Dr. D.Y. Patil Institute of Engineering, Management & Research Akurdi Pune

Department: First Year Engineering

Course Outcomes for all First Year Courses A.Y. (COs)

Table a: C101-Engineering Mathematics-I

C101.1	**Apply** mean value theorems and its generalizations leading to Taylors and Maclaurin's series in the analysis of engineering problems
C101.2	**Analyze** the periodic continuous and discrete functions by using Fourier series and harmonic analysis
C101.3	**Apply** the concept of partial differentiation in various problems
C101.4	**Apply** the concept of Jacobian to find partial derivative of implicit function and functional dependence. Estimate error, approximation and finding extreme values of the function using partial derivatives
C101.5	**Use** the concepts of matrices and linear algebra to analyze the system of linear equations and solve Engineering Problems
C101.6	**Solve** the problems on Eigen values, Eigen vectors, diagonalization and Quadratic forms.

Table b: C102-Engineering Physics

C102.1	**Develop** an understanding of interference, diffraction and polarization; connect it to few engineering applications
C102.2	**Analyze** different types of lasers and optical fibers and their applications.
C102.3	**Describe** concepts and principles in quantum mechanics. Relate them to applications.
C102.4	**Evaluate** theory of semiconductors and their applications in some semiconductor devices.
C102.5	**Relate** basics of magnetism and superconductivity to magnetic and technological applications like transformer, magnetic data storage, superconducting quantum interface devices (SQUIDs),
C102.6	**Comprehend** use of concept of physics -for nondestructive testing and learn some properties of manner Nano material with their application

Table c : C103-Systems in Mechanical Engineering A.Y. 2020-21

C103.1	**Calculate** the efficiency of energy conversion devices.
C103.2	**Apply** the laws of thermodynamics to **evaluate** thermodynamic systems.
C103.3	**Compare** different vehicle on the basis of their specifications and **analyze** their cost.
C103.4	**Justify** the use of various vehicle systems.
C103.5	**Explain** various manufacturing processes and **identify** suitable process.
C103.6	**Explain** various types of mechanism and its application

Table d : C104-Basic Electrical Engineering

C104.1	**Differentiate** between electrical and magnetic circuits and **derive** mathematical relation for self and mutual inductance along with coupling effect.
C104.2	**Calculate** series & parallel capacitance of capacitor as well as characteristics parameters of alternating quantity and phasor arithmetic
C104.3	**Derive** expression for impedance, current, power in series and parallel RLC circuit with AC supply along with phasor diagram
C104.4	**Demonstrate** &**Relate** phase and line electrical quantities in polyphase networks and the operation of single phase transformer also calculate efficiency regulation at different loading conditions
C104.5	**Apply** and **analyze** the resistive circuits using star-delta conversion KVL, KCL and different network theorems under DC supply.
C104.6	**Evaluate** work, power, and energy relations and suggest various batteries for different applications, concept of charging and discharging and depth of charge.

Table e : C105-Programming and Problem Solving

C105.1	**Relate** and apply various skills in problem solving.
C105.2	**Choose** the most appropriate programming constructs and features to **solve** the problems in diversified domains.
C105.3	**Exhibit** the programming skills for the problems those require the writing well documented programs including use of the logical constructs of language, Python.
C105.4	**Demonstrate** the usage of string handling and various string operations using the Python program development environment.
C105.5	**Implement** the Python program development environment using object oriented principles.
C105.6	**Develop** applications using file handling principles using Python language

Table f: C106-WorkshopA.Y. 2020-21

C106.1	**Familiar** with safety norms to prevent any mishap in workshop.
C106.2	**Handle** appropriate hand tool, cutting tool and machine tools to manufacture a job.
C106.3	**Understand** the construction, working and functions of machine tools and their parts.
C106.4	**Apply** the knowledge of measuring instruments required to inspect the jobs.

