



KARNATAK LAW SOCIETY'S
**Vishwanathrao Deshpande Institute of
Technology, Haliyal-581 329**
DEPARTMENT OF CIVIL ENGINEERING
ADD ON COURSE SYLLABUS

SEMESTER – VII
Academic Year: 2022-23

TECHNICAL ASPECTS OF PEDESTRIAN FACILITIES

Teaching Hours/Week	3
Total Teaching Hours	30

Module - 1
Definitions of footpath, street crossings, school zone improvement and Pedestrian Level of Service (LOS). Definition of Pedestrian, Importance of Pedestrian facilities, Concept of Pedestrian LOS, Characteristics of Pedestrian facilities (Physical and User Characteristics)
Module - 2
Pedestrian Facilities design standards: Footpath, Kerbs, Continuity and Consistency, Tactile pavers, Level change, Maintenance, Pedestrian Crossings and Ramps and steps.
Module - 3
Pedestrian facilities design standards: Elevator/Lift, Street furniture, Bollards, Lighting, Washrooms and Toilets, school zone improvements, Pedestrian facilities- Parking, Pedestrian facilities at transit areas. Road safety audit and Pedestrian facility audit. Speed-flow, density relationship for pedestrian movements. Simulation of pedestrian movement in software.
Course Outcomes
After the successful completion of the course the student will be able to CO1: Understand the meaning of pedestrian, importance of pedestrian facilities CO2: Design the pedestrian facilities as per IRC CO3: Apply appropriate techniques to solve field problems using advanced software
Text Books
T1: Holt, Daniel J. Pedestrian Safety. No. PT-112. SAE Technical Paper, 2004. T2: Zegeer, Charles V. Pedestrian facilities users guide: Providing safety and mobility. Diane publishing, 2002
Reference Books
R1: Relevant IRC Codes: IRC103 - 2012 "Development of Guidelines for the Selection of Pedestrian Crossing Facilities–A Relook." R2: Specifications for Roads and Bridges-MoRT&H, IRC, New Delhi. R3: Access Board (2004), Americans with Disabilities Act and Architectural Barriers Act Accessibility Guidelines United States Architectural and Transportation Barriers Compliance Board (U. S. Access Board), Washington DC (www.access-board.gov/ada-aba/final.pdf)

(A) Bellary
(Dr. Ashik. Bellary)



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SEMESTER – V
Academic Year: 2022-23

QUALITY CONTROL IN CIVIL ENGINEERING

Teaching Hours/Week	3
Total Teaching Hours	30

Module-1

INTRODUCTION: Quality Eras ,Concept of Zero Defects ,Stated and Implied needs ,Human Resource and Quality ,Skill Development and Quality, Contract and Quality ,Specifications and Quality , Contract Conditions and Quality ,Acceptance Criteria ,Mechanization and Quality ,Safety, Health & Environment (SHE) and Quality, Continuous Improvement

Module-2

QUALITY ASSURANCE PLAN: Introduction, Objectives ,Quality Control , Types of Quality Control, Performance of Quality Control, Testing Facilities Test Specifications & Frequency ,Reporting of Test Results, Statistical Quality Control, Sampling of Materials, Sampling Requirements ,Sampling Guidelines , Preparation and Storage of Samples

Module-3

LIST OF QUALITY CONTROL FORMATS: Slump Test , Test for Cube Strength of Cement Concrete ,Test for Particle Size Distribution of Course /Fine Sand ,Test for Particle Size Distribution of 12.5/20mm/40mm graded stone aggregate ,Flakiness & Elongation Index. ,Test for Silt Content in Coarse/Fine Sand ,Fineness Modulus of Coarse/Fine Sand ,Water Test for Construction Use ,Test for Compressive Strength of / Bricks/ Bricks Tiles/ Fly Ash Bricks/ AC Block etc. ,Test for Bricks/ Bricks tiles for Water Absorption ,Test for Bricks/ Bricks tiles for Efflorescence ,Test of Brick/ Tiles for Dimensions ,Check list for seeking approval of Source /Product/Agency ,List of Equipment for Fields Testing Laboratory (Illustrative List) ,Field Testing Instruments / Laboratory Equipment ,Conformance/Non-Conformance Report ,Format for Quality Audit by Internal QA unit.

