

F.Y. B.Tech. – Course Outcomes (COs)

NEP 2020 | Academic Year 2025–26

Shivaji University, Kolhapur

F.Y.B.Tech NEP Structure and Syllabus Sem I & II 2025-26.

The Course Outcomes below are transcribed from the supplied syllabus file, retaining its wording.

Semester I

Engineering Physics

CO	Course Outcome	Bloom's Taxonomy
CO1	Explain the concepts of diffraction and polarization for engineering applications.	Understand
CO2	Explain basics of lasers and optical fibers and their use in some applications.	Understand
CO3	Illustrate the basic requirement of acoustical good hall and solve problems on sabin's formula	Understand
CO4	Apply the knowledge of Quantum Mechanics to solve related problem	Apply
CO5	Apply peculiar properties of crystallography to solve engineering problems.	Apply
CO6	Comprehend use of concepts of physics and some properties of nanomaterials and their application.	Apply

Engineering Mathematics – I

CO	Course Outcome	Bloom's Taxonomy
CO1	Calculate roots of complex numbers, separation into real and imaginary parts of complex numbers by using De Moivre's Theorem.	
CO2	Apply Taylor's and Maclaurin's series to find expansion of functions.	
CO3	Find partial derivatives and use it to find Maxima and minima, Jacobian.	
CO4	Solve the system of linear	

	equations by using matrix method.	
CO5	Calculate Eigen values and eigen vectors of matrix and higher powers of matrix using Cayley Hamilton theorem.	
CO6	Solve linear simultaneous equations by using numerical methods.	

Basic Civil Engineering

CO	Course Outcome	Bloom's Taxonomy
CO1	Explain the role of Civil Engineers in infrastructure development.	Understand
CO2	Identify and explain the various building components, construction materials, and services	Understand
CO3	Apply the linear, angular measurement and levelling techniques.	Apply
CO4	Explain the components and need of water supply, drainage, and hydraulic systems	Understand
CO5	Describe the modes of transport, types and structure of road.	Understand

Engineering Graphics

CO	Course Outcome	Bloom's Taxonomy
CO1	Draw the neat drawings of Engineering Curves.	Remember
CO2	Understand the Projection of Point, Straight lines, Plane.	Understand
CO3	Understand the Projection of Solids.	Understand
CO4	Construct neat Sketch of Orthographic Projection.	Apply
CO5	Construct neat Sketch of Isometric Drawings.	Apply
CO6	Develop lateral surfaces of solid cut sections and their projections	Create

Professional Communication -I

CO	Course Outcome	Bloom's Taxonomy
CO1	Communicate effectively in various formal and informal situations minimizing the barriers.	Understand
CO2	Construct grammatically correct sentences and use contextual words in English.	Understand
CO3	Use phonetically transcription to pronounce words correctly.	Apply
CO4	Use different formats of formal written skills.	Apply

Skill Enhancement Course-I

CO	Course Outcome	Bloom's Taxonomy
Mechanical Engineering Group – CO-1	Describe the methods, operations and processes used in Smithy, fitting, Plumbing.	Understanding
Mechanical Engineering Group – CO-2	Use the techniques, skills, and modern engineering tools necessary in fitting, smithy and plumbing operations.	Applying
Civil Engineering Group – CO-1	Study of different building materials and drawings.	Understanding
Civil Engineering Group – CO-2	Use surveying equipments to measure distance and levels.	Applying
Electrical Engineering Group – CO-1	Understand the electrical tools and equipment's/components	Understanding
Electrical Engineering Group – CO-2	Utilize the know-how of basic electrical concepts in wiring installation	Applying
Computer Science and Engineering Group – CO-1	Understand Basics of Computer Engineering.	Understanding
Computer Science and Engineering Group – CO-2	Apply skills to analyse I/O devices.	Applying
Electronics and Telecommunication Engineering Group – CO-1	Use the different commands, functions, arrays required for programming in MATLAB.	Understanding
Electronics and Telecommunication Engineering Group – CO-2	Apply the knowledge of programming to plot graph and write program for simple applications.	Applying

National Service Scheme (NSS)

CO	Course Outcome	Bloom's Taxonomy
CO1	Understand the community in which they work and relation to Community.	
CO2	Identify the needs & problems of the Community and involve them in problem solving process.	
CO3	Develop capacity to meet emergencies and natural disasters	
CO4	Acquire leadership qualities and democratic attitude.	
CO5	Practice national integration and social harmony.	
CO6	Utilize their knowledge in finding practical solutions to individual and community problems.	

Programming Languages-I

CO	Course Outcome	Bloom's Taxonomy
CO1	Understand basic Programming concepts.	
CO2	Design C Programs using various Operators.	
CO3	Apply programming logic using Conditional and Looping statements in C.	
CO4	Understand fundamentals of Arrays and Strings in C.	

