ST. VINCENT PALLOTTI COLLEGE OF ENGINEERING & TECHNOLOGY, NAGPUR

(An autonomous institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)

B. Tech. Scheme of Examination & Syllabus 2024-25

Group II (Civil Engineering)

SEMESTER III

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				No. of Hrs for ESE
				L	T	P		Mid-Sem Examination	Continual Assessment	End Sem Examination	Total	
1.	PCC	24CV301T	Mathematics for Civil Engineers	2	-	-	2	10	10	30	50	1.5
2.	PCC	24CV302T	Solid Mechanics	3	-	-	3	20	20	60	100	3
3.	PCC	24CV302P	Solid Mechanics Lab	-	-	2	1	-	25	25	50	-
4.	PCC	24CV303T	Concrete Technology	3	-	-	3	20	20	60	100	3
5.	PCC	24CV303P	Concrete Technology Lab	-	-	2	1	-	25	25	50	-
6.	PCC	24CV304T	Environmental Engineering	3	-	-	3	20	20	60	100	3
7.	PCC	24CV304P	Environmental Engineering Lab	-	-	2	1	-	25	25	50	-
8.	PCC	24CV305P	Computer Aided Civil Engineering Drawing	-	-	2	1	-	25	25	50	-
9.	AEC	24ES401T	Economics & Management	3	-	-	3	20	20	60	100	3
10.	MDM	24CV331M	MDM - I (Refer MDM Basket)	2	-	-	2	10	10	30	50	1.5
11.	SEC	24CV341P	Career Development – III	-	-	2	1	-	50	-	50	-
12.	ELC	24CV306P	Micro Project I*	-	-	2	1	-	50	--	50	-
Total				**16**	**-**	**12**	**22**	**100**	**300**	**400**	**800**	**-**

*** Field Project or Community engagement project in the major discipline**

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		Date of Release	Version	

Basket for Multi-Disciplinary Minor Courses (MDM)

A. Civil Engineering

Semester	Course Category	Course Code	Name of Course
III	MDM-I	24CV331M	MDM - I Basics of Civil Engineering
IV	MDM-II	24CV431M	MDM - II Basic Construction Materials
V	MDM-III	24CV531M	MDM - III Building Planning & Construction
VI	MDM-IV	24CV631M	MDM - IV Building Services
VII	MDM-V	24CV731M	MDM - V Smart Transit System

Basket for Program Elective Courses (PEC)

B. Civil Engineering

Semester	Course Category	Course Code	Name of Course
VI	PEC	24CV603T(i) 24CV603T(ii) 24CV603T(iii)	PE - I Advanced Structural Analysis PE - I Advanced Surveying PE - I Advanced Fluid Mechanics
VI	PEC	24CV604T(i) 24CV604T(ii) 24CV604T(iii) 24CV604T(iv)	PE - II Advanced Reinforced Cement Concrete Structures PE - II Air Pollution & Control PE - II Foundation Engineering PE - II Advanced Traffic Engineering
VII	PEC	24CV703T(i) 24CV703T(ii) 24CV703T(iii) 24CV703T(iv)	PE - III Advanced Steel Design PE - III Mass Rapid Transit System PE - III Ground Improvement Techniques PE - III Disaster Management
VII	PEC	24CV704T(i) 24CV704T(ii) 24CV704T(iii)	PE - IV Earthquake Resistant Design of Concrete Structures PE - IV Solid Waste Management PE - IV Irrigation Engineering

VIII	PEC	24CV802T(i) 24CV802T(ii) 24CV802T(iii)	PE - V Industrial Wastewater Treatment PE - V Retrofitting and Rehabilitation of Civil Infrastructure PE - V Modern Construction Materials

Basket for Open Elective Courses (OE)

C. Civil Engineering

Semester	Course Category	Course Code	Name of Course
VI	VI	24CV661O	OE - I Public Health Engineering
VII	VII	24CV761O	OE - II Green Buildings
VIII	VIII	24CV861O	OE - III Air Pollution and Control

THIRD SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
24CV301T	Mathematics for Civil Engineers	2	-	-	2	20	30	50

Course Objectives	Course Outcomes
The goal of this paper is to • Develop the knowledge of solving civil Engineering problems numerically.	**Students will be able to** • Identify and Analyze different types of Errors & solve equations • Solve various practical problems by Numerical Computational methods. • Apply the knowledge of Numerical methods in solving physical & Engineering phenomena.

