and several other branches of Mathematics. This also leads to study of related areas like computer science and statistics. Thus, this programme helps learners in building a solid foundation for higher studies in Mathematics.
PO2	The skills and knowledge gained has intrinsic beauty, which also leads to proficiency in analytical reasoning. This can be utilized in modeling and solving real life problem.
PO3	Students undergoing this programme learn to logically question assertions, to recognize patterns and to distinguish between essential and irrelevant aspects of problems. They also share ideas and insights while seeking and benefitting from knowledge and insight of others. This helps them to learn behave responsibly in a rapidly changing interdependent society.
PO4	Completion of this programme will also enable the learners to join teaching profession in primary and secondary schools.
PO5	This programme will also help students to enhance their employability for government jobs, jobs in banking, insurance and investment sectors, data analyst jobs and jobs in various other public and private enterprises

Course Outcomes for Paper on Advanced Calculus H61 (CO MATH H61)

CO MATH H61.1	Understand the foundation of the set of real numbers and functions defined on them.
CO MATH H61.2	Describe and communicate the concepts of Riemann integration, multivariable calculus and the Euclidean space.
CO MATH H61.3	Calculate and compute the line integral and the Jacobian matrix.
CO MATH H61.4	Generalize the theorems and results from a two-dimensional space to an n-dimensional space, and the continuity & uniform continuity property from the set of real numbers to the Euclidean space.
CO MATH H61.5	To conclude and summarize the results geometrically.

Course Outcomes for Paper on Programming in C & Computer Oriented numerical analysis HOPT62 (CO HOPT 62)

CO MATH HOPT62.1	Understand the basic concepts of C Programming Language.
CO MATH HOPT62.2	Describe the fundamental tools of C language like conditional statements, loops, arrays, pointers, and functions.
CO MATH HOPT62.3	Compute and calculate the roots of equations using various methods like Bisection, Newton-Raphson and others.
CO MATH HOPT62.4	Generalize the programs to work in a more broad setting.
CO MATH HOPT62.5	Summarize the outputs of programs visually in a well-formatted manner.

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PROGRAM OUTCOMES (PO) & COURSE OUTCOMES (CO)

SUBJECT: PHYSICS (EVS)
(6th Semester, 2020 Batch)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for Physics

PO1	Domain Expertise: Apply knowledge of science and experiments at an appropriate level to the discipline
PO2	Skills and Ethics: Analyze a problem and define the scientific requirements, appropriate to its solution.
PO3	Lifelong Learning: Understand new concepts and be articulate while executing knowledge with peers.
PO4	Modern Tool Usage: Use current techniques, skills, and tools necessary for scientific research.
PO5	Social Contribution: Follow current thinking for implementing the technology for the larger benefit of the society.

Course Outcomes for Paper on Condensed Matter Physics F1040 (CO PH 1040)

CO PH F1040.1	The students can design a method for attaining low temperatures by applying/using Joule Thomson effect.
CO PH F1040.2	The students will be able to formulate an expression for the most probable velocity using Maxwell-Boltzmann distribution in a molecular system and evaluate it at any given temperature.
CO PH F1040.3	The students can design and construct a 3D model for any given crystal structure (sc, fcc, bcc) and hence evaluate the packing fraction for it.
CO PH F1040.4	The students will be able to evaluate the value of electrical conductivity (σ) for a given metal, when the thermal conductivity is supplied to them, using Weidemann-Franz law.
CO PH F1040.5	The students will be able to explain the formation of bands & band gap besides evaluating a number of parameters (such as intrinsic mobility, impurity, conductivity etc.,) for an extrinsic semiconductor.

Course Outcomes for Paper on Atomic, Molecular & Nuclear Physics F1050 (CO PH F1050)

CO PH F1050.1	The students can compare between Normal and Anomalous Zeeman effect and apply it in designing a method to study the characteristics of the system as well as to determine the unknown wavelength of a source.
CO PH F1050.2	The students will be able to apply the knowledge of spectral analysis in fields, such as synthesis of satellite imagery etc.
CO PH F1050.3	The students can use the acquired ideas of UV, IR, AE & AA Spectroscopy in investigating varied sample characteristics.
CO PH F1050.4	The students will be able to use the knowledge in artificial radioactivity in the design and construction of nuclear reactor.
CO PH F1050.5	The students can use the concepts of elementary particles to investigate experimental high energy physics data.

