Department: First Year Engineering
Year: FE/SE/ TE/ BE: FE
Course Title: Data Engineering mathematics-I
Course Objectives (CO):

Course Objectives:

To make the students familiarize with concepts and techniques in Calculus, Fourier series and Matrices. The aim is to equip them with the techniques to understand advanced level mathematics and its applications that would enhance analytical thinking power, useful in their disciplines.

Course Outcomes (COs):

The students will be able to learn

CO1: Mean value theorems and its generalizations leading to Taylors and Maclaurin's series useful in the analysis of engineering problems.

CO2: the Fourier series representation and harmonic analysis for design and analysis of periodic continuous and discrete systems.

CO3: to deal with derivative of functions of several variables that are essential in various branches of Engineering.

CO4: to apply the concept of Jacobian to find partial derivative of implicit function and functional dependence. Use of partial derivatives in estimating error and approximation and finding extreme values of the function.

CO5: the essential tool of matrices and linear algebra in a comprehensive manner for analysis of system of linear equations, finding linear and orthogonal transformations, Eigen values and Eigen vectors applicable to engineering problems

TLO

UNIT I: DIFFERENTIAL CALCULUS

TLO1. Explain the concept of Rolle's and Mean Value Theorem

TLO2. Find Taylor's and Maclaurian's series of differentiable functions.

TLO3. Apply L'Hospital's rule to evaluate the limit of indeterminate forms.

UNIT II: FOURIER SERIES

TLO4. Obtain Fourier series expansion of a function in given interval.

TLO5. Find Fourier series for available numerical data using harmonic analysis.

TLO6. Apply Parseval's identity to solve the engineering problems

UNIT III: PARTIAL DIFFERENTIATION

TLO7. Explain the concept of partial differentiation, total derivative and find partial derivative of composite function.

TLO8. Explain Euler's theorem on homogeneous functions.

UNIT IV: - APPLICATIONS OF PARTIAL DIFFERENTIATION

TLO9. Explain the concept Jacobian with illustrations.

TLO10. Find the Jacobian of composite and Implicit functions and explain functional Dependence and Independence of function by using Jacobian.

TLO11. Find error and approximate value of functions.

TLO12. Apply the concept of partial differentiation to find stationary points of functions of two or more variables.

UNIT V: - LINEAR ALGEBRA –MATRICES, SYSTEM OF LINEAR EQUATIONS

TLO13. Find the Rank by using Echelon form and Normal Form of Matrix.

TLO14. Solve the system of linear equations by Matrix Method.

TLO15. Explain linear dependence and independence vectors, Linear and Orthogonal transformation of vectors.

UNIT V: - LINEAR ALGEBRA – EIGEN VALUES & EIGEN VECTORS, DIAGONALIZTION

TLO16. Find the Eigen values and Eigen vectors of Matrix and apply the Cayley Hamilton theorem to find inverse of a matrix.

TLO17. Apply Diagonaliztion matrix to reduce quadratic form to canonical form by using Linear & Orthogonal transformation.

TLO to CO Mapping with the help of Articulation Matrix: -

	CO: 1	CO: 2	CO: 3	CO: 4	CO: 5
TLO: 1	✓				
TLO: 2	✓				
TLO: 3	✓				
TLO: 4		✓			
TLO: 5		✓			
TLO: 6		✓			
TLO: 7			✓		
TLO: 8			✓		
TLO: 9				✓	
TLO: 10				✓	
TLO: 11				✓	
TLO: 12				✓	
TLO: 13					✓
TLO: 14					✓
TLO: 15					✓
TLO: 16					✓
TLO: 17					✓

CO To PO Mapping with Articulation Matrix:

	PO 1	PO 2	PO3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO1	2	-	-	-	-	1	-	-	-	-	-	1
CO2	2	-	-	-	-	1	-	-	-	-	-	1
CO3	2	-	-	-	-	1	-	-	-	-	-	1
CO4	2	-	-	-	-	1	-	-	-	-	-	1
CO5	2	-	-	-	-	1	-	-	-	-	-	1

Direct Assessment Tools for CO Attainment

Course Outcome	Assessment tool	% total	Result
CO1	UT, IE, A, PE, UE	A	
CO2	UT, IE, A, PE, UE	B	
CO3	A, PE, UE	C	
CO4	A, PE, UE	D	
CO5	A, PE, UE	E	

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Group of Institution's

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Department of Mechanical Engineering

Course Outcome- PO Mapping (CO- PO Mapping)

SE (Mechanical Engineering) -2019 Pattern

Course Code	Name of Subject/ Course	Course Outcome (COs)
Sem I		
202041	Solid Mechanics	DEFINE various types of stresses and strain developed on determinate and indeterminate members.
		DRAW Shear force and bending moment diagram for various types of transverse loading and support.
		COMPUTE the slope & deflection, bending stresses and shear stresses on a beam.
		CALCULATE torsional shear stress in shaft and buckling on the column.
		APPLY the concept of principal stresses and theories of failure to determine stresses on a 2-D element.
		UTILIZE the concepts of SFD & BMD, torsion and principal stresses to solve combined loading application based problems.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	M	-	-	-	S	-	-	-	-	-	-
CO2	H	H	M	-	-	-	-	-	-	-	-	
CO3	M	H	S	-	-	S	-	-	-	-	-	_
CO4	H	S	S	-	-	-	-	-	-	-	-	-
CO5	-	-	-	-	H	-	-	H	-		-	-
CO6	S	-	-	-	-	-	-	-	-	-	-	-

202042	Solid Modeling and Drafting	UNDERSTAND basic concepts of CAD system, need and scope in Product Lifecycle Management UTILIZE knowledge of curves and surfacing features and methods to create complex solid geometry CONSTRUCT solid models, assemblies using various modeling techniques & PERFORM mass property analysis, including creating and using a coordinate system APPLY geometric transformations to simple 2D geometries USE CAD model data for various CAD based engineering applications viz. production drawings, 3D printing, FEA, CFD, MBD, CAE, CAM, etc. USE PMI & MBD approach for communication

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	H	H		H	M			M			M
CO2	H	H	H	H	H				M	M	M	
CO3					H							
CO4					H							
CO5					H							
CO6					H							

202043	Engineering Thermodynamics	DESCRIBE the basics of thermodynamics with heat and work interactions.
		APPLY laws of thermodynamics to steady flow and non-flow processes.
		APPLY entropy, available and non available energy for an Open and Closed System,
		DETERMINE the properties of steam and their effect on performance of vapour power cycle.
		ANALYSE the fuel combustion process and products of combustion.
		SELECT various instrumentations required for safe and efficient operation of steam generator.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	H	H			M			M			M
CO2	H	H	H	H	H				M	M	M	
CO3					H							
CO4					H							
CO5		H										
CO6					H							

202044	Engineering Materials and Metallurgy	COMPARE crystal structures and ASSESS different lattice parameters.
		CORRELATE crystal structures and imperfections in crystals with mechanical behaviour of materials.
		DIFFERENTIATE and DETERMINE mechanical properties using destructive and non-destructive testing of materials.
		IDENTIFY & ESTIMATE different parameters of the system viz., phases, variables, component, grains, grain boundary, and degree of freedom. etc.
		ANALYSE effect of alloying element & heat treatment on properties of ferrous & nonferrous alloy.
		SELECT appropriate materials for various applications.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	H				M			M			M
CO2	H	H	H	H					M	M	M	
CO3	H											
CO4		H										
CO5		H										
CO6			H									

203156	Electrical and Electronics Engineering	APPLY programming concepts to UNDERSTAND role of Microprocessor and Microcontroller in embedded systems
		DEVELOP interfacing of different types of sensors and other hardware devices with Atmega328 based Arduino Board
		UNDERSTAND the operation of DC motor, its speed control methods and braking
		DISTINGUISH between types of three phase induction motor and its characteristic features
		EXPLAIN about emerging technology of Electric Vehicle (EV) and its modular subsystems
		CHOOSE energy storage devices and electrical drives for EVs

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	H				M			M			M
CO2	H	H	H	H					M	M	M	
CO3	H											
CO4		H										
CO5		H										
CO6			H									

Sem II

207002	Engineering Mathematics - III	SOLVE higher order linear differential equations and its applications to model and analyze mass spring systems.
		APPLY Integral transform techniques such as Laplace transform and Fourier transform to solve differential equations involved in vibration theory, heat transfer and related mechanical engineering applications.
		APPLY Statistical methods like correlation, regression in analyzing and interpreting experimental data applicable to reliability engineering and probability theory in testing and quality control.
		PERFORM Vector differentiation & integration, analyze the vector fields and APPLY to fluid flow problems.
		SOLVE Partial differential equations such as wave equation, one and two dimensional heat flow equations.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M	H	M	M		M						
CO2	M	H	H	H	H	H						
CO3	M	H	M	H		H						
CO4	M	M	H	H		H						
CO5	M	M	H	H		H						
CO6												
202047	Kinematics of Machinery	APPLY kinematic analysis to simple mechanisms										
		ANALYZE velocity and acceleration in mechanisms by vector and graphical method										
		SYNTHESIZE a four bar mechanism with analytical and graphical methods										
		APPLY fundamentals of gear theory as a prerequisite for gear design										
		CONSTRUCT cam profile for given follower motion										

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M	-	-	-	-	M						
CO2	M	H	-	-	-	-						
CO3	H	M	M	-	-	-						
CO4	H	M	M	-	-	-						
CO5	H	H	M	-	M	-						
CO6												
202048	Applied Thermodynamics	DETERMINE COP of refrigeration system and ANALYZE psychrometric processes.										
		DISCUSS basics of engine terminology,air standard, fuel air and actual cycles.										
		IDENTIFY factors affecting the combustion performance of SI and CI engines.										
		DETERMINE performance parameters of IC Engines and emission control.										
		EXPLAIN working of various IC Engine systems and use of alternative fuels.										
		CALCULATE performance of single and multi stage reciprocating compressors and DISCUSS rotary positive displacement compressors										

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M	-	-	-	-	M						
CO2	M	H	-	-	-	-						
CO3	H	M	M	-	-	-						
CO4	H	M	M	-	-	-						
CO5	H	H	M	-	M	-						
CO6												

202049	Fluid Mechanics	DETERMINE various properties of fluid
		APPLY the laws of fluid statics and concepts of buoyancy
		IDENTIFY types of fluid flow and terms associated in fluid kinematics
		APPLY principles of fluid dynamics to laminar flow
		ESTIMATE friction and minor losses in internal flows and DETERMINE boundary layer formation over an external surface
		CONSTRUCT mathematical correlation considering dimensionless parameters, also ABLE to predict the performance of prototype using model laws

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-						
CO5	H	H		-	H	-						
CO6	H		H									

202050	Manufacturing Processes	SELECT appropriate moulding, core making and melting practice and estimate pouring time, solidification rate and DESIGN riser size and location for sand casting process
		UNDERSTAND mechanism of metal forming techniques and CALCULATE load required for flat rolling
		DEMONSTRATE press working operations and APPLY the basic principles to DESIGN dies and tools for forming and shearing operations
		CLASSIFY and EXPLAIN different welding processes and EVALUATE welding characteristics
		DIFFERENTIATE thermoplastics and thermosetting and EXPLAIN polymer processing techniques
		UNDERSTAND the principle of manufacturing of fibre-reinforce composites and metal matrix composites

