ST. VINCENT PALLOTTI COLLEGE OF ENGINEERING & TECHNOLOGY, NAGPUR

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

B.Tech. Scheme of Examination & Syllabus 2022-23

CIVIL ENGINEERING

FIFTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
22CV501T	Fluid Mechanics I	3	-	-	3	30	70	100

Course Objectives	Course Outcomes
1. Impart the importance and practical significance of various fluid properties. 2. Discuss and evaluate various forces acting on partially and fully submerged bodies. 3. Discuss and evaluate the importance of various parameters on the fluid motion. 4. Discuss various flow measuring devices with their practical applications. 5. Deliberate the concept of impulse momentum principle, dimensional analysis and model analysis of a fluid phenomenon.	At the end of the course, students will be able to- 1 Define the fundamental properties of fluids and apply the concepts of fluids statics. 2 Comprehend and estimate static forces acting on partially and fully submerged bodies. 3 Understand the concept of dynamics of fluid flow. 4 Understand various flow measuring devices with their practical applications. 5 Illustrate the concept of impulse momentum principle, dimensional and model analysis of a fluid.

Unit I	**[8 Hrs]**
Basics of Fluid Mechanics: Fluid Mechanics and its importance in civil Engineering, Rheological diagram and its significance, Fluid Properties, Pressure and its measurement, types of pressure gauges and manometers.	
Unit II	**[8 Hrs]**
Hydrostatics and Stability of Floating Bodies: Total Pressure and centre of pressure on for a plane surface, Archimedes principle, Metacentre and centre of buoyancy, Metacentric height and its determination, Stability of floating bodies partially and fully submerged.	
Unit III	**[8 Hrs]**
Kinematics and Kinetics of flow: Euler and Lagrangian approaches, velocity and acceleration of fluid, local and convective acceleration, Continuity equation, stream function and velocity potential functions, Streamline, path line and streak lines. Kinetics of Flow: Euler's Equation of motion, Bernoulli's Equation.	
Unit IV	**[8 Hrs]**
Measurement of Flow: For pipeline- Venturimeter, orifice meter, Nozzle meter, pitot Tube for velocity measurement. **For tank-** orifice and its types, hydraulic coefficients, mouth piece and its types. **For Open Channel-** Notches and weirs, velocity of approach, End contraction, Sharp crested weir, broad crested weir.	
Unit V	**[8 Hrs]**
Impulse momentum: principle and its application, impact jet. **Dimensional Analysis**: Dimensionally Homogenous equation, Methods of Dimensional Analysis, Dimensionless numbers **Model Analysis**: Types of similarities, Reynold's and Froude's Number.	

Text Books

S.N	Title	Authors	Edition	Publisher
1	A Text Book of Fluid Mechanics and Hydraulic Machines	R.K. Bansal	9th edition	Laxmi Publications (P) Ltd., New Delhi
2	A Text Book of Fluid Mechanics and Hydraulic Machines	R.K. Rajput	6th edition	S Chand & Company (P) Ltd., New Delhi
3	Hydraulics, Fluid Mechanics and Hydraulic machines	P.N. Modi & S.M. Seth	21st edition	Standard Book House. Delhi

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Fluid Mechanics including Hydraulic Machines	A.K. Jain	2nd edition	Khanna Publishers
2	Hydraulics, Fluid Mechanics and Fluid Machines	S. Ramamrutham	9th edition	Dhanpat Rai Publishing Co... New Delhi

		July 2024	1.0	Applicable for 2024-25
Chairman - BoS	Dean – Academics	Date of Release	Version	

FIFTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
22CV501P	Fluid Mechanics I Lab	-	-	2	1	CA	ESE	Total
						25	25	50
Course Objectives		**Course Outcomes**						
-		At the end of the course, students will be able to- 1. Understand the different types of fluid flow. 2. Identify type of fluid flow patterns and apply continuity equation. 3. Use the flow measuring devices.						

Expt. No.	Title of the experiment
1	Determination of Metacentric height and its importance.
2	Calibration of Venturimeter and its practical utility.
3	Calibration of Orifice meter and its practical utility.
4	Calibration of Rectangular Notches.
5	Calibration of Rectangular V-Notches.
6	Hydraulic Coefficients of an orifice.
7	Hydraulic Coefficients of a Mouthpiece.
8	Verification of Bernoulli's Theorem.
9	Impact of jet apparatus.

