



# SAPTHAGIRI COLLEGE OF ENGINEERING

Affiliated to VTU, Belagavi & Approved by AICTE, New Delhi  
An ISO 9001:2015 and 14001:2015 Certified Institution

## COURSE OUTCOMES

### First year-2017 scheme (Common to all braches)

| Course Code | Course Name               | Course Outcomes (COs)   |
|-------------|---------------------------|---|
| 17MAT11     | Engineering Mathematics-I | <p>CO1: Solve the problems on nth derivatives of the functions, angle between radius vector and tangent, curvature and radius of curvature.</p> <p>CO2: Find Taylor's and Maclaurin's series of the functions, and to apply Hospital rule to evaluate the limits and to solve the problems on Partial differentiation.</p> <p>CO3: Find the velocity, acceleration, gradient, curl, divergence and able to prove the vector identities.</p> <p>CO4: Evaluate the integrals involving <math>\sin^n x</math>, <math>\cos^n x</math>, <math>\sin^n x \cos^n x</math> between the limits 0 to <math>\pi/2</math>.</p> <p>CO5: Solve the ordinary differential equations of first order and first degree.</p> <p>CO6: Solve the system of equations, to find the Eigen value and Eigen vector of a matrix and reducing quadratic form to canonical form.</p> |
| 17PHY12/22  | Engineering Physics       | <p>CO1: Gain the knowledge about fundamentals of Modern Physics and Quantum Mechanics, applying to wave mechanics.</p> <p>CO2: Discriminate the conductivity of conductors, semiconductors and super conductors based on Quantum theory.</p> <p>CO3: Impart the knowledge about the basic principles and classification of Laser and Optical fibres, their uses in various fields.</p> <p>CO4: Differentiate the crystal systems, properties and crystal structure using XRD</p> <p>CO5: Discuss the formation of Shock waves and change in flow properties across it and its uses.</p> <p>CO6: Know the processing and characterization of Nano materials, their properties and applications.</p>  |

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| <b>17CIV13/23</b>  | Elements of civil engineering and mechanics | <p>CO1: Mention the applications of various fields of Civil Engineering.</p> <p>CO2: Compute the resultant of given force system subjected to various loads.</p> <p>CO3: Comprehend the action of Forces, Moments and other loads on systems of rigid bodies and compute the reactive forces that develop as a result of the external loads.</p> <p>CO4: Locate the Centroid and compute the Moment of Inertia of regular and built-up sections.</p> <p>CO5: Express the relationship between the motions of bodies and analyze the bodies in motion.</p> <p>CO6: Apply the concepts of kinetics and kinematics, to understand about curvilinear and rectilinear motion and to analyze the various problems based on these.</p> |
| <b>17EME14/24</b>  | Elements Of Mechanical Engineering          | <p>CO1. Explain different sources of energy and its conversion</p> <p>CO2. Explain the conversion of energy by prime movers.</p> <p>CO3. Explain the different machine tool operations and basics of Robotics and Automation.</p> <p>CO4. Explain basic engineering materials and identify its application.</p> <p>CO5. Explain the working principle of refrigeration and air conditioning.</p>  |
| <b>17ELE15/25</b>  | Basic Electrical Engineering                | <p>CO1: To predict the behavior of electrical and magnetic circuits.</p> <p>CO2: Select the type of generator / motor required for a particular application.</p> <p>CO3: Realize the requirement of transformers in transmission and distribution of electric power and other applications.</p> <p>CO 4: Practice Electrical Safety Rules &amp; standards.</p>  |
| <b>17WSL16/26</b>  | Work Shop Practice                          | <p>CO1: Demonstrate the use of fitting tools to make models.</p> <p>CO2: Demonstrate the use of sheet metals tools to make models.</p> <p>CO3: Demonstrate the use of Welding tools to make models.</p>   |
| <b>17PHYL17/27</b> | Engineering Physics Lab                     | <p>CO1: Formulate, Conduct and inference of the Engineering physics experiments.</p> <p>CO2: Characterize the semiconducting materials.</p> <p>CO3: Determine the physical parameters in optical experiments.</p> <p>CO4: Find mechanical properties of materials.</p> <p>CO5: Identify and verify the passive electronic components</p>  |
| <b>17MAT21</b>     | Engineering Mathematics-II                  | <p>CO1: Solve linear and nonlinear ordinary differential equations.</p> <p>CO2: Form/solve the Partial differential equations.</p> <p>CO3: Evaluate the double and triple integrals.</p> <p>CO4: Derive Beta and Gamma functions and its properties.</p>  |

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|                   |                                      | CO5: Find the Laplace Transforms and inverse Laplace transforms of the functions and to solve initial and boundary value problems.  |
| <b>17CHE12/22</b> | Engineering Chemistry                | CO1: Electrochemical and concentration cells. Classical & modern batteries and fuel cells.<br>CO2: Causes & effects of corrosion of metals and control of corrosion. Modification of surface properties of metals to develop resistance to corrosion, wear, tear, impact etc. by electroplating and electro less plating.<br>CO3: Production & consumption of energy for industrialization of country and living standards of people. Utilization of solar energy for different useful forms of energy.<br>CO4: Replacement of conventional materials by polymers for various applications.<br>CO5: Boiler troubles and applies sewage treatment and desalination of sea water, and over viewing of synthesis, properties and applications of nanomaterials.  |
| <b>17PCD13/23</b> | Programming in C and Data structures | CO1: Understand the concepts of C programming<br>CO2: Understand basic programming skills using looping and branching techniques<br>CO3: Understanding and to illustrate the usage of functions and arrays in programming<br>CO4: Get familiarized with the concepts of files and structures<br>CO5: Illustrate the usage of pointers and data structures   |
| <b>17CED14/24</b> | Computer Aided Engineering Drawing   | CO1.Demonstrate the usage of CAD software<br>CO2.Draw orthographic projections of points, lines, planes and solids.<br>CO3.Generate the development of lateral surfaces of solids and isometric projections of solids   |
| <b>17ELN15/25</b> | Basic Electronics                    | CO1: Apply the Knowledge of Semiconductor diode for designing Regulated power supply Using Rectifier, filter and IC regulator.<br>CO2: Describe the construction and working operation of JFET, MOSFET and Operating principles of SCR with the Phase Control application.<br>CO3: Explain the Various Op-Amp parameters and using Op-amp design basic applications Like Inverting, non-inverting amplifier, Integrator, differentiator etc<br>CO4: Use BJT for applications like amplifier and switch for power control and Describe the principles operation of feedback amplifier and oscillators.<br>CO5: Explain the different number system and their conversions and construct simple Combinational and sequential logic circuits using Flip-Flops.<br>CO6: Describe the basic principle of operation of communication system and mobile Phones. |

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| <b>17CPL16/26</b>  | Computer<br>Programming<br>Laboratory | CO1: Draw flowcharts and write Algorithms<br>CO2: Design and develop C problem solving skills<br>CO3: Trace and debug a program<br>CO4: Write C programs using functions and arrays<br>CO5: Use concepts of pointers, structures and files to write C programs                                       |
| <b>17CHEL17/27</b> | Engineering<br>Chemistry Lab          | CO1: Analyze hardness of water and quality of cement.<br>CO2: Analyze copper and iron metal from its alloy and ore.<br>CO3: Analyze waste water and alkalinity of the water.<br>CO4: Estimate the strength and concentration of acids.<br>CO5: Measure the viscosity coefficient of organic liquids. |