Civil Engineering

November
2020

Undergraduate student's

Programme Handbook

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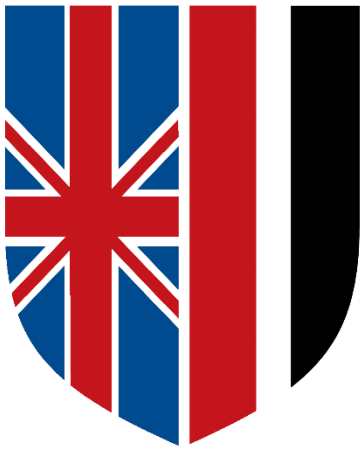
Programme Handbook for Civil Engineering

The British University in Egypt

November 20



Programme Handbooks are issued and maintained by the Faculty of Engineering, Civil engineering department, BUE. They are edited and designed by Eng. Salem Azzam with Cooperation with Eng. Fady Hany (Civil Engineering department, Faculty of Engineering, the British University in Egypt).

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A Welcome from the department's staff

Welcome to the Department of Civil Engineering at the British University in Egypt (BUE). We, the department's staff, want to do everything we can to help you making your studies both fruitful and enjoyable. The main objective of the civil engineering program at the BUE is to provide the basic undergraduate education required for industrial and public practice in civil engineering, or for continued education.

The department comprises 2 assistant professors, 3 associate professors, and 2 full professors. Support staff include around 21 teaching assistants, 3 laboratory engineers, and an administrative assistant. The department has 8 laboratories for academic experiments related to taught modules, project work, and research. We all work together as a friendly team, with the aim of achieving excellence in teaching, research, and student experience across all cohorts.

We hope that you will use this handbook as a guide during your four years in the department. We designed it to provide you with information our students often find useful. The handbook will help in:

- Familiarising you with the structure of the department, its staff, and its programmes.
- Guiding you through the modules you need to pass in order for you to receive your degree.
- Providing you with useful information on topics such as the grading system, summer training internships, exchange programmes, academic misconduct policies, eLearning system, facilities, and other useful regulations and data.

Civil Engineering Department's staff

Disclaimer. It should be noted that, as the educational process necessitates regular changes to programmes and their course contents and regulations, this handbook is meant to be a useful and relevant guide to the student for the academic year for which it is issued. The department may change this handbook to reflect such changes in future generations, and its contents are non-binding to the regulatory departments of the University.

B Why Choose Civil Engineering?

Civil Engineering is a professional engineering discipline that deals with the design, construction and maintenance of structures, including bridges, roads, canals, dams, and buildings. Civil Engineering comprises of six major specialty areas:

Structural Engineering is a field of engineering that deals with the design of structures that support or resist loads. Structural engineers are responsible for design and analysis. Structural engineers often specialize in bridge engineering, industrial structures, or special structures such as high rise buildings and cable supported structures. The role of a structural engineer involves today a significant understanding of both static and dynamic loading and how the structure can resist them.

Construction Engineering concerns the planning and management of the construction of structures such as highways, bridges, airports, railroads, buildings, dams, and reservoirs. Construction engineers engage in the design of temporary structures, quality assurance and quality control, building and site layout surveys, on site material testing, concrete mix design, cost estimation, planning and scheduling, safety engineering, materials procurement, selection of equipment, and cost engineering and budgeting.

Geotechnical Engineering is a science involving the application of soil and rock mechanics, engineering geology, and other related fields to the problems of construction on ground. Geotechnical engineering includes investigation of subsurface conditions, assessing risks posed by site conditions, and the design and construction of earth works and foundations.

Environmental Engineering is the application of science and engineering principles to improve the environment and to provide healthy water, air, and land. Environmental engineering involves water and air pollution control, recycling, waste disposal, and public health issues. It also includes studies on the environmental impact of proposed construction projects. Environmental engineers conduct hazardous waste management studies to evaluate the significance of such hazards. They also design water supply and industrial waste- water treatment systems.

Transportation Engineering is the science of safe and efficient movement of people and goods. The planning aspects of transportation engineering relate to urban planning. Passenger trips are the focus of transportation engineering because they often represent the peak of demand on any transportation system. The design aspects of transportation engineering include the sizing of transportation facilities, deter- mining of pavements, designing of the roadways, and traffic engineering.

Water Resources Engineering is a science concerned with the flow and conveyance of fluids. This area of engineering is intimately related to the design of different water structures such as channels, canals, water distribution networks, water collection networks, storm water management, and sediment transport.

C Civil Engineering Programme

Civil Engineering is offered as a full-time, four year, programme. In each year students study modules with a combined weight of 120 credits which is taught in two 15-week semesters; week 13 being a revision week, and weeks 14-15 being assessment weeks at the end of each semester.

The programme is divided into teaching units called modules, which are each assigned a credit weighting. A typical 10-credit module requires approximately 100 hours of student effort, which usually includes around 33 hours of formal teaching and laboratory work. The remaining time is required for coursework and tutorial completion, self-directed study and assessment. Each semester contains the equivalent of 60 credits giving a total of 120 credits for each year and 160 credits at each level.

Modules that are delivered in one semester have their assessment completed within the semester in which they are taught, with formal examinations (where applicable) taking place in weeks 14 to 15. Modules that are delivered over both semesters have 20-50% of their assessment completed in semester one and the remainder in semester two, with formal examinations (where applicable) taking place in weeks 14 to 15 of semester two.

The programme is structured such that formal examinations can take place at the end of each semester or all at the end of semester two depending on the module specification. Modules that are delivered over both semesters are suspended during the semester one examination period and students are expected to use this time for examination preparation, project work and coursework as applicable.