Unit I: Numerical methods for roots of equations	**[10 Hrs]**
Errors & Types of Errors, Theory of Equations, Solution of Algebraic & Transcendental equations: Bisection, False Position, Newton-Raphson methods (only formulae), Problems.	
Unit II: Numerical methods for system of equations	**[10 Hrs]**
Solution of Simultaneous Equations: Gauss Elimination, Gauss Seidel, Factorization method. Iterative method for finding Largest Eigen value & Eigen vector.	
Unit III: Numerical Solution of Ordinary Differential Equations	**[10 Hrs]**
Numerical Solution of Ordinary Differential Equations for first order & first degree: Taylor's Series method, Euler's Modified method, Runge – Kutta method of fourth order, Milne's Predictor Corrector method (No derivation of formulae), solution of 2^{nd} order Differential Equation by Runge – Kutta method.	

Topics for self-learning: Application of Laplace Transform for solving Periodic function & Impulse function problems.

Text Books

S.N	Title	Authors	Edition	Publisher
1	Higher Engineering Mathematics	B.S. Grewal	40th Edition	Khanna Publication
2	. Advanced Engineering Mathematics	Erwin Kreysizig	8th Edition	Wiley India
3	Numerical Methods	Dr. P. Kandasamy, Dr. K Thilagavathy, Dr. K. Gunavathy	-	S. Chand

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Mathematics for Engineers	Chandrika Prasad	-	
2	A text book of Engineering Mathematics	N. P. Bali & M. Goyal	-	Laxmi Publication.
3	Higher Engineering Mathematics	B. V. Ramana	-	Tata McGraw-Hill Publications, New Delhi.

THIRD SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
24CV302T	Solid Mechanics	3	-	-	3	40	60	100

Course Objectives	Course Outcomes
1. To learn the fundamental principles of strength of materials. 2. To calculate stresses, strains and deformations of structural elements under the external forces.	At the end of the course, the students will be able to- 1. Recognize the concepts of stress and strain for deformable bodies 2. Sketch shear force & bending moment diagrams for beams. 3. Compute bending stress, shear stresses and deflection for a beam under various loads. 4. Understand the shear stress distribution within shafts subjected to torsion. 5. Compute combined stresses for structural members and sketch Mohr's circle of stress.

Unit I **[11 Hrs]**

Concept of simple stresses and strains: Introduction, stress, strain, types of stresses, stress and strain diagram for brittle & ductile material, elastic limit, Hooks law, modulus of elasticity, modulus of rigidity, factor of safety, analysis of tapered rod, analysis of composite section, thermal stress and strain. Longitudinal strain & stress, lateral stresses and strains, Poisson's ratio, volumetric stresses and strain with uni-axial, bi-axial & tri-axial loading, bulk modulus, relation between Young's modulus and modulus of rigidity, Poisson's ratio and bulk modulus. Basic concepts used in design of pressure vessels.

Unit II **[9 Hrs]**

Shear force and bending moment: Types of beam (cantilever beam, simply supported beam, overhung beam etc.). Types of loads (Concentrated and UDL), shear force and bending moment diagrams for different types of beams subjected to different types of loads as well as couple. Relation between load and shear force and bending moment.

Unit III **[11 Hrs]**

Bending stresses in simple beams, assumptions and derivations of simple bending theory, relation between bending moment, bending stress and curvature, homogenous and composite beams Shear stress in simple beams, shear flow and shear stress distribution. Combined effect of BM and shear force. Section modulus for various shapes of beam sections.
Deflection of beams: Derivation of differential equation of elastic curve with the assumptions made in it. Deflection and slope of cantilever, simply supported, overhung beams subjected to concentrated load UDL, Relation between slope, deflection and radius curvature in Macaulay's method to determine deflection of beam. Buckling of columns and strut columns. Euler's and Rankine's formula.

Unit IV **[6 Hrs]**

Torsion of circular sections, assumptions and derivation of relations between torsional moment, shear stress and angle of twist, Torsional stress in solid circular sections, torsion in thin walled hollow sections closely coiled, helical spring, Leaf spring. Introduction of torsion in rectangular section.

Unit V **[8 Hrs]**

Principal stresses and strains: Definition of principal planes & principal stresses, analytical method of determining stresses on oblique section when member is subjected to direct stress in one plane in mutually perpendicular two planes, when member is subjected to shear stress and direct stresses in two mutually perpendicular planes, Mohr's circle for representation of stresses.

