

# CIVIL ENGINEERING TECHNOLOGY: BACHELOR

## Overview

### Program Mission

Working in partnership with industry, the Civil Engineering Technology four years Program provides quality education that prepares innovative engineers capable of serving the community and fulfilling personal ambitions with excellence.

## Program Description

The Bachelor of Civil Engineering Technology program covers different streams in Civil Engineering including planning and design of buildings, bridges, transportation systems, water resources and supply, with particular attention to protection of the environment. It prepares students for positions as engineers with the technical and managerial skills necessary to enter careers in planning, design, construction, operation and maintenance of infrastructure in a sustainable environment. Civil Engineering Technology provides an excellent broad education with specialized areas to serve the needs of the global UAE industry. The curriculum produces high-quality engineers known for productivity, professionalism, and competence in the workplace. Graduates will have the ability to analyze and design systems, specify project methods and materials,

perform cost estimates and analyzes, and manage technical tasks in support of both public and private sector organizations in Civil Engineering construction.

The graduates will have the ability to work professionally and efficiently; to gather and use information effectively. The program instills leadership qualities based on moral and ethical principles coupled with sound and rational judgment.

The program stresses the effective use of technology, information resources and engineering tools. Additionally, the program is designed to prepare students for graduate studies in Civil Engineering Technology and other areas of professional practice.

This program offers elective courses in Structures Engineering, Water and Environmental Engineering and Transportation Engineering. Students are eligible for a one year Work Experiential Learning experience during their study.

## Program Goals

1. With the technical knowledge and skills required by the industry to professionally develop, design, construct, operate, and maintain projects in areas of the built environment and global infrastructures.
2. Equipped for lifelong learning, professional development, and adhering to international Code of Ethics.
3. Capable to engage in sustainable activities through community and work-based opportunities.
4. With effective leadership, team building, and communication skills.

## Program Learning Outcomes

Upon graduation, a HCT graduate in Bachelor of Civil Engineering Technology should demonstrate:

1. an ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-

defined engineering problems appropriate to the Civil Engineering Technology.

2. an ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the Civil Engineering Technology.
3. an ability to apply written, oral, and graphical communication in broadly defined technical and non-technical environments; and an ability to identify and use appropriate technical literature;
4. an ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes;
5. an ability to function effectively as a member as well as a leader on technical teams.
6. an ability to develop and evaluate a business plan to transform an engineering design (systems, products ,services and solutions) into a business opportunity utilizing entrepreneurial skills and knowledge

## Requirements Completion Requirements

Bachelor of Civil Engineering Technology

*Students must successfully complete a minimum of 138 credits, including:*

| Code                            | Title | Credit Hours |
|---------------------------------|-------|--------------|
| Program Core Courses            |       | 84           |
| Program Elective Courses        |       | 6            |
| Mathematics and Science Courses |       | 15           |
| General Studies course          |       | 33           |
| <b>Total Credit Hours</b>       |       | <b>138</b>   |

| Code | Title | Credit Hours |
|------|-------|--------------|
|------|-------|--------------|

### Civil Engineering Core Courses

| Required Credits: 84 |                                   |   |
|----------------------|-----------------------------------|---|
| CVE 2001             | Applied Drafting and CAD: Civil   | 1 |
| CVE 2013             | CAD tools in Civil Engineering    | 3 |
| CVE 2103             | Site Surveying                    | 3 |
| CVE 2113             | Quantity Surveying and Estimating | 3 |
| CVE 2203             | Engineering Mechanics             | 3 |
| CVE 2213             | Strength of Materials             | 3 |
| CVE 2303             | Soil Mechanics                    | 3 |
| CVE 2403             | Fluid Mechanics and Hydraulics    | 3 |
| CVE 2603             | Construction Materials            | 3 |
| CVE 2613             | Civil Engineering Construction    | 3 |
| CVE 2903             | Sophomore Design Project          | 3 |
| CVE 3203             | Structural Analysis               | 3 |
| CVE 3303             | Highway Engineering               | 3 |
| CVE 3403             | Water Resources and Supply        | 3 |
| CVE 3503             | Foundation Engineering            | 3 |
| CVE 3513             | Concrete Design I                 | 3 |
| CVE 4413             | Environmental Engineering         | 3 |
| CVE 4503             | Steel Design                      | 3 |

