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| **Course Outcomes for First Year Engineering**  **(All Subjects)** | |
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|  | After the completion of the course, learner will be able to, |
| **FEC101** | **Engineering Mathematics-I** |
| FEC101.1 | Determine powers of complex numbers and roots of equations using D'Moivres Theorem |
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| FEC101.2 | Use hyperbolic functions and logarithm of complex numbers to separate into real and imaginary parts |
| FEC101.3 | Compute the partial differentiation of functions of two & three variables. |
| FEC101.4 | Determine nth order derivative and extreme values of a given function. |
| FEC101.5 | Apply the concept of matrices to solve system of linear simultaneous equations. |
| FEC101.6 | Solve the system of Linear Algebraic and transcendental equations numerically |
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| **FEC102** | **Engineering Physics-I** |
| FEC102.1 | Describe the concepts of quantum mechanics and its applications of Schrodinger's equation to study the simple physical system. |
| FEC102.2 | Explain the basic principles and methodologies of crystal structures for their application in crystallography using the x-ray diffraction technique. |
| FEC102.3 | Illustrate the concepts of semiconductor physics and applications of semiconductors in electronic devices. |
| FEC102.4 | Apply the concepts of interference in thin films for various measurements. |
| FEC102.5 | Discuss the properties of Superconductors and Supercapacitors to apply them in the novel applications. |
| FEC102.6 | Compare the properties of engineering materials for their current and futuristic applications. |
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| **FEC103** | **Engineering Chemistry-I** |
| FEC103.1 | Apply EDTA method to determine the hardness of water. |
| FEC103.2 | Illustrate the concept of fabrication of plastic & viscoelasticity. |
| FEC103.3 | Apply the concept of atomic and molecular orbital theory to calculate bond order & magnetism of molecules. |
| FEC103.4 | Apply Huckel’s Rule to find out the aromaticity of a molecule. |
| FEC103.5 | Apply Gibb’s phase rule to calculate number of phases, component & degree of freedom of one & two component systems. |
| FEC103.6 | Differentiate ionic, dipolar & Vander waal’s intermolecular forces of attraction. |
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| **FEC104** | **Engineering Mechanics** |
| FEC104.1 | Compute resultant and support reactions for force systems. |
| FEC104.2 | Determine the position of centroid with respect to a given reference axis. |
| FEC104.3 | Determine friction forces in various engineering applications. |
| FEC104.4 | Establish relation between position, velocity, acceleration & time for a particle. |
| FEC104.5 | Develop kinematic relations for rigid bodies. |
| FEC104.6 | Develop the relation between various forces and motion of a particle using Newton second law, work-energy and impulse momentum principles. |
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| **FEC105** | **Basic Electrical Engineering** |
| FEC105.1 | Determine the circuit response / behavior for DC network theorems |
| FEC105.2 | Determine the circuit parameters for single phase AC circuits. |
| FEC105.3 | Illustrate the working of series & parallel resonance circuits. |
| FEC105.4 | Examine voltage/current/power relationship in star and delta for three phase AC circuits. |
| FEC105.5 | Determine efficiency & equivalent parameters of single phase transformer. |
| FEC105.6 | Illustrate the working principle of single phase and three phase machines |
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| **FEC201** | **Engineering Mathematics-II** |
| FEC201.1 | Solve differential equations of first order & first degree |
| FEC201.2 | Solve linear differential equations with constant coefficients , variable coefficients of higher order. |
| FEC201.3 | Solve Improper integrals using Beta, Gamma Functions and DUIS |
| FEC201.4 | Compute Area of a Plane region using Double integration |
| FEC201.5 | Determine Volume of Solids using triple integrations. |
| FEC201.6 | Solve Differential equations & Definite integrals Numerically |
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| **FEC202.1** | **Engineering Physics-II** |
| FEC202.1 | Employ the knowledge of diffraction of light in various engineering applications. |
| FEC202.2 | Apply the foundation of laser and fiber optics in development of modern communication systems. |
| FEC202.3 | Illustrate the basics of electrodynamics, which are the prerequisites for satellite communications, and antenna theory. |
| FEC202.4 | Explain the fundamentals of theory of relativity and its applications. |
| FEC202.5 | Describe the broad outline of nanotechnology and their application to engineering. |
| FEC202.6 | Interpret the basic sensing techniques for physical measurements in modern instrumentations. |
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| **FEC203** | **Engineering Chemistry-II** |
| FEC203.1 | Illustrate anodic & cathodic protection method for prevention of corrosion. |
| FEC203.2 | Determine the volume of oxygen & air required for combustion of fuel. |
| FEC203.3 | Illustrate the concept of Emission Spectroscopy. |
| FEC203.4 | Differentiate the phenomenon of fluorescence & Phosphorescence. |
| FEC203.5 | Apply Nernst equation to calculate EMF of cell. |
| FEC203.6 | Apply 12 principles of green chemistry for synthesis of drugs. |
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| **FEC204** | **Engineering Graphics** |
| FEC204.1 | Apply the basic principles of projections in Projection of Lines and Planes |
| FEC204.2 | Apply the basic principles of projections in Projection of Solids & Section of solids |
| FEC204.3 | Apply the basic principles of projections in converting 3D view to 2D drawing. |
| FEC204.4 | Visualize an object from the given two views. |
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| **FEC205** | **Computer Programming** |
| FEC 205.1 | Write an algorithm to support Structure Programming approach. |
| FEC 205.2 | Use variables, derived data types and control structures to write c program |
| FEC 205.3 | Decompose a problem into functions and synthesize a complete program |
| FEC 205.4 | Use Array and String for solving complex computational problem |
| FEC 205.5 | Use Structure-Union for solving complex computational problem |
| FEC 205.6 | Use Pointers for solving complex computational problem |
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| **FEC206** | **PCE-I theory** |
| FEC206.1 | Interpret verbal & non-verbal cues for effective communication at workplace and social situations. |
| FEC206.2 | Choose appropriate vocabulary and avoid grammatical errors in oral and written communication. |
| FEC206.3 | Apply reading and writing strategies for faster comprehension and summarization of texts. |
| FEC206.4 | Develop writing skills required for well-structured business letters and technical documents. |
| FEC206.5 | Apply effective writing skills to frame definition, user instruction and description of a technical object or scientific process. |
| FEC206.6 | Make use of learned social etiquettes and personality traits to interact in all kinds of situations. |