# B. Tech with

# MINOR

in

# CIVIL ENGINEERING

Academic Regulations, Course Structure and Syllabus

Effective from 2023-24 admitted batches

Offered by

## Department of Civil Engineering


## KSRM College of Engineering (A) – Kadapa

**(Approved by AICTE, Accredited by NAAC with A+ Grade and NBA and Affiliated to JNTUA, Anantapuramu)**

## ELIGIBILITY / REGISTRATION / AWARD OF MINOR

The primary objective of a minor degree is to provide students with a secondary area of study to broaden their knowledge, enhance their skill set, and potentially improve their career prospects. It allows students to explore interests beyond their major, potentially leading to a more well-rounded and competitive profile.

i) Minor degree is introduced by the respective departments offering B. Tech. programs and is applicable to all B.Tech (Regular and Lateral Entry) students admitted in Engineering & Technology.

ii) There is NO minimum CGPA requirement to register for Minor degree program. However, the student shouldn't have any course backlog **up to III Semester in the major degree.**

iii) A student shall earn **additional 18 credits for award of Minor degree** offered by the department other than parent department. This is in addition to 163 credits by a regular student and 123 Credits by a Lateral Entry student for the award of Major degree.

iv) A student is permitted to register for Minor in IV Semester after the results of III Semester are declared. Students shall register and pass in all the courses prescribed and being offered from V semester under the respective Minor degree.

v) Students have to attend classwork for courses under Minor degree beyond regular academic hours meant for major degree. Students can also undergo the courses under Minor through any proctored online platforms with the prior approval of the BoS Chairman and the HoD of the respective department offering Minor degree.

vi) The attendance for the registered courses under Minor and regular courses offered for Major degree in a Semester will be considered separately.

vii) A student shall have an aggregate of 75% attendance in all courses registered under Minor in that particular semester to become eligible for attending Semester-End examinations.

viii) The registration for the Minor will be cancelled, if the student is detained due to lack of attendance in Major.

ix) The registration for the Minor will be cancelled, if the student fails in any course of either Minor / Major in any semester from V to VIII Semester.

x) A student registered for Minor shall pass in all subjects that constitute the requirement for the Minor degree program. No class/division (i.e., second class, first class and distinction, etc.) will be awarded for Minor degree program.

xi) A separate grade sheet will be issued for the Minor degree courses semester-wise..

xii) If a student drops or is terminated from the Minor program, the additional credits so far earned cannot be converted into open or core electives; they will remain extra.

xiii) The Minor will be mentioned in the degree certificate as Bachelor of Technology in Civil Engineering with Minor in Mechanical Engineering.

xiv) There shall be a minimum enrolment of 20% OR 20 enrollments from the list of

eligible students to offer Minor program.

xv) There is no fee for registration of courses for Minor program offered.

xvi) A student can register for either Minor / Honor but not both.

xvii) Student shall submit an application for either Minor / Honor at least one week before the commencement of the V Semester.

## MINOR PROGRAMS OFFERED

| Offering Department | Title | Who can Register |
|---|---|---|
| Civil Engineering | Civil Engineering | B.Tech. EEE / ME / ECE / CSE / AIML / CSE(AIML) / CSE(DS) |
| Mechanical Engineering | 3D Printing | B.Tech. CE / EEE / ECE / CSE / AIML / CSE(AIML) / CSE(DS) |
| | Industrial Engineering | B.Tech. CE / EEE / ECE / CSE / AIML / CSE(AIML) / CSE(DS) |
| Electrical and Electronics Engineering | Energy Systems | B.Tech. CE / ME / ECE / CSE / AIML / CSE(AIML) / CSE(DS) |
| Electronics and Communication Engineering | Embedded Systems | B.Tech. CE / EEE / ME / CSE / AIML / CSE(AIML) / CSE(DS) |
| Computer Science and Engineering | Computer Science and Engineering | B.Tech. CE / EEE / ME / ECE |
| | Data Science | B.Tech. CE / EEE / ME / ECE |
| | Computer Science and Engineering – Artificial Intelligence and Machine Learning | B.Tech. CE / EEE / ME / ECE |