Semester II

Engineering Chemistry

CO	Course Outcome	Bloom's Taxonomy
CO1	Select the properties of metallic and advanced material.	Understand
CO2	Explain the basic principles of instrumental methods for chemical Analysis	Understand
CO3	Select water treatment process	Apply

	to solve engineering problem.	
CO4	Make use of relevant fuel in engineering application.	Apply
CO5	Make use of corrosion preventive method	Apply
CO6	Use various types of polymers in engineering field.	Apply

Basic Mechanical Engineering

CO	Course Outcome	Bloom's Taxonomy
CO1	Understand the basic concepts of thermodynamics and I.C. Engine.	Understand
CO2	Understand principle of energy conversion system and power plants	Understand
CO3	Understand and identify power transmission devices with their functions	Understand
CO4	Identify and elaborate different mechanisms and mobility systems	Understand
CO5	Identify and elaborate different manufacturing process	Understand
CO6	Describe the scope of mechanical engineering in multidisciplinary industries	Understand

Engineering Mechanics

CO	Course Outcome	Bloom's Taxonomy
CO1	Identify and explain different types of force systems and laws of forces.	Understand
CO2	Analyze and draw the Free body diagram of objects and determine the support reactions of determinate beams using conditions of Equilibrium.	Apply and Analyse
CO3	Analyze the motion of particle or object to solve the problems of rectilinear and projectile motions in kinematics	Apply and Analyse
CO4	Apply the concepts of Newton's laws of motion, D'Alembert's principles to solve problems related in	Analyse

	dynamics	
CO5	Explain the concepts of stress-strain and engineering properties of materials.	Understand

Engineering Mechanics Lab

CO	Course Outcome	Bloom's Taxonomy
CO1	Demonstrate the verification of different laws of forces and moments.	Applying
CO2	Apply graphical method to analyse determinate beams and trusses.	Applying
CO3	Determine the values of coefficients of friction and restitution.	Applying

Basic Electronics Engineering

CO	Course Outcome	Bloom's Taxonomy
CO-1	Understand passive semiconductor devices applications	Understand
CO-2	Understand active semiconductor devices applications	Understand
CO-3	Analyze different biasing circuits and low frequency response of an amplifier	Analyze
CO-4	Gain knowledge about fundamentals of Operational amplifiers and various applications.	Remember
CO-5	Apply fundamental techniques of digital design	Apply

Engineering Mathematics-II

CO	Course Outcome	Bloom's Taxonomy
CO1	Solve ordinary differential equations of first order and first degree.	
CO2	Apply Ordinary differential equation of first order and first degree to solve simple electric circuit problems, Newton's law of cooling and find orthogonal	

	trajectories of given curves.	
CO3	Solve ordinary differential equations of first order and first degree numerically.	
CO4	Find Numerical Solutions of Algebraic and Transcendental Equations.	
CO5	Evaluate definite integrals by using special functions.	
CO6	Evaluate double integral and use it to find area enclosed by plane curves, mass of plane lamina.	

Professional Communication –II

CO	Course Outcome	Bloom's Taxonomy
CO1	Construct Technical paragraph writing.	Apply
CO2	Understand the role of behavioral skills in career building.	Understand
CO3	Deliver presentation effectively.	Apply
CO4	Develop expected career skills.	Apply

Skill Enhancement Course-II

CO	Course Outcome	Bloom's Taxonomy
Mechanical Engineering Group – CO-1	Understand report of procedures followed for a given task in welding, carpentry, and sheet metal work.	Understanding
Mechanical Engineering Group – CO-2	Learn the techniques, skills, and modern engineering tools necessary for welding, carpentry and sheet metal work	Applying
Civil Engineering Group – CO-1	Demonstrate identification and reading ability of elements in building drawing.	Understanding
Civil Engineering Group – CO-2	Use surveying equipment to measure distance and levels.	Applying
Electrical Engineering Group – CO-1	Demonstrate the knowledge of theorems/laws to analyze the simple electrical circuits.	Understanding
Electrical Engineering Group – CO-2	Apply the knowledge of RL and RLC circuits for the measurement of active and	Applying

	reactive power.	
Computer Science and Engineering Group – CO-1	Understand Basics of Computer Engineering.	Understanding
Computer Science and Engineering Group – CO-2	Apply skills to analyse memory hierarchy and compilers.	Applying
Electronics and Telecommunication Engineering Group – CO-1	Use proper soldering technique, fault finding in circuit board components connection.	Understanding
Electronics and Telecommunication Engineering Group – CO-2	Apply skills to simulate a simple electronics circuit and design a printed circuit board.	Applying

Indian Knowledge Systems (IKS)

CO	Course Outcome	Bloom's Taxonomy
CO-1	Understand the concept of the Indian Knowledge System and its importance.	Understand
CO-2	Understand the relevance of Traditional knowledge in different domains.	Understand

Programming Languages-II

CO	Course Outcome	Bloom's Taxonomy
CO1	Understand the python programming basics	
CO2	Solve programs on decision making & looping statements in python	
CO3	Understand python list, tuple, and dictionary collection concepts	
CO4	Understand simulation programs using SimPy Library	
CO5	Design & Apply Simpy library functions to model real time problems.	