The Bombay Salesian Society's

Don Bosco Institute of Technology

Kurla (West), Mumbai 400070

Department of Mechanical Engineering

SE - SEM. IV - Internal Assessment - I (Syllabus) **14/02/2025**

Academic Year: 2024-2025

Sr No	Name of Subject Incharge	Subject	Subject Code	Date of Exam	Module No.	Detailed Syllabus
1	Prof. Manisha Seksaria	EM.IV	MEC401	20/02/2025	Module 2	2.1: Line Integral, Cauchy's Integral Theorem, Cauchy's Integral formula. 2.2: Taylor's and Laurent's series. 2.3: Definition of Singularity, Zeros, poles of f(z), Residues, Cauchy's Residue Theorem.
					Module 3	3.1: Karl Pearson's Coefficient of correlation and related concepts with problems. 3.2: Spearman's Rank correlation coefficient. 3.3: Lines of Regression. 3.4: Fitting of first and second degree curves.
2	Dr. Yogesh S Padiya	FM	MEC402	21/02/2025	Module 1	Basic Concept and Fluid Static
					Module 2	Fluid Kinematics and Dimensional Analysis
3	Dr. Manju Lata	KOM	MEC403	22/02/2025	Module 1	**1.1 Kinetics of Rigid Bodies:** Concept of mass moment of Inertia and its application to standard objects. Kinetics of rigid bodies: Work and Energy, Kinetic energy in translating motion, Rotating about fixed axis and in general plane motion, Work energy principle and Conservation of energy **1.2 Basic Kinematics:** Structure, Machine, Mechanism, Kinematic link and its type,Kinematic pairs, Types of constrained motions, Tyes of Kinematic pairs, Kinematic chains, Types of joints, Degree of Freedom (mobility), Kutzbach mobility criterion, Grublers criterion and its limitation, Four bar chain and its inversions, Grashoff's Law, Slider crank chain and its inversions, Double slider crank chain and its inversions

					Module 3	**3.1 Velocity Analysis of Mechanisms:** Velocity anlysis by instantaneous centre of rotation method (Graphical approach), Velocity analysis by relative velocity method (Graphical approach) **3.2 Acceleration analysis of Mechanism:** Acceleration analysis by relative method including pairs involving Coriolis acceleration (Graphical approach)
4	Prof. Shreeprasad Manohar	CAD/CAM	MEC404	24/02/2025	Module-1	Computer Graphics 1.1 Introduction: Scope of CAD/CAM in product life cycle, CAD/CAM hardware and software, 2D and 3D computer graphics representation, Mapping of Geometric Models. 1.2 Parametric representation of curves and surfaces: Synthetic Curves - Bezier curves, Hermite Curves, B-spline curves. Surface representation. 1.3 Solid Modeling: Constructive solid geometry (CSG), Boundary Representation (BRep), Wire Frame Modeling, Solid Modeling, Surface Modeling, Parametric Modeling, Feature based modeling, Constraint Based Modeling.
					Module - 2	Geometric Transformation 2.1 Homogeneous Coordinate system, Matrix representation, Concatenations, 2D and 3D geometric transformation (Translation, Reflection, Scaling, Rotation)
5	Prof. Freda Carvalho	IE	MEC405	25/02/2025	Module 3	Operational Amplifier circuits, Ideal OPAMP behaviour, common OPAMP ICs, Inverting Amplifier, Non Inverting amplifier, voltage buffer(follower), Instrumentation amplifier, Active low pass filter(LPF), active high pass filter (HPF), IC 555 operating modes (monostable and astable)
					Module 4	Boolean Algebra, logic gates, logic families, logic levels, noise immunity, fan out, propagation delay, TTL and CMOS logic families, Set reset flip flop, T flip flop, clocked flip flop, registers, multiplexer, demultiplexer applications

Prof. Shreeprasad Manohar
(IA Coordinator)

Prof. Pratibha Dumane
(Dean Academics)

Prof. Swapnil Gujarathi
(HoD - MECH)