

# **Course Objectives and Course Outcomes**

# **ODD Semester**

Subject code: FEC101	Subject Name: Applied Mathematics -I	Credits:05
----------------------	--------------------------------------	------------

**Course Objective:** At the end of course, student should be able to:

1	Develop student's sound foundation in applied mathematics to solve real life problems in industry.
2	Give hand on experience in using sci lab software to handle real life problems.
3	Extend the concept of complex number and matrices in their application.
4	Study the concept of partial derivatives.
5	Understand the concept of application of partial differentiation such as maxima, minima and Jacobean, Taylor's series.
6	Use the various method of numerical analysis.

Course Outcomes: At the end of course, students will attain ability to:

1	Use/Apply the concept of complex numbers to the engineering problem.
2	Evaluate n <sup>th</sup> order derivative of standard function.
3	Identify and use the principles of basic operations of matrices to the engineering problem.
4	Analyze the basic principles of partial differentiation to engineering problem.
5	Use the concept of partial differentiation as an application of successive differentiation.
6	Operate sci-lab programming techniques to model problems based on solutions of simultaneous linear algebraic equation.

Subject code: FEC102	Subject Name: Applied Physics-I	Credits:3.5
----------------------	---------------------------------	-------------

1

**Course Objective:** At the end of course, student should be able to:

Т

1	Identify and understand the fundamental physical principles underlying engineering devices and processes of prerequisite to become successful engineers and provide inclusive knowledge of fundamental physical principles encouraging engineering students to venture in to the research field.
2	Identify various Bravais Lattice patterns, crystal systems with their Unit cell parameters, Ligancies, and Critical Radius Ratios, Miller indices of crystallographic planes and directions, Liquid crystal phases. Analyze the crystal structures using X-Ray diffraction techniques.
3	Describe the concepts like wave particle duality, de 'Broglie's hypothesis, Heisenberg's uncertainty principle time dependence, time independence Schrodinger's wave function, infinite potential well, Schrodinger's wave function. Motion of free particle and particle trapped in one dimensional potential well.
4	Different types of semiconductors with fermi level and its application as different engineering devices, Evaluate Hall voltage and Hall constant for given semiconductor type Analyze the operational performance of active semiconductor devices like Rectifier diode, LED, Zener diode, Photo diode, Photovoltaic cell, BJT, FET, SCR., MOSFET
5	Summaries the superconductivity and its applications, concept of Acoustics and its effect, ultrasonic and method of production of ultrasonic waves.
6	Apply the acquired knowledge for solving problems in the field of engineering

Course Outcomes: At the end of course, students will attain ability to:

1	Explain the concept of crystallography and apply it to different crystal structure
2	Distinguish various phases of Liquid crystals and defects in crystals.
3	Understand the principles of quantum mechanics and its key.
4	Apply semiconductor properties in electronic devices as well as to comprehend the concept of superconductors and their applications.
5	Learn the principle behind the acoustic design of a hall.
6	Learn the methods of production of ultrasonic and its applications in various field

Subject code: FEC103	Subject Name: Applied chemistry I	Credits: 3.5

At the end of course, student should be able to:

1	Apply the knowledge of applied chemistry in various areas of engineering
2	Explain different techniques of purification of water for the benefit of society and environment
3	Make student understand the concept of Gibbs's phase rule and its utility with phase diagram.
4	Understand the importance and application of polymer in the field of medicine and surgery
5	Make student understand the concept of lubricants and its mechanism and applications
6	Study important engineering materials useful for benefits of society

## **Course Outcomes:**

1	Apply knowledge of applied chemistry in various areas of Engineering and Technology
2	Apply knowledge of purification methods for water treatment for benefit of society
3	Understand the designing and synthesis of specific industrial polymers for various fields
4	Student will able to select right type of lubricant depending upon its application on mobbing surfaces
5	Understand engineering materials such as cement, concrete, RCC, CNTS and fullerenes
6	Apply knowledge of Phase rule in studying different chemical systems

Subject code:FEC104	Subject Name: Engineering Mechanics	Credits: 06

At the end of course, student should be able to:

1	Illustrate the concept of force, moment, and apply the same along with the concept of equilibrium in two- and three-dimensional systems with the help of FBD.
2	Demonstrate the understanding of centroid and its significance and locate the same.
3	Correlate the real-life application to specify Type pf friction and estimate the required force to overcome friction.
4	Establish relationship between velocity and acceleration of a particle and analyze the motion by plotting the relationship.
5	Illustrate different types of motion and establish kinematic relations for rigid body.
6	Analyze body in motion using DeAlembert's principle, work-energy, impulse- momentum Principles.