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-						
CO5	H	H		-	H	-						
CO6	H		H									

202051	Machine Shop	PERFORM welding using TIG/ MIG/ Resistance/Gas welding technique
		MAKE Fibre-reinforced Composites by hand lay-up process or spray lay-up techniques
		PERFORM cylindrical/surface grinding operation and CALCULATE its machining time
		DETERMINE number of indexing movements required and acquire skills to PRODUCE a spur gear on a horizontal milling machine
		PREPARE industry visit report
		UNDERSTAND procedure of plastic processing

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-						
CO5	H	H		-	H	-						
CO6	H		H									

202052	Project Based Learning - II	IDENTIFY the real-world problem (possibly of interdisciplinary nature) through a rigorous literature survey and formulate / set relevant aims and objectives
		ANALYZE the results and arrive at valid conclusions
		PROPOSE a suitable solution based on the fundamentals of mechanical engineering by possibly integration of previously acquired knowledge
		CONTRIBUTE to society through proposed solutions by strictly following professional ethics and safety measures
		USE of technology in proposed work and demonstrate learning in oral and written form
		DEVELOP ability to work as an individual and as a team member

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-						
CO5	H	H		-	H	-						
CO6	H		H									

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Department of Mechanical Engineering

Course Outcome- PO Mapping (CO- PO Mapping)

TE (Mechanical Engineering) -2019 Pattern

Sem I		
302041	Numerical and Statistical Methods	SOLVE system of equations using direct and iterative numerical methods.
		ESTIMATE solutions for differential equations using numerical techniques.
		DEVELOP solution for engineering applications with numerical integration.
		DESIGN and **CREATE** a model using a curve fitting and regression analysis.
		APPLY statistical Technique for quantitative data analysis.
		DEMONSTRATE the data, using the concepts of probability and linear algebra.

CO-PO Mapping												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-						
CO5	H	H		-	H	-						
CO6	H		H									

302042	Heat and Mass Transfer	**ANALYZE** & **APPLY** the modes of heat transfer equations for one dimensional thermal system.
		DESIGN a thermal system considering fins, thermal insulation and & Transient heat conduction.
		EVALUATE the heat transfer rate in natural and forced convection & validate with experimentation results.
		INTERPRET heat transfer by radiation between objects with simple geometries, for black and grey surfaces.
		ABILITY to analyze the rate of mass transfer using Fick's Law of Diffusion and understands mass diffusion in different coordinate systems.
		DESIGN & ANALYSIS of heat transfer equipments and investigation of its performance.

CO-PO Mapping												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-						
CO5	H	H		-	H	-						
CO6	H		H									

302043	Design of Machine Elements	DESIGN AND ANALYZE the cotter and knuckle Joints, levers and components subjected to eccentric loading.
		DESIGN shafts, keys and couplings under static loading conditions.
		ANALYZE different stresses in power screws and APPLY those in the procedure to design screw jack.
		EVALUATE dimensions of machine components under fluctuating loads.
		EVALUATE & INTERPRET the stress developed on the different type of welded and threaded joints.
		APPLY the design and development procedure for different types of springs.

CO-PO Mapping												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-						
CO5	H	H		-	H	-						
CO6	H		H									

302044	Mechatronics	**DEFINE** key elements of mechatronics, principle of sensor and its characteristics.
		UTILIZE concept of signal processing and MAKE use of interfacing systems such as ADC, DAC, Digital I/O.
		DETERMINE the transfer function by using block diagram reduction technique.
		EVALUATE Poles and Zero, frequency domain parameter for mathematical modeling for mechanical system.
		APPLY the concept of different controller modes to an industrial application.
		DEVELOP the ladder programming for industrial application.

CO-PO Mapping												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-						
CO5	H	H		-	H	-						
CO6	H		H									

302045-A	Advanced Forming & Joining Processes	ANALYSE the effect of friction in metal forming deep drawing and IDENTIFICATION of surface defects and their remedies in deep drawing operations
		ASSESS the parameters for special forming operation and SELECT appropriate special forming operation for particular applications
		ANALYSE the effect of HAZ on microstructure and mechanical properties of materials
		CLASSIFY various solid state welding process and SELECT suitable welding processes for particular applications
		CLASSIFY various advanced welding process and SELECT suitable welding processes for particular applications.
		INTERPRET the principles of sustainable manufacturing and its role in manufacturing industry.

CO-PO Mapping												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-						
CO5	H	H		-	H	-						
CO6	H		H									

302045-B	Machining Science &Technology	DEFINE metal cutting principles and mechanics of metal cutting and tool life.
		DESCRIBE features of gear and thread manufacturing processes.
		SELECT appropriate grinding wheel and demonstrate the various surface finishing processes.
		SELECT appropriate jigs/fixtures and to draw the process plan for a given component.
		SELECT & EVALUATE various parameters of process planning.
		GENERATE CNC program for Turning / Milling processes and generate tool path using CAM software.

CO-PO Mapping												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-						
CO5	H	H		-	H	-						
CO6	H		H									

302046	Digital Manufacturing Laboratory	**DEVELOP** a component using conventional machines, CNC machines and Additive Manufacturing Techniques.
		ANALYZE cutting tool parameters for machining given job.
		DEMONSTRATE simulation of manufacturing process using Digital Manufacturing Tools.
		SELECT and DESIGN jigs and Fixtures for a given component.
		DEMONESTRATE different parameters for CNC retrofitting and reconditioning.

CO-PO Mapping												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-						
CO5	H	H		-	H	-						
CO6	H		H									

302047	Skill Development	APPLY& DEMONSTRATE procedure of assembly & disassembly of various machines.
		DESIGN & DEVELOP a working/model of machine parts or any new product.
		EVALUATE fault with diagnosis on the machines, machine tools and home appliances.
		IDENTIFY & DEMONSTRATE the various activities performed in an industry such as maintenance, design of components, material selection.

CO-PO Mapping												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-						
CO5	H	H		-	H	-						
CO6	H		H									

Sem II

302049	Artificial Intelligence & Machine Learning	DEMONSTRATE fundamentals of artificial intelligence and machine learning.
		APPLY feature extraction and selection techniques.
		APPLY machine learning algorithms for classification and regression problems.
		DEVISE AND DEVELOP a machine learning model using various steps.
		EXPLAIN concepts of reinforced and deep learning.
		SIMULATE machine learning model in mechanical engineering problems.

CO-PO Mapping												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						

CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-						
CO5	H	H		-	H	-						
CO6	H		H									
302050	Computer Aided Engineering	DEFINE the use of CAE tools and DESCRIBE the significance of shape functions in finite element formulations.										
		APPLY the various meshing techniques for better evaluation of approximate results.										
		APPLY material properties and boundary condition to SOLVE 1-D and 2-D element stiffness matrices to obtain nodal or elemental solution.										
		ANALYZE and APPLY various numerical methods for different types of analysis.										
		EVALUATE and SOLVE non-linear and dynamic analysis problems by analyzing the results obtained from analytical and computational method.										
		GENERATE the results in the form of contour plot by the USE of CAE tools.										

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-						
CO5	H	H		-	H	-						
CO6	H		H									
302051	Design of Transmission Systems	APPLY the principle of Spur & Helical gear design for industrial application and PREPARE a manufacturing drawing with the concepts of GD&T.										
		EXPLAIN and DESIGN Bevel & Worm gear considering design parameters as per design standards.										
		SELECT&DESIGN Rolling and Sliding Contact Bearings from manufacturer's catalogue for a typical application considering suitable design parameters.										
		DEFINE and DESIGN various types of Clutches, Brakes, used in automobile.										
		APPLY various concept to DESIGN Machine Tool Gear box, for different applications										
		ELABORATE various modes of operation, degree of hybridization and allied terms associated with hybrid electric vehicles.										

CO-PO Mapping												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-						
CO5	H	H		-	H	-						
CO6	H		H									
302052- A	Composite Materials	DEFINE & COMPARE composites with traditional materials.										
		IDENTIFY & ESTIMATE different parameters of the Polymer Matrix Composite										
		CATEGORISE and APPLY Metal Matrix Process from possessions landscape.										
		DETERMINE volume/weight fraction and strength of Composites.										
		SELECT appropriate testing and inspection method for composite materials.										
		SELECT composites materials for various applications.										

CO-PO Mapping												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-						
CO5	H	H		-	H	-						
CO6	H		H									
302052-B	Surface Engineering	DEFINE the basic's principle & mechanism of surface degradation.										
		ANALYSE & SELECT correct corrosion prevention techniques for a different service condition.										
		DEMONSTRATE the role of surface engineering of materials to modify/improve the surface properties.										
		SELECT the suitable surface heat treatments to improve the surface properties.										
		APPLY the surface modification technique to modify surface properties.										
		ANALYSE & EVALUTE various surface coating defects using various testing/characterization method.										

CO-PO Mapping												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-						
CO5	H	H		-	H	-						
CO6	H		H									
302053	Measurement Laboratory	EVALUATE causes of errors in Vernier calipers, micrometers by performing experiments in standard metrological conditions, noting deviations at actual and by plotting cause and effect diagram, to reduce uncertainty in measurement.										
		ANALYZE strain measurement parameters by taking modulus of elasticity in consideration to acknowledge its usage in failure detection and force variations.										
		EXAMINE surface Textures, surface finish using equipment's like Talysurf and analyze surface finish requirements of metrological equipment's like gauges, jaws of vernier calipers, micrometers, magnifying glasses of height gauge and more, to optimize surface finish accuracy requirements and cost of measurement.										
		MEASURE the dimensional accuracy using Comparator and limit gauges and appraise their usage in actual measurement or comparison with standards set to reduce measurement lead time.										
		PERFORM Testing of Flow rate, speed and temperature measurements and their effect on performance in machines and mechanisms like hydraulic or pneumatic trainers, lathe machine etc. to increase repeatability and reproducibility.										
		COMPILE the information of opportunities of entrepreneurships/business in various sectors of metrology like calibrations, testing, coordinate and laser metrology etc in an industry visit report.										

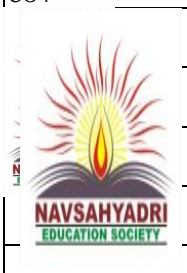
CO-PO Mapping												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-						
CO5	H	H		-	H	-						
CO6	H		H									
302054	Fluid Power & Control Laboratory	DEFINE working principle of components used in hydraulic and pneumatic systems.										
		IDENTIFY & EXPLAIN various applications of hydraulic and pneumatic systems.										
		SELECT an appropriate component required for hydraulic and pneumatic systems using manufactures' catalogues.										
		SIMULATE & ANALYSE various hydraulic and pneumatic systems for industrial/mobile applications.										
		DESIGN a hydraulic and pneumatic system for the industrial applications.										
		DESIGN & DEMONESTRATE various IoT, PLC based controlling system using hydraulics and pneumatics.										