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PROGRAM OUTCOMES (PO) & COURSE OUTCOMES (CO)

SUBJECT: POLITICAL SCIENCE (PSC)
(6th Semester, 2020 Batch)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for Political Science

PO1	Domain Expertise: Understand and Analyze key concepts and theories, political systems and institutions which would help sharpen their understanding of political discourses.
PO2	Skills and Ethics: Will be able to possess skills like critical thinking and innovation which could be applied in their reflections and articulations on political issues and public policies.
PO3	Lifelong Learning: Further learn and explore new concepts which would help in the scientific enquiry in the political phenomenon and in a broader context of inter-disciplinary approach
PO4	Modern Tool Usage: Use techniques and tools like interactive discussions as well as interview schedules necessary for solving socio-political issues and problems
PO5	Social Contribution: To engage with relevant ethical and normative questions towards building a better society that is just, free, fair and equitable which would produce an active participatory and responsible citizen strengthening the democratic system.

Course Outcomes for Paper on Government & Politics in North East India PSC 07 (CO PSC 01)

CO PSC 07.1	Gain knowledge on the constitutional and political developments that had taken place in the Northeastern region and on what is going on politically in and around the different states in the region.
CO PSC 07.2	Understand the constitution and working of Autonomous District Councils as system of Local Self Governments (LSGs) in the Northeastern region where there are no Panchayati Raj Institutions (PRIs)
CO PSC 07.3	Acquire historical knowledge on State formation in Northeast India
CO PSC 07.4	Establish a connection between traditional political institutions with modern day governance.
CO PSC 07.5	Prepare groundwork for further research work

Course Outcomes for Paper on Political Sociology PSC 08 (CO PSC 08)

CO PSC 08.1	Demonstrate how social trends affect the political processes and how various social forces work together to impact policies and decisions
CO PSC 08.2	Infer that in every political system, political power tends to be concentrated at the hands of a few called the elites which work as key agents of political and social developments.
CO PSC 08.3	Explain how power holders legitimize authority
CO PSC 08.4	Connect the social environment with the working of the political system.
CO PSC 08.5	Assess the stratification of the society based on caste and class

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PROGRAM OUTCOMES (PO) & COURSE OUTCOMES (CO)

SUBJECT: SOCIOLOGY (SOCI)
(6th Semester, 2020 Batch)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for Sociology

PO1	Domain Expertise: Understand the different aspects of society such as economy, polity, religion, culture, research methodology, family and kinship.
PO2	Skills and Ethics: Acquire the methods and techniques involved in understanding society
PO3	Lifelong Learning: Identify issues and problems in society
PO4	Modern Tool Usage: Learn the tools and techniques necessary for scientific research such as interviews, questionnaires, schedules, observation etc.
PO5	Social Contribution: Recognize the social responsibilities that an actor has to perform as a member of the society

Course Outcomes for Paper on Sociology of Religion 601 (CO SOC 601)

CO SOC 601.1	Understand the basic concepts of religion such as magic, beliefs, rituals, totem, and taboo
CO SOC 601.2	Aware of the different approaches to the study of religion such as Durkheimian, Weberian and Marxian perspectives
CO SOC 601.3	Understand the emergence of different religious organizations such as sect, cult, church, and denominations
CO SOC 601.4	Appreciate the significance of secular principles and identity the problems of communalism
CO SOC 601.5	Analyze and understand the role of religious movements in India such as Brahmo Samaj, Seng Khasi and Haraka Zeliangrong in bringing about social change

Course Outcomes for Paper on Research Methodology SOC 603 (CO SOC 603.1)

CO SOC 603.1	Understand social research specific to Sociology as a science
CO SOC 603.2	Understand the meanings and importance of social research
CO SOC 603.3	Identify the different methods and techniques employed in social research such as comparative method, ethno-methodology, and case study
CO SOC 603.4	Learnt the different sources of data such as primary and secondary sources
CO SOC 603.5	Analyse data collected through field work and apply it in understanding the various social phenomena

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PROGRAM OUTCOMES (PO) & COURSE OUTCOMES (CO)

SUBJECT: ZOOLOGY (ZOOH)
(6th Semester, 2020 Batch)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for Zoology

PO1	Core competency: Acquire core competency in the subject Zoology, and in allied subject areas.
PO2	Application: Apply the knowledge they have learned and understood, for their higher studies, competitive examinations and in discipline-related jobs.
PO3	Value addition: Apply their additional skills acquired from this programme through extra-curricular vocational and value-added courses.
PO4	Personality development: Develop social traits such as public speaking, teamwork, leadership skills, ethical and moral values.
PO5	Knowledge sharing: Share and propagate their knowledge and experiences with others.

