

# **BEng (Hons) Civil Engineering - E410**

## **1. Aim**

The aim of the degree programme is to provide students with a sound knowledge and understanding of the subject of Civil Engineering and the potential to practice in a range of contexts, with an awareness of their responsibilities to society and the environment. Graduates should be capable of becoming a professional civil engineer in governmental, industrial and commercial organizations worldwide, follow a postgraduate route or apply the skills they have learnt in a range of other careers.

## **Objectives**

The programme has been designed to enable students to

- solve civil engineering problems in practice by applying fundamental knowledge of mathematics, science, and engineering and by using modern engineering techniques, skills and tools, particularly recognising the role that computers play in engineering;
- identify, formulate and solve civil engineering problems, particularly the planning, design, construction and operation of systems, components or processes that meet specified performance, cost, time, safety and quality needs and objectives;
- obtain a broad education necessary to understand the impact of civil engineering solutions in a global, societal and environmental context consistent with the principles of sustainable development;
- design and conduct experiments and to analyse and interpret data within the various civil engineering disciplines;
- function and communicate effectively both individually and within multidisciplinary teams; obtain a solid understanding of professional and ethical responsibility and a recognition of the need for and ability to engage in lifelong learning; and
- experience an academic environment that facilitates and encourages learning and retention.

## **2. General Entry Requirements**

As per General Entry Requirements for admission to the University for Undergraduate Degrees.

## **3. Programme Requirements**

Credit in Chemistry at SC/ 'O' Level.

2 GCE 'A' Level Passes in Mathematics and one of the following subjects: Physics, Physical Science, Engineering Science, Physics with Chemistry, Design & Technology (Technology).

## **4. Minimum Requirements for Degree Award**

For the award of the degree, the following should be met:

Successful completion of 142 credits as per the programme structure;

1. Satisfactory attendance to industry seminars organised by the department;
2. Satisfactory completion of modules assessed through coursework only;

3. Satisfactory completion of industrial placements.
4. Satisfactory performance in each of the Exit Level Outcomes (ELOs) specified against modules in the module specification sheets.

To complete the programme of studies, students are required to perform satisfactorily in the following 10 ELOs.

1. *ELO1: Problem Solving*
2. *ELO2: Application of scientific and engineering knowledge*
3. *ELO3: Engineering Design*
4. *ELO4: Investigations, experiments and data analysis*
5. *ELO5: Engineering methods, skills and tools, including Information Technology*
6. *ELO6: Professional and technical communication*
7. *ELO7: Impact of Engineering activity*
8. *ELO8: Individual, team and multidisciplinary working*
9. *ELO9: Independent learning ability*
10. *ELO10: Engineering Professionalism*

*Students will be allowed to proceed to Level 3 subject to having a CPA of 45.0 at the end of level 2.*

### **Exit Points**

A student whose **registration** is on the point of **being terminated**, as a result of having her/his CPA < 40.0 at the end of an academic year and who has already repeated one year of study.

### **Minimum Requirements for Diploma Award**

**Students who have a CPA of less than 45.0 at the end of level 2 shall be required to repeat the entire academic year or exit with a Diploma in Civil Engineering provided the following conditions are met:**

<b>Modules</b>	<b>Credits</b>
Engineering core (as per section 10)	60
Diploma Project	6
<b>TOTAL</b>	<b>66</b>

The Diploma project would normally be lab based, of 8 weeks duration, for an input of at least 90 hours.

### **5. Programme Duration**

	<b>Normal (Years)</b>	<b>Maximum (Years)</b>
BEng (Hons) Degree:	4	7

### **6. Credits per Year (subject to Regulation 5 above)**

Minimum: 6 credits  
Maximum: 48 credits

Yearly modules and Semester Modules assessed jointly to be registered for only at the start of the module, at the beginning of the academic year.

## 7. Assessment

The assessment mode for each module will be based on one or a combination of the following:

- Examination
- Assignments
- Mini projects
- Practicals
- Presentations
- Attendance to seminars

The overall assessment mode for each module is given in the detailed programme structure.

Assessment will be based on a written examination **3-hour** duration for modules carrying **4 – 6 credits** and on continuous assessment done during the year. The continuous assessment will count for **30 - 40%** of the overall percentage mark of the module(s). In addition to Practicals (**P**) and Tutorials (**T**), there will be a component of Mini Projects (**MP**) and oral presentations.

An overall total of **40% for combined assessment** and written examination components would be required to pass the module, without minimum thresholds within the individual continuous assessment and written examination.

