

Sinhgad Technical Education Society's  
Sinhgad Institute of Technology, Lonavala  
Department of Engineering Sciences  
Academic Year 2016-17

**Course Outcomes (COs)**

<b>FE 2015 Pattern Semester I</b>			
<b>SN</b>	<b>Course Code</b>	<b>Course Name</b>	<b>Course Outcomes (COs)</b>
1	107002	Engineering Physics	CO1: Develop understanding of interference, diffraction; connect it to few engineering applications.
			CO2: Comprehend use of concepts in acoustics and relate them some applications. Learn basics of ultrasonic waves and their use in some applications
			CO3: Develop understanding of polarisation; connect it to few engineering applications. Learn basics of lasers and their use in some applications.
			CO4: Understand theory of semiconductors and their applications in some semiconductor devices.
			CO5: Understand concepts and principles in quantum mechanics; relate them to some applications.
			CO6: Summarize basics of superconductivity and explore few of their technological applications. Leran some properties of nanomaterials and their applications.
2	107009	Engineering Chemistry	CO1: Apply the different methodologies for analysis of water and techniques involved in softening of water as commodity
			CO2: Select appropriate electro analytical-technique and Identify various electronic transitions of chemical compounds based on their structure.
			CO3: Demonstrate the knowledge of advanced engineering materials along with basics of polymer for various engineering applications.
			CO4: Analyze fuel and suggest use of alternative fuels.
			CO5: Understand and apply the nanomaterials for engineering applications.
			CO6: Explain causes of corrosion and methods for minimizing corrosion.
3	107001	Engineering Mathematics-I	CO1: Analysis of linear equations, eigen values and eigen vectors in engineering.

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			CO2: Familiarize with parameters of complex numbers and find logarithm of complex numbers.
			CO3: Know the test for convergence, absolute & conditional convergence, range of convergence and apply basics of successive differentiation.
			CO4: To apply the concept of Taylor's and Maclaurin's series useful in the analysis of engineering problems.
			CO5: Derivative of the function of several variables, apply the concept of Jacobian and partial derivatives in errors and approximations.
4	101005	Basic Civil and Environmental Engineering	CO1: Describe basic area of Civil Engineering and their use in interdisciplinary projects.
			CO2: Identify material required for construction, Explain types of construction and differentiate between substructure and superstructure.
			CO3: Learn basics of surveying and levelling and calculate reduced levels.
			CO4: Explain types of ecosystems, Enlist natural resources and Describe solid waste management
			CO5: Describe use of building planning principles and building byelaws for building construction.
			CO6: Distinguish and provide examples of conventional and nonconventional energy, Have an understanding of environmental pollution
5	103004	Basic Electrical Engineering	CO1: Understand and apply the basic laws of electric circuits to solve problems on basic terminologies of electrical engineering. Evaluate work, power and energy relations electrical, mechanical and thermal systems.
			CO2: Understand and solve the problems on basic concepts of electromagnetism. Differentiate between electrical and magnetic circuits and derive mathematical relation for self and mutual inductance along with coupling effect.
			CO3: Understand and remember the need,

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			<p>construction, working principle, types and applications of single phase transformer &amp; determine the power losses/efficiency and voltage drop/voltage regulation. Understand the fundamentals of electrostatics. Calculate series, parallel and composite capacitor and remember concept of capacitor charging and discharging.</p> <p>CO4: Analyze and interpret the sinusoidal electrical quantities mathematically, graphically and in terms of phasor arithmetic. Understand behavior of R, L, C circuit elements with AC.</p> <p>CO5: Derive expression for impedance, current, power in series and parallel RLC circuit with AC supply along with phasor diagram. Relate phase and line electrical quantities in polyphase networks. Understand and solve the problems on single phase and polyphase star and delta connected circuits.</p> <p>CO6: Understand and apply star-delta conversion technique, Kirchhoff's laws and different network theorems to analyze complex DC circuits.</p>
6	104012	Basic Electronics Engineering	<p>CO1: Study of Different Electronic components and devices &amp; Explain the working of P-N junction diode and its circuits.</p> <p>CO2: Explain the working of transistors like BJT, MOSFETs and also can compare BJT with MOSFET.</p> <p>CO3: Build and test analog circuits using OPAMP, regulated power supply &amp; Study of IC 555 timer circuit.</p> <p>CO4: Build and test digital circuits using universal/basic gates and flip flops and their applications.</p> <p>CO5: Describe basic of power device &amp; Study and select of sensors for specific applications.</p> <p>CO6: Describe basic principles of communication systems.</p>
7	110003	Fundamental of Programming Languages-I	<p>CO1: Use modular programming approach in diversified problem domains</p> <p>CO2: Apply programming logic to solve</p>