Course Outcomes

After the successful completion of the course the student will be able to
CO1: Know the basics of Quality control and its relationship with different building aspects.
CO2: Know the types and field aspects of Quality control.
CO3: Know the formats of different Quality control works

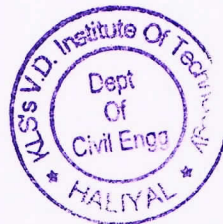
Text Books

T1: M L Gambir, "Concrete Technology", McGraw Hill Education,2014.

Reference Books

R1: Indian Standards.
R2: Quality Assurance Manual for Building Works 2022, Government of India, Ministry Of Housing And Urban Affairs, Central Public Works Department.

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SEMESTER – III
Academic Year: 2022-23

FIRE SAFETY IN BUILDINGS

Teaching Hours/Week

3

Total Teaching Hours

30

Module - 1

Fire: Introduction, Basic concepts of fire protection, Fire as a process of combustion, planning for fire protection, fire resistance, Ventilation and fuel controlled fire, Process of combustion: flashover condition, effect of fire on construction material, design of fire resistance steel structure, concrete structure. Fire safety: urban planning, escape and refuge, internal planning, detection and suppression.

Module - 2

Flow in pipe networks and fixture units, design of water supply distribution system, flow in waste water pipes. Electrical systems: design of electrical systems, intelligent building, life cycle cost and basics of building maintenance, stages of maintenance management, planning for building maintenance, periodicity of maintenance management, cost profile of maintenance, building inspection, planned and Ad-hoc maintenance.

Module - 3

Introduction to HVAC: equations for HVAC process, psychometric chart, equation-based approach. Condition survey and health evaluation of buildings, diagnosis of building by visual survey, case studies of visual survey, Repair, rehabilitation, retrofit, periodicity and economics of condition survey, interpretation of test results.

Course Outcomes

After the successful completion of the course the student will be able to

CO1: Understand types of fire, combustion process and fire resistance

CO2: Plan for fire safety and design of lifts

CO3: Design flow network in buildings

CO4: Design of electrical systems and maintenance

CO5: Perform health evaluation of buildings and suggest remedies

Text Books

T1: V K Jain, Fire Safety in Buildings, ISBN-13 978-938980219, New Age International Private Limited; Third edition, 2020

T2: Fire protection, services and maintenance management of building, NPTEL video lecture, IIT, Delhi

Reference Books

R1: SP-35 (1987): Handbook of Water supply & drainage-BIS



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**SEMESTER – IV
Academic Year: 2022-23**

GEOGRAPHICAL INFORMATION SYSTEM

Teaching Hours/Week	3
Total Teaching Hours	30

Module - 1

Geographic Information System: Introduction to GIS; components of a GIS; Geographically Referenced Data, Spatial Data- Attribute data-Joining Spatial and attribute data, GIS Operations: Spatial Data Input – Attribute data Management, Geographic coordinate System, Datum; Map Projections: Types of Map Projections, Projected coordinate Systems. UTM Zones. **10 Hours**

Module - 2

Data Models: Vector data model: Representation of simple features – Topology and its importance; coverage and its data structure, Shape file; Relational Database, Raster Data Model: Elements of the Raster data model, Types of Raster Data, Raster Data Structure, and Data conversion. **10 Hours**

Module - 3

INTRODUCTION IN QGIS About QGIS Characteristics of QGIS Start using QGIS. QGIS TOOLS QGIS Configuration, General tools, Working with projections QGIS Browser. WORKING WITH RASTER DATA Introduction, Display raster data, Raster calculator, Working with images, Practical exercises: Working with raster data **10 Hours**

Course Outcomes

After the successful completion of the course the student will be able to

1. Various tools in QGIS software
2. Create thematic layers with attribute data
3. Use open-source software for civil engineering applications

Text Books

1. Kang – T surg Chang, “Introduction to Geographic Information System”. Tata McGraw Hill Education Private Limited 2015.
2. Chor Pang Lo and Albert K.W Yeung, “Concepts & Techniques of GIS”, PHI, 2006
2. John R. Jensen, “Remote sensing of the environment”, an earth resources perspective–2nd edition– by Pearson Education 2007.

Reference Books

1. Anji Reddy M., “Remote sensing and Geographical information system”, B. S. Publications 2008.
2. Peter A. Burrough, Rachael A. McDonnell, and Christopher D. Lloyd, “Principals of Geophysical Information system”, Oxford Publications 2004.



