

Vision of the Institute

To ignite the minds of the students through academic excellence so as to bring about social transformation and prosperity.

Mission of the Institute

- To expand the frontiers of knowledge through Quality Education.
- To provide valued added Research and Development.
- To embody a spirit of excellence in Teaching, Creativity, Scholarship and Outreach.
- To provide a platform for synergy of Academy, Industry and Community.
- To inculcate high standards of Ethical and Professional Behavior.

Vision of Civil Department

To give the nation qualitative Civil Engineers, who can contribute for the construction of a better world with sophisticated infrastructural facilities, eco-friendly houses, modern transportation facilities with a pollution free environment and to protect the precious natural resources of this planet.

Mission of Civil Department

- To shape the students into good entrepreneurs and to promote self-confidence and all-round development of the student personality through special lectures, practical training programs, field visits and technical seminars.
- To train the students to acquire generic knowledge in the areas of Civil Engineering
- To continuously update the physical infrastructure through modernization, thrust area development, R & D and other schemes
- To generate knowledge base through sustained research and developmental efforts.
- To produce engineers with self-confidence and overall personality who can be self-employed and generate employment opportunities to fellow engineers and take active part in nation building, keeping in view the challenges of the future

Program Educational Objectives (PEO's) of Civil Department

1. The main objective of the faculty is to guide them by the principles of sustainable development and global inter connectedness with the CIVIL structures, and make them to understand the impact of CIVIL engineering projects how they effects society and environment in case of failures.
2. To develop their Communication skills (Oral, Written and Visual, Graphic modes) which makes them to participate actively in their Communities and Profession when working as team leaders or members.
3. An intensive training is provided to identify, formulate and solving engineering problems in technical areas appropriate to CIVIL ENGINEERING.
4. To make them competent and engaged engineering professionals applying their technical & managerial skills in Planning, Designing and Construction.

Program Outcomes(PO's) of Civil Department

1. Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes(PSO's) of Civil Department

1. An ability to learn constructional concepts and to implement them in the field work and to make the structural planning in a smarter way.
2. To encourage young energetic engineers in technical and software skills in the field of Civil Engineering with innovative thoughts along with existing and future trends in constructional field.
3. The capability to integrate knowledge in constructional field work and to improve skills to become an entrepreneur.

III YEAR - II SEMESTER

S.No	Category	Course Code	Course Title	L	T	P	C	IM	EM	TM
1	PC	19CE6T01	Design & Drawing of Steel Structures	4	-	2	3	40	60	100
2	PC	19CE6T02	Foundation Engineering	3	-	-	3	40	60	100
3	PC	19CE6T03	Transportation Engineering	3	-	-	3	40	60	100
4	PE	19CE6T04 19CE6T05 19CE6T06 19CE6T07	Professional Elective-II 1. Building planning and drawing 2. Railway and Airport Engineering 3. Construction Management 4. Infrastructure Planning and Design	3	-	-	3	40	60	100
5	ES	19OE6T05	Oops Through Java	3	-	-	3	40	60	100
6	OE	19OE6T01 19OE6T02 19OE6T03 19OE6T04	Open Elective-II 1. Solar Energy Systems 2. Management Science 3. Internet of Things 4. Industrial Robotics	3	-	-	3	40	60	100
7	ES	19CE6P01	Building planning and drawing through AutoCAD	-	-	3	1.5	40	60	100
8	PC	19CE6P02	Transportation Engineering Lab	-	-	3	1.5	40	60	100
9		19CE6J01	Socially relevant project	-	-	2	1	20	30	50
Total				19	-	10	22	340	510	850

Subject	DESIGN AND DRAWING OF STEEL STRUCTURES				
Year/semester	III B.Tech/II Sem	L	T	P	C
Regulation year	2021-2022	4	2	0	3

Course Learning Objectives: The objective of this course is to:

1. Familiarize Students with different types of Connections and relevant IS codes.
2. Equip student with concepts of design of flexural members.
3. Understand Design Concepts of tension and compression members in trusses.
4. Familiarize students with different types of Columns and column bases and their Design.
5. Familiarize students with Plate girder and Gantry Girder and their Design.

SYLLABUS

UNIT – I: Connections: Riveted connections – definition, rivet strength and capacity, Welded connections: Introduction, Advantages and disadvantages of welding- Strength of welds-Butt and fillet welds: Permissible stresses – IS Code requirements. Design of fillet weld subjected to moment acting in the plane and at right angles to the plane of the joints.