Text Books

S.N	Title	Authors	Edition	Publisher
1	Strength of Materials	R K Bansal	4th Edition	Laxmi Publications
2	Strength of Materials	S. Ramamrtham	20th Edition	Dhanpat Rai and Sons
3	Strength of Material	R. K. Rajput	7th Edition	S. Chand Publications

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Mechanics of Material	Beer and Johnston	8th Edition	Tata McGraw Hill
2	Strength of Materials	U. C. Jindal	2nd Edition	Umesh Publications

		July 2025	1.0	Applicable for 2025-26
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THIRD SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
24CV302P	Solid Mechanics Lab	-	-	2	1	CA	ESE	Total
						25	25	50
Course Objectives		Course Outcomes						
-		At the end of the course, the students will be able to- 1. Perform tension, compression, bending, shear and torsion tests on specimens. 2. Perform impact and hardness tests on specimens. 3. Sketch stress diagrams using Mohr's Circle method. 4. Demonstrate stiffness determination of a helical spring						

Expt. No.	Title of the experiment
1	To perform Tension test for a metal specimen.
2	To perform Hardness test on a metal specimen.
3	To perform Impact test on a metal specimen.
4	To perform Torsion test on a metal specimen.
5	To perform Compression test on Bricks
6	To perform Shear test on a metal specimen
7	To perform Bending test on a wooden specimen
8	To perform a test for calculation of deflection of a beam.
9	To determine stresses using Mohr's Circle method.
10	To demonstrate stiffness determination of a helical spring.

Text Books

S.N	Title	Authors	Edition	Publisher
1	Relevant BIS Codes	-	-	-
2	Virtual Labs	-	-	-

THIRD SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
24CV303T	Concrete Technology	3	-	-	3	40	60	100

Course Objectives	Course Outcomes
1. To develop a fundamental understanding of the properties, composition, and behavior of concrete and its individual constituents including cement, aggregates, water, and admixtures. 2. To explain the behavior of fresh and hardened concrete, including workability, setting time, strength gain, and durability characteristics. 3. To provide knowledge and practice in proportioning concrete mixes using Indian (IS), American (ACI), and British (Road Note No. 4) mix design methods.	At the end of this course, student will be able to, 1.Explain physical properties of the cement and aggregates. 2.Identify various methods of batching, mixing, also explain the significance of the water-cement (w/c) ratio and workability. 3.Identify standard tests for hardened concrete and non-destructive testing (NDT) methods. 4.Define the basic principles and terminology of concrete mix design and apply the IS method to design concrete mix. 5.Explain shrinkage, cracks and their role in concrete also various durability aspects in concrete.

Content

Unit I Cement And Aggregate [9 Hrs]

Main constituents of cement Hydration of cement, Physical properties and testing of cement, Soundness test, Hardening and compressive strength, Grades and different types of cements.
Aggregates: Coarse and fine aggregate, normal, light and heavy weight aggregates. Aggregate characteristics and their significance in properties of concrete. Sampling, Particle shape and texture, Bond of aggregate, size & grading of aggregate, strength of aggregate. Mechanical properties and tests, bulking of sand. Crushed sand. Alkali aggregate reaction.

Unit II Fresh Concrete [10 Hrs]

Batching, Mechanical mixers, automatic batching and mixing plants. Efficiency of mixing, Workability and its Measurement, Factor affecting workability, setting time, Significance of w/c ratio, cohesiveness of concrete, Segregation, bleeding, voids, permeability. Hot weather concreting, Conveyance of concrete, placing of concrete, compaction, vibrators, curing of concrete, significance and methods, temperature effects on curing and strength gain, Maturity of concrete, Formwork for concrete.
Introduction to Ready mix, pumped and self-compacting concrete.

Unit III Strength of Concrete [9 Hrs]

Strength gain, factors affecting compressive strength, Tensile and flexural strengths, relation between compressive and tensile strength. Failure modes in concrete, cracking in compression. Impact strength, fatigue strength, shear, elasticity, Poisson's ratio.
Testing of Hardened Concrete: Compression test, cube strength and cylinder strength and their relation, effect of aspect ratio on strength. Flexural strength of concrete, determination of tensile strength, indirect tension test, splitting test, abrasion resistance, accelerated curing test.
Non-Destructive Test: Significance, rebound hammer, ultra-sonic pulse velocity test, and Advanced concrete testing equipment.