CO-PO Mapping												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-						
CO5	H	H		-	H	-						
CO6	H		H									
302055	Internship	DEMONSTRATE professional competence through industry internship.										
		APPLY knowledge gained through internships to complete academic activities in a professional manner.										
		CHOOSE appropriate technology and tools to solve given problem.										
		DEMONSTRATE abilities of a responsible professional and use ethical practices in day to day life.										
		DEVELOP network and social circle, and DEVELOPING relationships with industry people.										
		ANALYZE various career opportunities and DECIDE career goals.										

CO-PO Mapping												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-						
CO5	H	H		-	H	-						
CO6	H		H									
302055	Mini Project	EXPLAIN plan and execute a Mini Project with team.										
		IMPLEMENT hardware/software/analytical/numerical techniques, etc.										
		DEVELOP a technical report based on the Mini project.										
		DELIVER technical seminar based on the Mini Project work carried out.										

CO-PO Mapping												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M			H			H
CO2	H	H	-	-	-	H			H			

CO3		H	H	-	-	H			H			H
CO4	H	M	H	-	-	-			H			H



Navsahyadri Education Society's

Group of Institution's

Sr.No. 69,70 & 71 , Naigaon, Nasrapur, Pune - Satara Road , Dist. - Pune.

Department of Mechanical Engineering

Course Outcome- PO Mapping (CO- PO Mapping)

BE (Mechanical Engineering) -2019 Pattern

Sem I

402041	Heating, Ventilation, Air Conditioning and Refrigeration	ANALYSE different air-craft refrigeration systems and EXPLAIN the properties, applications and environmental issues of different refrigerants.
		ANALYSE multi pressure refrigeration system used for refrigeration applications.
		DISCUSS types of compressors, condensers, evaporators and expansion valves along with regulatory and safety controls and DESCRIBES Transcritical and ejector refrigeration systems.
		ESTIMATE cooling load for air conditioning systems used with concern of design conditions and indoor quality of air.
		DESIGN air distribution system along with consideration of ventilation and infiltration.
		EXPLAIN the working of types of desiccants, evaporative, thermal storage, radiant cooling, clean room and heat pump systems.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-						
CO5	H	H		-	H	-						
CO6	H		H									

402042	Dynamics of Machinery	APPLY balancing technique for static and dynamic balancing of multi cylinder inline and radial engines.
		ANALYZE the gyroscopic couple or effect for stabilization of Ship, Airplane and Four wheeler vehicles.
		ESTIMATE natural frequency for single DOF un-damped & damped free vibratory systems.
		DETERMINE response to forced vibrations due to harmonic excitation, base excitation and excitation due to unbalance forces.
		ESTIMATE natural frequencies, mode shapes for 2 DOF un-damped free longitudinal and torsional vibratory systems.
		DESCRIBE noise and vibration measuring instruments for industrial / real life applications along with suitable method for noise and vibration control.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-						
CO5	H	H		-	H	-						
CO6	H		H									
402043	Turbomachinery	VALIDATE impulse moment principle using flat, inclined and curved surfaces and INVESTIGATE performance characteristics of hydraulic turbines.										
		DETERMINE performance parameters of impulse and reaction steam turbine along with discussion of nozzles, governing mechanism & losses.										
		MEASURE performance parameters of single & multistage centrifugal pumps along with discussion of cavitation and selection.										
		EXPLAIN performance parameters of centrifugal compressor along with discussion of theoretical aspects of axial compressor.										

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-							H
CO2	H	H	-	-	-							
CO3		H	H	-	-	H			H			H
CO4	H	M	H	-	-	-			H			H
402044A	Automobile Design	DESIGN of Principal Engine Components										
		DESIGN of Drive train										
		DESIGN of brakes and Suspension										

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						H
CO2	H	H	-	-	-							
CO3		H	H	-	-	H			H			H
402044B	Design of Heat Transfer Equipments	EXPLAIN the design aspect of heat exchanger considering fouling factor for Heat Transfer Applications										
		SELECT and DESIGN the double tube heat exchangers for process industry										
		DESIGN the Shell & Tube Heat Exchangers for specified conditions										
		DESIGN the condensers and evaporators for refrigeration applications										

		DESIGN the compact heat exchangers
		ANALYSE the performance of counter and cross flow cooling tower.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-						
CO5	H	H		-	H	-						
CO6	H		H									

402044C	Modern Machining Processes	UNDERSTAND and ANALYZE the mechanism, process parameters of mechanical assisted modern machining processes.
		UNDERSTAND the mechanism, construction and working of laser, plasma and electron beam assisted machining.
		CLASSIFY and ANALYZE the mechanism, process parameters of the chemical and electrochemical machining.
		RELATE and ANALYZE the mechanism and select process parameters Electrical Discharge Machining for an application.
		ILLUSTRATE the application of micromachining processes.
		SUGGEST appropriate nanomachining process for the specific application.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-						
CO5	H	H		-	H	-						
CO6	H		H									

402044D	Industrial Engineering	EVALUATE the productivity and IMPLEMENT various productivity improvement techniques.
		APPLY work study techniques and UNDERSTANDS its importance for better productivity.
		DEMONSTRATE the ability to SELECT plant location, appropriate layout and material handling equipment.
		USE of Production planning and control tools for effective planning, scheduling and managing the shop floor control.
		PLAN inventory requirements and EXERCISE effective control on manufacturing requirements.
		APPLY Ergonomics and legislations for human comfort at work place and UNDERSTANDS the role of value engineering in improving productivity.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-						
CO5	H	H		-	H	-						
CO6	H		H									

402044E	Internet of Things	EXPLAIN the Applications/Devices, Protocols and Communication Models of IoT
		DEMONSTARTE small Mechanical Engineering IoT oriented applications using Sensors, Actuators, Microcontrollers and Cloud
		SELECT commonly used IoT Simulation Hardware platforms
		APPLICATION of Interfacing and Communication Technologies for IoT
		ILLUSTRATE IoT Application Development and Security of IoT Ecosystem
		EVALUATE Present and Future Domain specific Applications of IoT Ecosystem

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-						
CO5	H	H		-	H	-						
CO6	H		H									

402044F	Computational Fluid Dynamics	**DISTINGUISH** and **ANALYSE** the governing equations of fluid mechanics and heat transfer in various formulations
		ANALYZE and MODEL the conduction and advection problems
		ANALYZE and MODEL the Convection-Diffusion problems
		IDENTIFY and EVALUATE the External/Internal flow and its simulation
		DISTINGUISH and COMPARE concepts of stability and turbulence.
		USE and APPLY a CFD tool for effectively solving practical Fluid-Structure Interaction problems

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

CO1	H	-	-	-	-	M						
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-						
CO5	H	H		-	H	-						
CO6	H		H									
402045A	Product Design and Development	**UNDERSTAND** Product design and Product development processes										
		UNDERSTAND Processes, tools and techniques for Market Survey & Product Specification Finalization										
		UNDERSTAND Processes, tools and techniques for Concept Inception, Verification and selection										
		UNDERSTAND Processes, tools and techniques for Concept Exploration & Development										
		UNDERSTAND Processes, tools and techniques for Design Verification and Validation										
		UNDERSTAND Processes, tools and techniques for Robust Design and Development										

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-						
CO5	H	H		-	H	-						
CO6	H		H									
402045B	Experimental Methods in Thermal Engineering	IDENTIFY the suitable instrument for measuring parameters as per performance characteristics										
		ANALYZE experimental data by using different statistical techniques and estimate error										
		DISTINGUISH different methods of temperature measurements and thermal radiation										
		CLASSIFY various pressure measurement instruments and their comparison										
		EXPLAIN different flow measurement methods and flow visualization techniques										
		APPLY knowledge of modern engineering experimentation, including calibration, data acquisition, analysis and interpretation using different AI and ML techniques										

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						
CO2	H	H	-	-	-	-						

CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-						
CO5	H	H		-	H	-						
CO6	H		H									
402045C	Additive Manufacturing	USE and CLASSIFY the fundamentals of Additive Manufacturing Technologies for engineering applications.										
		IDENTIFY and CATEGORIZE the methodology to manufacture the products using light-based photo-curing, LASER based technologies and STUDY their applications, benefits.										
		IDENTIFY and CATEGORIZE the methodology to manufacture the products using extrusion-based deposition, inkjet-based technologies and STUDY their applications, benefits.										
		SYNTHESIZE, RECOMMEND and DESIGN the suitable material and process for fabrication and build behavior of verities of product.										
		DESIGN and CONSTRUCT the AM equipment's for appropriate applications and the input CAD model.										
		DEVELOP the knowledge of additive manufacturing for various real-life applications.										

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-						
CO5	H	H		-	H	-						
CO6	H		H									
402045D	Operations Research	EVALUATE various situations of Games theory and Decision techniques and APPLY them to solve them in real life for decision making.										
		SELECT appropriate model for queuing situations and sequencing situations and FIND the optimal solutions using models for different situations.										
		FORMULATE various management problems and SOLVE them using Linear programming using graphical method and simplex method.										
		FORMULATE variety of problems such as transportation, assignment, travelling salesman and SOLVE these problems using linear programming approach.										
		PLAN optimum project schedule for network models arising from a wide range of applications and for replacement situations find the optimal solutions using appropriate models for the situation.										
		APPLY concepts of simulation and Dynamic programming										

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						H
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-			H			

CO5	H	H		-	H	-						
CO6	H		H									H
402045E	Augmented Reality and Virtual Reality	UNDERSTAND fundamental Computer Vision, Computer Graphics and HumanComputer Interaction Techniques related to VR/AR										
		UNDERSTAND Geometric Modeling Techniques										
		UNDERSTAND the Virtual Environment										
		ANALYZE and EVALUATE VR/AR Technologies										
		APPLY various types of Hardware and Software in Virtual Reality systems										
		DESIGN and FORMULATE Virtual/Augmented Reality Applications										

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						H
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-			H			
CO5	H	H		-	H	-						
CO6	H		H									H
402046	Data Analytics Laboratory	**UNDERSTAND** the basics of data analytics using concepts of statistics and probability.										
		APPLY various inferential statistical analysis techniques to describe data sets and withdraw useful conclusions from acquired data set.										
		EXPLORE the data analytics techniques using various tools										
		APPLY data science concept and methods to solve problems in real world context										
		SELECT advanced techniques to conduct thorough and insightful analysis and interpret the results										

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						H
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-			H			
CO5	H	H		-	H	-						
		Implement systems approach.										
		To conceptualize a novel idea / technique into a product.										

402047	Project (Stage I)	To think in terms of a multi-disciplinary environment.
		To take on the challenges of teamwork, and document all aspects of design work.
		To understand the management techniques of implementing a project.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						H
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-			H			
CO5	H	H		-	H	-						

Sem II

402048	Computer Integrated Manufacturing	EXPLAIN CIM and factory automation.
		UNDERSTAND the integration of hardware and software elements for CIM
		APPLY CNC program for appropriate manufacturing techniques.
		ANALYZE processes planning, quality and MRP integrated with computers.
		INTERPRET flexible, cellular manufacturing and group technology.
		ANALYZE the effect of IOT, Industry-4.0 and cloud base manufacturing.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						H
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-			H			
CO5	H	H		-	H	-						
CO6	H		H									H

402049	Energy Engineering	EXPLAIN the power generation scenario, the layout components of thermal power plant and ANALYZE the improved Rankine cycle.
		ANALYZE the performance of steam condensers, cooling tower system; RECOGNIZE an environmental impact of energy systems and methods to control the same.
		EXPLAIN the layout, component details of diesel engine plant, hydel and nuclear energy systems.
		ANALYZE gas and improved power cycles.
		EXPLAIN the fundamentals of renewable energy systems.