UNIT – II: Beams: Allowable stresses, design requirements as per IS Code-Design of simple and compound beams-Curtailment of flange plates, Beam to beam connection, check for deflection, shear, buckling, check for bearing, laterally unsupported beams.

UNIT –III: Tension Members and compression members: General Design of members subjected to direct tension and bending –effective length of columns. Slenderness ratio – permissible stresses. Design of compression members, struts etc. **Roof Trusses:** Different types of trusses – Design loads – Load combinations as per IS Code recommendations, structural details.

UNIT – IV: Design of Columns: Built up compression members – Design of lacings and battens. Design Principles of Eccentrically loaded columns, Splicing of columns.

UNIT – V: Design of Column Foundations: Design of slab base and gusseted base. Column bases subjected moment.

UNIT – VI: Design of Plate Girder: Design consideration – I S Code recommendations Design of plate girder-Welded – Curtailment of flange plates, stiffeners – splicing and connections. Design of Gantry Girder: impact factors – longitudinal forces, Design of Gantry girders.

NOTE: Welding connections should be used in Units II – VI.

The students should prepare the following plates.

- Plate 1 Detailing of simple beams
- Plate 2 Detailing of Compound beams including curtailment of flange plates.
- Plate 3 Detailing of Column including lacing and battens.
- Plate 4 Detailing of Column bases – slab base and gusseted base
- Plate 5 Detailing of steel roof trusses including joint details.
- Plate 6 Detailing of Plate girder including curtailment, splicing and stiffeners.

INTERNAL EXAMINATION PATTERN:

The total internal marks (40) are distributed in two components as follows:

- Descriptive (subjective type) examination: 20 marks
- Day to Day work 20 marks

FINAL EXAMINATION PATTERN:

The end semester examination is conducted for 60 marks. The pattern will consist of 2 parts (part -A and part-B), where in part-A, 2 questions will be given with each question carrying 24 marks, out of which the student has to answer one question and part-B consists of 6 questions with each question carrying 12 marks each, out of which the students has answer 3 questions.

IS Codes

- IS -800 – 2007.
- IS – 875.
- Steel Tables.

These codes and steel tables are permitted to use in the examinations.

TEXT BOOKS

- ‘Steel Structures Design and Practice’ by N.Subramanian, Oxford University Press.
- ‘Design of Steel Structures’ by Ramachandra, Vol – 1, Universities Press.
- ‘Design of steel structures’ by S.K. Duggal, Tata Mcgraw Hill, and New Delhi.

REFERENCES

1. 'Structural Design in Steel' by Sarwar Alam Raz, New Age International Publishers, New Delhi.
2. 'Design of Steel Structures' by P. Dayaratnam; S. Chand Publishers.
3. 'Design of Steel Structures' by M. Raghupathi, Tata Mc. Graw-Hill.
4. 'Structural Design and Drawing' by N. Krishna Raju; University Press.

Course Outcomes

At the end of this course the student will be able to

1. Work with relevant IS codes.
2. Carryout analysis and design of flexural members and detailing.
3. Design compression members of different types with connection detailing.
4. Design Plate Girder and Gantry Girder with connection detailing.
5. Produce the drawings pertaining to different components of steel structures.

Subject	FOUNDATION ENGINEERING				
Year/semester	III B.Tech/II Sem	L	T	P	C
Regulation year	2021-2022	3	0	0	3

COURSE OBJECTIVES:

1. To impart to the student knowledge of types of shallow foundations and theories required for the determination of their bearing capacity.
2. To enable the student to compute immediate and consolidation settlements of shallow foundations.
3. To impart the principles of important field tests such as SPT and Plate bearing test.
4. To enable the student to imbibe the concepts of pile foundations and determine their load carrying capacity.

UNIT – I

Soil Exploration: Need – Methods of soil exploration – Boring and Sampling methods – Field tests – Penetration Tests – Pressure meter – planning of Programme and preparation of soil investigation report.

UNIT-II

Stability of Slopes: Infinite and finite earth slopes in sand and clay – types of failures – factor of safety of infinite slopes – stability analysis by Swedish arc method, standard method of slices – Taylor’s Stability Number-Stability of slopes of dams and embankments - different conditions.

UNIT – III

Earth Retaining Structures: Rankine’s & Coulomb’s theory of earth pressure – Culmann’s graphical method - earth pressures in layered soils.

UNIT-IV

Shallow Foundations – Bearing Capacity Criteria: Types of foundations and factors to be considered in their location - Bearing capacity – criteria for determination of bearing capacity – factors influencing bearing capacity – analytical methods to determine bearing capacity – Terzaghi’s theory - IS Methods.