Text Books

S.N	Title	Authors	Edition	Publisher
1	Hydraulics, Fluid Mechanics and Hydraulic machines	P.N. Modi & S.M. Seth	21st edition	Standard Book House. Delhi
2	A Text Book of Fluid Mechanics and Hydraulic Machines	R.K. Bansal	9th edition	Laxmi Publications (P) Ltd. New Delhi

FIFTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
22CV502T	Reinforced Cement Concrete Structures	3	-	-	3	30	70	100

Course Objectives	Course Outcomes
1. To understand and apply working stress and limit state design philosophies. 2. To design reinforced concrete beams, columns, slabs and footings.	At the end of the course, the students will be able to- 1. Understand the concept of working stress method for beams. 2. Analyze and design of reinforced concrete beam with limit state approach. 3. Design one way and two way slab. 4. Design short and slender columns. 5. Design isolated footings and staircase.

Unit I	**[7 Hrs]**
Design of Beam (Working Stress Method) **Introduction to the Working Stress Method of RCC design:** Assumptions, Basic concepts, design constants. Analysis and design of rectangular section. Balanced, under-reinforced and over-reinforced sections; Limitations of Working stress methods.	
Unit II	**[8 Hrs]**
Design of Beam (Limit State Method) Introduction to Limit state method, basic assumptions, design of reinforced rectangular, T and L shaped beams in flexure, shear and torsion.	
Unit III	**[9 Hrs]**
Design of Slab (Limit State Method) Design of one-way, two-way, cantilever and continuous slab.	
Unit IV	**[7 Hrs]**
Deign of Column (Rectangular and Circular) Design of short and slender columns by Limit State Method for axial load and with uni-axial bending.	
Unit V	**[8 Hrs]**
Design of Footing and Staircase Types of footings; Design of isolated footing. Design of staircase.	

Text Books

S.N	Title	Authors	Edition	Publisher
1	Design of Reinforced Concrete Structures.	P. Dayaratnam	-	Oxford& IBH Pub., New.Delhi.
2	Reinforced Concrete-Limit State Design	A.K.Jain	-	Nem Chand & Bros., Roorkee
3	Reinforced Concrete	I.C.Syal, A.K.Goel, A.H. Wheeler	-	TATA McGraw Hill
4	Reinforced Concrete Design	S.N.Sinha	-	TMH Pub.,N.Delhi

Reference Books

S.N	Title	Authors	Edition	Publisher
1	RCC Design	B.C. Punamia and Ashok Kumar Jain	-	Laxmi Publications
2	Reinforced concrete, Vol. I & II	H. J. Shah	-	Charotar Publishing House Pvt. Ltd

		July 2024	1.0	Applicable for 2024-25
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FIFTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
22CV502P	Reinforced Cement Concrete Structures Lab	-	-	2	1	CA	ESE	Total
						25	25	50

Course Objectives	Course Outcomes
-	At the end of the course, students will be able to 1. Design and Draw reinforcement detailing of structural components. 2. Apply integrated approach for structural design of building. 3. Develop program in Excel for design of structural elements.

Expt. No.	Title of the experiment
1	**Design and reinforcement detailing of the following:** a) Beam b) Short / slender Column c) Slab d) Footing e) Staircase
2	Micro Project based on structural design of building.
3	Excel spreadsheets for any of the design mentioned above.

Text Books

S.N	Title	Authors	Edition	Publisher
1	Design of Reinforced Concrete Structure	N Subramanian	1st edition	Oxford Publication
2	RCC Design	B.C Punamia and Ashok Kumar Jain	9th edition	Laxmi Publications (P) Ltd. New Delhi

FIFTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
22CV503T(i)	PE – I (Advanced Structural Analysis)	3	-	-	3	30	70	100

Course Objectives	Course Outcomes
1. To introduce the stiffness method of analysis. 2. To analyse rigid jointed beams and frames using stiffness matrix method. 3. To analyse pin jointed frames using matrix stiffness method. 4. To analyse grid using matrix stiffness method.	At the end of the course, the students will be able to- 1. Understand basic concepts of stiffness method. 2. Analyse rigid jointed beams using matrix stiffness method. 3. Analyse rigid jointed frames using matrix stiffness method. 4. Analyse pin jointed frames using matrix stiffness method. 5. Analyse grid using matrix stiffness method.

