



Course Description

ETC2450 | Concrete Construction | 3.00 credits

The use of concrete in construction to include foundations, columns, beams, slabs, hydraulic conduits. Prerequisite: ETG 2502.

Course Competencies

Competency 1: The student will demonstrate the understanding of concrete materials and mix design by:

1. Defining the properties and characteristics of concrete materials, including aggregates, cement, water, and admixtures
2. Designing concrete mixes that meet specific project requirements

Competency 2: The student will demonstrate hand-on skills in concrete production and testing by:

1. Mixing and transporting concrete samples
2. Performing tests to assess the quality and properties of fresh and hardened concrete, including slump tests, compressive strength tests, and durability assessments

Competency 3: The student will demonstrate proficiency in formwork and shoring by:

1. Designing formwork and shoring systems for various concrete structures
2. Explaining safety precautions and practices related to formwork and shoring

Competency 4: The student will demonstrate proficiency in Concrete Placement and Finishing by:

1. Explaining techniques for placing, consolidating, and finishing concrete, including screeding, floating, and troweling
2. Explaining methods for curing concrete to ensure proper hydration and strength development

Competency 5: The student will demonstrate an understanding in reinforcement installation by:

1. Explaining the importance of reinforcement in concrete structures
2. Explaining how to install and tie reinforcement bars correctly, following engineering drawings and specifications
3. Being able to identify and correct errors in reinforcement installations

Competency 6: The student will demonstrate an understanding in concrete constructions techniques by:

1. Explaining various construction techniques for concrete structures, such as cast-in-place concrete, precast concrete, and shotcrete
2. Explaining the advantages and limitations of each technique

Competency 7: The student will demonstrate proficiency in concrete repair and rehabilitation by:

1. Describing methods and materials used in the repair and rehabilitation of deteriorated concrete structural elements
2. Assessing the condition of existing concrete
3. Designing appropriate repair strategies of concrete structural elements

Competency 8: The student will demonstrate proficiency in quality control by:

1. Designing quality control measures to monitor concrete quality throughout the construction process
2. Identifying and addressing common quality issues and defects in concrete construction processes

Competency 9: The student will demonstrate proficiency in project managing by:

1. Creating a Concrete Construction project including scheduling, cost estimation, and resource allocation
2. Explaining how to plan and execute concrete construction projects efficiently

Competency 10: The student will demonstrate proficiency in communication and collaboration by:

1. Showing written and verbal communication skills for effective collaboration with engineers, teams, clients, and regulatory agents
2. Interpreting and communicating construction drawings and specifications

Competency 11: The student will demonstrate understanding of ethical considerations by:

1. Showing understanding of ethical responsibilities of professionals in the construction industry
2. Explaining ethical standards and codes of conduct in the construction industry

Learning Outcomes:

- Communicate effectively using listening, speaking, reading, and writing skills
- Formulate strategies to locate, evaluate, and apply information
- Demonstrate knowledge of ethical thinking and its application to issues in society