|          |                                  |    |
|----------|----------------------------------|----|
| CVE 4902 | Capstone Design Project I        | 2  |
| CVE 4912 | Capstone Design Project II       | 2  |
| EGN 1001 | Engineering Workshop             | 1  |
| EGN 1133 | Design Thinking in Technology    | 3  |
| EGN 2712 | Applied Programing for Engineers | 2  |
| EGN 2806 | Work Placement I                 | 6  |
| EGN 3012 | Project Management               | 2  |
| EGN 3212 | Economics for Engineering        | 2  |
| EGN 3812 | Work Placement                   | 12 |

**Mathematics and Science Required Courses**

Required Credits: 15

|          |  |   |
|----------|--|---|
| CHM 1103 | Engineering Chemistry                  | 3 |
| MTH 1203 | Calculus I                             | 3 |
| MTH 2103 | Calculus II                            | 3 |
| MTH 2503 | Introduction to Differential Equations | 3 |
| PHY 1203 | Physics II                             | 3 |

**Civil Engineering Elective Courses**

Required Credits: 6

|          |   |   |
|----------|---|---|
| CVE 4323 | Transportation Planning                 | 3 |
| CVE 4333 | GIS Applications in Civil Engineering   | 3 |
| CVE 4353 | Road Design and Construction            | 3 |
| CVE 4403 | Waste Water Engineering                 | 3 |
| CVE 4423 | Solid Waste Management                  | 3 |
| CVE 4443 | Coastal Engineering                     | 3 |
| CVE 4513 | Concrete Design II                      | 3 |
| CVE 4523 | Steel Design II                         | 3 |
| CVE 4603 | Construction Contract Management        | 3 |
| CVE 4803 | Special Topics in Civil Engineering     | 3 |
| EGN 4873 | Data Analytics                          | 3 |
| EGN 4883 | Introduction to Artificial intelligence | 3 |

**General Studies**

Required Credits: 33

**English, Arabic or other Languages**

Required Credits: 12

LSC 1103, AES 1013, AES 1033 and LSC 2223

**Humanities or Art**

Required Credits: 3

AES 1003

**Information Technology and Mathematics**

Required Credits: 6

ICT 2013 and MTH 1113

**The Natural Sciences**

Required Credits: 3

PHY 1103

**The Social or Behavioral Sciences**

Required Credits: 9

LSS 1003, LSS 1123 and BUS 2403

| Description               | Data    |
|---------------------------|---------|
| Total Required Credits    | 138     |
| Maximum Duration of Study | 6 years |
| Minimum Duration of Study | 4 years |
| Cost Recovery Program     | No      |

Program Code BCVET

Major Code CVE

## Ideal Study Plan

### Recommended Sequence of Study

**Year 1**

| Semester 1          |  | Credit Hours |
|---------------------|--|--------------|
| EGN 1133            | Design Thinking in Technology            | 3            |
| LSC 1103            | Professional Communication and Reporting | 3            |
| LSS 1003            | Life and Future Skills                   | 3            |
| MTH 1203            | Calculus I                               | 3            |
| PHY 1103            | Physics I                                | 3            |
| <b>Credit Hours</b> |  | <b>15</b>    |

**Semester 2**

|                     |                            |           |
|---------------------|----------------------------|-----------|
| AES 1013            | Arabic Communications      | 3         |
| CHM 1103            | Engineering Chemistry      | 3         |
| CVE 2603            | Construction Materials     | 3         |
| EGN 1001            | Engineering Workshop       | 1         |
| MTH 1113            | Statistics for Engineering | 3         |
| PHY 1203            | Physics II                 | 3         |
| <b>Credit Hours</b> |                            | <b>16</b> |

**Summer**

|                     |                       |          |
|---------------------|-----------------------|----------|
| CVE 2203            | Engineering Mechanics | 3        |
| MTH 2103            | Calculus II           | 3        |
| <b>Credit Hours</b> |                       | <b>6</b> |

