

## **Course Objective and Course Outcomes of FE Sem-I**

### **Applied Mathematics-I**

#### **Course Objectives:**

The course is aimed to develop the basic Mathematical skills of engineering students that are imperative for effective understanding of engineering subjects. The topics introduced will serve as basic tools for specialized studies in many fields of engineering and technology.

- Matrices –To provide detailed of matrices which is applied for solving system of linear equations and useful in various fields of technology.
- Partial Derivatives – This course enables to provide an overview of partial derivatives and its applications which is used for solving optimization problems and concepts is needed in study of wave, heat equation of various orders and also in calculation of errors in various engineering subjects.
- Complex numbers – This course enables the students to learn the concept of imaginary numbers and gives awareness about algebra of complex numbers which helps in understanding of engineering subjects like electrical circuits, Electromagnetic wave theory, and complex analysis etc.
- Indeterminate forms and Taylor series- It helps the students to understand and apply the concept of existence of limits, indeterminate conditions, expansion of standard and non standard functions in series form.
- Successive Differentiation – To provide understanding of existence of n'th order derivative.
- Numerical methods and scilab: To build ability to solve numerically system of linear equations, algebraic and transcendental equations. To provide an overview of the experimental aspect of applied mathematics.

**Course outcomes:** At the end of this course, students will be able to

- Apply the knowledge of matrices to solve the problems.
- Know and to understand various types of numerical methods.
- Ability to interpret the mathematical results in physical or practical terms for complex numbers.
- Inculcate the Habit of Mathematical Thinking through Indeterminate forms and Taylor series expansion
- Solve and analyze the Partial derivatives and its application in related field of engineering

### **Applied Physics-I**

#### **Course Objectives:**

- Identify and understand the fundamental physical principals underlying engineering devices and processes— a prerequisite to become successful engineers.
- To provide inclusive knowledge of fundamental physical principles encouraging engineering students to venture into the research field.

## **Course Outcome:**

- Explain the concept of crystallography and apply it to different crystal structures.
- Understand the principles of quantum mechanics and its key.
- Apply semiconductor properties in electronic devices as well as to comprehend the concept of superconductors and their applications.
- Learn the principles behind the Acoustic Design of a Hall and also methods of production of Ultrasonic and its Applications in various fields.

## **Applied Chemistry-I**

### **Course Objectives:**

To make the students understand the chemistry of i) Water ii) Polymers iii) Lubricants iv) various other Engineering materials.

### **Course Outcomes:**

Students will be able to;

- i) Calculate the types & percentage of impurities in water
- ii) Calculate various reagents required to soften hard water
- iii) Understand methods of purification of water as per the standards.
- Understand the chemistry of polymers along with their applications.
- Understand mechanism of lubrication and its properties.
- Understand thermodynamics of chemical processes.
- Understand the process of manufacture of cement and Engineering materials.

## **Engineering Mechanics**

**Course objective:** Students should be able to:

- Understand the logical sequence of any problem.
- Understand the given data and explain with diagram.
- Think and find an appropriate solution of the day today problems.

**Course outcome:** Students should be able to:

- Construct free body diagram and calculate the reactions for static equilibrium.
- Determine the centroid of plane lamina.
- Calculate the internal forces, moments and distributed loads in members.
- Evaluate the velocity, acceleration, time, force and energy of the particle as well as rigid bodies.
- Locate instantaneous centre of rotation for rigid bodies having plane motion.

## **Basic Electrical Engineering**

### **Course Objectives:**

- To understand the fundamentals of DC circuits and its applications.
- To learn the fundamentals of single phase AC circuits and its applications.
- To understand the fundamentals of three phase AC circuits and its applications.
- To learn the basic operation and analyse the performance of single phase transformer.
- To understand the basic operation of DC machines.

### **Course Outcomes:** Learner will be able to

- To understand fundamentals of DC circuits and apply knowledge for analysing network theorems in DC circuits.
- To learn the fundamentals and analyse single phase AC circuits.
- To learn the fundamentals and analyse three phase AC circuits.
- To learn the basic operation and analyse the performance of single phase transformer.
- To understand the construction and basic operation of DC motors and generators.