		EXPLAIN basic principles of energy management, storage and economics of power generation.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						H
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-			H			
CO5	H	H		-	H	-						
CO6	H		H									H

402050A	Quality & Reliability Engineering	UNDERSTAND basic concepts of quality and RELATE various quality tools
		DEVELOP analytical competencies to SOLVE problems on control charts and process capability.
		UNDERSTAND fundamental concepts of reliability.
		EVALUATE system reliability.
		IDENTIFY various failure modes and CREATE fault tree diagram.
		UNDERSTAND the concept of reliability centered maintenance and APPLY reliability tests methods.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						H
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-			H			
CO5	H	H		-	H	-						
CO6	H		H									H

402050B	Energy Audit and Management	EXPLAIN the energy need and role of energy management
		CARRY OUT an energy audit of the Institute/Industry/Organization
		ASSESS the ENCON opportunities using energy economics
		ANALYSE the energy conservation performance of Thermal Utilities
		ANALYSE the energy conservation performance of Electrical Utilities
		EXPLAIN the energy performance improvement by Cogeneration and WHR method

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						H
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-			H			
CO5	H	H		-	H	-						
CO6	H		H									H
402050C	Manufacturing System and Simulation	UNDERSTAND the concepts of manufacturing system, characteristics, type, etc.										
		UNDERSTAND the concepts of Facilities, manufacturing planning & control and Support System.										
		UNDERSTAND the concepts of manufacturing towards solving productivity related problems.										
		DEVELOP a virtual model to solve industrial engineering related issues such as capacity utilization, line balancing.										
		BUILDING tools to view and control simulations and their results.										
		PLAN the data representation & Evaluate the results of the simulation.										

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						H
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-			H			
CO5	H	H		-	H	-						
CO6	H		H									H
402050D	Engineering Economics and Financial Management	UNDERSTAND the business environment, concepts of economics and demand-supply scenario.										
		APPLY the concepts of costing and pricing to evaluate the pricing of mechanical components.										
		UNDERSTAND accounting systems and analyze financial statements using ratio analysis										
		SELECT and **PREPARE** the appropriate type of budget and understand the controlling aspects of budget.										
		UNDERSTAND the international business and trade system functioning										
		DEMONSTRATE understanding of financing decisions of new ventures and performance										

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						H

CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-			H			
CO5	H	H		-	H	-						
CO6	H		H									H

402050E	Organizational Informatics	Demonstrate an understanding of the scope, purpose and value of information systems in an organization.
		Understand the constituents of the information system.
		Demonstrate the Understanding of the management of product data and features of various PLM aspects.
		Relate the basic concepts of manufacturing system and the ERP functionalities in context of information usage.
		Understand the manufacturing execution system and it's applications in functional areas.
		Outline the role of the information system in various types of business and allied emerging technologies.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						H
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-			H			
CO5	H	H		-	H	-						
CO6	H		H									H

402050F	Computational Multi Body Dynamics	APPLY the basic terminology and concepts used in Multibody Dynamics to solve varieties of motion related applications
		IDENTIFY and EVALUATE the types of joints, its kinematics and relevant transformations
		DISTINGUISH and COMPARE the formulation methods
		DERIVE equations of motion and EVALUATE the kinematics and dynamics of rigid Planar inter-connected bodies
		DERIVE equations of motion and EVALUATE the kinematics of rigid Spatial interconnected bodies
		APPLY MBD tool effectively and SIMULATE it to solve and validate practical Multibody Dynamics problems and its solutions

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						H
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						

CO4	H	M	H	-	-	-			H			
CO5	H	H		-	H	-						
CO6	H		H									H
402051A	Process Equipment Design	INTERPRET the different parameters involved in design of process Equipments.										
		ANALYZE thin and thick walled cylinder										
		DESIGN cylindrical vessel, spherical vessel, tall vessels and thick walled high pressure vessels										
		DESIGN different process Equipments and select pump, compressor etc. and auxiliary services										
		EVALUATE Process parameters and their correlation										
		APPLY the concepts of process equipment design for specific applications										

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						H
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-			H			
CO5	H	H		-	H	-						
CO6	H		H									H
402051B	Renewable Energy Technologies	DESCRIBE fundaments, needs and scopes of renewable energy systems.										
		EXPLAIN performance aspects of flat and concentric solar collectors along with applications.										
		DESIGN solar photovoltaic system for residential applications.										
		DESIGN AND ANALYSIS of wind energy conversion system.										
		APPLY Installation practices of Wind and Solar Photovoltaic Systems for grid connection.										
		DETERMINE performance parameters of bio-energy conversion systems.										

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						H
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-			H			
CO5	H	H		-	H	-						

CO6	H		H									H
402051C	Automation and Robotics	UNDERSTAND the basic concepts of Automation										
		UNDERSTAND the basic concepts of Robotics										
		IDENTIFY and EVALUATE appropriate Drive for Robotic Applications										
		COMPARE and SELECT End-effectors and Sensors as per Application										
		DEVELOPE the Mathematical Modeling Approaches of Robot										
		EVALUATE the fundamentals of robot programming and CLASSIFY the Applications										

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						H
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-			H			
CO5	H	H		-	H	-						
CO6	H		H									H
402051D	Industrial Psychology and Organizational Behavior	DEMONSTRATE fundamental knowledge about need and scope of industrial - organizational psychology and behavior.										
		ANALYZE the job requirement, have understanding of fatigue, boredom and improve the job satisfaction.										
		UNDERSTAND the approaches to enhance the performance.										
		KNOWLEDGE of theories of organizational behavior, learning and social-system.										
		UNDERSTAND the mechanism of group behavior, various aspects of team, leadership and conflict management.										
		EVALUATE the organizational culture, manage the change and understands organizational development approaches.										

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						H
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-			H			
CO5	H	H		-	H	-						
CO6	H		H									H
		UNDERSTAND the basics related to e-vehicle										

402051E	Electric and Hybrid Vehicle	CLASSIFY the different hybrid vehicles
		IDENTIFY and EVALUATE the Prime Movers, Energy Storage and Controllers
		DISCOVER and CATAGORIZE the Electric Vehicle Configuration with respect to Propulsion, Power distribution and Drive-Train Topologies
		DEVELOP body frame with appropriate suspension system and TESTING of for eVehicles
		CLASSIFY and EVALUATE Battery Charging techniques and management

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	-	M						H
CO2	H	H	-	-	-	-						
CO3		H	H	-	-	-						
CO4	H	M	H	-	-	-			H			
CO5	H	H		-	H	-						
CO6	H		H									H

402052	Mechanical Systems Analysis Laboratory	DEVELOP an understanding of the Systems Engineering Process and the range of factors that influence the product need, problem-specific information collection, Problem Definition, Task Specification, Solution Concept inception, Concept Development, System's Mathematical Modelling, Synthesis, Analysis, final solution Selection, Simulation, Detailed Design, Construction, Prototyping, Testing, fault-finding, Diagnosis, Performance Analysis, and Evaluation, Maintenance, Modification, Validation, Planning, Production, Evaluation and use of a system using manual calculation, computational tools to automate product development process, redesign from customer feedback and control of technological systems.
		ILLUSTRATE the concepts and USE the developed skill-set of use of computational tools (FEA, CFD, MBD, FSI, CAE) to automate the complete product development process.
		EVALUATE the knowledge of new developments and innovations in technological systems to carry forward to next stage of employment after passing your Undergraduate Degree Examination.
		APPRAISE how technologies have transformed people's lives and can be used to SOLVE challenges associated with climate change, efficient energy use, security, health, education and transport, which will be coming your ways in the coming future.
		PRIORITIZE the concept of quality and standards, including systems reliability, safety and fitness for the intended purpose.
		INVENT yourself to face the challenges of future technologies and their associated Problems.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	-	H	H			H		H	H
CO2	H	H	-	-	H	H			H		H	H
CO3		H	H	-	H	H			H		H	H
CO4	H	M	H	-	H	H			H		H	H
CO5	H	H		-	H	H			H		H	H
CO6	H		H		H	H			H		H	H

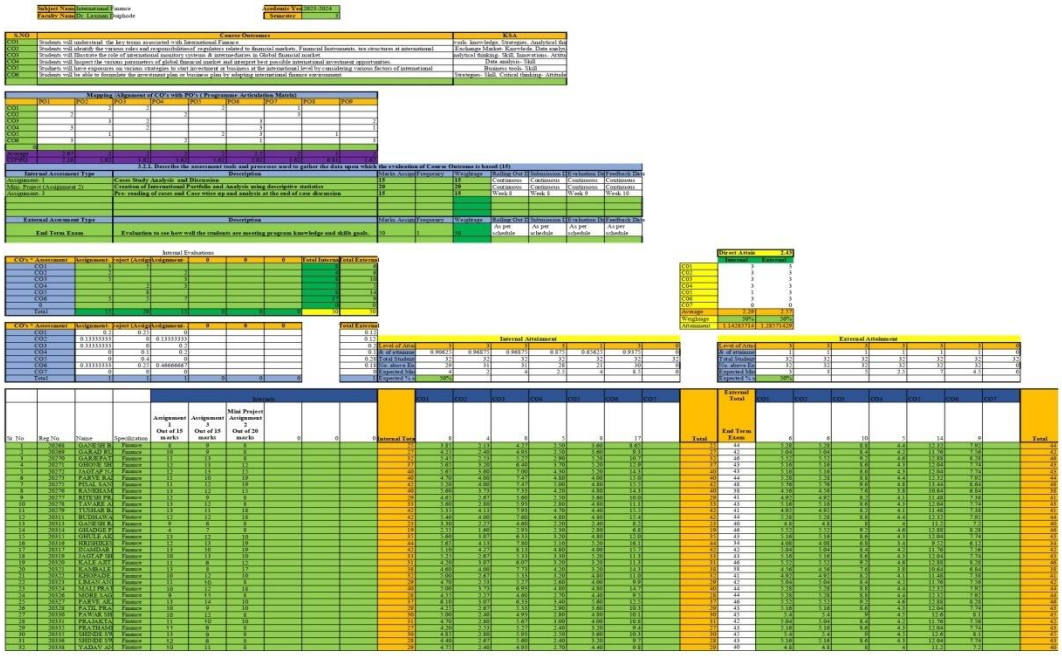
402053	Project (Stage II)	Implement systems approach.
		To conceptualize a novel idea / technique into a product.
		To think in terms of a multi-disciplinary environment
		To take on the challenges of teamwork, and document all aspects of design work.
		To understand the management techniques of implementing a project.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	-	H	H	H			H		H	H
CO2	H	H	-	H	H	H			H		H	H
CO3		H	H	H	H	H			H		H	H
CO4	H	M	H	H	H	H			H		H	H
CO5	H	H		H	H	H			H		H	H

2.6.2 - Attainment of Programme outcomes and course outcomes are evaluated by the institution.