**COURSE STRUCTURE**

**for**

**MINOR**

**in**

**CIVIL ENGINEERING**

| S.No | COURSE CODE | COURSE TITLE | Semester Offered | L | T | P | IM | EM | CR |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2301571M | Building Materials and Construction | V | 3 | 0 | 0 | 30 | 70 | 3 |
| 2 | 2301572M | Environmental Engineering | V | 3 | 0 | 0 | 30 | 70 | 3 |
| 3 | 2301573M | Civil Engineering Workshop | V | 0 | 0 | 3 | 30 | 70 | 1.5 |
| 4 | 2301671M | Introduction to Interior Design | VI | 3 | 0 | 0 | 30 | 70 | 3 |
| 5 | 2301672M | Water Resources Engineering | VI | 3 | 0 | 0 | 30 | 70 | 3 |
| 6 | 2301673M | Environmental Engineering Lab | VI | 0 | 0 | 3 | 30 | 70 | 1.5 |
| 7 | 2301771M | Estimation and Costing | VII | 3 | 0 | 0 | 30 | 70 | 3 |
| | | | **Total** | **15** | **0** | **6** | **210** | **490** | **18** |

| 2301571M | MINOR IN CIVIL ENGINEERING BUILDING MATERIALS AND CONSTRUCTION (EEE, ME, ECE, CSE, CSE-DS, CSE- AIML, AIML) | L | T | P | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**Pre-Requisites:** NIL

**Course Outcomes:**

On successful completion of the course, student will be able to

**CO1.** Identify the alternate waste and sustainable materials for low-costhousing construction as per appropriate standards.
**CO2.** Understand the properties and utilisation of glass and plastic materials in building construction.
**CO3.** Evaluate various types of thermal and acoustic insulation materials.
**CO4.** Identify various structural components and their functions.
**CO5.** Understand the finishing works meant for flooring, roofs and walls.

**SYLLABUS:**

**UNIT - I: INTRODUCTION TO BUILDING MATERIALS (09 Periods)**

Traditional &OrganicBuilding Materials Stone Dressing of Stones Modern Building Materials Bricks Manufacturing process Ceramic Products Manufacturing Process Building Materials for Low Cost Housing Utilisation of Wastes for Alternative Building Materials Sustainable Materials in Construction, Concepts of energy efficient building envelopes as per ECBC National Standards.

**UNIT - II: GLASS, PLASTIC (09 Periods)**

GLASS:Introduction to Fenestration - Functions of Glass in Buildings Constituents and Classification ofGlass Manufacturing Process Properties of Glass Common Types of Glass Special Glass Advantages and Disadvantages of Glass National Standards such as ECBC. PLASTIC: Introduction Polymerisation Classification of Plastics Commonly Used Plastics Moulding and Fabricating for Plastic Products Applications Advantages Disadvantages Intelligent Use of Plastics in Buildings National Standards such as ECBC.

**UNIT - III: INSULATING MATERILAS (09 Periods)**

Thermal Insulating Materials: Introduction Thermal Insulation Heat Transfer Fundamentals Thermal Properties of Insulating Materials Selection of Insulating Materials Classification of Insulation materials Reflective Insulation Systems Commonly Used Building Insulation Materials Insulation that Should not be Used National Standards such as ECBC. Sound Insulating Materials: Introduction Basics of Acoustics Sound Absorption or Insulation Green Insulation Cool Roof, Green Roof, Power Roof National Standards such as ECBC.

**UNIT - IV: UNIT IV STRUCTURAL COMPONENTS (09 Periods)**

Foundations classification of Foundations consideration in selection of foundation types Masonry Brick and block walls Cavity walls Damp proof courses and membranes Mortars Arches and openings Windows Glass and glazing Doors Stairs Types and Applications Cladding to external walls Flat roofs Dormer windows Formwork & Scaffolding Precast concrete frames Portal frames Types components Framed structures components construction Procedure Panel walls National Standards such as ECBC.