UNIT-V

Pile Foundations: Types of piles – Load carrying capacity of piles based on static pile formulae – Dynamic pile formulae– Pile load tests - Load carrying capacity of pile groups in sands and clays.

UNIT – VI

Well Foundations: Types – Different shapes of well – Components of well – functions – forces acting on well foundations - Design Criteria – Determination of steining thickness and plug - construction and sinking of wells – Tilt and shift.

TEXT BOOKS:

TB1: Principles of Foundation Engineering, Das, B.M., (2011), 6th edition Cengage learning.

TB2: Basic and Applied Soil Mechanics, Gopal Ranjan & A.S.R. Rao, New Age International Pvt. Ltd, (2004).

REFERENCES:

R1: Foundation Analysis and Design, Bowles, J.E., (1988), 4th Edition, McGraw-Hill Publishing Company, New York.

R2: Analysis and Design of Substructures by Swami Saran, Sarita Prakashan, Meerut.

COURSE OUTCOMES:

1. The student must be able to understand the various types of shallow foundations and decide on their location based on soil characteristics.
2. The student must be able to compute the magnitude of foundation settlement to decide the size of the foundation.
3. The student must be able to use the field test data and arrive at the bearing capacity.
4. The student must be able to design Piles based on the principles of bearing capacity.

Subject	TRANSPORTATION ENGINEERING				
Year/semester	III B.Tech/II Sem	L	T	P	C
Regulation year	2021-2022	3	0	0	3

COURSE OBJECTIVES:

1. To impart different concepts in the field of Highway Engineering.
2. To acquire design principles of Highway Geometrics and Pavements.
3. To acquire design principles of Intersections.

UNIT – I

Highway Planning and Alignment: Highway development in India; Classification of Roads; Road Network Patterns; Necessity for Highway Planning; Different Road Development Plans– First, second, third road development plans, road development vision 2021, Rural Road Development Plan – Vision 2025; Planning Surveys; Highway Alignment- Factors affecting Alignment Engineering Surveys – Drawings and Reports.

UNIT-II

Highway Geometric Design: Importance of Geometric Design- Design controls and Criteria- Highway Cross Section Elements- Sight Distance Elements- Stopping sight Distance, Overtaking Sight Distance and Intermediate Sight Distance- Design of Horizontal Alignment- Design of Super elevation and Extra widening- Design of Transition Curves- Design of Vertical alignment Gradients- Vertical curves.

UNIT – III

Traffic Engineering: Basic Parameters of Traffic- Volume, Speed and Density- Traffic Volume Studies; Speed studies – spot speed and speed & delay studies; Parking Studies; Road Accidents- Causes and Preventive measures - Condition Diagram and Collision Diagrams; PCU Factors, Capacity of Highways – Factors Affecting; LOS Concepts; Road Traffic Signs; Road markings;

Types of Intersections; At-Grade Intersections – Design of Plain, Flared, Rotary and Channelized Intersections; Design of Traffic Signals – Webster Method – IRC Method.

UNIT-IV

Highway Materials: Subgrade soil: classification –Group Index – Subgrade soil strength – California Bearing Ratio – Modulus of Subgrade Reaction. Stone aggregates: Desirable properties – Tests for Road Aggregates – Bituminous Materials: Types – Desirable properties – Tests on Bitumen – Bituminous paving mixes: Requirements – Marshall Method of Mix Design.

UNIT-V

Analysis& Design of Pavements: Types of pavements; Functions and requirements of different components of pavements; Design Factors

Flexible Pavements: Design factors – Flexible Pavement Design Methods – CBR method – IRC method – Burmister method – Mechanistic method – IRC Method for Low volume Flexible pavements.

UNIT – VI

Rigid Pavements: Design Considerations – wheel load stresses – Temperature stresses – Frictional stresses – Combination of stresses – Design of slabs – Design of Joints – IRC method – Rigid pavements for low volume roads – Continuously Reinforced Cement Concrete Pavements – Roller Compacted Concrete Pavements

TEXT BOOKS:

TB1: Highway Engineering, Khanna S. K., Justo C. E. G and Veeraragavan A, Nem Chand Bros., Roorkee.

TB 2: Traffic Engineering and Transportation Planning, Kadiyali L. R, Khanna Publishers, New Delhi.

REFERENCES:

R1: Principles of Highway Engineering, Kadiyali L. R, Khanna Publishers, New Delhi.