## **Course Outcomes:**

1	Find resultant force and analyze equilibrium condition to find unknown reaction using appropriate FBD
2	Locate the centroid of a plain figure
3	Analyze dry friction in blocs, Edges and ladders
4	Find unknown motion parameters like velocity, acceleration, time, displacement distance by analytical and graphical method
5	Locate ICR of a mechanism and find angular and linear velocities of required point on required links
6	Use the DeAlembert's principle, work-energy, impulse-momentum Principles

Subject code:FEC105	Subject Name: Basic Electrical Engineering	Credits:05

At the end of course, student should be able to:

1	Understand the knowledge on fundamentals of D.C circuits and its applications
2	Analyze D.C circuits
3	Apply fundamentals of single-phase A.C circuits and its applications
4	Inoculate the basic operation and the performance of single-phase transformer
5	Describe the fundamentals of three phase A.C circuits and its applications
6	Classify and describe the fundamentals of DC machines

## **Course Outcomes:**

1	Study D.C circuits using network theorems
2	Design the D.C circuits
3	Evaluate single phase A.C circuits
4	Illustrate constructional features and operation of single-phase transformer
5	Use design and analyze three phase A.C circuits
6	Know the concept of working principle of DC machines
7	Conduct experiments on DC circuits and AC circuits

Subject code: FEC106	Subject Name: Environmental studies	Credits: Theory 2

At the end of course, student should be able to:

1	Explain the multidisciplinary nature of environmental studies.
2	Understand the various aspects of sustainable development
3	Understand core concept of environmental pollution, its control and prevention.
4	Provide knowledge of environmental legislation
5	Provide knowledge of alternative source of energy and its manufacturing.
6	Provide knowledge of advancement of science and technology in various field

## **Course Outcomes:**

At the end of course, students will able to understand:

1	The core concept of multidisciplinary nature of environmental studies.
2	Appreciate environmental issues and interaction across the social and environmental process
3	Reflect critically about their roles and responsibilities to minimize pollution
4	Rules and regulations to protect environment.
5	Will be able to apply the knowledge of using renewable resources to save nonrenewable resources.
6	Apply the knowledge science and technology to save them from various natural disasters.



# **Course Objectives and Course Outcomes**

# **EVEN Semester**

Subject code:FEC201	Subject Name: Applied Mathematics -II	Credits:05

## **Course Objective:**

At the end of course, student should be able to:

1	Apply gamma function to solve different types of integrals and understand gamma function as generalize factorial function and understand beta function and its application.
2	Discuss first order first degree D.E and its application in basic electrical circuits and motion of particle.
3	Compute the limits of integral using equation of curves and to find area of bounded region and mass of lamina.
4	Calculate triple integral, rectify the curve.
5	Discover ability to solve D.E numerically.
6	Solve linear D.E with constant coefficient and variable coefficient of higher order.

### **Course Outcomes:**

1	Propose the appropriate function and technique to differentiate under integral sign.
2	Solve and analyze the D.E and its application in related field of engineering.
3	Compute the limits of integration from given equation of curves and analyze the area and mass of lamina.
4	Analyze and find the volume of solid by using triple integration.
5	Classify various types of numerical methods for solving D.E
6	Use the knowledge of different methods to solve higher order D.E

Subject code: FEC202	Subject Name: Applied Physics -II	Credits:3.5

**Course Objective:** At the end of course, student should be able to:

1	Identify and understand the fundamental physical principles underlying engineering devices and processes of prerequisite to become successful engineers and provide inclusive knowledge of fundamental physical principles encouraging engineering students to venture in to the research field.
2	Prepare the candidate for a successful career in the industry and make him acquainted with the latest software and hardware
3	Identify various type of interference patterns due to monochromatic and polychromatic sources in their reflected and transmitted forms along with the equations. Also, distinguish the difference between the interference and diffraction
4	Categorize various existing laser systems based on the type of active mode used and the dimensional varieties sought, Articulation of optical fibers based on construction of fiber, light guiding process, and capacity.
5	Evaluate Cartesian, Cylindrical and Spherical Coordinate system, Scalar, and Vector field, Articulate upon the Physical significance of gradient, curl and divergence, Determination of Maxwell's four equations.
6	Assimilate knowledge of the Nanotechnology and tools used SEM, TEM, and AFM.