**UNIT- V: INTERNAL CONSTRUCTION AND FINISHES (09 Periods)**

Internal elements Internal walls Construction joints Internal walls, fire protection separating walls Partitions Plasters and plastering Domestic floors and finishes Sound insulation Timber, concrete and metal stairs Internal doors Door sets Fire resisting doors Plasterboard ceilings Suspended ceilings Paints and painting Components of Paints Types of Paint Considerations in Selecting Paints Cement Paints Oil Paints Emulsion Paints Whitewash and Colourwash Application of Paints Distempers Varnishes Safety Joinery production Composite boarding National Standards such as ECBC.

**Total Periods: 45**

**TEXT BOOKS:**


T1. Building Materials by M.L.Gambhir, TMH Pubilishers 2017 edition
T2. Building material by S K Duggal New Age International Publishers; Fifth Edition
T3. Building Construction by B.C.Punmia, Ashok Kumar Jain and Arun Kumar Jain - Laxmi Publications (P) ltd., New Delhi 11thedition
T4. A Textbook on building construction by S.K.Sharma, S.ChandPubilishers 2016 editionRao, M. N. and Rao H. V. N., Air Pollution, Tata McGraw-Hill, New Delhi, 2007.


**REFERENCE BOOKS:**


R1. Building construction by W.B.Mckay, Vol. I, II, III & IV Pearson Publications, 2013 edition.
R2. Building materials by S.C.Rangawala, CharotarPubilishing House, Anand-India.
R3. Building Construction by S.C.Rangawala, CharotarPubilishing House, Anand-India
R4. Building Construction by P.C. Varghese, Prentice-Hall of India private Ltd, New Delhi.
R5. ECBC (Energy Conservation Building Code).BEE (Bureau of Energy Efficiency) Manuals on Energy efficient building envelope concepts.Fundamentals of Air Pollution by Dr. B.S.N. Raju, Oxford & I.B.H.


**Web Resources:**

1. nptel.ac.in/courses/105102088

| 2301572M | MINOR IN CIVIL ENGINEERING ENVIRONMENTAL ENGINEERING (EEE, ME, ECE, CSE, CSE-DS, CSE- AIML, AIML) | L | T | P | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**Pre-Requisites:** Engineering Chemistry

**Course Outcomes:**

On successful completion of the course, student will be able to

**CO1.** Recognize the importance of protected water supply systems, identify various water sources, and examine their physical, chemical, and biological characteristics along with associated waterborne diseases.

**CO2.** Explain the stages involved in conventional water treatment processes and demonstrate knowledge of disinfection, aeration, and Defluoridation methods.

**CO3.** Describe the components and layout of water distribution systems, recognize the need for sewerage systems, and estimate the quantity of sewage generated.

**CO4.** Analyze the characteristics of sewage and outline preliminary sewage treatment and appropriate disposal methods for maintaining environmental sustainability.

**CO5.** Classify air pollutants and assess their effects on human health, plants, animals, and the global environment while understanding various control measures.

**SYLLABUS:**

**UNIT - I: INTRODUCTION, SOURCES AND CHARACTERISTICS OF WATER (9 Periods)**

Introduction - Objectives of protected water supply systems - Flow diagram of water supply systems.

Sources of water – Surface and Sub Surface – Quality of water - Physical, chemical and biological aspects - Waterborne diseases.

**UNIT - II: WATER TREATMENT (9 Periods)**

Flowchart of conventional water treatment processes- Treatment methods – Outline of different treatment methods. Disinfection –Different methods of disinfection. Aeration and Defluoridation.

**UNIT - III: WATER SUPPLY DISTRIBUTION AND INTRODUCTION TO SEWERAGE SYSTEM (9 Periods)**

**Water Distributions:** Requirements - Layout of Water distribution systems - Laying of pipelines – Waste detection and prevention.

**Introduction to Sewerage Systems:** Definition of Terms – Sewage, Sullage, Sewerage and Storm Water. Estimation of sewage. Necessity of a sewerage system.