R2: Principles of Transportation Engineering, Partha Chakroborthy and Animesh Das, PHI Learning Private Limited, Delhi.

COURSE OUTCOMES:

1. Plan highway network for a given area.
2. Determine Highway alignment and design highway geometrics.
3. Design Intersections and prepare traffic management plans.
4. Judge suitability of pavement materials and design flexible and rigid pavements.

Subject	[PE-II] BUILDING PLANNING AND DRAWING				
Year/semester	III B.Tech/II Sem	L	T	P	C
Regulation year	2021-2022	3	0	0	3

COURSE OBJECTIVES:

1. Initiating the student to different building bye-laws and regulations.
2. Imparting the planning aspects of residential buildings and public buildings.
3. Giving training exercises on various signs and bonds and different building units.
4. Imparting the skills and methods of planning of various buildings.

UNIT – I

Building Byelaws and Regulations:

Introduction- terminology- objectives of building byelaws- floor area ratio- floor space index- principles under laying building bye laws- classification of buildings- open space requirements – built up area limitations height of buildings- wall thickness – lightening and ventilation requirements

UNIT-II

Residential Buildings: Minimum standards for various parts of buildings requirements of different rooms and their grouping- characteristics of various types of residential buildings and relationship between plan, elevation and forms and functions

UNIT – III

Public Buildings: Planning of educational institutions, hospitals, dispensaries, office buildings, banks, industrial buildings, hotels and motels, buildings for recreation, Landscaping requirements.

UNIT-IV

Sign Conventions and Bonds: Brick, stone, plaster, sand filling, concrete, glass, steel, cast iron, copper alloys, aluminium alloys etc., lead, zinc, tin etc., earth, rock, timber and marbles. English bond and Flemish bond - odd and even courses for one, one and half, two and two and half brick walls in thickness at the junction of a corner.

UNIT-V

Doors, Windows, Ventilators and Roofs: Panelled door, panelled and glazed door, glazed windows, panelled windows, swing ventilators, fixed ventilators, coupled roof, collar roofs. King Post truss, Queen Post truss Sloped and flat roof and buildings: drawing plans, Elevations and Cross Sections of given sloped and flat roof buildings.

UNIT – VI

Planning And Designing of Buildings: Draw the Plan, Elevation and Sections of a Residential and Public buildings from the given line diagram.

TEXT BOOKS:

TB1: Planning, designing and Scheduling, Gurucharan Singh and Jagadish Singh

TB2: Building planning and drawing by M. Chakravarthi.

REFERENCES:

R1: Building drawing, M G Shah, C M Kale and S Y Patki, Tata McGraw Hill, New Delhi.

R2: Principles of Building Drawing, M G Shah and C M Kale, Trinity Publications, New Delhi.

R3: Civil Engineering drawing and House planning, B. P. Verma, Khanna publishers, New Delhi.

R4: Civil Engineering Building practice, Suraj Singh: CBS Publications, New Delhi, and Chennai.

R5: Building Materials and Construction, G. C Saha and Joy Gopal Jana, Mcgraw Hill Education (P) India Ltd. New Delhi

COURSE OUTCOMES:

1. Student should be able to plan various buildings as per the building by-laws.
2. The student should be able to distinguish the relation between the plan, elevation and cross section and identify the form and functions among the buildings.
3. The student is expected to learn the skills of drawing building elements and plan the buildings as per requirements.

Subject	[PE-II] RAILWAY AND AIRPORT ENGINEERING				
Year/semester	III B.Tech/II Sem	L	T	P	C
Regulation year	2021-2022	3	0	0	3

COURSE OBJECTIVES:

1. To know various components and their functions in a railway track
2. To acquire design principles of geometrics in a railway track
3. To know various techniques for the effective movement of trains
4. To acquire design principles of airport geometrics and pavements.

UNIT – I

Components of Railway Engineering: Permanent way components – Railway Track Gauge - Cross Section of Permanent Way - Functions of various Components like Rails, Sleepers and Ballast –Rail Fastenings – Creep of Rails- Theories related to creep – Adzing of Sleepers- Sleeper density – Rail joints.

UNIT-II

Geometric Design of Railway Track: Alignment – Engineering Surveys - Gradients- Grade Compensation- Cant and Negative Super elevation- Cant Deficiency – Degree of Curve – safe speed on curves – Transition curve – Compound curves – Reverse curves – Extra clearance on curves – widening of gauge on curves – vertical curves – cheek rails on curves.