The PSOs, POs, and COs are designed using the top-down approach. The PSOs are in tune with the expectation of professional bodies and society. The program outcomes are carefully fixed studying the graduate attributes and blending those properly to suit the program being offered. To meet these program outcomes, the curriculum is designed by SPPU. While designing the curriculum, feedback from stack holders is incorporated. Each course has specific measurable course outcomes. Each course has 6 units and in general, each unit relates to a specific course outcome. Each course outcome is mapped with the Program Outcomes. While calculating the attainment level bottom to top approach is used. For each course, the attainment level of all course outcomes is arrived at rigorously based on the student performance in the internal and external examinations. Thus, the CO attainment is a combined result of internal and external examinations assessment. This will helps in arriving at the PO assessment as each CO is mapped with certain POs and PSOs. Besides this, the exit survey is taken from students for indirect assessment of the PO's. The alumni and employer surveys are taken for indirect assessment of the PSOs.



S.NO	Program Outcomes	KSA	Knowledge	Skill	Attitude
PO1	Develop Competencies in students which will help them to perform well in the dynamic National and international environment and strive for excellence.	Anticipation-Skill, Business Acumen-Knowledge, Communication Skills-Skill, Result orientation-Attitude,	Business Acumen	Anticipation, Communication	Result orientation
PO2	The student will be able to understand the various approaches and practices to understand organisational process and practices	Critical Thinking-Attitude, Domain Knowledge-Knowledge,	Domain Knowledge	Critical Thinking	
PO3	This program is designed to facilitate student with the understanding to develop different strategies by critical analysis of the internal and external environment of the organisation and lead sustainable development	Creativity-Skill, Decision Making-Skill, Research Skill-Skill, Sustainability-Attitude		Creativity, Decision Making, Research	Sustainability
PO4	Student will be able to develop the culture understanding to appreciate various point of view in the worldwide environment	Cultural Sensitivity-Attitude,			Cultural Sensitivity
PO5	The student will be able to demonstrate a high degree of integrity and ethics in behaviour	Ethical Orientation-Attitude, Global Perspective-Knowledge, Positive attitude & Integrity-Attitude,	Global Perspective		Ethical Orientation, Positive attitude & Integrity

PO6	The student will be able to evaluate management decisions, global issues, and business strategies	Analytical Skill-Skill, Data Analysis-Skill, Leadership Skill-Skill, Resource Management and Organisation Capabilities-Knowledge,	Resource Management, Organisation Capabilities	Analytical, Data Analysis, Leadership,	
PO7	Students will be able to apply business productive tools and concepts and the real world scenario	Business Tools-Skill, Concept application ability-Skill,		Business Tools, Concept application ability	
PO8	Students will develop the ability to conceptualize and develop original work in research, product or services design, customer experience, and solution to help business and Society	Innvoation-Attitude, Problem Solving-Skill, Social responsibility-Attitude, Strategic Thinking-Skill,		Problem Solving, Strategic Thinking	Innvoation, Social responsibility
PO9	The student will be able to develop and ability to use digital technology tools to enhance business productive	Technology orientation-Attitude			Technology orientation

Course: International Finance

Course Code 305 FIN:

Programme: MBA(3rd Semester) Batch2022-2024

Academic Year: 2023-2024

Credits: 3

(40 Sessions. Each Session for 60 Minutes)

Table of Contents

A. Programme Outcome

Programme Outcome - 1	Develop competencies in students which will help them to perform well in the dynamic national and international environment and strive for excellence.
Programme Outcome - 2	The student will be able to understand the various approaches and practices to understand organizational processes and practices.
Programme Outcome - 3	This programme is designed to facilitate students with the understanding to develop different strategies by critical analysis of the internal and external environment of the organization and lead sustainable development.
Programme Outcome - 4	Students will be able to develop the cultural understanding to appreciate various points of view in a worldwide environment.
Programme Outcome - 5	The student will be able to demonstrate a high degree of integrity and ethics in behavior.
Programme Outcome - 6	The student will be able to critically evaluate management decisions, global issues, and business strategies.
Programme Outcome - 7	Students will be able to apply business productivity tools and concepts in the real world scenario.
Programme Outcome - 8	Students will develop the ability to conceptualize and develop original work in research, product/services design, customer experience, and solution to help business and society at
Programme Outcome - 9	The student will be able to develop an ability to use digital technology tools to enhance business productivity.

B. Course Perspective

Rapidly integrating markets have stretched firms across borders and increased the importance of foreign operations to firms around the world. In contrast, most finance scholarship and pedagogic material emphasizes firms that are domestic. What do finance practitioners need to know to operate in a global setting? The International Finance Course has been developed to address this question. In the process, the course materials provide students with the analytical tools and frameworks to become a financial or general manager within a multinational firm or to become an intermediary advising or evaluating those firms.

This course overview - introduces the central ideas and architecture of the course for instructors who are considering the material for adoption. The course was developed from 2000 to 2005 with waves of case writing interspersed with discussions with finance practitioners around the world. Various cases have been adopted by instructors around the world. Teaching notes for the cases as well as module notes are available for instructors considering adopting parts of the course. John Wiley & Sons has published the full set of cases in a volume entitled *International Finance: A Casebook*

Why does financial decision- making in a global setting merit attention? How is this material different from other course materials on international finance? The first section of this note

argues that the forces of globalization have fundamentally changed the scope and activities of firms of any size. As a consequence of an increasing reliance on tightly-integrated foreign operations, a parallel world of finance has been opened within every multinational firm and this world has, heretofore, been overlooked. The course materials are designed to address the many aspects of financial decision making within global firms prompted by these changes that are not addressed in traditional materials.

The broad topics cover:

1. International finance on conceptual framework
2. Corporate Governance
3. Forex Management
4. International Financing and Investment Management
5. IFRS on International Transactions

C. Course learning outcomes (COs)

This course will develop professional skills such as critical thinking, business acumen and risk assessment to work in global environment where fiscal policies are determined consideringonexternalshocks.Studentswillbeabletoevaluatethecrossborderinvestment opportunities and cost of capital raised from overseas market.

CO	COURSEOUTCOMES
CO-1	Enumerate the key terms associated with International Finance.
CO-2	Students can able to understand various concepts related to functions of regulators, financial markets, Financial Instruments, tax structures at international level.
CO-3	This course will help to apply the skill of portfolio creation and international risk management
CO-4	Student can critically analyze the role of international monitory systems & intermediaries in Global financial market. They will also inspect the various parameters of global financial market and interpret best possible international investment opportunities.
CO-5	Students can able to evaluate in detail about the various strategies to start Investment or business at the international level by considering various factors of international finance.
CO-6	Students can able to create and formulate the investment plan or business Plan by adapting international finance environment.

Course Outcome Indicator–(COI)

Enumerate the key terms Associated with International Finance.	Will be able to understand the Various sterms related to Intrenational finance	Will be able to read Forex quotations	Identyfying direct V/S Indirect Quotations	Evaluate the arbitrage opportunities With cross rates	Abilit y to apply all Concepts in International business
To understand various Concepts related to functions regulators, financial markets, Financial Instruments, tax Structures at international Level	Able to analyse the international Financial market	Understanding how To raise funds from International market	Evaluating Financial Instruments with risk - return Tradeoffs	Analyzing tax Impact on cross border investments	Able to identify issues Related to compliances And procedures
To apply the skill of Portfolio creation and International risk management	Develop critical thinking	Able to compare domestic returns with international returns	Developing Domain expertise	Able to Compare IFRS With IndAs	Identifying impact of Exchange rate volatility, Ppp and IRP on cross Border investments and finances
Can critically have analyzed The role of international Monitory systems & Intermediaries in Global Financial market.	Able to identify the toxic assets	Can analyse the role of international credit rating agencies	Can able to compare the nation's credibility And integrity in cross border business opportunities	Able to analyse The scope and limitations of domestic companies dealing in international business	Analyzing macro Economic factors that affecting cost and revenue of the Company
Can able to evaluate in detail About the various strategies To start investment or Business at the international Level by considering various Factors of international Finance	Understanding the business Model	Analyzing investment opportunities	Evaluating Business strategies and Investment strategies	Identifying factors that Have significant impact on business strategy	Able to measure market valuation in Carve out strategy
Can able to create and Formulate the investment plan Or business plan by adapting International finance Environment.	Understanding business opportunities or investment opportunities	Analysis of foreign direct investment V/S foreign indirect investment	Applying domain Expertise to get Through International risk exposure	Creating Business Plan or Investment plan	Able to analyses factor affecting investment Plan or business plan at International level

D. Course Description

The Course carries enough evidence for the students to understand the international finance with respect to various transactions of the economy that could make them compatible with the dynamic global Finance. The course is divided into 6 modules.

Thecourseisdividedinto6 modules:

1. Nature & Scope of International Finance
2. The Foreign Exchange Market
3. International funding, Global Capital markets and interest rate
4. International short-term financial Management
5. International bond market
6. Global Loan Syndication

The Course provides extensive knowledge for International finance conceptual framework-What is international finance? International financial institutions and regulatory such as IMF,WorldBank, WTO etc. Corporate Governance- Corporate governance and settings at different nations, Forex Management-International transactions and forex,forex risk management, International Financing and Investment Management-Global equity market and international bond market and Cross border financial opportunities

E. Learning Outcomes

Knowledge

K1	International finance conceptual framework
K2	Foreign Exchange Market
K3	Exchange rate risk and risk management
K3	Global capital market
K4	International Bond Market
K5	IFRS on foreign transactions

Attitude

A1	Critical thinking
A2	Reasoning
A3	Innovations
A4	Positive attitude
A5	Result Orientation

Skill

S1	Analytical thinking
S2	Business tools
S3	Data analysis
S4	Strategies
S5	Concept application

F.Detailed Session Plan

Sr.No.	Topic (*)	Teaching tool or Pedagogy (with Time Break-Up)	Why the Topic is Taught (Learning Goal) (Mandatory)	Where it can be applied (Mandatory)	How it is aligned with Purpose (Mandatory)	Pre-reading	Session outcome/ Learning outcome	Course Outcome(Cos)
1	Introduction to International Finance (1)	Class Room Session	To get the exposure of International Financing and Investing	For International Business and Finance	Understanding and Analysis	International Finance - P.G. Apte	K1, K2, K4	CO1, CO2
2	Introduction to International Finance (2)	Class Room Session	To get the exposure of International Financing and Investing	For International Business and Finance	Understanding and Analysis	International Finance - P.G. Apte	K1, K2, K4, S2, S6	CO1, CO2
3	Introduction to International Finance (3)	Class Room Session	To get the exposure of International Financing and Investing	For International Business and Finance	Understanding and Analysis	International Finance - P.G. Apte	K1, K2, K4, S2, S6	CO1, CO2
			Understanding					

4	International Financial Institutions	Class Room Session	Role and Functions of International Agencies	For International Business and Finance	Understanding and Analysis	International Finance - P.G. Apte	K1, K2, K4, S2, S6	CO1, CO2
5	Foreign Exchange Market (1)	Class Room Session	Basic terms related to forex	Forex and Corporate Finance	Understanding and Analysis	International Finance - P.G. Apte	K1, K2, K4, S2, S6, A1, A4, S4,S1	CO1, CO2, CO3, CO6

6	Foreign Exchange Market (2)	Class Room Session	To have critical understanding on Foreign exchange rate and mathematical calculations	Forex and Corporate Finance	Understanding and Analysis	International Finance - P.G. Apte	K1, K2, K4, S2, S6, A1, A4, S4,S1	CO1, CO2, CO3, CO6
7	Foreign Exchange Market (3)	Class Room Session	To have critical understanding on Foreign exchange rate and mathematical calculations	Forex and Corporate Finance	Understanding and Analysis	International Finance - P.G. Apte	K1,K2,K3,K4,S6,A1,A5	CO1, CO2, CO3
	Case Study - 1 Foreign		Learning					

8	exchange market and transactions (1)	Practical	Exchange rate spot rate, forward rate, cross rate	Forex and Corporate Finance	Through Problem - solving techniques	International Finance - Mihir Desai	K1,K2,K3,K4,S6,A1,A5	CO1, CO2, CO3
9	Case Study - 1 Foreign exchange market and transactions (2)	Practical	Learning Relationship between PPP and Exchange rates	Forex and Corporate Finance	Through Problem - solving techniques	International Finance - Mihir Desai	K1,K2,K3,K4,S6,A1,A5	CO1, CO2, CO3
	Case Study - 1 Foreign		To know					

10	exchange market and transactions (3)	Practical	Exchange rate risk and risk management	Forex and Corporate Finance	Through Problem - solving techniques	International Finance - Mihir Desai	KI,K2,K4, S2,S3,A1,A3	CO1, CO2, CO3, CO4

G.