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			real world problems
			CO3: Decide effectiveness of computer based solutions
8	102006	Engineering Graphics-I	CO1: Draw the fundamental engineering objects using basic rules and able to construct the projection of lines
			CO2: Draw projection of planes like circle, polygons, etc
			CO3: Draw projection of various solids like cone, cylinder, prism and pyramid
			CO4: Construct the various engineering curves using the drawing instruments.
			CO5: Draw the orthographic projection of various mechanical components
			CO6: Apply the visualization skill to draw a simple isometric projection from given orthographic views precisely using drawing equipment
<b>FE 2015 Pattern Semester II</b>			
1	107008	Engineering Mathematics-II	CO1: Effective mathematical tools for solutions of first order differential equations that model physical processes such as Newton's law of cooling, electrical circuit, rectilinear motion, mass spring systems, heat transfer etc.
			CO2: The Fourier series representation and the Harmonic analysis for the design and analysis of periodic continuous and discrete system. Advanced integration techniques such as Reduction formulae, Beta functions, Gamma functions
			CO3: Differentiation under integral sign and Error functions needed in evaluating multiple integrals and their applications. To trace the curve for a given equation and measure arc length of various curves.
			CO4: Concepts of solid geometry using equations of sphere, cone and cylinder in a comprehensive manner.
			CO5: Evaluation of multiple integrals and its application to find area bounded by curves, volume bounded by surfaces, Centre of gravity and Moment of inertia.



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4	103004	Basic Electrical Engineering	CO1: Understand and apply the basic laws of electric circuits to solve problems on basic terminologies of electrical engineering. Evaluate work, power and energy relations electrical, mechanical and thermal systems.
			CO2: Understand and solve the problems on

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			<p>basic concepts of electromagnetism. Differentiate between electrical and magnetic circuits and derive mathematical relation for self and mutual inductance along with coupling effect.</p> <p>CO3: Understand and remember the need, construction, working principle, types and applications of single phase transformer &amp; determine the power losses/efficiency and voltage drop/voltage regulation. Understand the fundamentals of electrostatics. Calculate series, parallel and composite capacitor and remember concept of capacitor charging and discharging.</p> <p>CO4: Analyze and interpret the sinusoidal electrical quantities mathematically, graphically and in terms of phasor arithmetic. Understand behavior of R, L, C circuit elements with AC.</p> <p>CO5: Derive expression for impedance, current, power in series and parallel RLC circuit with AC supply along with phasor diagram. Relate phase and line electrical quantities in polyphase networks. Understand and solve the problems on single phase and polyphase star and delta connected circuits.</p> <p>CO6: Understand and apply star-delta conversion technique, Kirchhoff's laws and different network theorems to analyze complex DC circuits.</p>
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			applications.
			CO6: Describe basic principles of communication systems.
6	102013	Subject: Basic Mechanical Engineering	Describe and compare the conversion of energy from renewable and non-renewable energy sources
			Explain various types of mechanism and its application
			Discuss several manufacturing processes and identify the suitable process
			Explain basic laws of thermodynamics, heat transfer and their applications
			Illustrate various basic parts and transmission system of a road vehicle
			List down the types of road vehicles and their specifications
7	101011	Engineering Mechanics	CO1: Determine resultant of various force systems and centroid
			CO2: Calculate position, velocity and acceleration of particle in rectilinear motion using principles of kinematics and apply newtons second law to rectilinear motion
			CO3: Calculate position, velocity and acceleration of particle in curvilinear motion using principles of kinematics and apply newtons second law to curvilinear motion
			CO4: Solve problems of kinematics using work,power,energy
			CO5: Determine reactions of beams, calculate forces in cables using principles of equilibrium and apply principles of equilibrium to forces in space
			CO6: Solve trusses, frames for finding member forces and solve problems related to friction
8	110010	Fundamental of Programming Languages-II	CO1: Develop programs using object oriented concepts
			CO2: Design and develop web pages
			CO3: Design and develop mobile application
			CO4: Design and develop simple application using Embedded Programming
9	102014	Engineering Graphics- I	CO1: Draw the fundamental engineering objects using basic rules and able to construct the simple



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			geometries.
			CO2: Construct the various engineering curves using the drawing instruments.
			CO3: 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.
			CO4: Apply the visualization skill to draw a simple isometric projection from given orthographic views precisely using drawing equipment
			CO5: Draw the development of lateral surfaces for cut section of geometrical solids.
			CO6: Draw fully-dimensioned 2D, 3D drawings using computer aided drafting tools.
10	110010	Fundamental of Programming Languages-II	CO1: Develop programs using object oriented concepts
			CO2: Design and develop web pages
			CO3: Design and develop mobile application
			CO4: Design and develop simple application using Embedded Programming