UNIT – III

Turnouts & Controllers: Track layouts – Switches – Design of Tongue Rails – Crossings – Turnouts – Layout of Turnout – Double Turnout – Diamond crossing – Scissors crossing. Signal Objectives – Classification – Fixed signals – Stop signals – Signalling systems – Mechanical signalling system – Electrical signalling system – System for Controlling Train Movement – Interlocking – Modern signalling Installations.

UNIT-IV

Airport Planning & Design: Airport Master plan – Airport site selection – Air craft characteristics – Zoning laws – Airport classification – Runway orientation – Wind rose diagram – Runway length – Taxiway design – Terminal area and Airport layout – Visual aids and Air traffic control

UNIT-V

Runway Design: Various Design factors – Design methods for Flexible pavements – Design methods for Rigid pavements – LCN system of Pavement Design.

UNIT – VI

Airfield Pavement: Airfield Pavement Failures – Maintenance and Rehabilitation of Airfield pavements – Evaluation & Strengthening of Airfield pavements – Airport Drainage – Design of surface and subsurface drainage

TEXT BOOKS:

TB1: Railway Engineering by Satish Chandra and Agarwal M.M., Oxford University Press, New Delhi

TB2: Airport Engineering, Khanna & Arora - Nemchand Bros, New Delhi

REFERENCES:

R1: 'Highway, Railway, Airport and Harbour Engineering' by Subramanian KP, Scitech Publications (India) Pvt Limited, Chennai

R2: A Text book of Transportation Engineering by S.P.Chandola, S. Chand & Company pvt. Ltd., New Delhi.

COURSE OUTCOMES:

1. Design geometrics in a railway track.
2. Design airport geometrics and airfield pavements.

Subject	[PE-II] CONSTRUCTION MANAGEMENT				
Year/semester	III B.Tech/II Sem	L	T	P	C
Regulation year	2021-2022	3	0	0	3

COURSE OBJECTIVES:

1. To introduce to the student the concept of project management including network drawing and monitoring
2. To introduce various equipment like earth moving equipment, trucks and handling equipment, aggregate production and construction equipment and machinery, related to construction.
3. To introduce the importance of safety in construction projects.

UNIT – I

Construction project management and its relevance – qualities of a project manager – project planning – coordination –scheduling - monitoring – bar charts – milestone charts – critical Path Method – Applications

UNIT-II

Project Evaluation and Review Technique – cost analysis - updating – crashing for optimum cost – crashing for optimum resources – allocation of resources

UNIT – III

Construction equipment – economical considerations – earthwork equipment – Trucks and handling equipment – rear dump trucks – capacities of trucks and handling equipment – calculation of truck production – compaction equipment – types of compaction rollers

UNIT-IV

Hoisting and earthwork equipment – hoists – cranes – tractors - bulldozers – graders – scrapers– draglines - clamshell buckets.

UNIT-V

Concreting equipment – crushers – jaw crushers – gyratory crushers – impact crushers – selection of crushing equipment - screening of aggregate – concrete mixers – mixing and placing of concrete – consolidating and finishing

UNIT – VI

Construction methods – earthwork – piling – placing of concrete – form work – fabrication and erection – quality control and safety engineering

TEXT BOOKS:

TB1: Construction Planning Equipment and Methods, Peurifoy and Schexnayder, Shapira, Tata Mcgraw hill

TB2: Construction Project Management Theory and Practice, Kumar Neeraj Jha (2011), Pearson.

TB3: Construction Technology, Subir K. Sarkar and Subhajit Saraswati, Oxford University press.

TB4: Project Planning and Control with PERT and CPM, B. C. Punmia and K K Khandelwal, Laxmi Publications Pvt Ltd. Hyderabad.

REFERENCES:

R1: Construction Project Management - An Integrated Approach, Peter Fewings, Taylor and Francis

R2: Construction Management Emerging Trends and Technologies, Trefor Williams, Cengage learning.

R3: Hand Book of Construction Management, P. K. Joy, Trinity Press Chennai, New Delhi.

COURSE OUTCOMES:

1. Appreciate the importance of construction planning
2. Understand the functioning of various earth moving equipment
3. Know the methods of production of aggregate products and concreting and usage of machinery required for the works.
4. Apply the gained knowledge to project management and construction techniques.

Subject	[PE-II] INFRASTRUCTURE PLANNING AND DESIGN				
Year/semester	III B.Tech/II Sem	L	T	P	C
Regulation year	2021-2022	3	0	0	3

COURSE OBJECTIVES:

1. Understanding role of infrastructure in economic development.
2. To learn principles of infrastructure planning.
3. To study principles of Infrastructure Management.
4. Understanding strategic planning for infrastructure.
5. Understand the rural & urban infrastructure planning.
6. Understand the Emerging trends in infrastructure.