11	Case Study-2-Exchange rate policy at MAS (1)	Class Room Session	Factors affecting monitory policy, capital account and current account,	Monetory policy Tools	Through Problem - solving techniques	International Finance - Mihir Desai	KI,K2,K4, S2,S3,A1,A3	CO1, CO2, CO3, CO4
12	Case Study-2-Exchange rate policy at MAS (2)	Class Room Session	Exchange rate behaviour, efficiency and forecasting	Monetory policy Tools	Through Problem - solving techniques	International Finance - Mihir Desai	KI,K2,K4, S2,S3,A1,A3, S6,S1	CO1, CO2, CO3, CO4
13	Case Study-2-Exchange rate policy at MAS (3)	Presentation	Interference of central bank and monitory authority in exchange rate adjustment	Monetory policy Tools	Through Problem - solving techniques	International Finance - Mihir Desai	KI,K2,K4, S2,S3,A1,A3, S6,S1	CO1, CO2, CO3, CO4
14	Case Study - 3 Innocents Abroad-Currencies and International stock return (1)	Class Room Session	Understanding Cost and benefit of international investing	Valuation of Returns through Equity and Forex	Data Analysis and Decision Making	International Finance - Mihir Desai	KI,K2,K4, S2,S3,A1,A3, S6,S1	CO1, CO2, CO3, CO4
15	Case Study - 3 Innocents Abroad-Currencies and International stock return (2)	Presentation	Understanding Impact of currencies on investment portfolios	Valuation of Returns through Equity and Forex	Data Analysis and Decision Making	International Finance - Mihir Desai	KI,K2,K4, S2,S3,A1,A3, S6,S1	CO1, CO2, CO3, CO4
16	Case Study - 3 Innocents Abroad-Currencies and International	Presentation	How CAPM changes in global context	Valuation of Returns through Equity and Forex	Data Analysis and Decision Making	International Finance - Mihir Desai	K5A1, A2, S1, S3, S5	CO4, CO5

	stock return (3)							
17	Global capital market (1)	Presentation	participants, issues,investors, intermediaries, ECB	International Financing & Investing	Business Acument	International Finance - P.G.Apte & Mihir Desai	K5A1, A2, S1, S3, S5	CO4, CO5
18	Global capital market (2)	Presentation	Concept and Application of ADR , GDR	International Financing & Investing	Business Acument	International Finance - P.G.Apte & Mihir Desai	K5A1, A2, S1, S3, S5	CO4, CO5
19	Global capital market (3)	Presentation	Domestic foreign currency loans - FCNR(B), EEFC	International Financing & Investing	Business Acument	International Finance - P.G.Apte & Mihir Desai	K5A1, A2, S1, S3, S5	CO4, CO5
20	Case-4 The Refinancing of Shangai General Motors (1)	Class Room Session	Understanding - Evaluation of JVs between multinational and local companies	International Financial Restructuring	Through Scanario Analysis	International Finance - Mihir Desai	KI,K2,K4, S2,S3,A1,A3, S6,S1	CO1, CO2, CO3, CO4
21	Case-4 The Refinancing of Shangai General Motors (2)	Class Room Session	Motivation for FDIs	International Financial Restructuring	Through Scanario Analysis	International Finance - Mihir Desai	KI,K2,K4, S2,S3,A1,A3, S6,S1, A2	CO1, CO2, CO3
	Case-4 The Refinancing of Shangai General Motors (3)		Financing of overseas subsidiries through refinancing and Influence on firm due to currency	International Financial	Through Scanario	International Finance -	K1,K2,K4,A2,A3,S4,S5	CO1, CO2, CO3, CO4

22		Presentation	composition of debt	Restructuring	Analysis	Mihir Desai		

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23	Case-5 Corporate Inversion- Stanley works and Lure of the tax havens (1)	Class Room Session	Introdcution in Corporate Inversion	Corporate Inversion and Taxation	Through Valuation Models	International Finance - Mihir Desai	K1,K2,K3,K4,A1, A3,S1,S2,S5	CO1, CO2, CO3, CO4, CO5
24	Case-5 Corporate Inversion- Stanley works and Lure of the tax havens (2)	Class Room Session	Taxation on foreign activities	Corporate Inversion and Taxation	Through Valuation Models	International Finance - Mihir Desai	K1,K2,K3,K4,A1, A3,S1,S2,S5	CO1, CO2, CO3, CO4, CO5
25	Case-5 Corporate Inversion- Stanley works and Lure of the tax havens (3)	Presentation	Market Valuation due to corporate inversion	International portfolio investment and international liquidity	Through Valuation Models	International Finance - Mihir Desai	K1,K2,K3,K4,A1, A3,S1,S2,S5	CO1, CO2, CO3, CO4, CO5
	Case-5 Corporate Inversion- Stanley works and Lure of the tax havens		To get exposure on International portfolio investment and international liquidity	International portfolio investment and international	Through Valuation	International Finance -	K1,K2,K3,K4,A1, A3,S1,S2,S5	CO1, CO2, CO3, CO4, CO5

26	(4)	Presentation		liquidity	Models	Mihir Desai		
27	Internatioan Bond Market Developments (1)	Class Room Session	To have conceptual background Foreign bond, Euro Bond	International Bond Market and Valuations	Decision Making and Forecating	International Finance - P.G.Apte & Mihir Desai	K1,K2,K3,K4,A1, A3,A4, S1,S2,S5,S6	CO1, CO2, CO3, CO4, CO5, CO6

28	Internatioan Bond Market Developments (2)	Class Room Session	FRN, Deep Discount bond, Zero coupon bond	International Bond Market and Valuations	Decision Making and Forecating	International Finance - P.G.Apte & Mihir Desai	K1,K2,K3,K4,A1, A3,A4, S1,S2,S5,S6	CO1, CO2, CO3, CO4, CO5, CO6
29	Internatioan Bond Market Developments (3)	Class Room Session	Loan agreement, Right and duties of managing and agent banks	International Bond Market and Valuations	Decision Making and Forecating	International Finance - P.G.Apte & Mihir Desai	K1,K2,K3,K4,A1,A 3,S1,S2,S3,S5,S6	CO1, CO2, CO3, CO4, CO5, CO6
30	Cross Border Financial Opportunities	Class Room Session	Overview of Cross border opprotunities	Invetsment and Financing Opprtunities Abroad	Critical Thinking and Analysis	International Finance - P.G.Apte & Mihir Desai	K1,K2,K3,K4,A1,A 3,S1,S2,S3,S5,S6	CO1, CO2, CO3, CO4, CO5, CO6
31	Case-6 - Nestle-Alcon (1)	Class Room Session	Advanatages and Disadvantages of Listing Techniques	Benefits of Listing and Delisiting	Critical Thinking and Analysis	International Finance - Mihir Desai	K1,K2,K3,K4,A1,A 3,S1,S2,S3,S5,S6	CO1, CO2, CO3, CO4, CO5, CO6
32	Case-6 - Nestle-Alcon (2)	Class Room Session	Value Business Units having different risk and return	Risk & Return at International levels	Critical Thinking and Analysis	International Finance - Mihir Desai	K1,K2,K3,K4,A1,A 3,S1,S2,S3,S5,S6	CO1, CO2, CO3, CO4, CO5, CO6

P. Q. R. S. T. U. V.	33	Case-7 - Petrobras (1)	Class Room Session	Undersatnding - Corporate Governance in Emerging Markets	Corporate Governance	Pestle Analysis and Scenario Analysis	International Finance - Mihir Desai	K1,K2,K3,K4,A1, A3,A4, S1,S2,S5,S6	CO1, CO2, CO3, CO4, CO5, CO6
W. X. Y. Z. AA. BB. CC.	34	Case-7 - Petrobras (2)	Class Room Session	Importance of listing of shares in US market	Corporate Governance	Pestle Analysis and Scenario Analysis	International Finance - Mihir Desai	K1,K2,K3,K4,A1, A3,A4, S1,S2,S5,S6	CO1, CO2, CO3, CO4, CO5, CO6
DD. EE. FF. GG. HH. II. JJ.	35	Case-7 - Petrobras (3)	Presentation	Issues in valuation in emerging market and cross border aqusitions	Listing of shares in International Market	Pestle Analysis and Scenario Analysis	International Finance - Mihir Desai	K1,K2,K3,K4,A1,A 3,S1,S2,S3,S5,S6	CO1, CO2, CO3, CO4, CO5, CO6
	36	International Financial Reporting standard on foreign transactions	Class Room Session	Understanding and Applicability of IFRS on foreign transactions	Implication of IFRS in Forei gn transaction	Understanding Accounting Standards	International Finance - P.G.Apte & Mihir Desai	K1,K2,K3,K4,A1,A 3,S1,S2,S3,S5,S6	CO1, CO2, CO3, CO4, CO5, CO6

KK.

Details of Text book and references

Text Book (T)

T1.P.G.ApteInternationalFinanceMcGraw-HillEducation.

T2.Mihir Desai International Finance

Reference Books(R)

R1.MihirDesai- International Finance-Cases

R2:Damodaran,A. (1996).Corporate finance. Wiley.