Programme content can change due to internal and external drivers and its nature as part of a dynamic subject area; consequently, the content listed below is applicable only in the year of issue and should be considered as typical only.
For full details of programme content refer to the module specifications. Notes:

- The data is presented in the order: module code, number of credits, title and semester(s) of delivery.
- Some module specifications reflect closely or are equivalent to those offered by UK partner. This is indicated in each relevant module specification.
- If a different programme is approved from that currently offered at the University a migration and transition strategy will be formulated so as to ensure that the students are not disadvantaged.
- Also note that at the end of years two and three the students are required to engage in industrial training 17ENGG03I and 1ENGG07H. This takes place over the summer holidays. It carries no credit and is assessed purely on a pass/fail basis.
- Where a module is delivered across two semesters the ratio of distribution of weight is given in square brackets. i.e. [2:1] means the modular weight is split 2:1 between semesters (so for a 15-credit module 10 credits would be delivered in semester 1 and 5 in semester 2)

C

Preparatory *(120 credits at level P)*

MECH03P04	**10**	**Production Technology [1:1]**	**1**
ENGL01X01	10	English	1
MECH01P04	10	Mechanics 1 & 2	1
SCIB01P03	10	Mathematics for Engineers (1)	1
ARCH01P04	10	Engineering, Ethics and Human Rights	1
SCIB02P04	10	Introductory Physics	1
CHME01P04	10	Chemistry for Engineers	2
ENGL01X01	10	English	2
SCIB03P03	10	Mathematics for Engineers (2)	2
SCIB04P04	10	Electricity & Magnetism	2
SCIB05P03	10	Algebra and Geometry	2
MECH02P04	10	Engineering Drawing and Descriptive Geometry	2

Year 1 *(120 credits at level C)*

SCIB01C	10	**Calculus**	1
CIVL15C	10	Rigid Body Mechanics	1
CIVIL12C	10	Introduction to Construction Eng. Materials	1
CIVL01C	10	Construction Technology & Management	1
CIVL02C	10	Civil Engineering Drawing	1
CIVL04C	10	Geometrics in Surveying	1
SCIB02C	10	Differential Equations	2
CIVL03C	10	Structural Analysis and Mechanics	2
CIVIL11C	10	Research and Communication	2
CIVIL13C	10	Fluid Mechanics	2
CIVL05C	10	Geotechnics and Engineering Geology	2
CIVL06C	10	Construction Engineering materials (1)	2

C

Year 2 *(40 credits at level C and 80 credits at level I)*

CiVL07C	**10**	**Structural Analysis and Mechanics (2)**	**1**
CIVL09C	10	Computer Application in Civil Engineering	1
CIVL10C	10	Hydraulics	1
CIVL14C	10	Computer Aided Drafting	1
CIVL01I	10	Construction Engineering materials (2)	1
CIVL16I	10	Construction Management	1
SCIB03I	10	Statistics for Engineers	1
SCIB02I	10	Numerical Methods	2
CIVL04I	10	Structural Steel Design (1)	2
CIVL05I	10	Geomatics	2
CIVL06I	10	Geotechnics	2
CIVL07I	10	Reinforced Concrete Design (1)	2

Year 3 *(80 credits at level I and 40 credits at level H)*

CIVL08I	**10**	**Structural Analysis and Mechanics (3)**	**1**
CIVL09I	10	Water Distribution & Sewerage Systems	1
CIVL11I	10	Reinforced Concrete Design (2)	1
CIVL01H	10	Hydraulics (2)	1
SCIB03I	10	Statistics for Engineers	1
CIVL15I	10	Field Courses	1
CIVL23H	10	Construction Contract Procedures	2
CIVL12I	10	Transport Systems	2
CIVL13I	10	Irrigation Works Design (1)	2
CIVL14I	10	Water & Wastewater Treatment	2
CIVL02H	10	Structural Analysis and Mechanics (4)	2
CIVL03H	10	Structural Steel Design (2)	2

C

Year 4 *(120 credits at level H)*

CIVL30H	**20**	**Research Project**	**1 &2**
CIVL27H	20	Design Project	1 &2
CIVL05H	10	Foundation Engineering	1
CIVL07H	10	Irrigation Works Design (2)	1
CIVL08H	10	Highway & Airport Engineering	1
CIVL09H	10	Project Management	2
CIVL10H	10	Advanced Reinforced Concrete Design	2
CIVL04H	10	Geoinformatics	2

Optional Modules

(Offered subject to availability and sufficient student numbers)

Elective modules

CIVL18H	10	Advanced Strength of Materials	1
CIVL25H	10	Strategic Management in Construction	1
CIVL21H	10	Earthquake Resistant Design	1
CIVL15H	10	Pavement Design	1
CIVL11H	10	Bridge Engineering	2
CIVL19H	10	Pre-stressed Concrete	2
CIVL26H	10	Value and Risk Management in Construction	2
CIVL16H	10	Transportation Planning	2

D Module contents

In this programme, emphasis is placed on the basics of Computers Engineering principles and design techniques. Students learn the basic engineering and scientific concepts needed for this major through the required coursework in several areas of specialization (e.g. Operating Systems, Databases, Multimedia, Computer vision, Computer Networks). Through a series of mandatory courses and a couple of elective courses, the students will be able to choose a specialization for their graduation project. Their area of specialization concludes in a capstone design experience.

Each module in the programme has a level. Levels at the BUE reflect the standards adopted by the UK's Higher Education Qualifications Framework (HEQF). They are as follows:

Level P (Preparatory).
Taught in the preparatory year at BUE.

Level C (Certificate).
Taught in degree year 1 at BUE and equivalent to a UK year 1 module.

Level I (Intermediate).
Taught in degree year 2 (and degree year 3 of engineering programmes) at BUE and equivalent to a UK year 2 module.

Level H (Honours).
Taught in degree year 3 (and degree year 4 of engineering programmes) at BUE and equivalent to a UK degree year 3 module.

The following listing provides a brief summary of the modules covered in each year of this programme, including information on module's weight, prerequisites, semester taught in, related keywords, a concise description of topics covered.