UNIT – I

INTRODUCTION: Definition of basic terminologies, role of infrastructure in economic development, types of infrastructure, measurement of infrastructure capacity, bases for quantification of demand and supply of various types of infrastructure, Indian scenario in respect of adequacy and quality

UNIT-II

INFRASTRUCTURE PLANNING: Goals and course objective of infrastructure planning; Identification and quantification of the casual factors influencing the demand for infrastructure; review and application of techniques to estimate supply and demand for infrastructure; use of econometric, social and land use indicators and models to forecast the demand and level of service of infrastructure and its impact on land use; critical review of the relevant forecasting techniques.

UNIT – III

INFRASTRUCTURE MANAGEMENT: Concepts, Common aspects of urban and rural infrastructure management systems; pavement and bridge management systems, integrated infrastructure management Sector

UNIT-IV

STRATEGIC PLANNING: Infrastructure planning to identify and prioritize preferred areas for development; Integration of strategic planning for infrastructure at urban, regional and national levels; case studies in infrastructure planning.

UNIT-V

EMERGING TRENDS IN INFRASTRUCTURE: Overview of Public-Private Sector Participation in infrastructure projects, Understanding stakeholders' concerns, regulatory framework, risk management in infrastructure projects, public policy for infrastructure.

UNIT – VI

OVERVIEW: Highways, railways, waterways, airports, urban and rural infrastructure: roads, housing, water supply, sanitation – case study examples

TEXT BOOKS:

TB1: Infrastructure Planning, Engineering and Economics” by Alvin S Goodman and Makarand Hastak

TB2: Infrastructure Planning Handbook: Planning, Engineering, and Economics” by Alvin S Goodman and Makarand Hastak.

REFERENCES:

R1: Mega Transport Infrastructure Planning: European Corridors in Local-Regional Perspective” by Sandro Fabbro

R2: Public Investment Management in the New EU Member States: Strengthening Planning and Implementation of Transport Infrastructure Investments (World Bank Working Paper)” by Thomas Laursen and Bernard Myers

R3: Engineering Geology for Infrastructure Planning in Europe: A European Perspective (Lecture Notes in Earth Sciences)” by Robert Charlier and Robert Hack

R4: Building California’s Future: Current Conditions in California’s Infrastructure Planning, Budgeting and Financing” by Michael Neuman and Jan Whittington.

R5: Infrastructure Planning” by James V Parkin and Deepak Sharma.

COURSE OUTCOMES:

1. Achieve Knowledge Infrastructure Planning.
2. Comprehend the Infrastructure Management.
3. Get familiar with the Public-Private Sector Participation in infrastructure projects.
4. Awareness on the public policy for infrastructure.
5. Attain Knowledge of the Highways, railways, waterways, airports, urban and rural infrastructure
6. Achieve the knowledge about rural urban infrastructure planning.

Subject	OOPS THROUGH JAVA				
Year/semester	III B.Tech/II Sem	L	T	P	C
Regulation year	2021-2022	3	0	0	3

Course Objectives:

1. Implementing programs for user interface and application development using core java principles.
2. Focus on object-oriented concepts and java program structure and its installation.
3. Comprehension of java programming constructs, control structures in Java Programming Constructs.
4. Implementing Object oriented constructs such as various class hierarchies, interfaces and exception handling.
5. Understanding of Thread concepts and I/O in Java.
6. Understanding of Various Components of Java Swing and write Code Snippets using them.

UNIT I:

Introduction to OOP

Introduction, Need of Object-Oriented Programming, Principles of Object-Oriented Languages, Procedural languages Vs OOP, Applications of OOP, History of JAVA, Java Virtual Machine, Java Features, Program Structures

Variables, Primitive Data types, Identifiers- Naming Conventions, Keywords, Literals, Operators- Binary, Unary and Ternary, Expressions, Precedence rules and Associativity, Primitive Type Conversion and Casting, Flow of Control-Branching, Conditional Loops.

UNIT II:

Classes and Objects- Classes, Objects, Creating Objects, Methods, Constructors-Constructor Overloading, Cleaning up Unused Objects-Garbage Collector, Class Variable and Methods, Static Keyword, this keyword.