Unit IV Mix Design [9 Hrs]

Mix Design Process, statistical relation between main and characteristic strength, variance, standard deviation, factors affecting mix properties, grading of aggregates, water/cement ratio etc. Degree of quality control, design of mix by IS method, introduction to road Note No. 4 (BS) and ACI method. Introduction of Admixtures.

Unit V Durability of Concrete [8 Hrs]

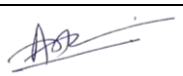
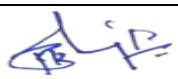
Shrinkage: Early volume changes, drying shrinkage, mechanism and factors affecting shrinkage, influence of curing conditions, differential shrinkage, carbonation, creep- factors influencing, relation between creep and time, nature of creep, effect of creep.
Durability of concrete, permeability of concrete, efflorescence, resistance to corrosion, sulphate attack and its control.

Text Books

S.N	Title	Authors	Edition	Publisher
1	Concrete Technology	M.L.Gambhir	Second Edition, 1995.	Tata McGraw Hill
2	Concrete Technology	M.S. Shetty	Second Edition	S. Chand & Company

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Properties of Concrete	A.M.Neville		Pearson Education
2	Concrete Technology	P Kumar Mehta,		Indian Concrete Institute

		July 2025	1.0	Applicable for 2025-26
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THIRD SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
24CV303P	Concrete Technology Lab	-	-	2	1	25	25	50

Course Objectives	Course Outcomes
1.Recall standard procedures and relevant IS codes for testing cement, aggregates, and concrete. 2.Assess the quality of concrete materials and mixes. 3.Design concrete mixes tailored to specific requirements and environmental conditions.	At the end of the course, the student will be able to 1.Demonstrate the physical properties of cement, fine and coarse aggregates. 2. Perform tests on fresh concrete to evaluate workability. 3. Design concrete mix proportions using standard mix design methods and determine the properties of hardened concrete.

Minimum EIGHT experiments to be performed from the list as below.

List of Experiments

Expt. No.	Title of the experiment
1	Determination of the normal consistency of cement.
2	Determination of initial setting time and final setting time by Vicat's apparatus.
3	Determination of soundness test of cement.
4	Determination of compressive strength of cement mortar cube.
5	To perform sieve analysis and particle size distribution of aggregate.
6	Determination of bulking of sand.
7	Determination of Water Absorption and Specific Gravity of aggregates.
8	Designing a concrete mix using I.S. Method.
9	Determination of Workability - Slump test, Compaction factor test.
10	Determination of Compressive strength of concrete cube.
11	Determination of quality of concrete by using Rebound hammer/ Ultrasonic Pulse Velocity Instrument.

Text Books

S.N	Title	Authors	Edition	Publisher
1	Concrete Technology	M.L.Gambhir	Second Edition, 1995.	Tata McGraw Hill
2	Concrete Technology	M.S. Shetty	Second Edition	S. Chand & Company

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Properties of Concrete	A.M.Neville	-	Pearson Education
2	Concrete Technology	P Kumar Mehta,	-	Indian Concrete Institute

THIRD SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
24CV304T	Environmental Engineering	3	-	-	3	40	60	100

Course Objectives	Course Outcomes
1. To describe the physical, chemical and bacteriological characteristics of water and waste water. 2. To describe the basic principles and processes of various units involved in water and wastewater treatment.	At the end of the course, the students will be able to- 1. Recognize the necessity of water treatment based on its characteristics. 2. Recognize the units processes involved in water treatment plants. 3. Explaining hydraulic design concepts and conveyance of treated water. 4. Recognize the units processes involved in primary treatment of wastewater. 5.Understand the unit processes involved in secondary treatment of wastewater and working.

Unit I **[9 Hrs]**

Introduction to water and its Treatment: Importance and necessity of water supply scheme. All types of water demand, empirical formulae, factors affecting per capita demand, variation in demand, design period, population forecasting methods and examples.
Water quality: Physical, Chemical and bacteriological characteristics of water, Drinking water quality criteria and standards.

Unit II **[9 Hrs]**

Water treatment Objectives, Unit operations and processes in surface Water treatment – Typical layouts and water distribution. water Principles, functions and preliminary design of flash mixers, clariflocculators, sedimentation tanks, Slow and Rapid sand filters, Aeration, Iron and Manganese removal, Defluoridation and Demineralization – water softening, Disinfection.

