

**Tentative Course List (July - December 2024 Semester)**

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|--|--|---|--|--|---|---|--|--|
| <b>1st Year</b>                                | Transport Phenomena in Materials Engineering | <b>Electrical Engineering</b>                     | Biostatistics  | Theoretical Foundations of ML  | Fracture Mechanics  | Topology  | Sequence Stratigraphy  | Critical Journey through Select Thoughts and Theories                        |
| Engineering Graphics                           | Statics & Dynamics                           | Electrical Systems Laboratory                     | Human Physiology   | Computer Systems   | Elastodynamics and Vibrations                                     | Applied Linear Algebra, Probability and Statistics      | Geodynamic Modelling Lab                                     | Scarred Nations - Partition in the Indian subcontinent                       |
| Computing                                      | <b>3rd Year</b>                              | Digital Signal Processing                         | <b>Civil Engineering</b>   | Natural Language Processing  | Special Topics in Mechanical Engineering - Phase Change Phenomena | Commutative Algebra                                     | Microwave Remote Sensing                                     | Public Policy and its Impact Evaluation                                      |
| Design, Innovation, and Prototyping            | <b>Chemical Engineering</b>                  | <b>Mechanical Engineering</b>                     | Advanced Geotechnical Engineering  | Special Topics in CSE: Toolkit for Theoretical Computer Science            | <b>Materials Engineering</b>                                      | Partial Differential Equations                          | <b>Cognitive Science</b>                                     | Critical Perspectives in Sociology   |
| Materials for the Future                       | Undergraduate Science Laboratory             | Integrated Design and Manufacturing II            | Advanced Structural Analysis   | <b>Electrical Engineering</b>  | Principles of Metal Extraction and Refining                       | Functional Analysis                                     | Computation and Cognition                                    | Reading Philosophy: Classical, Contemporary and Global Perspectives          |
| Introduction to Writing I                      | Chemical Reaction Engineering-II             | <b>Materials Engineering</b>                      | Advanced Engineering Hydrology   | 5G and Beyond: An Introduction   | Structure and Defects of Materials                                | Algebraic Topology                                      | Fundamentals of Cognitive Psychology                         | Special Topics in HSS: Understanding and Designing Comics and Graphic Novels |
| Calculus of Single Variable and Linear Algebra | Separation Processes -I                      | Computational Process Design                      | Structural Dynamics  | Electric Vehicle Technology  | Characterization of Materials                                     | Probability Theory                                      | Research Methods in Cognitive Science                        | Academic Communication: Argumentation and Reasoning                          |
| World Civilizations and Cultures               | Process Dynamics and Control                 | <b>Additional Courses</b>                         | Advanced Hydraulic Engineering   | Restructured Power Systems: Operation and Management                       | <b>Chemistry</b>  | Algebraic Number Theory                                 | Fundamental Neuroscience                                     | Semiotic Anthropology (Special Topics)                                       |
| <b>2nd Year</b>                                | Integrated Chemical Engineering Lab-I        | <b>Biological Engineering</b>                     | Slopes and Retaining Structures  | VLSI Design  | Chemistry Laboratory  | Matrix Lie Groups                                       | Perception and Attention                                     |  |
| Biology for Engineers                          | <b>Civil Engineering</b>                     | Bionanotechnology – Principles and Applications   | Infrastructure Systems: Planning and Management  | Lasers   | Electrochemical Science and Engineering                           | <b>Physics</b>  | Philosophy of Mind   |  |
| General Education II                           |  | Methods in Biology                                | Air Pollution Control Engineering  | Physics of Transistors   | Food Chemistry  | Introduction to Inverse Modelling in Physical Sciences  | Neural Plasticity  |  |
| Introduction to Quantum Physics                | Undergraduate Science Laboratory             | <b>Electrical Engineering</b>                     | Pavement Materials and Design  | Dynamic Behaviour of Electric Machines                                     | Physical Organic Chemistry  | Mathematical Methods of Physics - I                     | Special Topics in Cognitive Science: Brain Imaging Methods   |  |
| Introduction to Partial Differential Equations | Soil Mechanics                               | Undergraduate Science Laboratory                  | Advanced Solid Mechanics   | Introduction to Photonics  | Organometallic and Bioinorganic Chemistry                         | Quantum Mechanics I                                     | Special Topics in Cognitive Science: Language and Brain      |  |
