B.TECH CIVIL ENGINEERING – R22

Project Planning and Management by Primavera

SEMESTER V

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

Value Added Course: Safety Aspects in Construction

Course Duration: 30–40 Hours
Prerequisites: Basic knowledge of construction practices

UNIT – I: Introduction to Construction Safety

- Importance of Safety in Construction Industry
- Causes and Types of Construction Accidents
- Safety Culture and Safety Management Systems
- Roles and Responsibilities of Employers, Supervisors, and Workers
- Occupational Health and Safety Principles
- Safety Regulations and Standards
- Safety Policy and Safety Documentation

Practical: Identification of construction hazards and preparation of safety checklists.

UNIT – II: Construction Site Hazards and Risk Assessment

- Hazard Identification Techniques
- Risk Assessment and Risk Control Measures
- Safety Hazards in Excavation and Earthwork
- Hazards in Concrete, Masonry, and Structural Works
- Electrical Hazards at Construction Sites
- Fire Hazards and Prevention Measures
- Personal Protective Equipment (PPE) Selection and Usage

Practical: Site hazard survey and risk assessment report preparation.

UNIT – III: Safety in Construction Operations

- Safety in Scaffolding and Formwork
- Safety in Working at Heights
- Ladder Safety Practices
- Crane and Hoisting Safety
- Material Handling and Storage Safety
- Heavy Equipment and Machinery Safety
- Confined Space Safety

Practical: Inspection of scaffolding, lifting equipment, and work-at-height systems.

UNIT – IV: Occupational Health, Emergency Management and First Aid

- Occupational Health Hazards in Construction
- Dust, Noise, Vibration, and Chemical Exposure Control
- Heat Stress and Ergonomic Considerations
- Emergency Preparedness and Response Planning
- Fire Safety and Evacuation Procedures
- First Aid Fundamentals
- Incident Investigation and Reporting

Practical: First aid demonstrations, emergency drills, and accident reporting exercises.

UNIT – V: Construction Safety Management and Modern Practices

- Safety Planning and Safety Audits
- Toolbox Talks and Safety Training Programs
- Safety Performance Monitoring
- Behavior-Based Safety (BBS)
- Digital Technologies in Construction Safety

- Building Information Modeling (BIM) for Safety Management
- Case Studies on Major Construction Accidents and Lessons Learned
- Sustainable and Safe Construction Practices

Practical: Preparation of a Construction Safety Management Plan and project presentation.

Course Outcomes (COs)

After successful completion of this course, students will be able to:

1. Understand fundamental principles of construction safety and occupational health.
2. Identify hazards and perform risk assessments on construction sites.
3. Apply safe work practices for construction operations and equipment handling.
4. Implement emergency response, fire safety, and first aid procedures.
5. Develop and manage construction safety programs in compliance with industry standards.