Table g: C107-Environmental Studies-I

C107.1	**Demonstrate** an integrative approach to environmental issues with a focus on sustainability.
C107.2	**Identify** the role of the organism in energy transfers in different ecosystems
C107.3	**Demonstrate** renewable and nonrenewable resources.
C107.4	**Identify** key threats to biodiversity and develop appropriate policy options for conserving biodiversity in different settings.

Table h: C108-Engineering Mathematics-II

C108.1	**Apply** the effective mathematical tools for solutions of first order and first degree differential equations
C108.2	**Apply** appropriate techniques for modelling and analyzing physical processes such as Newton's law of cooling, electrical circuit, rectilinear motion, mass spring systems, heat transfer etc.
C108.3	**Evaluate** integrals by using advanced integration techniques such as Reduction formulae, Beta, Gamma functions, Differentiation under integral sign and Error functions
C108.4	**Analyze** and trace the curve for a given equation and measure arc length of various curves.
C108.5	**Apply** the concepts of solid geometry to find the equations of sphere, cone and cylinder in a comprehensive manner
C108.6	**Evaluate** multiple integrals and to find area bounded by curves, volume bounded by surfaces, Centre of gravity and Moment of inertia

Table i: C109- Engineering Chemistry

C109.1	**Illustrate** the technology involved in analysis and improving quality of water as commodity and its implementation.
C109.2	**Demonstrate** electro-analytical techniques that facilitates rapid and precise description of materials.
C109.3	**Describe** structure, properties and applications of speciality polymers and nano material.
C109.4	**Illustrate** conventional and alternative fuels with respect to their properties and applications.
C109.5	**Describe** spectroscopic techniques for chemical analysis
C109.6	**Explain** corrosion mechanisms and preventive methods for corrosion control.

Table j: C110-Basic Electronics Engineering

C110.1	**Explain** the working of P-N junction diode and its circuits.
C110.2	**Identify** types of diodes and plot their characteristics and also can compare BJT with MOSFET
C110.3	**Build** and **test** analog circuits using OPAMP and digital circuits basic/Universal gates and flip flops.
C110.4	**Comprehend** different electronics measuring instruments to measure various electrical parameters.
C110.5	**Identify** the different types of sensors for specific applications.
C110.6	**Describe** the elements of communication system and its applications.

Table k: C111-Engineering Mechanics

C111.1	**Calculate** resultant force and moment of any force system
C111.2	**Analyze** particles in Friction & to locate Centroid of Plane lamina & wire
C111.3	**Construct** Free body Diagram, apply equilibrium equations along with calculation of Support reactions and forces in plane and space
C111.4	**Analyze** Truss, Frame and Cable
C111.5	**Apply** equation of motion for rectilinear motion & identify Curvilinear motion of particle
C111.6	**Apply** Newton's second law of motion, work Energy Principle and Impulse Momentum Principle to define various quantities of particle when it is in motion

Table l: C112-Engineering Graphics

C112.1	**Draw** the fundamental engineering objects using basic rules and able to construct the simple geometries.
C112.2	**Construct** the various engineering curves using the drawing instruments.
C112.3	**Apply** the concept of orthographic projection of an object to **draw** several 2D views and its sectional views for visualizing the physical state of the object.
C112.4	**Apply** the visualization skill to draw a simple isometric views from given orthographic views precisely using drawing equipment.
C112.5	**Draw** the development of lateral surfaces for cut section of geometrical solids.
C112.6	**Draw** fully-dimensioned 2D, 3D drawings using computer aided drafting tools.

Table m: C114- Environmental Studies-II

C 114.1	**understand** environmental pollution and the science behind those problems and potential solutions.
C 114.2	**understand** various acts and laws and will be able to identify the industries that are violating these rules.
C 114.3	**Assess** the impact of ever increasing human population on the biosphere: social, economic issues and role of humans in conservation of natural resources.
C 114.4	**Learn** skills required to research and analyze environmental issues scientifically and learn how to use those skills in applied situations such as careers that may involve environmental problems and/or issues.