**UNIT - IV: CHARACTERISTICS OF SEWAGE AND TREATMENT METHODS (10 Periods)**

Characteristics of Sewage- Physical and Chemical Characteristics of Sewage. Sewage treatment methods- Preliminary treatment. Disposal of Treated Sewage into Inland Surface Waters, Marine Disposal and on Land for Irrigation. Self-purification of rivers.

**UNIT - V: AIR POLLUTION AND CONTROL (08 Periods)**

Introduction -Air Pollutants – Classifications of pollutants. Effects of air pollution – Human beings- Plants and Animals- Global effects of air pollution.

**Total Periods: 45**

**TEXT BOOKS:**


T1. S. K. Garg, Environmental Engineering (Vol. I): Water Supply Engineering", 20th Revised Edition, Khanna Publishers, New Delhi, 2018.

T2. S. K. Garg. Environmental Engineering (Vol. II): Sewage disposal and Air pollution, 43rd Edition, Khanna Publishers, New Delhi, 2024.


**REFERENCE BOOKS:**


R1. K. N. Duggal. Elements of Environmental Engineering. S. Chand Publishers, Edition 2007.

R2. H.S. Peavy and D. R. Rowe. Environmental Engineering. Tata McGraw-Hill Companies, Inc., New York. First edition 2017.

R3. Met Calf and Eddy. Wastewater Engineering – Treatment and Reuse", Tata McGraw-Hill Companies, Inc., New York.


**WEB RESOURCES:**

1. https://nptel.ac.in/courses/103107084
2. https://archive.nptel.ac.in/courses/127/105/127105018/
3. https://nptel.ac.in/courses/103107215
4. https://archive.nptel.ac.in/courses/103/107/103107215/

| 2301573M | MINOR IN CIVIL ENGINEERING<br>CIVIL ENGINEERING WORKSHOP<br>(EEE, ME, ECE, CSE, CSE-DS, CSE- AIML, AIML) | L | T | P | C |
|---|---|---|---|---|---|
| | | 0 | 0 | 3 | 1.5 |

**Pre-Requisites:** Basic Civil and Mechanical Engineering

**Course Outcomes:**

On successful completion of the course, student will be able to

**CO1.** Do setting out of a building plan as per drawings using tape and cross staff.
**CO2.** Differentiate different brick bonds and its applications for construct of different masonry walls.
**CO3.** Understand the plumbing layout, installation procedure and fixtures used for plumbing.
**CO4.** Get awareness on working procedures of plastering, painting & laying of tiles and the materials used for construction of the same.
**CO5.** Prepare and test the different composite blocks.
**CO6.** Demonstrate effective communication and collaboration skills to document, present, and explain civil engineering workshop practices, while applying basic project management principles to plan, organize, and execute tasks within resource constraints.

**List of Exercises/ List of Experiments:**

Minimum Ten experiments are to be conducted.

1. Setting out of a building: The student should set out a building (single room only) as per the given building plan using tape only.
2. Setting out of a building: The students should set out a building (single room only) as per the given building plan using tape and cross staff.
3. Construct a wall of height 50 cm and wall thickness 1½ bricks using English bond (No mortar required)-corner portion–length of side walls 60cm.
4. Construct a wall of height 50 cm and wall thickness 2 bricks using English bond (No mortar required) - corner portion – length of side walls 60cm.
5. Computation of Centre of gravity and Moment of inertia of a given rolled steel section by actual measurements.
6. Installation of plumbing and fixtures like Tap, T-Joint, Elbow, Bend, Threading.
7. Plastering and finishing of walls
8. Application of wall putty and painting a wall.

9. Application of base coat and laying of Tile flooring of one square meter.
10. Preparation of soil cement blocks for masonry and testing for compressive strength.

**REFERENCE BOOKS/LABORATORY MANUALS:**

R1 Civil Engineering Workshop manual, Department of civil engineering, KSRMCE, Kadapa.

| 2301573M | MINOR IN CIVIL ENGINEERING INTRODUCTION TO INTERIOR DESIGN (EEE, ME, ECE, CSE, CSE-DS, CSE-AIML, AIML) | L | T | P | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**Pre-Requisites:** NIL

**Course Outcomes:**

On successful completion of the course, student will be able to

**CO1.** Describe the origins and development of interior design in India, including key historical styles and cultural influences from ancient to medieval times.