Note that each module has a unique code. We provide in the list below only the basic code of the module (e.g. COMP01C), but in practice this code will be prefixed with two digits indicating the current academic year. For example, if we are in academic year 2016–2017, then the code COMP01C will be prefixed by '17', to give 17COMP01C.

Degree Year One modules (120 credits at level C):

Module code:	SCIB01C	**Title:**	Calculus						
Degree year:	1	**Semester:**	1	**Credits:**	10	**Prerequisites:**	SCIB01P, SCIB03P		
Keywords:	differentiation, integration, several variables								
Brief aim/scope:	The aim is to ensure that all students have a basic knowledge and understanding of vector calculus and also provide basic cognitive and practical skills required for future study. This module extends the aims and contents of the prep. year math.								

Module code:	CIVL15C	**Title:**	Rigid Body Mechanics						
Degree year:	1	**Semester:**	1	**Credits:**	20	**Prerequisites:**	MECH01P		
Keywords:	: statics, equilibrium, rigid body, hydrostatics, energy								
Brief aim/scope:	The aim of this module is to provide students with a clear and thorough understanding of the principles, ideas, and skills of the mechanics topics that found the bases of their studies.								

Module code:	CIVL12C	**Title:**	Introduction to Construction Eng. Materials						
Degree year:	1	**Semester:**	1	**Credits:**	20	**Prerequisites:**			
Keywords:	construction materials.								
Brief aim/scope:	The purpose of this module is to provide first year students with basic knowledge of material science and engineering necessary for civil engineers. This module emphasizes material mechanical properties of relevance to engineering applications.								

D

Module contents

Module code:	CIVL01C	**Title:**	Construction Technology & Management				
Degree year:	1	**Semester:**	1	**Credits:**	10	**Prerequisites:**	
Keywords:	construction, concrete, steel, building, design						
Brief aim/scope:	The aim of this module is to introduce the technological aspects, construction sequence, health and safety issues and management procedures of simple, unframed buildings to the students. The module emphasises the basic components, subsystems and their functions. The module is considered an introductory course that builds the necessary construction-based knowledge necessary for all civil and architectural courses to follow.						

Module code:	CIVL02C	**Title:**	Civil Engineering Drawing				
Degree year:	1	**Semester:**	1	**Credits:**	10	**Prerequisites:**	
Keywords:	steel, concrete, irrigation, roads.						
Brief aim/scope:	The aim of this module is to provide the student with guidance and practice in the basic skills of drawing, especially those needed for professional construction and civil engineering work.						

Module code:	CIVL04C	**Title:**	Geometrics in Surveying				
Degree year:	1	**Semester:**	1	**Credits:**	10	**Prerequisites:**	
Keywords:	: levelling, maps, tachometry, theodolites, linear measurement, area computation, coordinates.						
Brief aim/scope:	For the student to obtain an understanding of surveying instrumentation together with observation techniques and limitations, and also for the student to acquire the practical skills necessary to observe geospatial components in the field.						

Module code:	SCIB02C	**Title:**	Differential Equations				
Degree year:	1	**Semester:**	2	**Credits:**	10	**Prerequisites:**	SCIB01P,SCIB03P,SCIB05P
Keywords:	Differential equations, transforms, special functions; modelling.						
Brief aim/scope:	To ensure that students have a basic knowledge and understanding of differential equations.						

Module code:	CIVL03C	**Title:**	Structural Analysis and Mechanics (1)				
Degree year:	1	**Semester:**	2	**Credits:**	10	**Prerequisites:**	
Keywords:	arches, stability, determinate, beams, frames, trusses.						
Brief aim/scope:	The aim of this module is for the student to understand the principles of structural behaviour and mechanics and to be shown how these apply to the design of structures. This module builds on the material learned in the mechanics modules in previous semesters.						

Module code:	CIVL11C	**Title:**	Research and Communication Skills				
Degree year:	1	**Semester:**	2	**Credits:**	10	**Prerequisites:**	
Keywords:	technical writing, personal communications, visual presentation, research methods.						
	The aim of this module is to present the tools necessary to research information and produce professional technical documents including office memoranda, business letters and detailed investigative and research reports and acquaint the students with the types of documentation particular to the engineering profession such as project proposals, project briefs and project specifications.						

Module code:	CIVL13C	**Title:**	Fluid Mechanics				
Degree year:	1	**Semester:**	2	**Credits:**	10	**Prerequisites:**	
Keywords:	fluid statics, kinematics, dynamics, pressure forces, energy principle.						

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Module contents

Brief aim/scope: The aim of this module is to introduce students to the basic principles of fluid mechanics that are essential to civil engineering applications, basic fluid fundamentals such as fluid properties, fluid statics, kinematics and dynamics; and various types of fluid motion and the main forces that controls its behaviour..

Module code:	CIVL05C	**Title:**	Geotechnics and Engineering Geology				
Degree year:	1	**Semester:**	2	**Credits:**	10	**Prerequisites:**	
Keywords:	soil, rock, classification, consolidation, flow net, shear.						
Brief aim/scope:	The aim of this module is for the student to understand the basic concepts of Soil Mechanics and the fundamental principles of Engineering Geology, Seepage and Soil Shear Strength.						

Module code:	CIVL06C	**Title:**	Construction Engineering Materials (1)				
Degree year:	1	**Semester:**	2	**Credits:**	10	**Prerequisites:**	
Keywords:	concrete, steel, masonry, cement, aggregates.						
Brief aim/scope:	The aim of this module is to provide students with an understanding of the nature of common construction materials, their constituents, and properties and how they are used in engineering applications and to show how this knowledge is applied to design.						

Degree Year Two modules (40 credits at level C and 80 credits at level I):

Module code:	CIVL07C	**Title:**	: Structural Analysis and Mechanics (2)				
Degree year:	2	**Semester:**	1	**Credits:**	10	**Prerequisites:**	
Keywords:	stress, strain, torsion, deflection, rotation.						
Brief aim/scope:	The aim of this module is to extend the students' qualitative and quantitative understanding of the structural response to applied loads and external actions. This includes the stresses and strains caused by the different internal forces and the corresponding deformation of structures.						