Special examinations (e.g. class tests) will be arranged at the end of semester 1 or semester 2 for exchange students who have registered only for one semester. In case of yearly modules, credits will be assigned on a pro-rata basis.

**Pre-requisite (PR):** A student will be allowed to follow module y of which module x is a prerequisite (PR) provided s/he has passed in module x.

## 8. Modules of Special Nature

A student can take a maximum of 9 credits of Self-Study Subjects and Independent Study, subject to approval of the Department.

## 9. List of Modules – BEng (Hons) Civil Engineering

### CORE MODULES

Code	Module Name	Hrs/Wk L+T/P/MP	Credits
CIVE 1006Y(1)	Building Construction & CAD	1+2	4
CIVE 1007Y(1)	Professional Communication	1+2	4
CIVE 1008Y(1)	Civil Engineering Materials and Concrete Technology	2+2	6
CIVE 1009Y(1)	Structural Analysis I	2+2	6
CIVE 1010Y(1)	Surveying	2+2	6
CIVE 1011Y (1)	Mathematics for Civil Engineers	2+2	6
CIVE 1000	Vacation Training – (Electrical Installations, Mechanical workshop)	-	0
CIVE1020Y	Industry Seminar	-	0
CIVE 2011Y(3)	Fluid Mechanics	2+2	6
CIVE 2012Y(3)	Environmental Engineering	2+2	6
CIVE 2013Y(3)	Geotechnical Engineering I	2+2	6
CIVE 2014Y(3)	Highway and Traffic Engineering (PR-CIVE1010Y)	2+2	6
CIVE 2015Y(3)	Structural Analysis II (PR-CIVE1009Y)	2+2	6
CIVE 2016Y(3)	Structural Design I (PR-CIVE1008Y)	2+2	6
CIVE2020Y	Industry Seminar	-	0
CIVE 3000	Industrial Training (12 weeks – end of Semester 2 - Level 3)	-	0
CIVE 3010Y(5)	Statistics	2+2	3
CIVE 3011Y(5)	Civil engineering Management 1	2+2	6
CIVE 3012Y(5)	Water Resources & Wastewater Engineering (PR-CIVE2012Y)	2+2	6
CIVE 3013Y(5)	Geotechnical Engineering II (PR-CIVE2013Y)	2+2	6
CIVE 3014Y(5)	Advanced Structural Analysis & Design 1(PR-CIVE2015Y)	2+2	6
CIVE 3015Y(5)	Design Project (PR-CIVE2016Y)	0+6	6
CIVE 3123(5)	Numerical Methods	2+2	3
CIVE 4000Y(5)	Degree Project	-	12
CIVE 4030Y(5)	Advanced Structural Analysis & Design II (PR-CIVE3014Y)	2+2	6
CIVE 4031Y(5)	Civil Engineering Management II (PR-CIVE3011Y)	2+2	6
ENGG 4101(5)	Engineers in Society	2+0	2

### **ELECTIVES**

#### **Group A**

CIVE 4032Y(5)	Urban Planning & Environmental Management tools	2+2	6
CIVE 4033Y(5)	Geographical Information Systems & Traffic Engineering (PR-CIVE 2014Y)	2+2	6

#### **Group B**

CIVE 4034Y(5)	Building Services & Integrated Infrastructural Development	2+2	6
CIVE 4035Y(5)	Hydraulics & Coastal Engineering (PR-CIVE2011Y)	2+2	6

## 10. List of Modules – Diploma in Civil Engineering

### CORE MODULES

<b>Code</b>	<b>Module Name</b>	<b>Hrs/Wk L+T/P/MP</b>	<b>Credits</b>
CIVE 1006Y(1)	Building Construction & CAD	1+2	4
CIVE 1007Y(1)	Professional Communication	1+2	4
CIVE 1008 Y(1)	Civil Engineering Materials and Concrete Technology	2+2	6
CIVE 1009Y(1)	Structural Analysis I	2+2	6
CIVE 1010Y(1)	Surveying	2+2	6

### **And ANY OF THE FOLLOWING ADDING TO AT LEAST 60 CREDITS**

CIVE 1000	Vacation Training – (Electrical Installations, Mechanical workshop)	0	
CIVE 1011Y(1)	Mathematics for Civil Engineers	2+2	6
CIVE 2011Y(3)	Fluid Mechanics	2+2	6
CIVE 2012Y(3)	Environmental Engineering	2+2	6
CIVE 2013Y(3)	Geotechnical Engineering I	2+2	6
CIVE 2014Y(3)	Highway and Traffic Engineering (PR-CIVE1010Y)	2+2	6
CIVE 2015Y(3)	Structural Analysis II (PR-CIVE1009Y)	2+2	6
CIVE 2016Y(3)	Structural Design I (PR-CIVE1008Y)	2+2	6
<b>AND</b>			
CIVE 2000D(3)	Diploma Project	-	6