Unit I	**[8 Hrs]**
Introduction to Stiffness Concept: Degree of Kinematic Indeterminacy for rigid jointed structures and pin jointed structures. Introduction to stiffness concept. Direct Stiffness Method.	
Unit II	**[8 Hrs]**
BEAM Element: Concept of equilibrium equation. Analysis of continuous beam using BEAM element stiffness method. Maximum redundancy = 3	
Unit III	**[8 Hrs]**
TRUSS (BAR) Element: Analysis of pin jointed frames using TRUSS element stiffness method. Maximum redundancy =	
Unit IV	**[8 Hrs]**
FRAME Element: Concept of rotation transformation matrix. Analysis of portal frames using FRAME element stiffness method. Analysis of frame with inclined leg using FRAME element stiffness method. Maximum redundancy = 3	
Unit V	**[8 Hrs]**
GRID element: Introduction to GRID element. Analysis of grid using GRID element stiffness method. Maximum number of unknowns = 3	

Text Books

S.N	Title	Authors	Edition	Publisher
1	Matrix Structural Analysis	Hibbeler R. C.	-	Pearson Publications
2	Structural Analysis: A Matrix Approach, SI Edition	Aslam Kassimalli	-	Prentice Hall
3	Matrix analysis of structures	Pandit and Gupta.	-	TATA McGraw Hill

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Matrix methods of Structural Analysis	Weaver and Gere	-	McGraw Hill

		July 2024	1.0	Applicable for 2024-25
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FIFTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
22CV503P(i)	Professional Elective – I (Advanced Structural Analysis) 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. Analyse the continuous beam using software and validate the results with manual calculations. 2. Analyse the rigid jointed plane frame using software and validate the results with manual calculations 3. Analyse the pin jointed plane frame using software and validate the results with manual calculations 4. Analyse the grid using software and validate the results with manual calculations.

Expt. No.	Title of the experiment
1	Introduction to structural analysis software. Generation of input and output file. Interpretation of the data.
2	Analysis of a continuous beam subjected to point load and UDL using software
3	Analysis of a truss subjected to point load using software
4	Analysis of a portal frame subjected to point load and UDL using software
5	Analysis of a grid subjected to UDL and point load using software

Text Books

S.N	Title	Authors	Edition	Publisher
1	Matrix Structural Analysis	Hibbeler R. C.	-	Pearson Publications
2	Structural Analysis: A Matrix Approach, SI Edition	Aslam Kassimalli	-	Prentice Hall

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CIVIL ENGINEERING

FIFTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
22CV503T(iii)	**Professional Elective-I: Advanced Surveying**	**3**	**-**	**-**	**3**	**30**	**70**	**100**

Course Objectives	Course Outcomes
1. To understand the principles, applications, trends, and pertinent issues of geographical information systems and sciences, including remote sensing, photogrammetry, and global positioning systems. 2. To develop technical skills and competence in data and information acquisition, extraction, management and analysis, spatial and statistical modelling, mapping and visualization. 3. To increase awareness of GIS and modelling tools for improving competition and business potential. 4. To develop applications of environmental remote sensing and GIS which can directly enhance service delivery on land use management, ground water management/prospects, agriculture, forestry, food and water security, disaster management, etc.	At the end of the course, the students will be able to- 1. Gain the knowledge of geodetic surveying 2. Apply the concepts of photogrammetric surveying 3. Develop the concepts of total station 4. Explain the utility of GIS and GPS in given civil engineering problems 5. Describe the relevant system of remote sensing to be used for a given situation

