WILP (Work Integrated Learning Programmes)

B.Tech. in Civil and Infrastructure Engineering

Study B.Tech. Programme in Civil and Infrastructure Engineering from your working place through Work Integrated Learning Programmes.

B.Tech. Programme in Civil and Infrastructure Engineering is designed for working professionals with a technical diploma, adequate preparation in engineering, and work experience in construction-related domains.

This program will provide a strong foundation in the fundamental principles and practices of civil engineering while emphasising the critical role of infrastructure in modern society. This program integrates theoretical knowledge with practical applications to prepare graduates for addressing the challenges in designing, developing, and maintaining sustainable infrastructure systems with safety as the priority. The curriculum encompasses key areas such as structural engineering, transportation engineering, geotechnical engineering, water resources, and construction management. In response to recent industry trends, the program also incorporates recent advancements such as Building Information Modeling (BIM), sustainable building materials, renewable energy integration, and advanced robotics. These innovations are transforming the field by enhancing the efficiency, accuracy, and sustainability of engineering projects. The curriculum also covers Geographic Information Systems (GIS), modular construction, and 3D printing, which are pivotal in modern infrastructure. Through a blend of lectures, laboratory sessions, and projects, this program equips working professionals with technical expertise, problem-solving skills, and ethical responsibility needed to excel in their careers. Graduates will be well-prepared for advanced roles in civil engineering, infrastructure development, and higher education, contributing to societal advancement through innovative and sustainable engineering solutions.

Programme Objective

1. Leverage the existing experience of professionals by integrating practical, real-world applications with advanced theoretical concepts, ensuring immediate applicability in their current jobs.

2. Encourage continuous professional development and lifelong learning to keep pace with evolving industry standards, technologies, and practices.

3. Provide working professionals with advanced knowledge and skills in civil and infrastructure engineering to enhance their current roles and prepare them for leadership positions.

4. Encourage innovative thinking and problem-solving skills to address complex engineering challenges and develop sustainable solutions.

5. Enhance leadership, project management, and decision-making skills to prepare professionals for managerial and executive roles.

Learning Outcomes

1. Demonstrate a strong understanding of the fundamental principles of civil and infrastructure engineering, including structural, geotechnical, transportation, environmental, and water resource engineering.

2. Contribute to designing and constructing sustainable, safe, cost-effective civil infrastructure that meets societal needs while adhering to relevant codes and standards.

3. Apply critical thinking and problem-solving skills to analyze and address complex engineering challenges.

4. Perform site investigations, fieldwork, and quality assurance for civil engineering projects.

5. Communicate clearly and effectively with sound technical know-how through written reports, presentations, and discussions.

6. Plan, manage, and oversee civil engineering projects, ensuring they are completed on time, within budget, safely and to the required quality standards.

B. Tech. in Civil and Infrastructure Engineering

Type of Input: Employed professionals with a Technical Diploma with adequate preparation in Engineering and a minimum of two years of work experience in construction-related domains.

Nominal Duration: 7 semesters.

Programme Structure:

Foundation Courses (3)

Course No.	Course Title	Units
BCIE ZC111	Linear Algebra and Calculus	3
BCIE ZC112	Statistics for Engineers	3
BCIE ZC113	Technical Report Writing	3

Core Courses (16)

Course No.	Course Title	Units
BCIE ZC211	Mechanics of Solids	3
BCIE ZC212	Geomatics	4
BCIE ZC213	Civil Engineering Materials	4
BCIE ZC214	Hydraulic Engineering	4
BCIE ZC215	Analysis of Structures	3
BCIE ZC216	Construction Planning and Technology	4
BCIE ZC217	Highway Engineering	4
BCIE ZC218	Soil Mechanics	4
BCIE ZC311	Foundation Engineering	3

BCIE ZC312	Design of Reinforced Concrete Structures	4
BCIE ZC313	Water and Wastewater Engineering	4
BCIE ZC314	Design of Steel Structures	4
BCIE ZC315	Water Resources Engineering	3
BCIE ZC316	Estimation, Costing and Contracts	4
BCIE ZC317	Safety and Quality Control in Infrastructure Engineering	4
BCIE ZC318	Digital Technologies in Infrastructure Engineering	4

Pool of Discipline Elective Courses

Course No.	**Course Title**	**Units**
BCIE ZC319	Introduction to Environmental Engineering	3
BCIE ZC421	Computer Applications in Civil Engineering	3
BCIE ZC321	Green Buildings and Energy Conservation	3
BCIE ZC322	Airports, Railways and Waterways	3
BCIE ZC323	Principles of Geographical Information Systems	3
BCIE ZC411	Design of Prestressed Concrete Structure	3
BCIE ZC412	Geosynthetics and Reinforced Soil Structures	3
BCIE ZC413	Design of Advanced Concrete Structures	3
BCIE ZC414	Environmental Impact Assessment	3
BCIE ZC415	Introduction to Finite Element Methods	3
BCIE ZC416	Advanced Structural Design	3
BCIE ZC417	Structural Dynamics and Earthquake Engineering	3
BCIE ZC418	Prefabricated Structures	3
BCIE ZC419	Introduction to Bridge Engineering	3
BCIE ZC420	Design of Multi-storey Structures	3