Unit III **[9 Hrs]**

Conveyance of water: Intake Structures, Types of pipes, joints, fittings, valves & appurtenances.
Hydraulic design aspects: Friction, Manning's, Darcy Weishbach & Hazen Williams equation and problem. Concept of rising main, Classification, working, merits and demerits, selection of pumps.

Unit IV **[9 Hrs]**

Introduction to Waste Water Treatment – Study of waste water, black water & grey water. Physical and chemical characteristics of wastewater, significance of BOD, COD, BOD rate constant, Quantity and flow variation. Primary treatment- Principles, functions and preliminary design of screen, grit chambers and primary sedimentation tanks.

Unit V **[9 Hrs]**

Secondary Treatment of Waste Water - Activated Sludge Process and Trickling filter; Other treatment methods – ¬Stabilization Ponds, Oxidation ditch, oxidation pond, Sequencing Batch Reactor
Design of Imhoff Tank, Septic Tank, RBC etc.

Text Books

S.N.	Title	Authors	Edition	Publisher
1.	Theory and Practice of water & wastewater treatment	Droste R.L.	-	John Wiley & sons.
2.	Environmental Engineering	S. K. Garg	-	Khanna Publishers
3.	Water supply & Sanitary Engineering	Rangwala S. C.	-	Charotar Publishers
4.	Water Supply Engineering	Dr. B. C. Punmia	-	Laxmi Publications
5.	Wastewater Engineering	Dr. B. C. Punmia	-	Laxmi Publications

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Environmental Engineering	Peavy H.S.,.Rowe D.R and George T	-	McGraw Hill
2	Wastewater Engineering, Treatment and reuse	Metcalf and Eddy	-	Tata McGraw Hill

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THIRD SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
24CV304P	Environmental Engineering Lab	-	-	2	1	25	25	50

Course Objectives	Course Outcomes
	At the end of the course, students will be able to- 1. Assess the quality of water. 2. Assess the quality of wastewater. 3. Summarize the treatment processes based on site visit(s).

Expt. No.	Title of the experiment Part A (Any ten experiments out of the following)
1	Determination of TS, TDS and TSS of Water/Wastewater sample.
2	Determination of alkalinity of Water/Wastewater sample.
3	Determination of hardness of Water sample.
4	Determination of Chloride of Water/Wastewater sample.
5	Determination of Iron of Water/Wastewater sample.
6	Determination of pH of Water/Wastewater sample.
7	Determination of Biochemical Oxygen Demand of Wastewater sample.
8	Determination of Chemical Oxygen Demand of Wastewater sample.
9	Determination of optimum dose of coagulant of water sample.
10	Determination of breakpoint chlorination of water sample.
11	Determination of sulphates of water sample.
12	Determination of fluoride in water sample.
13	Determination of Dissolved Oxygen (D.O.) of water/wastewater sample.
14	Determination of Turbidity of water/wastewater sample.
15	Determination of acidity of water/wastewater sample.
16	Part B : Brief Report on Water Treatment and Waste Water Treatment Plant Visit.

Text Books

S.N	Title	Authors	Edition	Publisher
1	Water supply and Sanitary Engineering	Birdie G.S.	-	Dhanpat Rai Publications
2	Water supply & Sanitary Engineering	B. C. Punmia		Laxmi Publications
3	Other relevant BIS codes	-	-	-

THIRD SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
24CV305P	Computer Aided Civil Engineering Drawing	-	-	2	1	50	50	100

Course Objectives	Course Outcomes
1. Familiarize students with the AutoCAD workspace, tools, and user interface for efficient navigation. 2. Enable students to use various tools for creating, modifying, and annotating drawings. 3. Learn to organize and manage drawing components using layers for clarity and control.	1. Students will gain hands-on experience and become proficient in using AutoCAD for 2D drafting. 2. Ability to create precise and professional-quality engineering and architectural drawings. 3. Skills to organize and manage complex drawings using layers, layouts, and viewports.