Unit I	**[6 Hrs]**
Triangulation: Classification of Triangulation System and its Figures, Intervisibility and Height of Stations, Satellite station and Reduction to Centre. **Survey Adjustments**: Kinds of errors, Laws of accidental errors, Laws of weights, Normal equations, Determination of most probable values	
Unit II	**[6 Hrs]**
Photogrammetric Surveying: Introduction, Basic principles and Definitions, Photo-Theodolite, Determination of focal length of the lens, Aerial Camera, Scale of a Vertical Photograph, Relief Displacement, Flight planning	
Unit III	**[7 Hrs]**
Total Station: Introduction, Advantages and Disadvantages, Types, Measuring angles, Fundamental Parameters, Precautions, Setting up, Construction Layout, Measurement of Horizontal and Vertical Angles, Measurement of Distances and Coordinates	
Unit IV	**[7 Hrs]**
Geographic Information System: Introduction, Definitions, Components, Work Flow, Fundamental Operations, Data Types, Data Models, Spatial Analysis, Applications. **Global Positioning System**: Introduction, Overview, Segments, Satellite ranging, Time calculation, Position calculation, Current GPS satellite constellation, Errors and their corrections, Applications	
Unit V	**[7 Hrs]**
Remote Sensing: Concept, Principles, Components, Types (Active and Passive), Characteristics of Electromagnetic Radiation, Observation Platforms, Systems, Satellite Orbital Characteristics, Data Reception, Transmission and Processing, Digital Image Processing, Sensors, Applications	

Text Books

S.N	Title	Authors	Edition	Publisher
1	Surveying Vol. II	Dr. B.C. Punmia, Er. Ashok K. Jain, Dr. Arun K. Jain	Sixteenth edition	Laxmi Publication- New Delhi
2	Surveying & Levelling PART 2	T.P. Kanetkar, S.V. Kulkarni	Twenty third edition	Pune Vidyarthi Griha Prakashan
3	Advanced Surveying- Total station, GIS and Remote Sensing	Satheesh Gopi. R. Sathikumar and N. Madhu	Second edition	Pearson Publication

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Higher Surveying	Chandra A.M.	Third edition	New Age International (P) Limited
2	Remote sensing and Geographical information system	Anji Reddy M	Second edition	B. S. Publications

		July 2024	1.0	Applicable for 2024-25
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FIFTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
22CV503P(iii)	Professional Elective-I: Advanced Surveying Lab	-	-	2	1	CA	ESE	Total
						25	25	50
Course Objectives		Course Outcomes						
-		At the end of the course, students will be able to- 1. Demonstrate linear measurements of plotted points/objects by total station and GPS 2. Demonstrate angular measurements of plotted points/objects by total station and GPS 3. Understand the concepts of advanced surveying techniques						

Expt. No.	Title of the experiment
1	Measurement of horizontal and vertical angles using Total Station
2	Measurement of coordinates by Total Station
3	Determination of Area using Total Station
4	Determination of distance between points by Total Station
5	Location survey by Total Station
6	Determination of Area using DGPS.
7	Measurement of Latitude and Longitude using hand held GPS
8	Study of Remote Sensing

Text Books

S.N	Title	Authors	Edition	Publisher
1	Higher Surveying	Chandra A.M.	Third edition	New Age International (P) Limited

FIFTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
22CV561O(i)	Open Elective - I Introduction to Transportation Engineering	3	-	-	3	CA	ESE	Total
						30	70	100

Course Objectives	Course Outcomes
1. To understand basic principles and conceptual knowledge in transportation. 2. To learn the basics of Bridge engineering. .	At the of the course, students will be able to: 1. Describe significance of Highway Development. 2. Understand traffic management. 3. Explain and design highway pavement geometrics. 4. Demonstrate the testing of the highway materials as per relevant IS recommendation. 5. Define and discuss the various components of Bridge Engineering.

Unit I	**[7 Hrs]**
Introduction to Highway Engineering: Highway Development & Planning: Principles of Highway planning, Road development in India Classification of roads. Highway Alignment: Requirements, Engineering Surveys. Current road projects in India; project preparation Introduction to Intelligent Transportation System	
Unit II	**[7 Hrs]**
Traffic Engineering: Traffic Studies - Volume studies, speed studies, parking studies and accident studies Traffic Safety- Causes and types of accidents, Urban traffic management	
Unit III	**[8 Hrs]**
Geometric Design: Highway Geometric Design: Cross Section elements, carriageways, camber, stopping & overtaking sight distances Horizontal alignment- Curves, design of super elevation, widening, transition curves, vertical curves.	
Unit IV	**[7 Hrs]**
Highway Materials and its testing: Highway Materials: Properties of sub grade and pavement component materials, Tests on sub grade soils, aggregates and bituminous materials.	
Unit V	**[5 Hrs]**
Bridge Engineering: Bridge Engineering: Classification, identification and site selection. Flood discharge, waterways, scour depth, economic span. Introduction to IRC code of practices.	