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**SEMESTER – VI
Academic Year: 2022-23**

ADVANCES IN RAILWAY AND AIRPORT ENGINEERING

Teaching Hours/Week	3
Total Teaching Hours	30

Module - 1

Railway Planning: Significance of Road, Rail, Air and Water transports-Coordination of all modes to achieve sustainability-Elements of permanent way – Rails, Sleepers, Ballast, rail fixtures and fastenings,-Track Stress, coning of wheels, creep in rails, defects in rails – Route alignment surveys, conventional and modern methods-Soil suitability analysis-Geometric design of railways, gradient, super elevation, widening of gauge on curves-Points and Crossings(Explanation & Sketches of Right and Left hand turnouts only).

10 Hours

Module - 2

Railway Construction and Maintenance: Earthwork-Stabilization of track on poor soil, Calculation of Materials required for track laying-Construction and maintenance of tracks-Modern methods of construction & maintenance-Railway stations and yards and passenger amenities-Urban rail-Infrastructure for Metro, Mono and underground railways. Site Visit

10 Hours

Module - 3

Airport Planning: Air transport characteristics, airport classification, airport planning: objectives, components, layout characteristics, Runway Design: Orientation, Wind Rose Diagram, Runway length, Airport Zones, Passenger Facilities and Services, Runway and Taxiway Markings and lighting. Site Visit

10 Hours

Course Outcomes

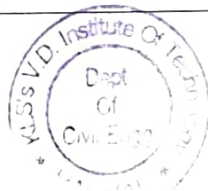
After the successful completion of the course the student will be able to
CO1: Understand components of railway track
CO2: Geometric design in railways
CO3: Modern methods of constructions
CO4: Types of railways
CO5: Airport and advancements

Text Books

T1: Saxena Subhash C and Satyapal Arora, A Course in Railway Engineering, Dhanpat Rai and Sons, Delhi.
T2: C Venkatramaiah, Transportation Engineering, Volume II: Railways, Airports, Docks and Harbours, Bridges and Tunnels, Universities Press.

Reference Books

R1: Khanna S K, Arora M G and Jain S S, Airport Planning and Design, Nemch and Brothers, Roorkee



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**SEMESTER – VIII
Academic Year: 2022-23**

ADVANCED CONSTRUCTION TECHNIQUES

Teaching Hours/Week	3
Total Teaching Hours	30

Module - 1

Advanced construction techniques necessity, Caissons: Definition, uses, construction material, types of caissons, loads on caisson, design features of caissons, remedial measures, Cofferdams: Introduction, definition, types of coffer dams, selection of coffer dams, design features of coffer dams, leakage prevention and economical height of cofferdam. Cladding of wall, ferrocement materials and construction methods. Water proofing works: types, advantages, chemicals, materials; Equipment's used for small and medium works in construction	10 Hours
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Module - 2

Construction of tall structures: Materials for tall structures. Structural system for tall structures. Methods of construction of tall structures. Diaphragm wall: Introduction and construction. Demolition of Structure: Demolition, dismantling, methods, safety measures. Trenchless technology: Introduction, types and uses; earth moving machines, slip tunnel formwork techniques, Soil Reinforcing Techniques, use of smart construction materials, Precast cladding Panels	10 Hours
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Module - 3

Grouting, Guniting, Shotcreting: Terminology, applications, Materials, Proportioning and Properties, Dry-Mix and Wet-Mix Process; Prefabricated Construction Techniques, 3D Printing in Construction, flat slabbing Technology, Tunnel formwork system, precast flat panel modules, hybrid concrete construction, Insulating concrete framework	10 Hours
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Course Outcomes

After the successful completion of the course the student will be able to

CO1: Supervise construction of deep foundations for heavy structures.

CO2: Execute construction of tall structures

CO3: Carryout demolition safely.

CO4: Understand recent advancement in construction techniques

Text Books

T1. Atev. S.S., "Construction Technology", Mir Publisher.

T2. Arun Kumar Jain, Ashok Kumar Jain, B.C. Punmia, "Building Construction", Laxmi Publication, ISBN 10: 8131804283 ISBN 13: 9788131804285

Reference Books

R1. Gahlot. P.S., Sharma Sanjay, "Building Repair and Maintenance Management", Edition 2005, CVS publication, ISBN 10: 8123912439, ISBN 13: 9788123912431

R2. Paul Wordsworth, Lee's Building Maintenance Management, 4th Edition, 2000, Wiley-Blackwell, ISBN: 978-0-632-05362-9

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