Module code:	CIVL09C	**Title:**	Computer Applications in Civil Engineering				
Degree year:	2	**Semester:**	1	**Credits:**	10	**Prerequisites:**	
Keywords:	structures, analysis, worksheet, sap, excel.						
Brief aim/scope:	The aim of this module is to provide the student with basic programming techniques, computer application packages and environments which are widely implemented in civil engineering.						

Module **code:**	CIVL10C	**Title:**	Hydraulics (1)				
Degree year:	2	**Semester:**	1	**Credits:**	10	**Prerequisites:**	
Keywords:	pipes, pipelines, open channels.						
Brief aim/scope:	The aim of this module is to introduce the fundamentals of hydraulics with particular attention to open channel flows.						

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Module contents

Module code:	CIVL14C	**Title:**	Computer Aided Drafting				
Degree year:	2	**Semester:**	1	**Credits:**	10	**Prerequisites:**	
Keywords:	floor plan, CAD, detailing, cross section, BIM						
Brief aim/scope:	The aim of this module is to provide the basic knowledge required to employ CAD tools in the design, planning and detailing of civil engineering projects.						

Module code:	: CIVL01I	**Title:**	Construction Engineering Materials (2)				
Degree year:	2	**Semester:**	1	**Credits:**	10	**Prerequisites:**	
Keywords:	concrete, admixtures, mix, durability, repair, strengthening						
Brief aim/scope:	The aim of this module is to enable students to build on the knowledge acquired in previous modules by learning how to design and test concrete mixes for general use and for special purposes, select the appropriate constituents for air entrainment, hot weather and cold weather concrete, durability of concrete and repair, introduction of new materials, development of new techniques and increasing emphasis on sustainability.						

Module code:	CIVL16I	**Title:**	Construction Management				
Degree year:	2	**Semester:**	1	**Credits:**	10	**Prerequisites:**	
Keywords:	construction, planning, equipment, schedules, estimates, crashing						
Brief aim/scope:	The aim of this module is to provide the student with a working knowledge of planning and estimating techniques for construction organisations; and to provide a basic knowledge of construction equipment, their productivity and impact on the construction planning scheme.						
Module code:	SCIB02I	**Title:**	Numerical Methods				
Degree year:	2	**Semester:**	2	**Credits:**	10	**Prerequisites:**	
Keywords:	: numerical, mathematics, programming.						
Brief aim/scope:	The aim of this module is to ensure that all students will have a basic knowledge and understanding of how to set up and solve mathematical problems numerically.						

Module code:	SCIB03I	**Title:**	Statistics for Engineers				
Degree year:	2	**Semester:**	1	**Credits:**	10	**Prerequisites:**	
Keywords:	statistics, random, uncertainty, probability.						
Brief aim/scope:	The aim of this module is to provide necessary mathematical foundation in probability and statistics for engineers with particular emphasis on civil engineering applications.						

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Module code:	CIVL04I I	**Title:**	Structural Steel Design (1)				
Degree year:	2	**Semester:**	2	**Credits:**	10	**Prerequisites:**	
Keywords:	stress, strain, torsion, deflection, rotation.						
Brief aim/scope:	The aim of this module is to introduce the basic structural design methods of structural steel sections, employed in today's codes, emphasising the allowable stress method, as well as, the load and resistance factor approach and also introduce the behaviour & design of structural steel axial members, and the basic types of steel connections, their behaviour & design.						

Module code:	CIVL05I	**Title:**	Geomatics				
Degree year:	2	**Semester:**	2	**Credits:**	10	**Prerequisites:**	
Keywords:	contours, traverse, sections, error propagation, GNSS, Horizontal curves, precise levelling.						
Brief aim/scope:	The aim of this module is to consolidate and extend the student's knowledge of land surveying techniques applicable to civil engineering works.						

Module code:	CIVL06I	**Title:**	Geotechnics				
Degree year:	2	**Semester:**	2	**Credits:**	10	**Prerequisites:**	
Keywords:	stability, settlement, investigation, compaction, dewatering.						
Brief aim/scope:	The aim of this module is for the students to understand the soil stability and settlement behaviour, design requirements of soils in relation to some common geotechnical problems.						

Module code:	CIVL07I	**Title:**	Reinforced Concrete Design (1)				
Degree year:	2	**Semester:**	2	**Credits:**	10	**Prerequisites:**	
Keywords:	codes, reinforced concrete, beams, slabs, stairs.						
Brief aim/scope:	The aim of this module is to introduce students to the concepts and methodology of reinforced concrete structural design and their application to design problems in structural engineering.						

Degree Year Three (80 credits at level I and 40 credits at level H):

Module code:	CIVL08I	**Title:**	Structural Analysis and Mechanics (3)				
Degree year:	3	**Semester:**	1	**Credits:**	10	**Prerequisites:**	
Keywords:	three-moment equation, moment distribution, flexibility, sways.						
Brief aim/scope:	The aim of this module is to build on previous modules to develop basic concepts and analytical techniques required for the analysis of elastic indeterminate structures and to demonstrate the advantages and disadvantages of indeterminacy.						

Module code:	CIVL09I	**Title:**	Water Distribution & Sewerage Systems				
Degree year:	3	**Semester:**	1	**Credits:**	10	**Prerequisites:**	
Keywords:	pipes, networks, water, sewerage systems.						
Brief aim/scope:	The aim of this module is to identify the most important aspects of how to design, construct and maintain water distribution networks, drainage and sewerage systems.						

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Module contents

Module code:	CIVL11I	**Title:**	Reinforced Concrete Design (2)				
Degree year:	3	**Semester:**	1	**Credits:**	10	**Prerequisites:**	
Keywords:	slender columns, flat slabs, frames.						
Brief aim/scope:	The aim of this module is to extend the students' knowledge of reinforced concrete design to the analysis and design of concrete assemblages including simple frames and floor systems and covering slender columns.						