Web Resources

R3.YouTubevideos of Ashwath Damodaran on corporate finance and International Finance

LL. Evaluation Scheme

Sr. No	Assessments Planed –Title	Marks Allocated	Rollout Date	Deadline /Conduct date	Evaluation Deadline	Feedback Slot
1	Case Study–I(Assignment1)	10	Week2	Week3	Week4	Week4
2	Mini-Project-Financial Model for Portfolio mgmt.	15	Week4	Week5	Week8	Week8
3	Assignment-3(Descriptive Questions)	10	Week6	Week7	Week10	Week10
4	MCQ Test	10	Week8	Week8	Week8	Week8
5	Class Participation and Attendance	05	All classes	All classes	All classes	All classes
6	MidTerm{As per exam calendar}	15	As per schedule	As per schedule	As per schedule	As per schedule
7	EndTerm{As per exam calendar}	35	As per schedule	As per schedule	As per schedule	As per schedule
	Total	100				

CASESTUDYDETAILS:

CaseNo.	Case Details	Session
1	CaseStudy1-ForeignExchangeMarketandTransactions	Session4
2	CaseStudy2-Foreignexchangepolicyat MAS	Session12
3	Case Study3– Innocent Abroad-Currencies and International stock market returns	Session19
4	CaseStudy4 – Currency Hedging at AIFS	Session25
5	CaseStudy5 –Nestle-Alcon –Value of Delisting	Session29

Course Objective	Knowledge	Attitude	Skill
CO – 1	K1	A1, A2	S1, S4
CO – 2	K2	A2	S1,S3
CO – 3	K3	A5	S5
CO – 4	K3, K5	A2, A1	S3
CO – 5	K3, K4	A2,A3	S1, S3
CO-6		A5	S4

MM. Alignment/Mapping of Cos & POs (Course Articulation Matrix)

(a) Alignment/Mapping of COs&POs

CO Mapping with Teaching Pedagogy

Course Outcomes	Class room session	Case study	Tutorial
CO 1	✓		
CO.2	✓	✓	✓
CO.3		✓	
CO.4	✓	✓	✓
CO.5	✓	✓	✓
CO.6		✓	✓

(b) CO Mapping with Assessment tools

Course Outcomes	Case Study (Assignment 1)	Mini Project	Assignment No.3	MCQ Test	Class Participation &Attendance	Mid Term	End Term Exam
Total	10	15	10	10	05	15	35
CO 1	3	2		4	1	5	8
CO.2	2	3	1	4	1	5	3
CO.3	3	3	3	2	1	5	6
CO.4		2	3		1		7
CO.5		3			1		4
CO.6	2	2	3				7

(c) Mapping/Alignment of Cos with POs(Programme Articulation Matrix)

Programme Outcomes	CO.1	CO.2	CO.3	CO.4	CO.5	CO.6
PO 1		2		3		3
PO 2	2	3	3		1	
PO 3	2		2	2		
PO 4		1	1			
PO 5	1				1	
PO 6			3	3	3	1
PO 7	1	3				
PO 8		3			1	3
PO 9						1

1=thestrengthofco-relationbetweenCOandPOisWeak,2=strengthofco-relation between CO and PO is Medium, 3= strength of co-relation is High

NN.Brief Description of evaluation components

Evaluation

1ASSIGNMENT1

TOPIC:Case Study(Assignment1) **(10Marks)**

Rollout Date	Submission Deadline	Evaluation Date	Feedback Slot
Week2	Week3	Week4	Week4

Assignment Description:

CaseTitle: Exchange Rate Policyat the Monetary Authority of Singapore

Guidelines for the Case study:

Solve case using following Points:

- Case Synopsis
- Problem definition
- Learning objectives
- Alternatives solutions
- Criteria
- Analysis
- Best possible solution
- Key take away
- What happened next?

Topic Covered:

The link between the current account and the capital account,the difference between real and nominal exchange rates, the consequences of shocks under fixed and floating exchange rate regimes.

Competency Expected

1. Domain Knowledge
    a. Key responsibilities of MAS
    b. Exchange rate and natural policy tool for Singapore Economy
    c. Factors the amount of liquidity to inject or withdraw from the banking system depended:
    d. Difficulty for MAS to influence foreign demand through domestic monetary policy
    e. How HongKong could sustain during Asian financial crises?
    f. Relationship between RER and NX

g. Why PPP to behold constant before determination of exchange rate?

2. Critical Analysis
3. Problem Solving
4. Global Perspective
5. Business Acumen
6. Cultural Sensitivity
7. Business Tools

Submission Guideline:

Submission Mode:Hard Copy Printout –A4Sheet

- ✓ Font–Time New Roman
- ✓ Font Size–Heading–14–Content -12
- ✓ Line Spacing–1.5(Add spacein before and after paragraph)

Frontpage– Mention Studentname, rollno.,section, assignment number and submitted

Guidelines for Evaluation & Rubrics

Evaluation Guidelines

		Assignment Title:**Case Study(Assignment1)**		
		Percentage Weightage:10Marks		
Evaluation Parameter	CO	Assignment Relevance with PO		Topic Outline
Understanding of the Case/Topics-2 marks	CO2	Students will be able to understand the case and apply basic International finance terminologies with givencase	PO1, PO3,	To study about the current account and capital account, RER and NX, To understand unholy trinity and its consequences.
Problem in the case/Topics-2 marks	CO4	The student will be able to identify the problems in the case	PO8, PO3	The students must solve problem / develop thought process / critically analyze
Solution for the Case/Topics-4 marks	CO5	The student will be able to find out alternative solutions for problems	PO2 PO3 PO7	Critical thinking and scenario based Analysis and Presentation skills (Content & Context)
Replying to the Answers and giving innovative solutions for the cases and questions asked.-2 marks	CO4	Student will identify the best possible solutions within criteria and provide key take away from this case study.	PO8	Developing problem solving ability

	1)Student will solve the case based on given parameters and standard guideline provided to solve case study

Rubrics

Rubrics for Assignments (Weightage10markseach)

Parameter	Category	Scores	Detail Description
Understanding of the Case/ Topics (3)	Exceptional	81%-100 %	Understood the Case/topic well
	Advance	66%-80%	Average Understanding of the Case/topic
	Intermediate	51%-65%	Understood Case/ topic but not able to explain
	Basic	26%-50%	Basic Understanding
	Poor	0%to 25%	No Understanding
Problem in the case/ Topics (2)	Exceptional	81%-100 %	Written the problem well
	Advance	66%-80%	Partial
	Intermediate	51%-65%	Average
	Basic	26%-50%	Basic Understanding
	Poor	0%to 25%	No Understanding
Solution for the Case/ Topics (5)	Exceptional	81%-100 %	Complete application of concept
	Advance	66%-80%	Practical application of Concepts
	Intermediate	51%-65%	Average Application
	Basic	26%-50%	Basic Application
	Poor	0%to 25%	No Application
Replying to the Answers and giving innovative solutions for the cases and questions asked. (5)	Exceptional	81%-100 %	Excellent explanation of the whole topic with important points and concepts. Timely Submission of the cases and solutions required
	Advance	66%-80%	Good explanation of the whole case with important points and concepts but missed on some points
	Intermediate	51%-65%	Average explanation of the whole case but Missed on important points and concepts
	Basic	26%-50%	Poor explanation of the whole case/ Topic With important points and concepts
	Poor	0%to 25%	No Explanation &Non submission

Benchmark Assignment Link–

https://drive.google.com/drive/folders/1Nqs0Lm5TWwwxdqz_tJrX1tNj2DYclvK3?usp=sharing

Evaluation2

MINI PROJECTAND PRESENTATION

TOPIC: Mini Project **(15Marks)**

Rollout Date	Submission Deadline	Evaluation Date	Feedback Slot
Week4	Week5	Week8	Week8

Project Description:

Case Title: Innocents Abroad: Currencies and International Stock Returns.

Topics Covered in Assessment–

1. Analyzing large data set using excel worksheet to explore international diversification
2. Identify the cost and benefit of international investing through portfolio formation.
3. Evaluate the impact of currencies on investment portfolio formation
4. Explore how the CAPM changes in the context of global market

Guidelines for the Case study

Students will prepare spreadsheet which includes

1) Index value$
2) Monthly return local
3) Monthly return $
4) Currency return and Standard Deviation Local
5) Currency return and Standard Deviation$
6) Local and $ returns compared
7) Country return local charts
8) Country return $charts
9) Sharpe ratio
10) Co-relation of monthly return local
11) Co-relation of monthly return $
12) Comparison of co-relation
13) EAFE and S&P (equity and currency)
14) EM and S&P (equity and currency)

15) EAFE,EM and S&P monthly return
16) Local EAFE,S&P portfolio
17) $EAFE,S&P portfolio
18) Portfolio Summary Data
19) Chart1
20) Chart2
21) Chart3
22) Chart4
23) Chart5
24) Chart6

SCPS Criteria:

- Sector Information
- Company Information–describe their product and services
- Business Model

Topic Covered:

- Chapter1-IntroductionofInternational Finance
- Chapter2–Forex Market
- Chapter3–Global Capital Market
- Chapter4– International Bond Market
- Chapter5–International Portfolio Management
- Chapter6– Efficient Portfolio Frontier

Competency Expected

- Domain Knowledge
  1. How to demonstrate portfolio return to investors?
  2. Foreign equity return
  3. What is efficient frontier? Which portfolio is more efficient as compare to others?

- Situational Analysis
- Problem Solving
- Decision Making

- Innovation Skill
- Global Perspective
- Business Acumen
- Cultural Sensitivity
- Business Tools
- Strategic Thinking
- Analytical Thinking

Submission Mode:

Mini Project–

✓ Excel Spreadsheet

PPT Presentation-

- Number of Slides–15 to 17
- Time– 15 Minutes

Guidelines for Evaluation & Rubrics

Evaluation Guidelines

		Assignment Title: **Case Study(Assignment1)**		
		PercentageWeightage:15Marks		
Evaluation Parameter	CO	Assignment Relevance with PO		Topic Outline
Understanding of the Case/Topics-2 marks	CO2	Students will be able to understand the case and apply basic International finance terminologies with given case	PO2, PO3,	To study about the international portfolio and risk – return tradeoffs through currency returns and index returns.
Problem in the case/Topics-2 marks	CO4	The student will be able to identify the problems in the case	PO8, PO3	The students must solve problem / develop thought process / critically analyze
Solution for he Case/Topics-4 marks	CO5	The student will be able to find out alternative solutions for problems	PO6 PO7	Critical thinking and scenario based Analysis and Presentation skills (Content & Context)
Replying to the Answers and giving innovative solutions for the cases and	CO4	Student will identify the best possible solutions within criteria and provide key take away from this case study.	PO8	Developing problem solving ability

Questions asked.-2 marks				
	1)Student will solve the case based on given parameters and standard guideline provided to solve case study			

Mini Project Rubrics–15Marks

Descriptive Statistics (5 Marks)	Exceptional	81%-100 %	Student understood the various tools of Descriptive statistics and used for analysis. Extensive use of co-relation, standard deviation, and Variances to measures risk and Return from the portfolio
	Advance	66%-80%	Student understood the various tools of Descriptive statistics and used for analysis. Extensive use of co-relation,standard deviation Only
	Intermediate	51%-65%	Student understood the various tools of Descriptive statistics and used for analysis. Average use of co-relation,standard deviation, And Variances to measures risk and return from the portfolio
	Basic	26%-50%	Student understood the various tools of Descriptive statistics and used for analysis but Average use of co-relation,standard deviation,
	Poor	0%to 25%	Student does not understand the various tools of Descriptive statistics.
SharpeRatio Analysis (5 Marks)	Exceptional	81%-100 %	Student understood the Sharperatio and use of Sharperatioin portfolio management and its Analysis
	Advance	66%-80%	Student understood the Sharperatio and use of Sharperatioin portfolio management but little Analysis done
	Intermediate	51%-65%	Student understood the Sharperatio and use of Sharperatioin portfolio management and but No analysis done
	Basic	26%-50%	Student understood the Sharperatio but do not know use of Sharpe ration in portfolio Management and its analysis
	Poor	0%to 25%	Student does not understood the Sharperatio and use of Sharpe ration in portfolio Management and its analysis