**CO2.** Compare major Western interior styles and identify their influence on Indian interiors during and after colonial rule.

**CO3.** Differentiate regional interior styles across India and explain how climate, culture, and materials influence vernacular design.

**CO4.** Evaluate the transformation of Indian interior design in the modern and contemporary era with respect to functionality, technology, and sustainability.

**CO5.** Develop a professional perspective on interior design by integrating global trends, emerging technologies, and entrepreneurship into design thinking.

**SYLLABUS:**

**UNIT - I: FOUNDATIONS AND HISTORY OF INTERIOR DESIGN** **(10 Periods)**

Definition, scope, and importance of interior design in India; Prehistoric cave paintings and early design understanding; Interior elements of ancient Indian civilizations (Indus Valley, Vedic, etc.); Classical Indian architecture and interior design principles; Buddhist and Jain architectural influences.

**UNIT - II: WESTERN INTERIOR DESIGN STYLES AND COLONIAL INFLUENCES** **(10 Periods)**

Gothic Revival and Renaissance interior styles; Baroque and Rococo interior design; Victorian era and colonial style influences; Bauhaus and Art Deco movements; Art Nouveau and Modernism; Minimalist and Industrial styles; Mid-century modern and Scandinavian design.

**UNIT - III: INDIAN INTERIOR DESIGN AND REGIONAL DIVERSITY** **(8 Periods)**

North Indian architectural interior elements; South Indian vernacular interior design; Eastern Indian materials and styles; Western Indian interior characteristics; Northeastern Indian design inspirations; Coastal interior design features; Hill station architecture and interiors; Traditional Indian homes and regional furniture styles; Regional adaptation to climate in interior design.

**UNIT - IV: MODERN INDIAN INTERIORS AND CONTEMPORARY PRACTICES (8 Periods)**

Contemporary Indian interior trends; Minimalism and functionalism in modern design; Urbanization and its impact on interiors; Smart homes and technology integration; Inclusive and wellness-focused interior design; Sustainable and eco-friendly interior practices.

**UNIT- V: GLOBAL TRENDS, FUTURE PROSPECTS, AND PROFESSIONAL PRACTICE (9 Periods)**

Global interior design trends and their influence in India; Impact of globalization on Indian interior design; Emerging technologies (AI, VR) in interior design; Socio-economic factors influencing design preferences; Entrepreneurship in interior design; Portfolio development and professional practice; Continuing education and future career opportunities.

**Total Periods: 45**

**TEXT BOOKS:**


T1. A History of Interior Design, John Pile and Judith Gura, John Wiley & Sons, Inc., 2014.
T2. History of Interior Design, Jeannie Ireland, Bloomsbury Academic, United States, 2nd ed., 2018.
T3. A History of Interior Design in India, Muktirajsinhji Chauhan, Kamalika Bose, SID Research Cell, School of Interior Design, CEPT University, 2007.
T4. Indian Interiors, Sunil Sethi & Angelika Taschen, Taschen, 2004.


**REFERENCE BOOKS:**


R1. Interior Design: A Practical Guide, Jenny Gibbs, University of Wisconsin - Madison, 2005.


**WEB RESOURCES:**

1. https://www.deccaninstitute.org/e-resources/?utm_source=chatgpt.com

| 2301672M | MINOR IN CIVIL ENGINEERING WATER RESOURCES ENGINEERING (EEE, ME, ECE, CSE, CSE-DS, CSE-AIML, AIML) | L | T | P | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**Pre-Requisites:** Nil

**Course Outcomes:**

On successful completion of the course, student will be able to

**CO1.** Understand different energy dissipation methods in spillways.
**CO2.** Know the concepts and design principles of various types of falls in canals.
**CO3.** Know the design principals of canal regulatory works.
**CO4.** Identify suitable site location for various cross drainage works and their design principles.
**CO5.** Know different water resources development projects across the nations and its strategies.

