First Year B. Tech. (All Branches) Semester- I
Course Outcomes (COs)
BSC-01 ENGINEERING PHYSICS

BSC-01.1	Understand the concepts of semiconductors to implement in Engineering field.
BSC-01.2	Analyze the structural properties of elemental solids.
BSC-01.3	Apply concepts of acoustics and ultrasonic in various Engineering instruments.
BSC-01.4	Implement diffraction and polarization phenomenon to design advanced optical instruments.
BSC-01.5	Understand the fundamentals, construction and working of Laser in order to apply this Technology in Engineering fields.
BSC-01.6	Understand the basics of optical fiber and Nanoscience to implement in Engineering.

BSC-02 ENGINERING CHEMISTRY

BSC-02.1	Analyze the water quality and interpret techniques for water purification.
BSC-02.2	Describe lubrication and properties of lubricants, select proper lubricant for specific machine.
BSC-02.3	Explain mechanism of the corrosion, select proper preventive methods of corrosion.
BSC-02.4	Recognize the fuel quality and understand the scope of alternate energy sources.
BSC-02.5	Interpret the chemical synthesis, properties of various polymers and their applications.
BSC-02.6	Describe various types of energy storage systems with their applications.

BSC-03 ENGINEERING MATHEMATICS – I

BSC-03.1	Compute higher order derivative of standard functions.
BSC-03.2	Determine the power series expansion of a given function and evaluate limits.
BSC-03.3	Use matrices techniques for solving system simultaneous linear equations, eigen values and eigen vectors of the matrix.
BSC-03.4	Solve multivariable derivative of given functions.
BSC-03.5	Use multivariable derivative to estimate maxima and minima of multivariable function.
BSC-03.6	Compute velocity vector, gradient, divergence, curl and applications.

ESC-01 BASICS OF CIVIL AND MECHANICAL ENGINEERING

ESC-01.1	Describe the role of civil engineer in the development of the society and Relationship of civil engineering with other branches of engineering and technology.
ESC-01.2	Explain various elements of buildings, concepts of Green Buildings, transportation engineering, Remote sensing Techniques, GIS &GPS..
ESC-01.3	Explain various concepts and application of GIS ,GPS and Remote sensing Techniques..
ESC-01.4	Determine heat and work quantum during different thermodynamic processes and Identify power absorbing/producing devices.
ESC-01.5	Identify suitable power transmission system for different mechanical applications
ESC-01.6	Explain various machining/joining processes implemented in everyday life.

ESC-02 Basic Electrical and Electronics Engineering

ESC-02.1	Apply the various simplification methods to analyze dc circuits.
ESC-02.2	Use the concept of electromagnetism to calculate the parameters of magnetic circuits and single-phase transformers.
ESC-02.3	Apply knowledge of ac fundamentals to analyze ac circuits.
ESC-02.4	Demonstrate the working, characteristics, and applications of diode.
ESC-02.5	Explain the working, characteristics, and applications of BJT
ESC-02.6	Perform arithmetic operations on a digital number system.

ESC-03 ENGINEERING MECHANICS

ESC-03.1	Apply fundamentals of Engineering Mechanics for analyzing effects of a system of forces acting on a rigid body.
ESC-03.2	Analyze various types of statically determinate pin jointed trusses.
ESC-03.3	Apply knowledge of Kinematics of rigid body motion to solve problems of bodies in motion.
ESC-03.4	Apply knowledge of Kinetics of rigid body motion to solve problems of bodies in motion.
ESC-03.5	Apply Work Energy methods and conservation of momentum principle for analyzing linear and rotational motion.
ESC-03.6	Locate centroid and center of Gravity and calculate moment of Inertia of plane lamina.

AEC- 01 COMMUNICATION SKILLS

AEC-01.1	Understand English grammar and apply it in communication.
AEC-01.2	Prepare for competitive exams with focus on verbal ability.
AEC-01.3	Develop oral communication skills.
AEC-01.4	Enhance reading and comprehension skills.
AEC-01.5	Prepare for professional written communication.
AEC-01.6	Develop and enhance communication skills.

CC-01 SPORTS & YOGA / NCC / NSS/UBA

CC-01.1	Understand the basic principles and practices of Physical Education & Sports.
CC-01.2	Understand and apply the concepts of Physical Education, Sports and Yoga with its various implications.
CC-01.3	Develop professionalism among students to conduct, organize & officiate, Physical Education and Sports events at schools, colleges and community.
CC-01.4	Understand and apply the knowledge of NSS/NCC in the social fabric system.
CC-01.5	Become free thinker, open communicator, knowledgeable citizens and respectable individuals.