**Year 2****Semester 3**

|                     |                                   |           |
|---------------------|-----------------------------------|-----------|
| CVE 2001            | Applied Drafting and CAD: Civil   | 1         |
| CVE 2103            | Site Surveying                    | 3         |
| CVE 2213            | Strength of Materials             | 3         |
| CVE 2403            | Fluid Mechanics and Hydraulics    | 3         |
| CVE 2613            | Civil Engineering Construction    | 3         |
| ICT 2013            | Computational Thinking and Coding | 3         |
| <b>Credit Hours</b> |                                   | <b>16</b> |

**Semester 4**

|                     |                                   |           |
|---------------------|-----------------------------------|-----------|
| CVE 2013            | CAD tools in Civil Engineering    | 3         |
| CVE 2113            | Quantity Surveying and Estimating | 3         |
| CVE 2303            | Soil Mechanics                    | 3         |
| CVE 2903            | Sophomore Design Project          | 3         |
| CVE 3203            | Structural Analysis               | 3         |
| <b>Credit Hours</b> |                                   | <b>15</b> |

**Summer**

|                     |                  |          |
|---------------------|------------------|----------|
| EGN 2806            | Work Placement I | 6        |
| <b>Credit Hours</b> |                  | <b>6</b> |

**Year 3****Semester 5**

|                     |                           |           |
|---------------------|---------------------------|-----------|
| AES 1003            | Emirati Studies           | 3         |
| AES 1033            | Islamic Culture           | 3         |
| CVE 3503            | Foundation Engineering    | 3         |
| EGN 3012            | Project Management        | 2         |
| EGN 3212            | Economics for Engineering | 2         |
| LSS 1123            | Basic Research Methods    | 3         |
| <b>Credit Hours</b> |                           | <b>16</b> |

**Semester 6**

|                     |                        |           |
|---------------------|------------------------|-----------|
| EGN 3812            | Work Placement         | 12        |
| LSC 2223            | Future Skills Capstone | 3         |
| <b>Credit Hours</b> |                        | <b>15</b> |

**Summer**

|          |                                 |   |
|----------|---------------------------------|---|
| BUS 2403 | Innovation and Entrepreneurship | 3 |
|----------|---------------------------------|---|

|                           |  |            |
|---------------------------|--|------------|
| CVE 3303                  | Highway Engineering                    | 3          |
| <b>Credit Hours</b>       |  | <b>6</b>   |
| <b>Year 4</b>             |  |            |
| <b>Semester 7</b>         |  |            |
| CVE 3403                  | Water Resources and Supply             | 3          |
| CVE 3513                  | Concrete Design I                      | 3          |
| CVE 4902                  | Capstone Design Project I              | 2          |
| EGN 2712                  | Applied Programming for Engineers      | 2          |
| MTH 2503                  | Introduction to Differential Equations | 3          |
| <b>Credit Hours</b>       |  | <b>13</b>  |
| <b>Semester 8</b>         |  |            |
| CVE 4413                  | Environmental Engineering              | 3          |
| CVE 4503                  | Steel Design                           | 3          |
| CVE 4912                  | Capstone Design Project II             | 2          |
| 2 Elective Courses        |  | 6          |
| <b>Credit Hours</b>       |  | <b>14</b>  |
| <b>Total Credit Hours</b> |  | <b>138</b> |

## Faculty and Academic Staff

### Abu Dhabi Men's

**Anf Ziadat**, PhD Civil Engineering, South Dakota School Mines and Technology, USA

**Muhammad Pahore**, PhD, Environmental Engineering / Water and Wastewater Systems, Hokkaido University Japan, Japan

**Nassir Eltinay**, Masters Architectural Engineer, The University of Kansas, USA

**Sokrates Ioannou**, PhD, Civil Engineering, Bath University, UK

**Tarig Ahmed**, PhD Civil Engineering, University of London, UK

### Dubai Men's

**Ahmed Abdullahi**, PhD Civil Engineering, University of Sheffield, UK

**Elgaali Elgaali**, PhD Civil Engineering, University of Colorado, USA

**Imad Chobaki**, PhD Civil and Structural Engineering, University of Salford, UK

**Majid Akram**, PhD Civil Engineering, West Virginia University, US