Module code:	CIVL01H	**Title:**	Hydraulics (2)				
Degree year:	3	**Semester:**	1	**Credits:**	10	**Prerequisites:**	
Keywords:	hydraulic jump, hydraulic structures, hydraulic models.						
Brief aim/scope:	The aim of this module is to introduce advanced hydraulics, with particular attention to hydraulic structures and hydraulic equipment.						

Module code:	SCIB03I	**Title:**	Statistics for Engineers				
Degree year:	3	**Semester:**	1	**Credits:**	10	**Prerequisites:**	
Keywords:	statistics, random, uncertainty, probability.						
Brief aim/scope:	The aim of this module is to provide necessary mathematical foundation in probability and statistics for engineers with particular emphasis on civil engineering applications.						

Module code:	CIVL15I	**Title:**	Field Courses				
Degree year:	3	**Semester:**	1	**Credits:**	10	**Prerequisites:**	
Keywords:	fieldwork, surveying, setting out, site investigation, geology.						
Brief aim/scope:	The aim of this module is to enable the students to use the knowledge gained in surveying and geotechnical engineering in field based practical work.						

Module code:	CIVL23H	**Title:**	Construction Contract Procedures				
Degree year:	3	**Semester:**	2	**Credits:**	10	**Prerequisites:**	
Keywords:	transportation, networks, traffic, parking, signals.						
Brief aim/scope:	To provide an introduction to both the theoretical and practical problems of applying feedback control by means of the computer through the basic control theories that have been studied before						

Module code:	CIVL12I	**Title:**	Transport Systems				
Degree year:	3	**Semester:**	2	**Credits:**	10	**Prerequisites:**	
Keywords:	design paradigm, algorithms and data structures						
Brief aim/scope:	The aim of this module is for the students to develop an understanding of the principles of transportation planning and traffic engineering.						

D

Module contents

Module code:	CIVL13I	**Title:**	Irrigation Works Design (1)				
Degree year:	3	**Semester:**	2	**Credits:**	10	**Prerequisites:**	
Keywords:	canals, drains, synoptic, culverts.						
Brief aim/scope:	The aim of this module is to introduce students to hydraulic analysis and design of irrigation structures and various water structures.						

Module code:	CIVL14I	**Title:**	Water & Wastewater Treatment				
Degree year:	3	**Semester:**	2	**Credits:**	10	**Prerequisites:**	
Keywords:	water, quality, sewage, treatment.						
Brief aim/scope:	The aim of this module is to enable students to develop an understanding of water quality and water treatment plants, and an identification of sewage properties and basic physical, as well as, biological treatment methods.						

Module code:	CIVL02H	**Title:**	Data : Structural Analysis and Mechanics (4)				
Degree year:	3	**Semester:**	2	**Credits:**	10	**Prerequisites:**	
Keywords:	finite element, analysis, flexibility, stiffness, matrix.						
Brief aim/scope:	The aim of this module is to introduce students to the matrix methods of analysis that are suitable for programming on a digital computer by representing the load/response relationships in a mathematical format which is readily programmable for electronic computers.						

Module code:	CIVL03H	**Title:**	Structural Steel Design (2)				
Degree year:	3	**Semester:**	2	**Credits:**	10	**Prerequisites:**	
Keywords:	: beam-columns, structures, steel, beams, bending, frames, detailing.						
Brief aim/scope:	The aim of this module is to introduce students to the behaviour & design of structural steel beams and beam-column members and to introduce the detailing techniques for steel connections.						

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Degree Year Four modules (120 credits at level H):

Module contents

Module code:	CIVL30H	Title:	**Research Project**				
Degree year:	4	**Semester:**	1+2	**Credits:**	20	**Prerequisites:**	
Keywords:	Individual research, presentation, report.						
Brief aim/scope:	The aims of this module are to provide the student with experience in research process and methodology by defining and studying a problem on an individual basis.						

Module code:	: CIVL05H	Title:	Foundation Engineering				
Degree year:	4	**Semester:**	1	**Credits:**	10	**Prerequisites:**	
Keywords:	shallow, deep, mat, piles, retaining walls, caissons.						
Brief aim/scope:	The aim of this module is to present the behaviour and design of shallow and deep foundation systems and to present the behaviour, analysis and design of retaining structures.						

Module code:	CIVL07H	**Title:**	**Distributed Systems**				
Degree year:	4	**Semester:**	1	**Credits:**	10	**Prerequisites:**	
Keywords:	weirs, barrages, locks, dams, aqueducts, siphons, tunnels.						
Brief aim/scope:	The aim of this module is to extend the range of applications to types and operation of several irrigation structures						

Module code:	: CIVL08H	**Title:**	Highway & Airport Engineering				
Degree year:	4	**Semester:**	1	**Credits:**	10	**Prerequisites:**	
Keywords:	highway, base, sub-base, surface, geometric design, airport.						
Brief aim/scope:	The aim of this module is to enable students to develop an understanding of the principles of highway geometric and structural design, and to establish an introduction to airport engineering.						

Module code:	: CIVL09H	Title:	Computer Vision				
Degree year:	4	**Semester:**	2	**Credits:**	10	**Prerequisites:**	
Keywords:	construction, planning, cost, control, cash.						
Brief aim/scope:	The aim of this module is to provide students with a comprehensive understanding of project management principles, tools and techniques used for successful management of construction projects.						

Module code:	CIVL27H	Title:	**Design Project**				
Degree year:	4	**Semester:**	1+2	**Credits:**	20	**Prerequisites:**	
Keywords:	group project						
Brief aim/scope:	The aim of this module is to present the students with the experience of the design process from preparation of the brief through to detailed design drawings, if necessary. Students will be able to draw on results of their individual research projects that relate to parts of the design project and integrate all individual components into a comprehensive viable design.						