Efficient Portfolio Frontier (5 Marks)	Exceptional	81%-100 %	Student understood the Efficient PortfolioFrontier and use of this in portfolio management and its Analysis
	Advance	66%-80%	Student understood the Efficient PortfolioFrontier And use of Efficient PortfolioFrontier in portfolio Management but little analysis done

	Intermediate	51%-65%	Student understood the Efficient Portfolio Frontier and use of Efficient Portfolio Frontier in portfolio management and but no analysis done
	Basic	26%-50%	Student understood the Efficient Portfolio Frontier but do not know use of Efficient Portfolio Frontier Inport folio management and its analysis
	Poor	0%to 25%	Student does not understood the Efficient Portfolio Frontier and use of Efficient Portfolio Frontier in Portfolio management and its analysis
Charts Preparationand Analysis (2.5Marks)	Exceptional	81%-100 %	Student understood how to prepare charts using Data and analysis of charts extensively
	Advance	66%-80%	Student understood how to prepare charts using data and analysis of charts but limited
	Intermediate	51%-65%	Student understood how to prepare charts using Data but no proper analysis of charts
	Basic	26%-50%	Student understood how to prepare charts using Data but no analysis of charts at all
	Poor	0%to 25%	Student does not understand how to prepare Charts using data and analysis of charts.
OverallAnalysis and KeyTakeAway (2.5 Marks)	Exceptional	81%-100 %	Student has done best overall analysis and mentioned appropriate key takeaway
	Advance	66%-80%	Student has done better overall analysis and mentioned appropriate key take away
	Intermediate	51%-65%	Student has done average overall analysis and mentioned related key take away
	Basic	26%-50%	Student has done good overall analysis and mentioned related key take away
	Poor	0%to 25%	Student has not done any overall analysis and did not mention key takeaway.

Benchmark Assignment Link–

https://drive.google.com/drive/folders/1loq_y11A5zhW6AmdMjSjGkB7j5cDRFQL?usp=sharing

Evaluation
3ASSIGNMENT
3

TOPIC: Individual –Assignment

Title: Questions on various topics **(10Marks)**

Rollout Date	Submission Deadline	Evaluation Date	Feedback Slot

Week6	Week7	Week10	Week10

Assignment Description:

Write Answers of the Questions based on following topics:

1) International Finance
2) Forex Market
3) Global Capital Market
4) IFRSwith respect to foreign transactions
5) Arbitrage Opportunities
6) International Economics

Guidelines for the Assignment:

Individual hand written assignment to be completed and submit on Google drive link shared with you.

Topic Covered:

Foreign Exchange Market, International Bond Market, Global Capita lMarket,IFRSwith respect to foreign transactions.

Competency Expected

1. Domain Knowledge
   a. International Finance
   b. Forex Market
   c. Global Capital Market
   d. IFRS with respect to foreign transactions
   e. Arbitrage Opportunities
   f. International Economics
2. Critical Analysis
3. Problem Solving
4. Business Acumen
5. Creativity Skill
6. Concept application ability
7. Decision making
8. Positive attitude and integrity

Submission Guideline:

Submission Mode: Hard Copy Printout–A4Sheet

i. Font–TimeNewRoman
ii. FontSize–Heading–14–Content -12

iii. LineSpacing–1.5(Add space in before and after paragraph)

iv. FrontPage–MentionStudentname,rollno.,section, assignment number and submitted to.

Evaluation Mapping

Evaluation Parameter	CO	PO
Domain Knowledge	CO1,CO2and CO 4	PO1
Problem Solving	CO 4	PO6
Presentations	CO6	PO9
Writing Skill	CO3,CO6	PO8, PO1

Assignment 3 Rubrics (10 Marks)

	Category	Scores	Detail Description
Domain Knowledge	Exceptional	81%-100 %	Detailed Explanation With Proper Flow
	Advance	66%-80%	Detailed Explanation Without Proper Flow
	Intermediate	51%-65%	Average Explanation With Proper Flow
	Basic	26%-50%	Average Explanation Without Proper Flow
	Poor	0%to 25%	Poor Explanation Without Proper Flow
Problem solving skill	Exceptional	81%-100 %	Properly Understood the problem, well comprehended, meticulously figured out the concepts and tools to be applied
	Advance	66%-80%	Properly Understood the problem, well comprehended, somewhat able to figure out which concepts and tools to be applied
	Intermediate	51%-65%	Properly Understood the problem, well comprehended, but not able to figure out which concepts and tools to Be applied
	Basic	26%-50%	Properly Understood the problem, well comprehended, but not able to comprehend how to solve problems
	Poor	0%to 25%	Notable to understand the problem properly

Presentation	Exceptional	81%-100 %	Exceptional Presentation Skills
	Advance	66%-80%	Better Presentation Skills
	Intermediate	51%-65%	Average Presentation Skills
	Basic	26%-50%	Below Average Presentation Skills
	Poor	0%to 25%	Poor Presentation Skills
Writing skill	Exceptional	81%-100 %	Exceptional Writing Skills
	Advance	66%-80%	Better Writing Skills
	Intermediate	51%-65%	Average Writing Skills
	Basic	26%-50%	Below Average Writing Skills
	Poor	0%to 25%	Poor Writing Skills

Benchmark Assignment Link–

https://drive.google.com/drive/folders/1LDegmquUE_KqrPkpvg-d2OIhzSsTproi?usp=sharing

Evaluation 4

MCQ 1

TOPIC:MCQ-NCP **(10marks)**

Rollout Date	Submission Deadline	Evaluation Date	Feedback Slot
Week8	Week8	Week8	Week8

Assignment description:

Students should undergone one online MCQ test for chapter 1 and 2–Scope and Importance of International Finance and Foreign exchange market

Each question will carry one mark, total 10 questions will be asked to the students to evaluate their domain knowledge.

MCQTest: Basic test will be conducted to examine the finance concepts w.r.t.international level viz. Scope and importance of international finance, foreign exchange market, PPP and IRP and Current account and Capital account

Topic Covered:

1. Overview of International Finance\
2. Foreign exchange market
3. Purchasing power parity and IRP
4. Current Account and Capital Account

Competency Expected

1. Domain Knowledge

International Finance

i. Overview of International Finance\
ii. Foreign exchange market
iii. Purchasing power parity and IRP
iv. Current Account and Capital Account

2. Critical Analysis

3. Problem Solving

4. Logical Interpretation

5. Business Acumen

Submission Guidelines:

- ✓ MCQ Test will be held through ERP.

Evaluation Mapping

Evaluation Parameter	CO	PO
Domain Knowledge	CO1,CO2and CO 4	PO1
Problem Solving	CO 3	PO6
Numerical Ability	CO 4	PO5
Critical Thinking	CO5	PO6

MCQ Rubrics (10Marks):

Parameter	Category	Scores	Detail Description
Domain Knowledge Problem Solving Numerical Ability Critical Thinking(10 Marks)	Exceptional	81%-100 %	Student could solve all questions and scored between 81% to 100%
	Advance	66%-80%	Student could solve all questions and scored between 66% to 80%
	Intermediate	51%-65%	Student could solve all questions and scored between51% to 65%
	Basic	26%-50%	Student could solve some questions and scored between 26% to 50%

	Poor	0%to25%	Student could solve some questions and scored between 0% to 25%

Evaluation 5
Class Participation

Class Participation Marks: Marks allotted on the basis of attendance, active involvement during sessions and discipline of the student

Mid Term Examination

There will be of one and half hour duration. There will be two types of the questions asked in the Mid-term: i) MCQ's ii) Practical Questions

In first part of the question paper, there will be 5MCQ questions pertaining to the different concepts of the course. Students are expected to answer these questions by selecting one option out of 4 options.

In second part, there will be two Numerical based on a Small case. Questions shall be set to assess the knowledge acquired and application of the knowledge in new situation as well as synthesis of the knowledge. Students are expected to approach the answer logically and they are encouraged to give examples to illustrate their point. Students should aim for neat and systematic organization of the content and elegant and lucid style of writing. The answers should be precise and to the point.

Comprehensive End Term Examination:

ComprehensiveEndTermExaminationwillbeofthree-hourduration.Asetof6-8questionswill be asked which application will be oriented.

Questions shall beset to assess the critical thinking and analytical skills of the students and ability to apply concepts in real life situation. Students are expected to look in close detail and establish the key facts and important issues surrounding a topic and it must be linked to relevant theory/ theories.

The answers should be precise and to the point and under no circumstances should exceed 300 words. You will be penalized for wastage of words/paper/time (mine as well as yours), repetition, vague answers and grammatical and spelling errors.

Students should aim for neat and systematic organization of the content, elegant, and lucid style of writing.

L. Plagiarism

We are committed to upholding the highest standards of academic integrity and honesty. Plagiarism in any form is unacceptable and will be treated seriously. All such cases will be referred to the appropriate Institute body for suitable disciplinary action.
All cases will be dealt as per institute plagiarism policy.

M. Makeup Policy

We will follow standard institute Make-Up policy.

N. Consultation Hours

The students can meet the Course instructor on matters related to the course being taught on all days he is available on campus after taking prior appointment through mail. Instead of personal meetings, they can also request responses through emails. Phone calls should be avoided except in cases of emergency. Course instructor will try to respond to the best of his ability.

O. Grading Policy

Standard Institute grading policy will be followed.

P. Student Attendance Policy

Institute attendance policy will be followed.
No make-up examination shall be granted to such student who has been prohibited to take the regular examination on ground of attendance. This shall be applicable for all Mid-Semester/Mid-Term examinations and Comprehensive examination.
Monitoring course attendance is a student responsibility and students are encouraged to check the status of their attendance every day on the ERP.

Q. Student's roles & responsibilities

All students must read these guidelines carefully and understand them fully.

Sr. No	Guidelines
1	All students must be seated in the class before the commencement of the session. The class room will be bolted from inside after this time period.
2	You are expected to read all topics/cases etc. Before coming to the class.
3	All students are expected to participate actively in discussions that take place in the class room.
4	You will have to maintain100% attendance in the class. Leave shall be granted only with prior permission for urgent & essential work only.
5	You will submit all types of assignments within given time frame.
6	You will work in team & contribute to the team functions.
7	You will be also asked to teach in your class.
8	You will undertake field and real time projects.
9	You will actively engage yourself final activities in class. Any absence will be dealt with separately according to the code of conduct.
10	You will come in the class properly dressed and neatly trimmed hair and clean shaven. The dress code is prescribed institute dress code.

R. Contact details & Interaction Timing

Course Instructor Name: Dr.LaxmanB.Doiphode, E
Mail ID: laxmanacademic@gmail.com
Desk Tel.No: 8551046292
Contact Days &Time: Monday to Saturday :As per the prior appointment.

End of the Course handout

Dr.Tanaji Dabade
Director