AMRUTVAHINI COLLEGE OF ENGINEERING, SANGAMNER

DEPARTMENT OF ENGINEERING SCIENCE

Course: Engineering Mathematics-I **Code:** 107001

CO No.	**Description of Course Outcome (Cos):** *On completion of the course, learner will be able to -*
C101.1	**Apply** mean value theorems for functions, use Taylors and Maclaurin's series to expand the functions and find limits of indeterminate forms.
C101.2	**Analyse** the periodic, continuous function to represent Fourier series and use it for harmonic analysis of discrete systems
C101.3	**Find** partial derivative of functions of several variables that are essential in various branches of Engineering.
C101.4	**Apply** the concept of Jacobian to find partial derivative of implicit function and functional dependence. Use of partial derivatives in finding errors and extreme values of the function.
C101.5	**Apply** the concept of rank of matrix and linear algebra to solve system of linear equations.
C101.6	**Find** linear and orthogonal transformations, Eigen values and Eigen vectors applicable to engineering problems

AMRUTVAHINI COLLEGE OF ENGINEERING, SANGAMNER

DEPARTMENT OF ENGINEERING SCIENCE

Course: Engineering Physics **Code:** 107002

CO No.	**Description of Course Outcome (Cos):** *On completion of the course, learner will be able to -*
C102.1	**Classify** types of interference, diffraction, conduct experiments and **analyze** the intensity variation of light due to interference, diffraction, Polarization to **relate** it to a few of engineering applications.
C102.2	**Describe** working principle of lasers, optical fibres, **compare** types of optical fibres and to **explain** its applications and measure numerical aperture, acceptance angle and fibre losses of optical fibres
C102.3	**explain** fundamentals of quantum mechanics, **illustrate** Schrödinger's equations and **apply** it to problems on bound states.
C102.4	**Explain** theory of semiconductors, experiment on parameters of solar cell and solve problems on **related** topics
C102.5	**Classify** the magnetic materials, **list** them, **explain** superconductivity and its applications
C102.6	**Explain** destructive testing, non - destructive testing methods and **describe** properties as well as **illustrate** the applications of nanoparticles.

AMRUTVAHINI COLLEGE OF ENGINEERING, SANGAMNER

DEPARTMENT OF FIRST YEAR ENGINEERING

Course: System in Mechanical Engineering **Code:** 102003

CO No.	**Description of Course Outcome (Cos):** *On completion of the course, learner will be able to -* **Bloom's Taxonomy Level**
C103.1	**Describe** and compare the conversion of energy from renewable and non-renewable energy sources.
C103.2	**Explain** basic laws of thermodynamics, heat transfer and their applications.
C103.3	**List** down the types of road vehicles and their specifications.
C103.4	**Illustrate** various basic parts and transmission system of a road vehicle.
C103.5	**Discuss** several manufacturing processes and **identify** the suitable process.
C103.6	**Explain** various types of mechanism and its application in domestic appliances.

AMRUTVAHINI COLLEGE OF ENGINEERING, SANGAMNER

DEPARTMENT OF FIRST YEAR ENGINEERING

Course: Basic Electrical Engineering **Code:103004**

CO No.	**Description of Course Outcome (Cos):** *On completion of the course, learner will be able to -*
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 and composite capacitor as well as characteristics parameters of alternating quantity and pharos arithmetic
C104.3:	**Derive** expression for impedance, current, power in series and parallel RLC circuit with AC supply along with phasor diagram.
C104.4	**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
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, energy relations and suggest various batteries for different applications, concept of charging and discharging and depth of charge.

AMRUTVAHINI COLLEGE OF ENGINEERING, SANGAMNER

DEPARTMENT OF FIRST YEAR ENGINEERING

Course: Programming and Problem-Solving **Code:** 110005

CO No.	**Description of Course Outcome (Cos):** *On completion of the course, learner will be able to -*
C105.1	Understand problem and implement solution for everyday life problem
C105.2	**Apply** Constructs- Sequence, Selection and Iteration for solving problem
C105.3:	**Solve** problem through Modular programming approach.
C105.4	**Demonstrate** the use of predefined String functions in python to solve problem
C105.5	**Apply** object-oriented software principles in problem solving
C105.6	**List** types of files and demonstrate operations performed on files

AMRUTVAHINI COLLEGE OF ENGINEERING, SANGAMNER

DEPARTMENT OF FIRST YEAR ENGINEERING

Course: Workshop Practises **Code:**111006

CO No.	**Description of Course Outcome (Cos):** *On completion of the course, learner will be able to -*
C106.1	Able to understand safety norms to prevent any mishap in workshop.
C106.2	Able to understand the construction, working and functions of machine tools and their parts.
C106.3:	Able to memories simple operations on a different machine tools like centre lathe, drilling, milling, shaper, and grinding.
C106.4	Able to implement appropriate hand tool, cutting tool and machine tools to manufacture a job.

AMRUTVAHINI COLLEGE OF ENGINEERING, SANGAMNER DEPARTMENT OF FIRST YEAR ENGINEERING **Course:** Audit Course 1 **Code:** 101007	
CO No.	**Description of Course Outcome (Cos):** ***On completion of the course, learner will be able to -***
C107.1	**Demonstrate** an integrative approach to environmental issues with a focus on sustainability.
C107.2	**Explain** and **identify** the role of the organism in energy transfers in different ecosystems.
C107.3:	**Distinguish** between and provide examples of renewable and non-renewable resources & **analyse** personal consumption of resources.
C107.4	**Identify** key threats to biodiversity and develop appropriate policy options for conserving biodiversity in different settings.

