B.TECH CIVIL ENGINEERING – R22

Life Skill Program on Basic Building Design Using STAAD Pro

SEMESTER VI

L/T/P/C
3/0/0/S

Unit 1: Introduction to Building Design and STAAD Pro

- Fundamentals of structural engineering and building design
- Overview of STAAD Pro software and interface
- Importance of computer-aided design in civil engineering
- Basic commands and modeling environment
- Role of STAAD Pro in modern construction projects

Unit 2: Structural Modeling and Geometry Creation

- Steps in creating building models
- Defining nodes, beams, and plates
- Assigning supports and boundary conditions
- Geometry editing and modification tools
- Practical exercises on simple building models

Unit 3: Load Application and Analysis

- Types of loads in building design (dead load, live load, wind load, seismic load)
- Load definitions and combinations in STAAD Pro
- Application of IS codes for load calculations
- Running structural analysis and interpreting results
- Case study on load distribution in a sample building

Unit 4: Design of Structural Components

- Design of beams, columns, and slabs using STAAD Pro
- Reinforced concrete design principles
- Steel structure design basics

- Checking member adequacy and deflection criteria
- Hands-on practice with component design

Unit 5: Report Generation and Practical Applications

- Generating analysis and design reports
- Exporting drawings and documentation
- Integration with other design tools (AutoCAD, BIM)
- Real-world applications of STAAD Pro in building projects
- Future trends in structural design software

Course Outcomes (COs):

CO1: Explain the fundamentals of building design and the role of STAAD Pro in structural engineering.

CO2: Develop structural models and geometry using STAAD Pro tools and commands.

CO3: Apply various loads and perform structural analysis in compliance with IS codes.

CO4: Design structural components such as beams, columns, and slabs using STAAD Pro.
CO5: Generate reports, interpret results, and evaluate practical applications of STAAD Pro in building projects.