D

Module contents

Module code:	CIVL10H	**Title:**	Advanced Reinforced Concrete Design				
Degree year:	4	**Semester:**	2	**Credits:**	10	**Prerequisites:**	
Keywords:	tall buildings, wind loads, seismic loads, water tanks, cracking, deflections.						
Brief aim/scope:	The aim of this module is to introduce students to two special types of reinforced concrete structures which require special treatment in both their analysis and design, the first type deals with tall buildings in which lateral loads play an important role in their behaviour and design. The second type deal with water structures in which durability and water tightness require more attention.						
Module code:	CIVL04H	**Title:**	Geoinformatics				
Degree year:	4	**Semester:**	2	**Credits:**	10	**Prerequisites:**	
Keywords:	GIS, GPS, map projections, geodetic, least squares adjustment.						
Brief aim/scope:	The aim of this module is to provide an identification of reference frames used in presenting geospatial data, and also to introduce the students to advanced techniques for determination of position, acquisition of thematic information and least squares techniques in data management.						

Optional modules (offered subject to sufficient number of students):

Module code:	CIVL18H	Title:	Advanced Strength of Materials				
Degree year:	4	**Semester:**	1	**Credits:**	10	**Prerequisites:**	
Keywords:	: shear flow, shear centre, thin walled, elasticity, mechanics, torsion						
Brief aim/scope:	: The aim of this module is to extend students' knowledge to some advanced topics in the strength and mechanics of materials including stress-strain						
Module code:	CIVL25H	**Title:**	Strategic Management in Construction				
Degree year:	4	**Semester:**	1	**Credits:**	10	**Prerequisites:**	
Keywords:	Strategic Management, International construction.						
Brief aim/scope:	This module introduces the strategic management environment in which the construction organizations operate. It explains the theoretical and practical aspects of strategy formulation and decision-making as they affect local, national and international firms in the construction industry.						
Module code:	CIVL21H	**Title:**	Earthquake Resistant Design				
Degree year:	4	**Semester:**	1	**Credits:**	10	**Prerequisites:**	COMP05H
Keywords:	seismic, earthquake, design earthquake.						
Brief aim/scope:	The aims of this module are to develop a knowledge of the principles of seismic activity and risks; and to develop an understanding of the basic philosophy and principles of earthquake resistant design of reinforced concrete and steel structures.						

D

Module contents

=Module code:	CIVL15H Title: Pavement Design
Degree year:	4 **Semester:** 1 **Credits:** 10 **Prerequisites:**
Keywords:	pavement, design, overlays, flexible pavements, rigid pavements.
Brief aim/scope:	The aim of this module is to develop an understanding of the different pavement systems and their structural design procedures.

Module code:	CIVL11H Title: Bridge Engineering
Degree year:	4 **Semester:** 2 **Credits:** 10 **Prerequisites:**
Keywords:	bridge, steel, concrete, truck, lane, bearings.
Brief aim/scope:	The aims of this module are to provide the student with ample knowledge regarding the analysis and design of bridge structures; to provide the student with the necessary background knowledge to suggest a suitable bridge system; to provide the student with the insight necessary to select the suitable construction material for a given bridge application, i.e., steel or reinforced concrete.

Module code:	CIVL19H **Title:** Pre-stressed Concrete
Degree year:	4 **Semester:** 2 **Credits:** 10 **Prerequisites:**
Keywords:	pre-tension, post-tension, losses, anchorage, cable.
Brief aim/scope:	The aim of this module is to introduce senior students to the concept of pre-stressing of concrete elements, the distinguishing features of pre-stressed concrete compared to normally reinforced concrete, the methods and types of pre-stressing, the use, the analysis and design of pre-stressed concrete and the applicable national and international Codes of Practice.

Module code:	CIVL26H **Title:** : Value and Risk Management in Construction
Degree year:	4 **Semester:** 2 **Credits:** 10 **Prerequisites:**
Keywords:	Value Management, Risk Management, Construction
Brief aim/scope:	The aim of this module is to introduce the concepts of value and risk management through a detailed study of their theories, tools and techniques applied in construction projects. The two disciplines have been joined for the purpose of this module reflecting their common approach to problem recognition and strategies for their solution.

Module code:	CIVL16H Title: Transportation Planning
Degree year:	4 **Semester:** 2 **Credits:** 10 **Prerequisites:**
Keywords:	transportation, networks, urban, regional, planning, model.
Brief aim/scope:	The aim of this module is to develop an understanding of the principles of urban and regional transportation planning.

E Grading Systems

At the BUE, we use both the Egyptian and the British grading systems. The following equivalence mapping table provides a useful tool to convert between the two systems.

Egyptian Standing	British Mark	Egyptian Mark	Letter Grade
Distinction	99	100	A+
	98	99	
	97	99	
	96	98	
	95	98	
	94	97	
	93	97	
	92	96	
	91	96	
	90	95	
	89	95	
	88	94	
	87	94	
	86	93	
	85	93	
	84	92	
	83	92	
	82	91	
	81	91	
	80	90	
	79	90	
	78	89	
	77	89	
	76	88	A
	75	88	
	74	87	
	73	86	A-
	72	86	
	71	85	
	70	85	
Very Good	69	84	B+
	68	83	
	67	82	
	66	81	B
	65	80	
	64	79	
	63	78	B-
	62	77	
	61	76	
	60	75	
Good	59	74	C+
	58	73	
	57	72	
	56	71	C
	55	70	
	54	69	
	53	68	C-
	52	67	
	51	66	
	50	65	