Topic No.	Content
1	Introduction to AutoCAD:- Overview of AutoCAD software, Interface, tools, and workspace, File management (creating, saving, and opening files), Coordinate systems: Cartesian and Polar.
2	Basic Drawing Tools:- Line, Polyline, Circle, Arc, and Ellipse, Rectangle, Polygon, and Hatch, Creating Points and Splines, object Snap (OSNAP) and Grid Snap, Using Dynamic Input
3	Editing Tools:- Erase, Copy, Move, and Rotate, Offset, Trim, Extend, and Mirror, Fillet and Chamfer, Stretch, Scale, and Array (Rectangular and Polar), Grips and Properties for Editing
4	Annotation and Text:- Adding and formatting text, Single-line and Multi-line text (MTEXT), Dimensioning tools (Linear, Aligned, Angular, Radial, Diameter), Leaders and Multi-leaders, Text styles and Dimension styles
5	Layers and Properties:- Creating and managing layers, Layer properties (Color, Line type, Line weight), Freezing, Locking, and Hiding layers, Using Match Properties
6	Layouts and Plotting:- Model space and Paper space, Creating and managing Layouts, Viewports: Creating and modifying, Plotting and Printing (to PDF or printer)

Text Books

S.N	Title	Authors	Edition	Publisher
1	Autodesk AutoCAD Certified user study Guide	Danial John Stine, William Wyatt	Autocad 2025 edition	SDC, Publication
2	Technical Drawing 101 with Aucocad	Ashleigh Congdon-Fuller,Douglas Smith	Autocad 2024 edition	SDC, Publication

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Learn Autocad in Simple way	Sunil K.Pandey	-	Unitech Books
2	Resedential Design using Autocad 2024	Danial John Stine, William Wyatt	Autocad 2024 edition	SDC, Publication

THIRD SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
24ES401T	**Economics and Management**	**3**	**-**	**-**	**3**	**40**	**60**	**100**

Course Objectives	Course Outcomes
1. The course examines how the economics, business and industrial management practices are related and how business decision is taken.	At the end of the course, students will be able to: 1. Apply managerial economics concept in business analysis and business decision making. 2. Explain relationships between production and costs and understand different forms of market structures. 3. Assess impact of macroeconomics and government policies on business and economy. 4. Recognize the functions of management and marketing management for business decisions. 5. Explore role of financial management in business and decision making.

Unit I	**[9 Hrs]**
Economics, Classification of economics, Industrial economics, Consumer demand, Law of Demand, Determinants of demand, Demand forecasting, Law of supply, Utility, Law of diminishing marginal Utility, Types of Elasticity of demand	
Unit II	**[9 Hrs]**
Concept of Production, Factors of Production, Laws of return, Cost concepts and types of cost, cost curves, Market Structures Perfect competition, Monopoly, Oligopoly, and Monopolistic competition.	
Unit III	**[9 Hrs]**
The functions of central bank, Inflation, Deflation, Recession. Measures to control Inflation, National income, GDP, GNP. Liberalization, Privatization and Globalization	
Unit IV	**[9 Hrs]**
Definition of management, functions of management – planning, organizing, directing, Controlling, Introduction to human resources Management, Marketing Management, Concepts of Marketing, Marketing mix, Methods of pricing, channels of distribution, advertising and sales promotion.	
Unit V	**[9 Hrs]**
Financial Management, nature and scope of financial management, Sources of finance, Types of capital, Brief outline of profit and loss account, balance sheet, Budgets and types of budgets, Ratio analysis.	

Text Books

S.N	Title	Authors	Edition	Publisher
1	Managerial Economics	D.N. Dwivedi	8th	Vikas Publishing
2	Modern Economic Theory	K.K. Dewett	2005	S. Chand Publisher
3	Industrial Management	Dr.I.K. Chopde, Dr.A.M. Sheikh	Revised Edition	S. Chand Publisher

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Industrial Organization and Industrial economics	T.R. Banga, S.C. Sharma	2006	Khanna Publishers

THIRD SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
24CV331M	MDM-I Basics of Civil Engineering	2	-	-	2	20	30	50

Course Objectives	Course Outcomes
To introduce students to the fundamental concepts and scope of various civil engineering disciplines and their role in sustainable infrastructure development.	At the end of the course, students will be able to- 1. Explain the scope of civil engineering, identify water resource management techniques, and apply basic principles of friction in engineering problems. 2. Describe surveying methods and instruments, interpret different types of maps, and classify soils and rocks based on their formation. 3. outline the development and classification of transportation systems in India and explain the basics of water, wastewater, and solid waste management techniques.