AMRUTVAHINI COLLEGE OF ENGINEERING, SANGAMNER DEPARTMENT OF ENGINEERING SCIENCE **Course:** Engineering Mathematics – II **Code:** 107008	
CO No.	**Description of Course Outcome (Cos):** ***On completion of the course, learner will be able to -***
C108.1	**Identify** the type of Differential equation and solve the first order -first degree ordinary differential equation.
C108.2	Write the differential equation and **solve** it using various methods for the applications like Heat flow, Electrical circuit, Newtons law of cooling
C108.3:	Use integration techniques such as Reduction formulae, Beta functions, Gamma functions, Differentiation under integral sign and Error functions required in multiple integrals and their applications.
C108.4	**Explain** the nature of equation by sketching curves and measure the arc length of various curves.
C108.5	**Describe** three-dimensional coordinate system and use it to analyse the three solid objects sphere, cone, cylinder in a comprehensive manner.
C108.6	**Evaluate** multiple integrals and its application area, volume, centre of gravity and moment of inertia.

AMRUTVAHINI COLLEGE OF ENGINEERING, SANGAMNER

DEPARTMENT OF ENGINEERING SCIENCE

Course: Engineering Chemistry **Code:** 107009

CO No.	**Description of Course Outcome (Cos):** *On completion of the course, learner will be able to -*
C109.1	To **identify** technology involved in analysis and improving quality of water as commodity.
C109.2	To **apply** the knowledge of electro-analytical techniques that facilitates rapid and precise understanding of materials.
C109.3:	To **analyze** structure, properties and applications of specialty polymers and nano material.
C109.4	To **illustrate** conventional and alternative fuels with respect to their properties and applications.
C109.5	To use spectroscopic techniques for chemical analysis.
C109.6	To **discuss** corrosion mechanisms and preventive methods for corrosion control.

AMRUTVAHINI COLLEGE OF ENGINEERING, SANGAMNER

DEPARTMENT OF FIRST YEAR ENGINEERING

Course: Basic Electronics Engineering **Code:** 104010

CO No.	**Description of Course Outcome (Cos):** *On completion of the course, learner will be able to -*
C110.1	**Explain** the working principle of various PN junction diodes and its circuits.
C110.2	**Identify** the function of BJT, MOSFET and OP-AMP
C110.3:	**Design** and test digital circuits using basic, universal gates and flip flops.
C110.4	Use different electronic measuring instruments to measure various electrical parameters.
C110.5	**Classify** sensors for specification applications and use of day-to-day life.
C110.6	**Describe** basic principles of communication systems.

AMRUTVAHINI COLLEGE OF ENGINEERING, SANGAMNER

DEPARTMENT OF FIRST YEAR ENGINEERING

Course: Engineering Mechanics **Code:** 101011

CO No.	**Description of Course Outcome (Cos):** *On completion of the course, learner will be able to -*
C111.1	**Determine** resultant of various force systems
C111.2	**Determine** centroid, moment of inertia and **solve** problems related to friction
C111.3:	**Determine** reactions of beams, calculate forces in cables using principles of equilibrium
C111.4	**Solve** trusses, frames for finding member forces and **apply** principles of equilibrium to forces in space
C111.5	**Calculate** position, velocity and acceleration of particle using principles of kinematics
C111.6	**Calculate** position, velocity and acceleration of particle using principles of kinetics and Work, Power, Energy

AMRUTVAHINI COLLEGE OF ENGINEERING, SANGAMNER

DEPARTMENT OF FIRST YEAR ENGINEERING

Course: Engineering Graphics **Code:** 102012

CO No.	**Description of Course Outcome (Cos):** *On completion of the course, learner will be able to -*
C112.1	**Identify** the various toolbars and commands for drawing, dimensioning, editing and modifying in the drafting software.
C112.2	Construct the various engineering curve using drawing instruments.
C112.3:	**Apply** the concept of orthographic projection of an object to draw several 2D views and sectional views for visualizing the physical state of the object.
C112.4	**Apply** the visualization skill to draw simple isometric projection from given orthographic views precisely using drawing equipment.
C112.5	Understand the development of lateral surface of standard solids.

AMRUTVAHINI COLLEGE OF ENGINEERING, SANGAMNER DEPARTMENT OF FIRST YEAR ENGINEERING **Course:** Project Based Learning **Code:** 110013	
CO No.	**Description of Course Outcome (Cos):** ***On completion of the course, learner will be able to -***
C113.1	**Identify** and **formulate** the engineering, and societal problem.
C113.2	**Apply** the concepts, tools of science, and engineering to arrive at a solution.
C113.3:	Ability to **construct** the project schedule, and perform, contribute and mentor/ lead the team.
C113.4	**Identify** and effective utilisation of resources.
C113.5	Ability to **construct** the project documentation and oral communication through demonstration and presentation.

AMRUTVAHINI COLLEGE OF ENGINEERING, SANGAMNER DEPARTMENT OF FIRST YEAR ENGINEERING **Course:** Audit Course 2 **Code:** 101014	
CO No.	**Description of Course Outcome (Cos):** ***On completion of the course, learner will be able to -***
C114.1	Have an understanding of environmental pollution and the science behind those problems and potential solutions.
C114.2	Have knowledge of various acts and laws and will be able to **identify** the industries that are violating these rules.
C114.3:	Assess the impact of ever-increasing human population on the biosphere: social, economic issues and role of humans in conservation of natural resources.
C114.4	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.