Course Outcomes for Paper on Biochemistry, Animal Physiology & Endocrinology ZOOH 601 (CO ZOOH601)

CO ZOOH601.1	Have conceptual understanding on the chemical foundations of physiology such as normal, molar and molal solutions, Acids, Bases, pH and buffers.
CO ZOOH601.2	Have a conceptual understanding on Enzyme kinetics such as Michaelis-Menten equation, importance of K_m and V_{max}, enzyme inhibition.
CO ZOOH601.3	Understand the structure and functions of the linear and ring forms of monosaccharides and polysaccharides.
CO ZOOH601.4	Understand amino acids metabolism and the biochemical reactions involved in glycogenesis and glycogenolysis.
CO ZOOH601.5	Understand the functions of blood and its regulation and to have a conceptual understanding on the mechanisms of gaseous exchange through gills and lungs and osmoregulation ion fishes. Students will have conceptual understanding on the different types of hormones and the cells/tissues that are associated with their release. The students will also be able to acquire knowledge on the mechanism of hormone actions and the disorders associated with hormonal imbalances. Reproductive cycles in mammals and the process of spermatogenesis and oogenesis will be learnt as well. Various methods, limitations and advantages of In vitro fertilization (IVF) and the contraceptive methods for males and females will also be explained.

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Course Outcomes for Paper on Developmental Biology, Environmental Biology & Biotechnology 602 (CO ZOOH 602)

CO ZOOH602.1	Understand the concepts of developmental biology including the series of sequential events that takes place in the development of multicellular organisms from fertilization till organogenesis.
CO ZOOH602.2	Understand regeneration in both vertebrates and invertebrates and developmental birth defects, concepts of ageing and teratogenesis.
CO ZOOH602.3	Acquire knowledge on the salient features of the diversified ecosystems and the ecological laws (The law of limiting factors and the law of tolerance) that are associated with the success and survival of the organisms.
CO ZOOH602.4	Understand Nutrient cycling, ecological succession and acquire knowledge on the characteristics/ salient features of the different types of Biomes.
CO ZOOH602.5	Understand and spread awareness on various environmental issues and concerns that are currently of crucial importance such as pollution, biomagnification, ozone depletion, greenhouse effect and global warming and acid rains. In situ and ex situ conservation strategies for wildlife and the technique of genetic engineering and its applications will also be learnt.

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PROGRAM OUTCOMES (PO) & COURSE OUTCOMES (CO)

SUBJECT: COMPUTER APPLICATION (BCA)
(6th Semester, 2020 Batch)

Program Outcomes (POs)

At the end of the honours Programme, the graduates will be able to:

Program Outcomes for Computer Applications

PO1	Domain Expertise: Apply knowledge of science and experiments at an appropriate level to the discipline
PO2	Skills and Ethics: Analyze a problem and define the scientific requirements, appropriate to its solution.
PO3	Lifelong Learning: Understand new concepts and be articulate while executing knowledge with peers.
PO4	Modern Tool Usage: Use current techniques, skills, and tools necessary for scientific research.
PO5	Social Contribution: Follow current thinking for implementing the technology for the larger benefit of the society.

Course Outcomes for Paper BCA 603
(CO BCA F1060)

CO BCA F1060.1	Recognition: The students can DESCRIBE and IDENTIFY problems pertaining to technology.
CO BCA F1060.2	Interpretation: The ability of a student to ASSOCIATE and CONTRAST traditional methods with modern tools and technology.
CO BCA F1060.3	Ideas: The students can obtain new findings through EXPERIMENT and DEMONSTRATION.
CO BCA F1060.4	Positive impact: The students can COMPARE the positive impact of technology in the society
CO BCA F1060.5	Innovators: The students can CREATE and FORMULATE plans and solutions that will help solve modern days' problems.

Course Outcomes for Paper Data warehouse and mining
(CO BCA F1070)

CO BCA F1070.1	Analysis: The students can ANALYZE data and INFER new knowledge using logical and mathematical skills.
CO BCA F1070.2	Effective Maintenance: The students will be able to efficiently PLAN AND PREPARE large storehouses of data required by client applications, while ensuring data consistency and reliability.
CO BCA F1070.3	Planning: The students can TABULATE and SUMMARIZE big-data oriented projects, through requirements gathering, collection and cleaning of data, pattern analysis and deployment of meaningful patterns useful to decision oriented applications like businesses, healthcare, cyber security and so on.
CO BCA F1070.4	SELECT, COMPARE and carefully differentiate between situations in order to APPLY different data mining techniques like classification, prediction, clustering, frequent pattern mining, association and outlier analysis.
CO BCA F1070.5	Evaluation: ASSESS and RANK the performance of different data-mining algorithms and Enable the students to PLAN and PREPARE for further research and innovation in the field of data mining.