**SYLLABUS:**

**UNIT - I: SPILLWAYS (09 Periods)**

Types of Spillways – Necessity and Components of Spillways – Applications of Spillways – Design Principles of Ogee Spillways – Types of Spillway Gates – Energy Dissipation Methods.

**UNIT - II: CANAL STRUCTURES – I (08 Periods)**

Types of Falls and Their Location – Design Principles of Sarda type Fall – Trapezoidal Notch Fall and Straight Glacis Fall.

**UNIT - III: CANAL STRUCTURES – 2 (08 Periods)**

Canal Regulation Works – Principles of Design, Distribution, Head Regulator – Canal Outlets – Types of Canal Modules – Proportionality, Sensitivity and Flexibility.

**UNIT-IV: CROSS DRAINAGE WORKS (08 Periods)**

Types of Selection of Site – Design Principles of Aqueduct – Siphon Aqueduct and Super Passage.

**UNIT - V: WATER RESOURCES PLANNING (09 Periods)**

Introduction to Indian Water Resources – Scenario of Water Use – Purpose of Water Resource Development – Classification of Water Resources – Development Projects –

Project Evaluation – Strategies for Future – Planning Strategies – Management Strategies.

**Total Periods: 45**

**TEXT BOOKS:**


T1. Irrigation and Water Resources Engineering, G. L. Asawa, New Age International (P) Limited Publishers, New Delhi, 2005.

T2. Theory and Design of Irrigation Structures, R. S. Varshney, S. C. Gupta, and R. L. Gupta, Nem Chand & Bros Publishers, Roorkee, Uttarakhand, 2009.

T3. Water Resources Systems Planning and Management, D. P. Loucks and E. van Beek, UNESCO Publishing, The Netherlands, 2017.


**REFERENCE BOOKS:**


R1. Water Resources Engineering – Principles and Practice, Satya Narayana Murty Challa, New Age International (P) Limited Publishers, New Delhi, 2016, Second Edition.

R2. Irrigation and Waterpower Engineering, B. C. Pumnia, Pande B. B. Lal, Ashok Kumar Jain, and Arun Kumar Jain, Lakshmi Publications, New Delhi, 2018, Revised Edition.

R3. Water-Resources Engineering, David A. Chin, Pearson Education, 2019, Third Edition (SI Edition).

R4. Water Resources Engineering, Larry W. Mays, Wiley, 2010, Second Edition.


**WEB RESOURCES:**

1. https://nptel.ac.in/courses/105105109

| 2301673M | MINOR IN CIVIL ENGINEERING ENVIRONMENTAL ENGINEERING LAB (EEE, ME, ECE, CSE, CSE-DS, CSE-AIML, AIML) | L | T | P | C |
|---|---|---|---|---|---|
| | | 0 | 0 | 3 | 1.5 |

**Pre-Requisites:** Engineering Chemistry

**Course Outcomes:**

On successful completion of the course, student will be able to

**CO1.** Determine and differentiate various forms of acidity and alkalinity in water and wastewater samples.

**CO2.** Measure and interpret pH, chloride content, and residual chlorine using standard laboratory methods.

**CO3.** Assess physical water quality parameters such as turbidity, solids, and hardness and analyze their implications.

**CO4.** Estimate dissolved oxygen (DO) to assess the pollution level and quality of water bodies.

**CO5.** Determine the optimum dosage of coagulant using jar test experiments for efficient water treatment design.

**List of Experiments**

1. Determination of various forms of Acidity
2. Determination of various forms of Alkalinity
3. Determination of pH in water
4. Determination of Chloride content
5. Determination of Residual Chlorine
6. Determination of Turbidity in water
7. Determination of various forms of Solids
8. Determination of Hardness in Water
9. Determination of Dissolved oxygen
10. Determination of Optimum Dosage of Coagulant

**Augmented Experiments:**

1. Determination of total iron in the water
2. Determination of fluoride in water
3. Determination of the BoD of the sewage sample.