UNIT III:

Inheritance: Types of Inheritance, Deriving Classes using Extends Keyword, Method Overloading, Super Keyword, Final Keyword, Abstract Class.

Interfaces, Packages: Interface-Extending Interface, Interface Vs Abstract Classes, Packages-Creating Packages, Using Packages, Access Protection, java.lang Package.

UNIT IV:

Exceptions: Introduction, Exception Handling Techniques-try...catch, throw, throws, finally block, User Defined Exception.

Multi-Threading: java.lang.Thread, The main Thread, Creation of New Threads, Thread Priority, Multithreading- Using isAlive() and join(), Synchronization, Suspending and Resuming Threads, Communication between Threads.

Unit V:

Input/Output: File I/O: Reading data from files and writing data to files, accessing data from CSV and Excel files.

String Handling: String Handling in Java: Introduction, Interface Char Sequence, Class String, Methods for Extracting Characters from Strings, Methods for Comparison of Strings, Methods for Modifying Strings, Methods for Searching Strings, Data Conversion and Miscellaneous Methods, Class String Buffer, Class String Builder.

Unit VI:

Event Handling: Event Delegation Model, Sources of Event, Event Listeners, Adapter Classes, Inner Classes.

Swings: Introduction, JFrame, JApplet, JPanel, Components in Swings, Layout Managers, List and JScroll Pane, SplitPane, JTabbedPane, JTree, DialogBox, Pluggable Look and Feel.

Text Books:

1. The Complete Reference Java, 11th edition, Herbert Schildt, TMH.
2. Programming in JAVA, Sachin Malhotra, Saurabh Choudhary, and Oxford.

References:

1. JAVA Programming, K.Rajkumar, Pearson.
2. Core JAVA, Black Book, Nageswara Rao, Wiley, DreamTech.
3. Core JAVA for Beginners, Rashmi Kanta Das, Vikas.
4. Object Oriented Programming through JAVA, P Radha Krishna, University Press.
5. Object oriented programming with JAVA, Essentials and Applications, Raj Kumar Bhuyya, Selvi, ChuTMH.
6. Introduction to Java Programming, 7th ed, Y Daniel Liang, Pearson.

Course Outcomes: After completion of the course the student will be

1. Able to understand and solve real world problems using OOP techniques.
2. Able to understand the use of abstract classes, Inheritance and Interface.
3. Able to solve problems using java I/o classes.
4. Able to handle textual information using Strings
5. Able to develop multithreaded applications with synchronization.
6. Able to use swings for various applications.

Subject	[OE-II] MANAGEMENT SCIENCE				
Year/semester	III B.Tech/II Sem	L	T	P	C
Regulation year	2021-2022	3	0	0	3

Course Objectives:

1. To familiarize with the process of management and to provide basic insight into contemporary management practices.
2. To provide conceptual knowledge on functional management and strategic management.

UNIT I

Introduction to Management: Concept –nature and importance of Management – Functions of Management – Henry Fayol’s 14 principles of management- Theories of Motivation – Decision making process— Types of Organizational structure.

UNIT II

Operations Management: Work study- Statistical Quality Control- Control charts (P-chart, R-chart, and C-chart) Simple problems- Material Management: Need for Inventory control- EOQ, ABC analysis (simple problems) and Types of ABC analysis (HML, SDE, VED, and FSN analysis).

UNIT III

Functional Management: Functions of HR Manager- Wage payment plans (Simple Problems) – Job Evaluation and Merit Rating - Marketing Management- Marketing strategies based on product Life Cycle, Channels of distributions.

UNIT IV

Project Management: (PERT/CPM): Development of Network – Difference between PERT and CPM Identifying Critical Path- Probability- Project Crashing (Simple Problems)

UNIT V

Strategic Management: Vision, Mission, Goals, Strategy – Elements of Corporate Planning Process – Environmental Scanning – SWOT analysis- Steps in Strategy Formulation and Implementation, Generic Strategy Alternatives.

UNIT VI

Contemporary Management Practice: Basic concepts of MRP, Total Quality Management (TQM), Six sigma, Business process Re-engineering and Bench Marking, Balanced Score Card.