SEC-01 WORKSHOP PRACTICE

SEC-01.1	Identify various hardware and software components of a computer and compare between them.
SEC-01.2	Assemble a desktop from components supplied and Setup a working desktop system using a Raspberry Pi board.
SEC-01.3	Identify and use various electronic components and instruments and Develop basic electronic circuits on breadboards.
SEC-01.4	Demonstrate the use of an Arduino board using basic circuits.
SEC-01.5	Prepare different shaped metal work piece joints from the given metal blanks by selecting different tools and machines, Perform different types of welding of metal components.
SEC-01.6	Select different engineering tools required to perform, fitting, machining, welding and joining processes.

First Year B. Tech. (All Branches) Semester-II
Course Outcomes (COs)
BS-04 ENGINEERING MATHEMATICS –II

BS-04.1	Find the solution of first order & first degree ordinary differential equations with its applications
BS-04.2	Determine the convergence of sequences and infinite series.
BS-04.3	Determine the differentiation of functions of complex variable that are used in various techniques dealing engineering problems.
BS-04.4	Solve improper integrals using mathematical tools.
BS-04.5	Sketch cartesian, polar and parametric curves.
BS-04.6	Solve multiple integrals and use them to find area of curve and mass of lamina.

ESC-04 ENGINEERING GRAPHICS AND CAD

ESC-04.1	Draw the projections of oblique lines and planes
ESC-04.2	Explain views of solids and their sectional surfaces.
ESC-04.3	Visualize and draw the orthogonal views.
ESC-04.4	Draft the machine components and related parts by using commercial drafting software.

SEC-02 DATA ANALYSIS AND PROGRAMMING SKILLS

SEC02.1	Design the flowchart and algorithms for the given programming problem
SEC02.2	Implement/Write Pseudo code using C Program by appropriately selecting the control and loop structure
SEC02.3	Implement/Write Pseudo code using C Program using Arrays.
SEC02.4	Implement/Write Pseudo code using C Program using Functions and pointers.
SEC02.5	Implement/Write Pseudo code using C Program using Structures and Unions

CC-02 PROFESSIONAL PERSONALITY DEVELOPMENT

CC 02.01	To develop students' personality
CC 02.02	To equip students with skills for effective participation in group discussion
CC 02.03	To equip students with skills for performing effectively in personal interviews
CC 02.04	To develop students' effective presentations skills
CC 02.05	To inculcate soft skills among students for professional success
CC 02.06	To develop students' approach for personal and professional success

IKS-01 Introduction to Indian Knowledge System

IKS-01.1	Creating awareness amongst the youths about the true history and rich culture of the country;
IKS-01.2	Understanding the scientific value of the traditional knowledge of Bhārata;
IKS-01.3	Promoting the youths to do research in the various fields of Bhāratīya knowledge system;
IKS-01.4	Converting the Bhāratīya wisdom into the applied aspect of the modern scientific paradigm;
IKS-01.5	Adding career, professional and business opportunities to the youths.

Program Outcomes (POs)

Engineering Graduates will be able to:

1. Engineering knowledge: Apply the knowledge of mathematics, natural science, computing, and engineering fundamentals and an engineering specialization to the solution of complex engineering problems.

2. Problem analysis: Identify, formulate, and analyze complex engineering problems, reaching substantiated conclusions with consideration for the holistic nature of the problem.

3. Design/development of solutions: Design creative solutions for complex engineering problems and design systems, components, or processes to meet identified needs — with consideration for public health and safety, and cultural, societal, and environmental factors. Sustainability is now intrinsic to design.

4. Conduct investigations of complex problems: Conduct investigations of complex engineering problems using research-based knowledge and research methods, including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

5. Engineering Tool Usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling — recognizing their limitations — to solve complex engineering problems.

6. The Engineer and the World: Analyze and evaluate societal and environmental aspects while solving complex engineering problems, considering their impact on sustainability with reference to economy, health, safety, legal frameworks, culture, and the environment.

7. Ethics: Apply ethical principles and commit to professional ethics, human values, diversity, and inclusion; and adhere to relevant national and international laws.

8. Individual and Collaborative Team Work: Function effectively as an individual, and as a member or leader in diverse and multi-disciplinary teams.

9. Communication: Communicate effectively and inclusively within the engineering community and with society at large — comprehending and writing effective reports and design documentation, and making effective presentations — considering cultural, language, and learning differences.

10. Project Management and Finance: Apply knowledge and understanding of engineering management principles and economic decision-making, and apply these to one's own work, as a member and leader in a team, to manage projects in multi-disciplinary environments.

11. Life-Long Learning: Recognize the need for, and have the preparation and ability for, independent and life-long learning, adaptability to new and emerging technologies, and critical thinking in the broadest context of technological change.