MET Bhujbal Knowledge City

Institute of Engineering
Department of Engineering Sciences & Mathematics

Sr.No	Code	Subject		FE Course Outcome (2024 Pattern)
				After successful completion of the course, learner will be able to:
1	BSC-101-BES	Engineering Mathematics-I	CO1	Apply mean value theorems and its generalizations leading to Taylors and Maclaurin's series useful in the analysis of engineering problems. Determine the Fourier series representation and harmonic analysis of periodic functions in engineering applications.
			CO2	Evaluate derivative functions of several variables that are essential in various engineering problems.
			CO3	Apply the concept of Jacobian to find partial derivatives of implicit function and functional dependence. Use of partial derivatives in estimating errors & approximations and finding extreme values of the function.
			CO4	Apply the essential tool of matrices and linear algebra in a comprehensive manner for analysis of system of linear equations, Linear dependence & Independence, finding linear and orthogonal transformations.
			CO5	Determine Eigen values & Eigen vectors. Use it to diagonalize matrix and to reduce quadratic form to canonical form, applicable to engineering problems.
2	BSC-102-BES	Engineering Physics	CO1	Develop the understanding of working principle of lasers, optical fibers and extend it to holography and fiber optic communication.
			CO2	Deduce Schrödinger's wave equations and apply it to problems on the bound states by summarizing fundamentals of quantum physics.
			CO3	Explain phenomena of interference in thin films, polarization, double refraction and connect to the Anti-Reflection Coating, LCD.
			CO4	Develop understanding of Fermi level and Fermi energy in semiconductors on the basis of results of Fermi Dirac statistics and relate them with the working of semiconducting devices. Extend the understanding of Ultrasonic to thickness measurement, flaw detection.
			CO5	Explain properties of nanoparticles and estimate engineering applications; Explain phenomenon of Superconductivity and estimate engineering applications
3	BSC-103-BES	Engineering Chemistry	CO1	Understand the practical approaches and techniques required to effectively monitor water quality.
			CO2	Select appropriate electro analytical techniques for understanding the materials.
			CO3	Demonstrate the structure and properties of advanced engineering materials for various technological applications.
			CO4	Analyze different types of conventional and alternative fuels.
			CO5	Explain causes of corrosion and methods for minimizing corrosion.

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4	ESC-101-ETC	Basic Electronics Engineering	CO1	Know about the working of P-N Junction diode and its application as rectifier & switch, basics of LED & Photodiode.
			CO2	Understand the working of BJT & MOSFET, their characteristics & compare.
			CO3	Learn logic gates & realization of the digital circuits.
			CO4	Understand the functioning of Opamp and electronic instruments.
			CO5	Select sensors based on their working principle for specific applications and its implementation with Communication system.
5	ESE-102-ELE	Basic Electrical Engineering	CO1	Apply Kirchhoff's Laws, Superposition theorem and network simplification techniques for DC circuit analysis.
			CO2	Analyze the magnetic circuit parameters, self-Inductance, mutual Inductance and Electromotive Forces (EMF's).
			CO3	Calculate AC quantities using mathematical equations, waveforms and phasor diagrams.
			CO4	Compute the voltage, current and power of the given 1-phase and 3-phase AC circuits.
			CO5	Understand the working principle of 1-Phase Transformer, Motors (DC, Induction) and their practical applications.
6	ESC-103-MEC	Engineering Graphics	CO1	Explain the fundamentals of Engineering Graphics and basic principles of geometric construction and apply the knowledge of Projections, Methods to prepare the drawings for points and lines.
			CO2	Apply the types of Projections, Methods to prepare the drawings for planes.
			CO3	Construct the various engineering curves and illustrate the application of various engineering curves and draw the development of the lateral surface of solid.
			CO4	Apply the concept of orthographic projection of an object to draw several 2D views for visualizing the physical state of the object.
			CO5	Apply the visualization skill to draw an isometric projection from given orthographic views.