References:

1. Dr. P. Vijaya Kumar & Dr. N. Appa Rao, 'Management Science' Cengage, Delhi, 2012.
2. Dr. A. R. Aryasri, 'Management Science' TMH 2011.
3. Koontz & Weihrich: 'Essentials of management' TMH 2011
4. Seth & Rastogi: Global Management Systems, Cengage learning, Delhi, 2011
5. Robbins: Organizational Behaviour, Pearson publications, 2011
6. Kanishka Bedi: Production & Operations Management, Oxford Publications, 2011
7. Philip Kotler & Armstrong: Principles of Marketing, Pearson publications
8. Biswajit Patnaik: Human Resource Management, PHI, 2011
9. Hitt and Vijaya Kumar: Strategic Management, Cengage learning
10. Prem Chadha: Performance Management, Trinity Press (An imprint of Laxmi Publications Pvt. Ltd.) Delhi 2015.
11. Anil Bhat & Arya Kumar: Principles of Management, Oxford University Press, New Delhi, 2015.

Course Outcomes:

1. After completion of the Course the student will acquire the knowledge on management functions, global leadership and organizational behavior.
2. Will familiarize with the concepts of functional management project management and strategic management.

Subject	BUILDING PLANNING AND DRAWING THROUGH AUTOCAD				
Year/semester	III B.Tech/II Sem	L	T	P	C
Regulation year	2021-2022	0	0	3	1.5

COURSE OBJECTIVES:

1. Learn to sketch and take field dimensions
2. Learn basic Auto Cad skills
3. Learn basic engineering drawing formats

List of experiments:

1. Introduction to computer aided drafting
2. Principles of Planning
3. Software for CAD – Introduction to different software
4. Practice exercises on CAD software
5. Drawing of plans of buildings using software
 - a) Single storied buildings
 - b) Multi storied buildings
 - c) Sanitation and electrical layout
6. Developing sections and elevations for
 - a) Single storied buildings
 - b) multi storied buildings
7. Detailing of building components like Doors, Windows, Roof Trusses etc. using CAD software
8. Exercises on development of working of buildings.
9. Executing a spiral stair case in 3D.

TEXT BOOKS:

TB1: Gurcharan Singh, Building Planning, Designing and Scheduling

REFERENCES:

R1: Rangwala, S.C., Town Planning, Charotar Publishing House, Anand.58

R2: National Building Code of India, Indian Standard Institution (ISI), 2005, New Delhi.

R3: BIS and IS Code.

COURSE OUTCOMES:

1. Principles of building planning
2. Know Auto Cad commands
3. Draw the plan, section and elevation of a building.
4. Draw the sanitation and electrical layout
5. Create, analyze and produce 2D drawings of buildings
6. Detailing building plans

Subject	TRANSPORTATION ENGINEERING LAB				
Year/semester	III B.Tech/II Sem	L	T	P	C
Regulation year	2021-2022	0	0	3	1.5

COURSE OBJECTIVES:

1. To test crushing value, impact resistance, specific gravity and water absorption, percentage attrition, percentage abrasion, flakiness index and elongation index for the given road aggregates.
2. To know penetration value, ductility value, softening point, flash and fire point for the given bitumen grade.
3. To test the stability for the given bitumen mix
4. To carry out surveys for traffic volume and parking.

SYLLABUS:

I. ROAD AGGREGATES:

1. Aggregate Crushing value
2. Aggregate Impact Test
3. Specific Gravity and Water Absorption
4. Attrition Test
5. Abrasion Test
6. Shape tests

II. BITUMINOUS MATERIALS:

1. Penetration Test
2. Ductility Test
3. Softening Point Test
4. Flash and fire point tests

III. BITUMINOUS MIX:

1. Marshall Stability test

IV. TRAFFIC SURVEYS:

1. Traffic volume study at mid blocks
2. Traffic Volume Studies (Turning Movements) at intersection
3. Parking study

LIST OF EQUIPMENT:

1. Apparatus for aggregate crushing test
2. Aggregate Impact testing machine
3. Pycnometers
4. Los angles Abrasion test machine
5. Deval's Attrition test machine
6. Length and elongation gauges
7. Bitumen penetration test setup
8. Bitumen Ductility test setup
9. Ring and ball apparatus
10. Marshal Mix design apparatus

TEXT BOOKS:

TB1: Highway Material Testing Manual, S. K. Khanna, C. E. G Justo and A. Veera Raghavan, Nem Chand Brothers New Chand Publications, New Delhi.

REFERENCES:

- R1: I R C Codes of Practice
- R2: Asphalt Institute of America Manuals
- R3: Code of Practice of B.I.S.

COURSE OUTCOMES:

1. Ability to test aggregates and judge the suitability of materials for the road construction
2. Ability to test the given bitumen samples and judge their suitability for the road construction
3. Ability to obtain the optimum bitumen content for the mix design
4. Ability to determine the traffic volume, speed and parking characteristics.