Unit I **[10 Hrs]**

Introduction to Civil Engineering Introduction and scope of Civil Engineering. Role of Engineers in the infrastructure development.
Water Resources Engineering Introduction to Hydraulic structures of storage; water conveyance systems; Watershed management: Definition, Necessity and methods; Roof top rain water harvesting and Ground water recharge: relevance and methods.
Friction: Introduction, laws of Coulomb friction, equilibrium of blocks on horizontal plane, equilibrium of blocks on inclined plane.

Unit II **[10 Hrs]**

Basics of Surveying Principles of survey, Classification of surveying, Various types of maps and their uses; Introduction to digital mapping. Introduction to various survey instruments such as EDM, Total Station, and digital planimeter, Modern Surveying Techniques.
Introduction to Geotechnical Engineering: Formation of soil, Types of Soil and types of rocks.

Unit III **[10 Hrs]**

Introduction to Transportation Engineering: Road development in India, Classification of roads, Introduction to BRTS, Metro and other modern methods of transportation.
Introduction to Environmental Engineering: Introduction to water and waste water treatment, introduction to solid waste management.

Text Books

S.N	Title	Authors	Edition	Publisher
1	Elements of civil engineering	S S Bhavikatti	8 January 2015	Swathi-N-R
2	Basic Civil Engineering	B.C. Punmia, Ashok Kumar Jain, Arun Kumar Jain	First Edition	Laxmi Publications
3	Engineering Mechanics	Bhavikatti S S	-	New Age International

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Environmental Engineering	Peavy H.S.,.Rowe D.R and George T	-	McGraw Hill
2	Principles of Transportation and Highway Engineering	RaoG.V.	-	Tata McGraw Hill
4	Principles of Geotechnical Engineering	Braja M Das	2nd	Cengage Publications
5	Advanced Surveying	Satheesh Gopi, R. Sathikumar, N. Madhu	2nd edition	Pearson Publications

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Chairman - BoS	Dean – Academics	Date of Release	Version	

THIRD SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
24CV341P	Career Development III	-	-	2	1	50	-	50

Course Objectives	Course Outcomes
The sole objective of imparting aptitude training is to make students able to critically evaluate various real-life situations by resorting to an analysis of key issues and factors. This Aptitude Training helps them to demonstrate various principles involved in solving mathematical problems and thereby reducing the time taken for performing job functions. To categorize, apply and use thought process to distinguish between concepts of Quantitative methods.	CO1. Students shall understand the concepts of Numbers system, Number series and Analogy. CO2. Students shall understand the concepts of Simple Equation and Percentage. CO3. Students shall understand the concepts of ratio and proportions and partnership and ages. CO4. Students shall understand the concepts of Profit Loss and Discount. CO5. Students shall understand the concepts of Simple and Compound Interest.

Unit I	**[5Hrs]**
Number System: - Divisibility Test, LCM/HCF Problems, Factorization, Remainder Theorem, Successive Division. Number Series:- Missing Number Series, Wrong Number series, Letter Series Analogy (Number, Letter, Word, Non Verbal analogy Key Skills and Abilities, Goal & Interests	
Unit II	**[5Hrs]**
Percentage: - Percentage to ratio conversion, Successive Percentage, Increase Decrease of Percentage, etc. Ambition & Knowledge,	
Unit III	**[5Hrs]**
Ratio & Proportion:- Joining of two ratios, Proportion, Mean Proportions, Problems on ages Partnership Problems true potential of your Branch of Engineering, Engineering Principle From Human Body	
Unit IV	**[5Hrs]**
Profit Loss:- Concept of Profit loss, Relation between CP SP Profit and Loss, Problems on Profit Loss. Discount:- Successive Discount, Relation between MP Discount and Selling Price, Problems based on Discount. Critical Creative & System Thinking, Cornell Note Taking System,	
Unit V	**[4Hrs]**
Simple Interest Compound Interest Engineering Habits of mind, need to think Creatively	

Text Books

S.N	Title	Authors	Edition	Publisher
1	Quantitative Aptitude By R. S. Aggarwal	R.S. Aggarwal		
2	Quantitative Aptitude	Shripad Deo		Allied Publishers Pvt Ltd
3	A Modern Approach to Verbal & Non-Verbal Reasoning	R.S. Aggarwal		

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Quantitative Aptitude for CAT by Arun Sharma	Arun Sharma		