



## BACHELOR OF SCIENCE Civil Engineering

In addition to conscious motivation, the Bachelor of Science in Civil Engineering program requires good knowledge of basic calculus and sciences—both natural and physical—so that students, along with the outcomes-based method of teaching and learning, can wade through the streams of higher mathematics and core courses that serve as foundation in gaining the ability to: calculate forces that act upon horizontal and vertical structures; analyze the effects of forces and response of structures; determine the properties and behavior of construction materials; estimate the quantity and cost of materials for construction; determine water velocity and flow rates either in pipes or open channels; and estimate flow velocity, flow rates and volumes in rivers and natural waterways.

The program, through the professional and elective courses, trains the students to: design horizontal and vertical structures; manage construction projects and design water supply systems, flood protection, and control structures; perform land development planning and consultancy, and work as part of a team.

The program provides hands-on training to students through internship in partner construction industries, consultancy groups, government and non-government organizations and related industries. The program provides opportunities for the students to offer solution to problems of our partner communities through Community Extension Services (CES) and Education with a Mission (EDM) programs and activities.

## The Program in Civil Engineering builds competencies for these jobs:

- Project managers / project engineers
- Construction managers / construction engineers
- Quantity surveyors
- Water resources engineers
- Geotechnical engineers
- Structural designers



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### CORE COURSES

- Civil Engineering Orientation
- Engineering Calculus
- Engineering Data Analysis
- Engineering Economics
- Engineering Management
- Chemistry for Engineers
- Physics for Engineers
- Computer Programming
- Engineering Drawing and Plans
- Computer-Aided Drafting
- Fundamentals of Surveying
- Statics of Rigid Bodies
- Dynamics of Rigid Bodies
- Mechanics of Deformable Bodies
- Engineering Utilities

### PROFESSIONAL COURSES

- Geology for Civil Engineers
- Differential Equations with CE Applications
- Numerical Solutions to CE Problems
- Building Systems Design
- Construction Materials and Testing
- Structural Theory
- Geotechnical Engineering
- Hydraulics
- Hydrology
- Quantity Surveying
- Principles of Steel Design
- Principles of Reinforced / Prestressed Concrete
- Water Supply Systems
- Geographic Information System: Applications for Civil Engineering
- Highway and Railroad Engineering
- Construction Methods and Project Management
- Principles of Transportation Engineering

### ELECTIVE COURSES

#### Structural Engineering Specialization

- Principles of Prestressed Concrete Design
- Principles of Foundation and Retaining Wall Design
- Matrix Structural Analysis
- Reinforced Concrete Design
- Earthquake Engineering
- Structural Dynamics
- Design of Steel Structures

#### Water Resources and Environmental Engineering Specialization

- Water Resources Engineering
- Irrigation Engineering
- Water Supply Planning and Design
- River Engineering
- Flood Control and Drainage Design

#### Construction Engineering and Management Specialization

- Construction Occupational Safety and Health
- Green Engineering
- Advanced Construction Methods and Equipment
- Construction Cost Engineering
- Database Management in Construction
- Project Construction Management