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7	ESC-104-CVL	Engineering Mechanics	CO1	Understand basic concept of forces, moments and couples in two-dimension force system.
			CO2	Apply concept of free body diagram for static equilibrium in two-dimension force system.
			CO3	Analyze the practical example involving friction and application of two force members.
			CO4	Analyze rectilinear and curvilinear motion of particle.
			CO5	Apply Newton's second law, work energy and impulse momentum principles for particles.
8	ESC-105-COM	Fundamentals of Programming Languages	CO1	To Design algorithms for simple computational problems.
			CO2	To Use mathematical, Logical Operators and Expressions.
			CO3	To apply Control Flow structures for decision making.
			CO4	To design a solution using Arrays, Character and String Arrays.
			CO5	To Design and apply user defined functions and structures.
			CO6	To implement and evaluate the given Problem Statement by applying concepts of 'C' Programming Languages.
9	VSE-101	Manufacturing Practice Workshop	CO1	Illustrate various sections of a typical workshop and different types of tools and machinery commonly found in a workshop.
			CO2	Explain the importance of workshop safety and apply general workshop safety rules and guidelines.
			CO3	Demonstrate proficiency in various cutting techniques such as sawing, shearing and laser cutting.
			CO4	Plan and complete a simple sheet metal job from start to finish incorporating shearing, bending and joining operations.
			CO5	Describe the applications, advantages and operation of advanced computerized machine tools in modern manufacturing.
			CO6	Apply 3D Printing Technology including setup, operation and post processing to print simple mechanical component.
10	AEC-101	Professional Communication Skills	CO1	Recognize, identify, and express advanced skills of Technical Communication in English through Language Laboratory.
			CO2	Understand, categorize, differentiate, and infer listening, speaking, reading, and writing skills in societal and professional life.
			CO3	Articulate and present the skills necessary to be a competent Interpersonal communicator.
			CO4	Deconstruct, appraise, and critique communication behaviors.
			CO5	Adapt, negotiate, and facilitate with multifarious socio-economical and professional arenas with effective communication and interpersonal skills.

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12	BSC-151-BES	Engineering Mathematics – II	CO1	Apply advanced integration techniques such as Reduction formulae, Beta functions, Gamma functions, Differentiation under integral sign and Error functions useful in evaluating multiple integrals and their applications.
			CO2	Trace the curve for a given equation and measure arc length of various curves. Apply the concepts of solid geometry to solve problems on sphere, cone and cylinder in a comprehensive manner.
			CO3	Evaluate multiple integrals and its application to find area bounded by curves, volume bounded by surfaces, Centre of gravity and Moment of inertia.
			CO4	Apply the effective mathematical tools for solving first order ordinary differential equations such as Exact and Reducible to exact Linear and reducible to Linear.
			CO5	Model physical systems using ordinary differential equations, solve and analyze the solutions apply to Newton's law of cooling, electrical circuit, rectilinear motion, mass spring systems, heat transfer etc.
13	PCC-151-ITT	Programming and Problem Solving	CO1	Inculcate and apply various skills in problem solving.
			CO2	Choose appropriate programming constructs and features to solve the problems in diversified domains.
			CO3	Exhibit the programming skills for the problem solving using functions and string manipulations.
			CO4	Demonstrate File handling and dictionaries in Python.
			CO5	Apply Object Oriented Programming concepts using Python.
14	IKS-151	Indian Knowledge System	CO1	Understand the significance and historical context of Indian knowledge systems.
			CO2	Comprehend Indian philosophical concepts, scientific achievements, and their interplay.
			CO3	Recognize the role of engineering in ancient India and its impact on architecture and materials.
			CO4	Apply ancient Indian engineering principles in modern practices while considering cultural and environmental aspects.
14	CCC-101/CCC-151	Co-Curricular Courses	CO1	**Academic & Technical Club**: Students will develop various technical skill by organizing training sessions, mini projects & competitions to encourage problem-solving abilities and holistic development.
			CO2	**Arts & Culture Club**: Students will get nurture with talent, celebrate the diversity and give expressions to the creativity of young minds to develop the creative and intellectual capabilities.
			CO3	**Community (Social) Services Club:** Students will exhibit leadership and social responsibility by contributing to community development promoting team work and ethical practices.
			CO4	**Multimedia & Bulletin Club:** Student will percolate the awareness about the effectiveness of social media and get engage with sustainable development through a wide range of initiative
			CO5	**Sports Club:** Students will able to reduce stress and enhance their strength, build up sportsmanship, developing positive attitude, self-confidence, courage and patience.
			CO6	**Safety Club** and **Health & Hygiene Club:** The students will get sense of responsibility towards the society and environment safety.
16	VSE-102	Design Thinking & Idea Lab	CO1	Identify & define Problems from users perspective and articulate design criteria.
			CO2	Apply empathy & observation to gain insights.
			CO3	Generate innovative ideas &solutions the brainstorm.
			CO4	Prototype &test design solution to improvement.
			CO5	Communicate & present design ideas.
			CO6	Industry professionals to address real world design.