## 11. Programme Plan - BEng (Hons) Civil Engineering

YEAR 1				
Code	Module Name	PR (Pre-Req)	Hrs/Wk L+T/P/M P	Credits
<b>CORE</b>				
CIVE 1006Y(1)	Building Construction & CAD		1+2	4
CIVE 1007Y(1)	Professional Communication		1+2	4
CIVE 1008Y(1)	Civil Engineering Materials and Concrete		2+2	6
CIVE 1009Y(1)	Technology		2+2	6
CIVE 1010Y(1)	Structural Analysis I		2+2	6
CIVE 1011Y(1)	Surveying		2+2	6
CIVE 1000	Mathematics for Civil Engineers		-	0
CIVE 1020Y	Vacation Training – (Electrical Installation, Mechanical workshop) Industry Seminar		-	0
<b>TOTAL CREDITS</b>				<b>32</b>

YEAR 2				
Code	Module Name	PR (Pre-Req)	Hrs/Wk L+T/P/ MP	Credits
<b>CORE</b>				
CIVE 2011Y(1)	Fluid Mechanics		2+2	6
CIVE 2012Y(3)	Environmental Engineering		2+2	6
CIVE 2013Y(3)	Geotechnical Engineering I		2+2	6
CIVE 2014Y(3)	Highway and Traffic Engineering	<b>CIVE1010Y</b>	2+2	6
CIVE 2015Y(3)	Structural Analysis II	<b>CIVE1009Y</b>	2+2	6
CIVE 2016Y(3)	Structural Design I	<b>CIVE1008Y</b>	2+2	6
CIVE 2020Y	Industry Seminar		-	0
<b>TOTAL CREDITS</b>				<b>36</b>

YEAR 3				
Code	Module Name	PR (Pre-Req)	Hrs/Wk L+T/P/ MP	Credits
<b>CORE</b>				
CIVE 3010(5)	Statistics for Civil Engineers		2+2	3
CIVE 3011Y(5)	Civil Engineering Management I		2+2	6
CIVE 3012Y(5)	Water Resources & Wastewater Engineering	<b>CIVE2012Y</b>	2+2	6
CIVE 3013Y(5)	Geotechnical Engineering II	<b>CIVE2013Y</b>	2+2	6
CIVE 3014Y(5)	Advanced Structural Analysis & Design I	<b>CIVE2015Y</b>	2+2	6
CIVE 3015Y(5)	Design Project	<b>CIVE2016Y</b>	0+6	6
CIVE 3123(5)	Numerical Methods		2+2	3
CIVE 3000	Industrial Training (end of Semester 2 – 12 weeks)		-	0
<b>TOTAL CREDITS</b>				<b>36</b>

<b>YEAR 4</b>				
<b>Code</b>	<b>Module Name</b>	<b>PR (Pre-Req)</b>	<b>Hrs/Wk L + T/P/MP</b>	<b>Credits</b>
<b>CORE</b>				
CIVE 4000Y(5)	Degree Project	<b>CIVE 1007Y</b>	-	12
CIVE 4030Y(5)	Advanced Structural Analysis & Design II	<b>CIVE 3014Y</b>	2+2	6
CIVE 4031Y(5)	Civil Engineering Management II	<b>CIVE 3011Y</b>	2+2	6
ENGG 4101(5)	Engineers in Society		2+0	2
<b>ELECTIVES</b>	<b>And Two Level 4 Electives CHOOSE EITHER GROUP A OR GROUP B</b>			
<b>GROUP A</b>				
CIVE 4032Y(5)	Urban Planning & Environmental Management tools	<b>CIVE 2014Y</b>	2+2 2+2	6 6
CIVE 4033Y(5)	GIS & Traffic Engineering			
<b>GROUP B</b>				
CIVE 4034Y(5)	Building Services & Integrated Infrastructural Development	<b>CIVE 2011Y</b>	2+2	6
CIVE 4035Y(5)	Hydraulics & Coastal Engineering		2+2	6
	<b>TOTAL CREDITS</b>			<b>26 credits + 2 electives</b>