Chemical Engineering Department
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Course Outcomes

F. Y. B. Tech. Chemical Engineering (2023) Sem-I

Subject 1 : Linear Algebra and Differential Calculus (2300101A)

CO1. Interpret the concepts of Jacobians, rank, quadratic form, canonical form, transformations, Eigen values, Eigen vectors and probability.
CO2. Solve problems on linear algebra, partial derivatives and probability.
CO3. Apply concepts of linear algebra, differential calculus and probability to engineering problems.
CO4. Use computational tools for solving mathematical problems.
CO5. Analyze the nature of quadratic forms, extreme values of the function, error and approximations

Subject 2 : Applied Chemistry (2300104A)

CO1. Describe different techniques used for chemical entities present in fluids, fuel, polymer, alloys.
CO2. Select appropriate technology involved in determination of purity and properties of material.
CO3. Illustrate causes and preventive measures of ill effect of hard water and corrosion
CO4. Analyse the fluids, fuels and selection of appropriate purification methods.
CO5. Compare composition of fuels, purity of water and mitigation for corrosion control.

Subject 3 :Fundamentals of Mechanical Engineering (2300114A)

CO1. Explain the basic concepts of IC engine, thermodynamics and smart manufacturing.
CO2. Identify various components of electric and hybrid vehicles.
CO3. Apply the knowledge of laws of thermodynamics and heat transfer to heat engine, heat pump and refrigerator.
CO4. Calculate material parameters for a given application
CO5. Select a suitable power transmission element for a required application.

Subject 4 : Engineering Drawing (2300110A)

CO1. Explain the need of engineering drawing and its standards.
CO2. Interpret engineering drawing by visualization.
CO3. Draw projections of 2D and 3D objects.
CO4. Apply manual and computerized graphical tools to solve practical problems.

Subject 5 : Communication Skills (2300112A)

CO1. Develop effective communication skills including Listening, Reading, Writing and Speaking
CO2. Practice professional etiquette and present oneself confidently. 3
CO3. Function effectively in heterogeneous teams through the knowledge of team work, Inter-personal relationships, conflict management and leadership quality.
CO4. Evaluate oneself by performing SWOC Analysis to introspect about individual's goals and aspirations.
CO5. Constructively participate in group discussion, meetings and prepare and deliver Presentations.

Subject 6 : Introduction to CAD (2300117B)

CO1. List the fundamental drawing commands used in AutoCAD.
CO2. Explain the importance and purpose of managing layers, applying colors, dimensions, text and defining line types in AutoCAD.
CO3. APPLY geometric transformations to simple 2D geometries.
CO4. Apply their knowledge to create 2D and 3D drawings, edit, and modify basic drawings using various commands in CAD.

F. Y. B. Tech. Chemical Engineering (2023) Sem-II

Subject 7 : Differential Equations and Integral Calculus (2300102A)
CO1. Explain types of differential equations, finite differences and multiple integrals. 2
CO2. Solve problems on differential equations and multiple integrals.
CO3. Apply concept of numerical methods, differential and multivariate calculus to engineering problems.
CO4. Use computational tools for solving mathematical problems.
CO5. Analyze the solution of differential equations, numerical differentiation & integration and multiple integrals

Subject 8 : Applied Physics (B) (2300103B)
CO1. Describe basics of mechanics, advanced materials, wave optics and environmental energy.
CO2. Classify motions is kinematics, advanced materials, refracting crystals and solar cell.
CO3. Explain properties of superconductors and nano-materials.
CO4. Calculate parameters in kinematics, conductivity, efficiency of solar and wind power.
CO5. Use knowledge of Laws of kinematics, semiconductors and wave optics in real life problems.

Subject 9 : Engineering Mechanics (2300113A)
CO1. Select appropriate method to solve problems on rigid bodies.
CO2. Extend the concepts of engineering mathematics and trigonometry for analyzing structures.
CO3. Construct the free body diagram and correlate active and reactive forces.
CO4. Determine centroid and moment of inertia of plane lamina.
CO5. Apply the concept of work, power, energy and impulse-momentum to solve engineering problems.

Subject 9 : Basic Electrical Engineering (2300106A)
CO1. Define terminologies and laws related to AC-DC circuits, machines and batteries an solve numerical
CO2. Demonstrate the need for safety precautions and procedures, components and instruments in the laboratory.
CO3. Elaborate construction, working and performance characteristics of electrical machines and protective devices.
CO4. Select appropriate machines, protective devices for a given application.
CO5. Calculate and analyze transformer efficiency, regulation and LT, HT electricity bill.

Subject 10 : Introduction to Chemical Engineering (2300118B)

CO1. Define terminologies and laws related to chemical engineering principles
CO2. Understand the basic laws, procedures, and components of chemical industries
CO3. Understand the basic unit operations used in the chemical industries.
CO4. Select appropriate chemical processes for a given application in the chemical engineering field.
CO5. Calculate and analyze product yield and efficiencies.

Subject 11 : Indian Knowledge System (2300116A)

CO1. Understand the term 'Indian Knowledge System' it's framework andkey components.
CO2. Appreciate the measurement techniques and mathematics in IKS.
CO3. Identify and elaborate the applications of IKS in engineering domain.

Subject 12: Workshop Practice (2300111A)

CO1. Select appropriate machine and cutting tools for a given application
CO2. Describe the process and programming methods for CNC machines and 3D printing
CO3. Apply the basic knowledge of Shop Floor Safety, Machine tools and Manufacturing processes.
CO4. Fabricate the simple mechanical parts

Subject 13: Engineering Explorations (2300115B):

CO1. Apply principles from several disciplines.
CO2. Demonstrate long-term retention of knowledge and skills acquired.
CO3. Function effectively as a team to accomplish a desired goal.
CO4. Explore an Engineering Product and prepare its Mind map.
CO5. Enhance their learning ability to solve practical problems.

Subject 14: Environmental Pollution and Control (2300122A)

CO1. To get acquainted with pollution aspects in Chemical Process Industries
CO2. To introduce International standards of Health, Safety and Environment and Indian standards
CO3. To get acquainted with air and water pollutions and air quality standards and Water Quality parameters and treatment methods.
CO4. Select appropriate control and treatment methods for wastewater and air emission.
CO5. Apply Solid Waste Management for its disposal.

Subject 15: Process Technology and Economics (2300123A)

CO1. State basic principles of chemical process industry.
CO2. Describe various manufacturing processes used in chemical process industries.
CO3. Draw and explain process flow diagrams for a given process.
CO4. Determine process aspects like yield, byproducts formed, generation of waste.
CO5. Apply Techniques for economic optimization and optimum design.