**TEXT BOOKS:**

T1. Dr. G. Kotaiah and Dr. N. Kumara Swamy, "Environmental Engineering Lab Manual", Charotar Publishing House, Anand, Gujarat.

T2. S.K. Garg, "Environmental Engineering (Vol. I): WaterSupply Engineering", 20th Revised Edition, Khanna Publishers, New Delhi, 2011.

**WEB RESOURCES:**

1. https://ee1-nitk.vlabs.ac.in/exp/determination-of-total-iron/
2. https://ee1-nitk.vlabs.ac.in/exp/determination-of-biological-oxygen/
3. https://ee2-nitk.vlabs.ac.in/exp/flouride-in-water/

| 2301771M | MINOR IN CIVIL ENGINEERING ESTIMATION AND COSTING (EEE, ME, ECE, CSE, CSE-DS, CSE-AIML, AIML) | L | T | P | C |
|---|---|---|---|---|---|
| | | 3 | 0 | 0 | 3 |

**Pre-Requisites:** Basic Civil and Mechanical Engineering

**Course Outcomes:**

On successful completion of the course, student will be able to

**CO1.** Understand the significance of Specifications for several items of works in infrastructural facilities
**CO2.** Identify the suitable method for estimating the structure and calculate the total quantity of all items of works for a building structure
**CO3.** Expertized in preparing the present rates of all items of works involved in a construction with usage of SSR
**CO4.** Understanding the significance of Contracts in Engineering sectors.
**CO5.** Proficient on Valuation of Building structure.

**SYLLABUS:**

**UNIT - I: Specification of Different Items of Works in Infrastructural facilities (10 Periods)**

Types of Standard Specifications for Different Items of Construction – Earth Work for Foundations, Mortars, Foundation Concrete, Reinforced Concrete, Brick Work, Stone Masonry, RCC Roof and AC Roof and GI Sheets, Plastering, Painting, Pointing, flooring with different materials and Wood Works.

**UNIT - II: Introduction to the Estimation of building Structures (10 Periods)**

Different Item of Works and its units – Types of Estimates – Methods of Estimates- Contingencies and overhead charges

**Quantity Estimation of Infrastructural facilities:**

Estimation of Quantities in Buildings: Load Bearing Wall Structure of Single Room and Multi Room, Framed structure: Multi room in Excel sheet

**UNIT- III: Rate Analysis of Different items in buildings (10 Periods)**

Definition and purpose of rate analysis- Factors affecting rate analysis – Estimating the cost of Earthwork Excavation – Mortars of Various Proportions (Cement and Lime) – Concrete with Various Proportions (Lime and Cement) – Brick Masonry – Stone Masonry – Pointing – Painting – Plastering – Aluminium Partitions – Wooden Partitions – Cement Concrete Flooring with 1:2:4 Mix – Ceramic and Vitrified Tile Flooring and Granite Flooring.

**UNIT- IV: Contracts** **(08 periods)**

**Contracts:** Types of Contracts, Contract document, Conditions of contracts, Contract Procedure, Termination of contracts, Important Conditions of Contract, Arbitration and Tenders.

**UNIT- V: Valuation** **(07 Periods)**

**Valuation:** Introduction, Technique of Valuation, Elements of Valuation and Factors Affecting Valuation

**Total Periods: 45**

**TEXT BOOKS:**


T1. B N Dutta "Estimating and Costing in Civil Engineering", U B S Publishers Distributers Pvt. Limited, Noida

T2. T2. "Standard Data Book – Vol.2", Andhra Pradesh Department of Standard Specifications, Amaravathi.


**REFERENCE BOOKS:**


R1. Dr. Roshan H Namavati "Professional Practice", The Lakhani Book Depot, Mumbai.

R2. S C Rangwala "Estimating Costing and Valuation", Charotar Publishing House Pvt. Limited, Anand.


**WEB RESOURCES:**

1. https://onlinecourses.swayam2.ac.in/nou20_cs11/preview
2. https://www.coursera.org/learn/construction-cost-estimating