Text Books

S.N	Title	Authors	Edition	Publisher
1	Highway Engineering	S.K.Khanna, .E.G.Justo	-	Nem Chand & Bros
2	Principles and Practice of Highway Engineering	L.R.Kadiyali	-	Khanna Publishers
3	Bridge Engineering	Rangwala S. C.	-	Charotar Publications

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Principles of Transportation and Highway Engineering	RaoG.V.	-	Tata McGraw Hill
2	Bridge Engineering	S. Ponnuswami	-	Tata McGraw Hill

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FIFTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
22CV561O(ii)	Open Elective-I: Construction Techniques	3	-	-	3	30	70	100

Course Objectives	Course Outcomes
Fundamental of cement concrete. Construction equipment, construction techniques and safety methods, Building components.	At the end of the course, students will be able to- 1. Explain various constituents of cement and concrete. 2. Apply various equipment and machinery used in construction. 3. Understand various types of structure. 4. Understand construction methods for various types of structure. 5. Examine new techniques used in construction, evaluation and safety methods adopted in construction industry.

Unit I	**[7 Hrs]**
Introduction to Cement and Concrete: Various types of cement, mortar, Ready mix concrete, self-compacting concrete, light weight concrete and fiber reinforced concrete.	
Unit II	**[7 Hrs]**
Introduction to construction Equipments: Various construction Equipments with its Advantages, Disadvantages and its Uses.	
Unit III	**[7 Hrs]**
Type of structure: Load bearing, Frame & Composite. Sub Structure: - Necessity and types of foundations, Footings and its Types, and Introduction to Underwater Construction.	
Unit IV	**[7 Hrs]**
Super structure: - Introduction to Stone Masonary and Brick Masonary, formwork and its types, pointing and plastering, roofs, painting, arches, lintels, stairs, etc.	
Unit V	**[7 Hrs]**
New Construction Techniques: Pre - Engineered Building and its Application & Advantages. **Safety in Construction Operations:** Introduction to various types of Hazards and its Safety measurement on construction site.	

Text Books

S.N	Title	Authors	Edition	Publisher
1	Concrete Technology	M.S.Shetty	6th	S. Chand & Company, Limited
2	Building Construction	S.C.Rangwala	32nd	Charotar Publishing House Pvt. Ltd.

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Construction Planning, Equipment and methods	Peurifoy	-	Tata McGraw Hill Publication
2	Construction Technology	Sankar S.K. and Saraswati S.	-	Oxford University Press, New Delhi
3	Building Construction	Sushil Kumar	19th	Standard Publisher Distributors, New Delhi
4	Elements of Civil Engineering	S. S. Bhavikatti	-	Vikas Publishing House Pvt Limited
6	SP 70 (2001): Handbook on Construction Safety Practices	BIS	-	BIS

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FIFTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
22H104	Foundational Humanities Elective-I Development of Societies	2	-	-	0	Audit		

Course Objectives	Course Outcomes
This course will provide a natural link between engineering and humanities.	At the end of the course, students will be able to: 1. Develop larger view of social structures and systems. 2. Understands the political systems and their comparative study. 3. Aware themselves of various economic systems and sustainable development. 4. Understand the interaction of political and economic strategies. 5. Apply learnt concepts and generate and evaluate models of development in current context.

Unit I Social Development	**[5Hrs]**
Concepts behind the origin of Family, Clan and Society, Different Social Systems, Relation between Human being and Society, Comparative studies on different models of Social Structures and their evolution.	
Unit II Political Development	**[4Hrs]**
1. Ideas of Political Systems as learnt from History 2. Different models of Governing system and their comparative study	
Unit III Economic Development I	**[4Hrs]**
1. Birth of Capitalism, Socialism, Marxism	
Unit IV Economic Development II	**[7Hrs]**
1. Concept of development in pre-British, British and post British period- Barter, Jajmani 2. E. F. Schumacher's idea of development, Buddhist economics. Gandhian idea of development. Swaraj and Decentralization	
Unit V Economic Development III	**[4Hrs]**
1. Economic Development 2. Idea of development in current context.	