| Calculus of Several Variables                  | Design of Steel Structures                   | Engineering Electromagnetics                      | Special Topics in Civil Engineering: Domestic Wastewater Engineering (Treatment and Reuse) | Digital Control Systems  | Main Group and Transition Metal Chemistry                         | Classical Electrodynamics                               | <b>Design</b>  |  |
| Introduction to Complex Analysis               | Water Resource Engineering                   | Analog & Mixed Signal Circuits                    | Advanced Concrete Technology   | Microfabrication and Semiconductor Processes                               | Quantum Chemistry   | Classical Mechanics                                     | Ancient Indian Technologies                                  |  |
| Introduction to Philosophy                     | Transportation Engineering                   | Digital Signal Processing                         | <b>Chemical Engineering</b>  | CMOS Analog IC Design  | Advanced Organic Chemistry  | Condensed Matter Physics                                | Visual Design for Academia                                   |  |
| Thermodynamics                                 | <b>Computer Science and Engineering</b>      | Power Electronics                                 | Introduction to Polymer Science and Engineering  | Analog IC Design Lab   | Inorganic Chemistry Laboratory                                    | Topics in Classical Mechanics and Electrodynamics       | Special Topics in Design: Design for Discrete Needs          |  |
| Materials Thermodynamics                       |  | <b>Mechanical Engineering</b>                     | Biochemical Engineering  | Digital VLSI Circuits Laboratory   | Organic Chemistry Laboratory                                      | Introduction to Einstein's Theory of General Relativity | <b>Management</b>  |  |
| Electronic Devices                             | Undergraduate Science Laboratory             | Economics   | Formulation Science and Engineering  | Smart Renewable Energy Systems   | Applied Chemical Biology  | Quantum Field Theory I                                  | Financial Considerations in Engineering Decisions            |  |
| Earth Materials and Processes                  | Computer Organization and Architecture       | Undergraduate Science Laboratory                  | Nanoscale Science  | Computer Vision  | Interpretative Organic Spectroscopy                               | X-ray Scattering: Concepts and Applications             | <b>Humanities and Social Science</b>                         |  |
| Chemical Process Calculations                  | Foundations of AI: Multiagent Systems        | Control Systems                                   | Advance Transport Phenomena  | Special Topics in Electrical Engineering: Economics of Regulation in India | Asymmetric Synthesis and Catalysis                                | Atomic and Molecular Physics                            | Economics  |  |
| Data Structures and Algorithms I               | Undergraduate Science Laboratory             | Mechanics of Materials                            | Advanced Thermodynamics  | <b>Mechanical Engineering</b>  | Introduction to Molecular Dynamics                                | Topics in Soft and Active Matter Physics                | Urdu Script & Poetry   |  |
| Signals, Systems, and Random Processes         | Materials Processing                         | Heat and Mass Transfer                            | Advanced Reaction Engineering  | Mechatronics   | Chemical Crystallography  | Advanced Statistical Physics                            | Urdu Poetry Interpretation                                   |  |
| Mechanics of Solids                            | Polymers, Ceramics and Composites            | Manufacturing Systems & Metrology                 | Engineering Optimization   | Special Topics in Mechanical Engineering - Machine Design                  | Statistical Thermodynamics and its Applications in Chemistry      | <b>Earth Science</b>                                    | Perspectives of Indian Civilisation                          |  |
| Discrete Mathematics                           | <b>4th Year</b>                              | <b>Materials Engineering</b>                      | Flexible Electronics: Materials, Methods and Devices                                       | Foundations of Fluid Dynamics  | <b>Mathematics</b>  | Earth Surface Processes in the Anthropocene             | Literary Experiment in European Modernism                    |  |
| Geospatial Engineering                         | <b>Chemical Engineering</b>                  | Genetic Engineering – Principles and Applications | <b>Computer Science and Engineering</b>  | Computational Fluid Dynamics   | Basic Algebra   | Modeling of Earth System and Sustainability             | Ancient Indian Architecture                                  |  |
| Electrical Machines                            | Process Synthesis and Design                 | Molecular and Cellular Biotechnology              | Computer and Network Security  | Compressible Flow  | Introduction to Linear Algebra                                    | Biodiversity Conservation and Sustainable Development   | Qualitative Research Methods                                 |  |
| Structure of Materials                         | Process Dynamics and Control Lab             | Biochemistry                                      | Algorithms   | Introduction to Robotics   | Topics in Real Analysis   | Physics of the Lithosphere                              | Special Topics in HSS: Introduction to the Learning Sciences |  |