Jaihind College of Engineering, Kuran (4084)
Department of First Year Engineering
Course Outcomes

First Year Engineering (2019 pattern)-Common for all branches		
Name of course	**Course Code**	**Course Outcomes**
Engineering Mathematics – I	107001	**Course Outcomes (COs):** The students will be able to learn **CO1:** Mean value theorems and its generalizations leading to Taylors and Maclaurin's series useful in the analysis of engineering problems. **CO2:** the Fourier series representation and harmonic analysis for design and analysis of periodic continuous and discrete systems. **CO3:** to deal withderivative of functions of several variables that are essential in various branches of Engineering. **CO4:** to apply the concept of Jacobian to find partial derivative of implicit function and functional dependence. Use of partial derivatives in estimating error and approximation and finding extreme values of the function. **CO5:** the essential tool of matrices and linear algebra in a comprehensive manner for analysis of system of linear equations, finding linear and orthogonal transformations, Eigen values and Eigen vectors applicable to engineering problems
Engineering Physics	107002	**Course Outcomes:** On completion of the course, learner will be able to– **CO1:** Develop understanding of interference, diffraction and polarization; connect it to few engineering applications. **CO2:** Learn basics of lasers and optical fibers and their use in some applications. **CO3:** Understand concepts and principles in quantum mechanics. Relate them to some applications. **CO4:** Understand theory of semiconductors and their applications in some semiconductor devices. **CO5:** Summarize basics of magnetism and superconductivity. Explore few of their technological applications. **CO6:** Comprehend use of concepts of physics for Non Destructive Testing. Learn some properties of nanomaterials and their application.

Engineering Chemistry	107009	**Course Outcomes:** On completion of the course, learner will be able to– **CO1:** Apply the different methodologies for analysis of water and techniques involved in softening of water as commodity. **CO2:** Select appropriate electro-technique and method of material analysis. **CO3:** Demonstrate the knowledge of advanced engineering materials for various engineering applications. **CO4:** Analyze fuel and suggest use of alternative fuels. **CO5:** Identify chemical compounds based on their structure. **CO6:** Explain causes of corrosion and methods for minimizing corrosion.
Systems in Mechanical Engineering	102003	**Course Outcomes** On completion of the course, learner will be able to **CO1:** Describe and compare the conversion of energy from renewable and non-renewable energy sources **CO2:** Explain basic laws of thermodynamics, heat transfer and their applications **CO3:** List down the types of road vehicles and their specifications **CO4:** Illustrate various basic parts and transmission system of a road vehicle **CO5:** Discuss several manufacturing processes and identify the suitable process **CO6:** Explain various types of mechanism and its application
Basic Electrical Engineering	103004	**Course Outcomes:** At the end of course students will be able to **CO1:** Differentiate between electrical and magnetic circuits and derive mathematical relation for self and mutual inductance along with coupling effect. **CO2**: Calculate series, parallel and composite capacitor as well as characteristics parameters of alternating quantity and phasor arithmetic **CO3:** Derive expression for impedance, current, power in series and parallel RLC circuit with AC supply along with phasor diagram. **CO4:** Relate phase and line electrical quantities in polyphase networks, demonstrate the operation of single phase transformer and calculate efficiency and regulation at different loading conditions **CO5:** Apply and analyze the resistive circuits using star-delta conversion KVL, KCL and different network theorems under DC supply. **CO6:** Evaluate work, power, energy relations and suggest various batteries for different applications, concept of charging and discharging and depth of charge.

Basic Electronics Engineering	104010	**Course Outcomes:** On completion of the course, learner will be able to– **CO1:** Explain the working of P-N junction diode and its circuits. **CO2:** Identify types of diodes and plot their characteristics and also can compare BJT with MOSFET. **CO3:** Build and test analog circuits using OPAMP and digital circuits using universal/basic gates and flip flops. **CO4:** Use different electronics measuring instruments to measure various electrical parameters. **CO5:** Select sensors for specific applications. **CO6:** Describe basic principles of communication systems.
Programming and Problem Solving	110005	**Course Outcomes:** On completion of the course, learner will be able to– **CO1:** Inculcate and apply various skills in problem solving. **CO2:** Choose most appropriate programming constructs and features to solve the problems in diversified domains. **CO3:** Exhibit the programming skills for the problems those require the writing of welldocumented programs including use of the logical constructs of language, Python. **CO4:** Demonstrate significant experience with the Python program development environment.
Engineering Mechanics	101011	**Course Outcomes:** On completion of the course, learner will be able to– **CO1:** Determine resultant of various force systems **CO2:** Determine centroid, moment of inertia and solve problems related to friction **CO3:**Determine reactions of beams, calculate forces in cables using principles of equilibrium **CO4:** Solve trusses, frames for finding member forces and apply principles of equilibrium to forces in space **CO5:** Calculate position, velocity and acceleration of particle using principles of kinematics **CO6:** Calculate position, velocity and acceleration of particle using principles of kinetics and Work, Power, Energy
Engineering Mathematics–II	107008	**Course Outcomes (COs):** The students will be able to learn **CO1:** the 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:** advanced integration techniques such as Reduction formulae, Beta functions, Gamma functions, Differentiation under integral sign and Error functions needed in evaluating multiple integrals and their applications. **CO3:** to trace the curve for a given equation and measure arc length of various curves. **CO4:** the 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.
Engineering Graphics	102012	**Course Outcomes** On completion of the course, learner will be able to **CO1:** Draw the fundamental engineering objects using basic rules and able to construct the simple 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.
Workshop Practice	111006	**Course Outcomes:** **CO1:** Familiar with safety norms to prevent any mishap in workshop. **CO2:** Able to handle appropriate hand tool, cutting tool and machine tools to manufacture a job. **CO3:** Able to understand the construction, working and functions of machine tools and their parts. **CO4:** Able to know simple operations (Turning and Facing) on a centre lathe.
Environmental Studies-I / Audit Course -I	101007	**Course Outcomes:**On completion of the course, learner will be able to– **CO1:**Demonstrate an integrative approach to environmental issues with a focus on sustainability. **CO2:** Explain and identify the role of the organism in energy transfers in different ecosystems. **CO3:** Distinguish between and provide examples of renewable and nonrenewable resources & analyze personal consumption of resources. **CO4:** Identify key threats to biodiversity and develop appropriate policy options for conserving biodiversity in different settings.

Project Based Learning	110013	**Course Outcomes:** **CO1:** Project based learning will increase their capacity and learning through shared cognition. **CO2:** Students able to draw on lessons from several disciplines and apply them in practical way. **CO3:** Learning by doing approach in PBL will promote long-term retention of material and replicable skill, as well as improve teachers' and students' attitudes towards learning.
Environmental Studies-II / Audit Course–II	101014	**Course Outcomes:** On completion of the course, learner will be able to– **CO1:** Have an understanding of environmental pollution and the science behind those problems and potential solutions. **CO2:** Have knowledge of various acts and laws and will be able to identify the industries that are violating these rules. **CO3:** Assess the impact of ever increasing human population on the biosphere: social, economic issues and role of humans in conservation of natural resources. **CO4:** 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.