Reference Books

S.N	Title	Authors	Edition	Publisher
1.	Sociology: Basic concepts	H.K.Rawat	2007	Rawat Publication
2.	Sociology: Themes and Perspectives	Michael Haralambos, Martin Holborn and Robin Heald	2000	Collins Educational, London, United Kingdom

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FIFTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
22AS502T	English for Engineers	2	-	-	2	15	35	50

Course Objectives	Course Outcomes
To provide students with the skills and knowledge of communication in a business environment.	At the end of the course, students will be able to- 1. develop an understanding of basic grammar concepts and their applications. 2. prepare and equip themselves for competitive exams 3. deliver effective presentations in a professional environment, tackle group discussions and face interviews. 4. acquire hands-on experience in writing business letters 5. display written communication in line with different workplace requirements.

Unit I : Functional Grammar	**[6Hrs]**
Subject-Verb Agreement, Preposition, Pronoun and Articles, Tenses, Direct – Indirect Speech, Transformation of sentences – Simple, Complex, Compound and Degrees of comparison, Active and Passive Voice.	
Unit II : English for Competitive Exams	**[5Hrs]**
Sentence improvement and construction, Paragraph ordering, One word substitution, Verbal Analogies, Idioms.	
Unit III : Verbal Ability	**[4Hrs]**
1. Reading Comprehension, Listening to Conversation (formal and Informal) and Announcements, Integrated Writing – Read, and listen to a short excerpt and write a response, Speaking – Podcast, Group Discussion, Presentations and Mock Interviews.	
Unit IV : Formal Correspondence	**[4Hrs]**
Describing, summarizing, comparing graphs or illustrations, Basic patterns of Business Letter Writing, Approaches to writing – Direct, Indirect and persuasive styles, Cover letter, Resume, Applications.	
Unit V : Communication at Workplace	**[5Hrs]**
Drafting emails and reports, Circular and notices, Meeting etiquette and recording Minutes of the Meeting, Writing a Press Release.	

Reference Books

S.N	Title	Authors	Edition	Publisher
1	Functional English for Technical Student	Dr. Pratibha Mahato and Dora Thompson	2020	Himalaya Publishing House
2.	Communication Skills for Engineer	C. Muralikrishna and Sunita Mishra	2022	Pearson
3.	Effective Technical Communication	Barun K Mitra	1	Oxford University Press
4.	Basic Business Communication	Lesikar, R. & Flately	9	Tata McGraw Hill

FIFTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credits	Evaluation		
						CA	ESE	Total
22CV504P	Technical Skill Development - II	-	-	2	1	50	-	50

Course Objectives	Course Outcomes
-	At the end of course students will be able to 1. Summarize the use of software available in civil engineering. 2. Modelling and analyze the multistoried building model(s) with the use of software.

Topic Number	Topics
1	Introduction to software(s) such as STAAD, SAP, E-Tabs, etc.
2	Modelling and analysis of multistoried residential building with the use of any one of the software mentioned above.
3	One Micro Project.

FIFTH SEMESTER

Course Code	Course Name	Th	Tu	Pr	Credit	Evaluation		
22CV505P	Career Development- III	2	-	-	0	CA	ESE	Total
						Audit		

Course Objectives	Course Outcomes
-	-

	[8 Hrs]
Quantitative Aptitude: Data interpretation: data graphs (bar graphs, pie charts, and other graphs representing the data), 2- and 3-dimensional plots, maps, and tables Numerical computation and estimation: ratios, percentages, powers, exponents and logarithms, permutations and combinations, and series Mensuration and geometry Elementary statistics and probability.	
	[8 Hrs]
Analytical Aptitude: Logic: deduction and induction, Analogy, Numerical relations and reasoning.	
	[8 Hrs]
Spatial Aptitude: Transformation of shapes: translation, rotation, scaling, mirroring, assembling, and grouping Paper folding, cutting, and patterns in 2 and 3 dimensions.	

Text Books

S.N	Title	Authors	Edition	Publisher
1.	Quantitative Aptitude	Dr. R. S. Agarwal	-	S.Chand Publications
2.	Verbal Reasoning	Dr. R. S. Agarwal	-	S.Chand Publications
3.	Non-Verbal Reasoning	Dr. R. S. Agarwal	-	S.Chand Publications