Egyptian Standing	British Mark	Egyptian Mark	Letter Grade
Satisfactory	49	64	D+
	48	62	
	47	60	
	46	59	D
	45	57	
	44	55	
	43	54	D-
	42	53	
	41	51	
	40	50	
Fail / Weak	39	49	F
	38	48	
	37	46	
	36	45	
	35	44	
	34	43	
	33	41	
	32	40	
	31	39	
	30	38	
	29	36	
	28	35	
	27	34	
	26	33	
	25	31	
	24	30	
Fail / Very Weak	23	29	
	22	28	
	21	26	
	20	25	
	19	24	
	18	23	
	17	21	
	16	20	
	15	19	
	14	18	
	13	16	
	12	15	
	11	14	
	10	13	
	9	11	
	8	10	
	7	9	
	6	8	
	5	6	
	4	5	
	3	4	
	2	3	
	1	1	
	0	0	

F Summer training internships

Each student in this programme undergoes two industrial placements in the summer of year 2 and year 3, which are a pass-or-fail requirement for graduation.
The industrial training placements (pass or fail, no credits, at level I and H) are the two modules ENGG03I and ENGG07H.
The industrial placement internship, required of all students, requires the attendance of a two-day health and safety workshop, on campus, before engaging in any on site activity. Professional publications of the Health & Safety Executive of the UK, in addition to other similar Egyptian and international governmental bodies, are introduced to students via the e-learning web page of the Electrical Engineering Department.
These training opportunities support the development and recognition of career management skills through work placements or work experience.

School Policies

Student attendance policy

Principles: BUE has obligations to students and their sponsors (usually parents or other family members) to provide a quality educational experience in a supportive learning environment.

Students have obligations to themselves, their families and the BUE, to ensure that they make best use of the learning opportunities provided by the University so that they may achieve a degree of high academic standing.

It is widely acknowledged across Higher Education, supported by experience and research evidence, that students who do not attend or participate in classes are more likely to achieve poor grades or fail. This is mainly because students who do not attend will not acquire the added value from their interactions with teaching staff and their peers in discussing and understanding a particular topic. Their absence is also a sign that they are distracted by other issues which can impede their learning.

The University monitors student attendance in accordance with the procedures below, to ensure that it fulfils its obligations and provides appropriate support to students.

Requirements and procedures: All students are expected to attend and participate in all teaching and learning sessions in order to benefit fully from their BUE education.

Students should contact the relevant

Teaching Assistant and then Module Leader if they have any concerns about understanding the requirements and/ or content of a particular module.

3. Students should contact either their Personal Advisor (for Preparatory Year students) or their Head of Department (all other students) if they wish to seek advice in regard to their studies.

4. Module outlines on e-learning shall specify the core teaching sessions for modules for which student attendance shall be recorded and indicate that non-attendance shall be reported in accordance with paragraph.

5. Core teaching sessions shall be determined by Module Leaders in consultation with Heads of Department. For most modules, the core sessions will be tutorials and/or laboratory/practical classes. Lectures will be specified as core sessions for some modules, including all English modules. In

6. Once a student has missed three core teaching sessions specified for a particular module, Module Leaders shall arrange for a Student Absence flag to be inserted in a student's record on the Student Records System (SRS). This shall lead to the automatic generation of letters to students, copied to their parents (and to the Personal Advisors of Preparatory Year students), informing students that they are deemed "At Risk" of failing the modules concerned due to their poor attendance.

7. If students "At Risk" continue not to attend and miss a further three core teaching sessions as specified for a particular module (two core sessions in the case of English modules), Module Leaders shall arrange for a second flag to be inserted on the SRS. This shall lead to the automatic generation of second letters to students, copied to their parents (and to the Personal Advisors of Preparatory Year students), informing students that they are deemed "At Significant Risk" of failing the modules concerned due to their continued poor attendance. Where these letters relate to English modules, they shall indicate that students will be ineligible for further assessment in the Semester concerned, as specified in paragraph 10 below.

8. Letters to students and parents shall highlight the possible consequences, as specified in paragraph 10 below.

9. Students who have a genuine reason for their absence should use the Student Absence Procedures (as specified in the Student Handbook) in order to avoid the possibility of receiving "At Risk" letters.

Penalties for non-attendance: Students who do not fulfill the attendance requirements for a module shall receive letters which highlight the obligations of students in regard to their studies and confirm the following:

– That, if students fail modules, they have only a limited number of attempts to pass modules, as specified in the General Academic Regulations (GAR), if they are to meet the GAR requirements for award of a UK Degree;.

– That students may be prevented from re-sitting modules during the Summer Assessment Period, depending on the number of credits failed, as specified in the GAR;

the case of Final Year students, Module Leaders shall determine.

– That students who wish to remain on the UK degree will be required to repeat their studies in the following academic year rather than progress, if they do not pass all their modules in a given programme year, provided that they have not exhausted their limited number of attempts in a given module;

– That students who have exhausted their limited number of attempts in a given module will be dismissed from the UK degree, in accordance with the GAR; attendance requirements that are consistent with the level and nature of study and with the requirements of projects and dissertations.

– That students will be dismissed from the BUE if they do not satisfy the regulations for the EG-only Degree.

– That students who do not satisfy English module attendance requirements will be prevented from taking the unseen examination/final paper for the English modules concerned, subject to approval of the Faculty Council, and that they may be ineligible to re-sit English modules during the Summer Assessment Period, as specified in the GAR;

– That student interim transcript will indicate "At Risk" flags for the module(s) concerned.

Academic Misconduct

1. It is academic misconduct for any student in the course of any assessment to engage in one or more of the following activities:

(i) Failing to comply with the Rules for the Conduct of Students in Assessments.

(ii) Failing to comply with the Rules for the Conduct of Students in Examination Halls.

(iii) Assisting another student to gain an advantage by unfair means, or receiving such assistance, for example by collusion, by impersonation or the passing off of one individual's work as another's. This includes undeclared failure to contribute to group coursework assignments.

(iv) Misleading the examiners by the fabrication or falsification of data.

(v) Plagiarism, which is defined by the University as 'submitting work as the student's own of which the student is not the author'. This includes failure to acknowledge clearly and explicitly the ideas, words or work of another person whether these are published or unpublished.