**EVS-** Nil

**Basic Workshop Practice-II-** Nil

## Course Outcomes of FE Sem-II

### Applied Mathematics-II

The course is aimed to develop the basic Mathematical skills of engineering students that are imperative for effective understanding of engineering subjects. The topics introduced will serve as basic tools for specialized studies in many fields of engineering and technology.

#### Course objectives:

- To use Gamma function to solve different type of Integrals and to understand Gamma function as generalize factorial function.
- To understand the Beta function and its application
- To understand First order first degree Differential equations and its applications in in basic electrical circuits and motion of a particle.
- To find the Area of a Bounded Region and calculating mass of lamina using double integral.
- To solve triple integral and understand their applications in physics like to compute total volume of a solid.
- To build ability to solve differential equations numerically. To provide an overview of the experimental aspect of applied mathematics.

#### Course outcomes:

At the end of this course, students will be able to

- Apply this knowledge to solve the problems.
- Apply and analyse various types of numerical methods for solving differential equations.
- Solve and analyse the Differential equations and its application in related field of engineering.
- Solve the model by selecting and applying a suitable mathematical method like Trapezoidal rule, Simpson's  $(1/3)^{\text{rd}}$  rule etc.
- Interpreting the mathematical results practically.
- Find and analyse area, mass of lamina and volume of solid by using double and triple integration,
- Find length of arc of a given curve.
- Inculcate the habit of Mathematical Thinking.

## **Applied Physics-II**

### **Course Objectives:**

- Identify and understand the fundamental physical principals underlying engineering devices and processes— a prerequisite to become successful engineers.
- To provide inclusive knowledge of fundamental physical principles encouraging engineering students to venture into the research field.

### **Course Outcome:**

- Ability to demonstrate competency & understanding of basic concepts of Physics like - Optics, Lasers, Fibre optics, Electrodynamics, Nanotechnology, etc.
- Comprehend the concepts of interference and diffraction and their applications
- Apply the working principles of Optical fibre, LASER and their applications in emerging technology
- Understand electrodynamics, Maxwell's equations and their applications
- Assimilate knowledge of the Nanotechnology and tools used SEM, TEM, AFM

## **Applied Chemistry-II**

### **Course Objectives:**

- To make the students understand the principles of corrosion & Green chemistry.
- To understand the chemistry of fuels, alloys and composite materials.

### **Course Outcomes:** Students will be able to:

- Calculate the quantity of air and oxygen required for the complete combustion of fuels and carry out analysis of fuels.
- Understand the mechanisms of corrosion, methods of preventing corrosion.
- Understand the properties and uses of various alloys.
- Calculate atom economy by various methods of synthesis. Incorporate the knowledge of green synthesis of various chemicals.
- Understand the chemistry of composite materials.

## **Engineering Drawing**

### **Course Objective:**

- To impart and inculcate proper understanding of the theory of projection.
- To impart the knowledge of reading a drawing.
- To improve the visualization skill.
- To teach basic utility of computer aided drafting (CAD) tool.

**Course Outcomes:** Learner will be able to..

- Apply the basic principles of projections in 2D drawings.
- Apply the basic principles of projections in converting 3D view to 2D drawings.
- Read a given drawing.
- Visualize an object from the given two views.
- Use CAD tool to draw different views of an object.

### **Structured Programming Approach**

**Course Objectives:** This subject aims to provide students with an understanding of the role computation can play in solving problems. The Course will be taught using C-Programming Language.

**Course Outcome:** Learner will able to

- Understand the basic terminology used in computer programming.
- Write, compile and debug programs in C language.
- Use different data types in a computer program.
- Design programs involving decision structures, loops and functions.
- Describe the dynamics of memory by the use of pointers.
- Use different data structures and create/update basic data files.
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### **Communication Skills**

**Course Objectives:**

- To acquaint the students with basic concepts, theories and barriers to communication.
- To enhance communication skills by giving adequate exposure in LSRW skills.
- To develop an overall language and communication skills for better technical writing.
- To know the essential features and mechanics of comprehension and summarization.
- To deploy technology to communicate effectively in various situations.

**Course Outcomes:** The students will be able to-

- Identify, interpret and construct appropriate messages for a variety of contexts.
- Display oral and written skills in the English language in different scenarios of business communication.
- Enhance the proficiency to use appropriate language for technical writing.
- Demonstrate good comprehension, inference making, vocabulary building, paraphrasing and summarizing.

**Basic Workshop Practice-II:** Nil