## **Course Outcomes:**

1	Ability to demonstrate competency & understanding of basic concepts of Physics like– Optics, Lasers, Fiber optics, Electrodynamics, nanotechnology.
2	Comprehend the concept of interference and Diffraction and their applications.Evaluate the values in various cases of interference and diffraction
3	Apply the working principles of optical fiber, Laser and their applications in emerging technology. Evaluate the values of NA and V-no.
4	Understand electrodynamics, Maxwell's equations and their applications. And able to solve the problems.
5	Comprehensive mathematical execution of terms Electrostatic and Magneto static focusing and applications of CRO.
6	Assimilate knowledge of the Nanotechnology and tools used SEM, TEM, and AFM.

Subject code: FEC203	Subject Name: Applied Chemistry II	Credits: 3.5

At the end of course, student should be able to:

1	Provide knowledge of corrosion and its adverse effect on machineries
2	Provide the knowledge of various types of corrosion and its protective methods.
3	Explain different types of fuels and their production and refining.
4	Explain composition and application of alloy
5	Provide knowledge of principles of green chemistry and its applications
6	Explain the manufacturing of composite and its industrial application.

## **Course Outcomes:**

1	Identify types of corrosion and factors affecting it related to problems affecting all industries.
2	Identify different types of corrosion control methods to study corrosion control in various industries.
3	Apply the knowledge of different types of fuels, including their production and refining methods and combustion mechanisms.
4	Illustrate composition and properties of different types of alloys and the process of powder metallurgy.
5	Illustrate principals of green chemistry.
6	Illustrate properties and applications of different types of composite materials

Subject code: FEC204	Subject Name: Engineering Drawing	Credits: 03

**Course Objective:** At the end of course, student should be able to:

1	Understand the application of various drawing instruments and basic rules of engineering drawing
2	Impart and inculcate proper understanding of the theory of projection.
3	Impart the knowledge of reading drawing.
4	Improve the visualization skills.
5	Teach basic utility of Computer Aided Drawing (CAD ) tools.

## **Course Outcomes:**

1	Handle various manual drawing instruments, identify various lines, apply it whenever required
2	Apply the basic principles of projection in 2D drawing as well as in converting 3D views to 2D views
3	Read a given Drawing
4	Visualize an object from the given two views
5	Use CAD tools to draw different views of 3D object and to draw object in 3D after visualizing from 2D

Subject Code : FEC205	Subject Name :SPA	Credits:05

At the end of course, students should be able to:

1	Understand the basic terminologies used in computer programming.
2	Understand the concept of data types, variables, operators, and data input output functions and the structure of a C program.
3	Use control statements and looping constructs in C
4	Implement functions in C.
5	Use simple and structured data types in C to solve a given problem.
6	Implement simple problems using files and pointers.

## **Course outcome:**

1	Illustrate the basic terminology used in computer programming.
2	Apply different data types, variables and operators in a C program.
3	Design and implement control statements and looping constructs in C.
4	Apply function concept on problem statement.
5	Use different data structures.
6	Apply pointers and create/update data file.

Subject code: FEC206	Subject Name: Communication Skill	Credits: 03

**Course Objective:** At the end of course, student should be able to:

1	Develop appropriate Language skills with the purpose of improving the existing LSRW skills.
2	Describe the importance and effective use of non-verbal communication.
3	Use proper grammar, syntax, vocabulary and be proficient in public speaking.
4	Utilize the principles of professional business and technical writing for effective communication in the global market.
5	Apply proper techniques to be capable of creating official content digitally for further communication in the corporate environment.
6	Support an academic environment and be aware of lifelong learning required for a successful career.

## **Course Outcomes:**

1	Understand and evaluate information they listen to and express their ideas with greater clarity.
2	Apply proper skills to speak and respond efficiently along with the various channels of communication in a business organization.
3	Develop proper speech and speak convincingly before an audience with the help of an expanded vocabulary and enhanced digital content.
4	Sketch a professional approach and ability for life-long learning. Demonstrate awareness of LSRW skills.
5	Illustrate the traits of enhanced communication skills through result oriented writing both within and outside the organization.
6	Deliver formal presentations, effectively implementing the paralanguage skills, technical description, instructions and convey the same using global information technology.