Students are referred to the Coursework Submission Statement of (SP) An offence of academic misconduct will be defined as minor or major depending on its seriousness. Minor Offences shall be considered by the Head of Department of the Faculty of the student (the relevant Head of Department). Major Offences shall be considered by the Faculty Academic Misconduct Committee.

3. Any decision made in accordance with the regulations on academic misconduct shall not be overturned subsequently by a Programme Examination Board under any circumstances.

4. An incident shall be deemed to be a Minor Offence of academic misconduct if it relates to work for assessment not undertaken in an Examination Hall, and if the nature of the incident together with the circumstances of the student make appropriate a relatively limited penalty.

5. Except for the Preparatory Year, a student suspected of committing a Minor Offence will automatically be referred for action under the Major Offence procedure if s/he has previously been found guilty of any offence of academic misconduct. In the case of a Preparatory Year student, referral for action under the Major Offence procedure will be applied only exceptionally at the discretion of the relevant Dean.

6. The relevant Head of Department is empowered to consider charges of Minor Offences against students and to levy penalties.

7. An incident shall normally be deemed to be a Major Offence of academic misconduct if it relates to an assessment undertaken in an Examination Hall, or to other assessed work where the nature of the incident together with the circumstances of the student make appropriate a substantial penalty. Except for the Preparatory Year, if a student has been found guilty of a previous offence of academic misconduct, the case shall be designated a Major Offence. In the case of a Preparatory Year student referral for action under the Major Offences procedure will be applied only exceptionally at the discretion of the relevant Dean. Final interpretation of the offence of academic misconduct as a Major Offence shall be the responsibility of the Dean in consultation with the Registrar.

8. Major Offences shall be considered by the Faculty Academic Misconduct Committee of the

(vi) Engaging in other activity likely to give an unfair advantage to any student.

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2. A student shall certify, when submitting work for assessment, that the work is his/her own.

- Three academic faculty members, including Dean, shall act as Chair.
- One member of the BUE Students' Union (SU) Board nominated by SU
- Where requested, one member of any validating institute, except at P level.
- The Registrar has the right to attend the Committee.
- No individual has a conflict of interest with case to be heard may serve on Faculty Academic Misconduct Committee or act as its Secretary.

9. Offences committed in the Preparatory Year are cumulative (i.e. an offence in Semester One will affect the consideration of a further offence during the year – see 14.6) but do not carry into Degree Year 1. In Degree Year 1 and all other years offences are cumulative.

10. A case which appears to academic staff to suggest that a student has committed an act of academic misconduct shall be reported immediately to the Dean, through the Head of Department with a recommendation of whether it constitutes a minor or major offence. The Dean shall consider whether or not there is a prima facie case to answer. Where the Dean considers the incident to constitute a Major Offence, s/ he shall consult the Registrar. If it is considered the case is a Major Offence, the Dean shall refer the matter to the Faculty Academic Misconduct Committee. If it is considered the case is a Minor Offence, the Dean shall refer the matter to the relevant Head of Department.

student's home Faculty. The Committee shall be appointed by the Dean on an annual basis with the following constitution:

11. The relevant Head of Department shall decide whether any action shall be taken under the procedures for Minor Offences.

12. Where the Registrar has been consulted, s/he shall advise the relevant Dean either to refer the case for action under the Major Offences procedure.

13. Students shall be notified in writing of alleged Minor Offences by the relevant Head of Department/Dean. Students shall be invited to admit or deny the allegation, Head of Department/Dean. Students shall be invited to admit or deny the allegation, have the right to see the evidence against them and to defend themselves in writing and/or in person, and may be accompanied by an individual of their own choosing. Any written defence or request to be heard in person, including the name and status of any accompanying individual, must be received by the relevant Head of Department within five working days of the notification of the alleged misconduct.

14. Having taken into account the evidence and the defense, if any, the relevant Head of Department shall decide whether the student is guilty of the offence, and if so, the appropriate penalty under paragraph 10.31 GAR. The student (and Q&V) shall be notified in writing of the relevant Head of Department's decision and of the penalty, if one is to be applied, within ten working days of the student being notified of the allegation.

Academic Staff

Full-time academic members, ordered alphabetically by surname:

- Prof. Maguid Hassan
- Structural Engineering
- Dean of Engineering
Maguid.hassan@bue.edu.eg

- Prof. Maged Morcos
- Project Construction Management
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- Dr. Mohamed Eizeldin
- Irrigation & Hydraulics Engineering
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- Dr. Yosra El-Maghraby
- Structural Engineering
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- Dr. Shady Salem
- Structural Engineering
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- Prof. Ghada El-Mahdy
- Structural Engineering
- Head of Civil Engineering
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- Dr. Amr Helmy
- Structural Engineering
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- Dr. Mohamed Hegazy
- Environmental Engineering
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- Dr. Mariam Ehab
- Structural Engineering
Mariam.ehab@bue.edu.eg

Resources and Facilities

- **Laboratories:**
  - Reinforced Concrete & Materials lab
  - Surveying lab
  - Structural Analysis lab
  - Hydaraulics & Hydrology lab
  - Soil Mechanics lab
  - Environmental Engineering lab

- **Field trips:**
  - Wadi Degla natural reserve
  - Drilling of boreholes in construction sites
  - Monitoring the construction of shal- low foundations
  - Mapping of the whole BUE campus
  - Monitoring the construction of resi- dential compounds

- **Library resources and databases:**
  - Scopus
  - Science Direct
  - Springer

Useful students References

- **General Academic Regulations (GAR):**
  http://www.bue.edu.eg/pdfs/q&v/GAR.pdf

- **Student Handbook:**
  http://www.bue.edu.eg/pdfs/q&v/SHB%2015-16%20-Sept%2015.pdf

- **BUE library study, style and copyright guides:**
  http://lib.bue.edu.eg/index.php/information-skills-introduction/

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My Notes

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My Notes

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My Notes

Undergraduate student's

Programme Handbook for Civil Engineering

The British University in Egypt

November 2020