

COURSE SPECIFICATION

Course Aim and Title	MSc Civil Engineering with Sustainability
Intermediate Awards Available	PgCert Civil Engineering with Sustainability PgDip Civil Engineering with Sustainability
Teaching Institution(s)	UEL on campus
Alternative Teaching Institutions (for local arrangements see final section of this specification)	N/A
UEL Academic School	Architecture, Computing and Engineering
UCAS Code	N/A
Professional Body Accreditation	N/A
Relevant QAA Benchmark Statements	Engineering (October 2019)
Additional Versions of this Course	MSc Civil Engineering with Sustainability with industrial placement
Date Specification Last Updated	April 2021

Course Aims and Learning Outcomes

The Civil Engineering with Sustainability MSc course is a hybrid course bringing together subjects from Engineering, Construction, Transportation, Logistics, Computing and Business subject areas at University of East London and provides advanced training for Engineers and Professionals concerned with a future built environment that is design and operation efficient with low whole-life carbon footprint.

This is in line with the UK's goal, alongside with other nations, to achieve 80% reduction in carbon emissions by 2050. Buildings alone account for approximately 45% of emissions. In fact, each structural engineer on average is responsible for design of 4000 m² of buildings per annum, resulting in about 250 kg.m⁻² of carbon influx which sums to 1000 tons of carbon per year. A practical knowledge of sustainable design, sustainable alternative materials and the impact on economy is fundamental to future Civil Engineers and is provided to Civil Engineering professionals by this MSc course.

The course is multidisciplinary in nature and instates in you the capability of designing systems that are resilient to the extreme climates and relax the greenhouse warming effect through a reduction in the whole-life carbon footprint.

This course uses the concepts of Civil Engineering and adaptation to frame an understanding of the: [1] Sustainability, [2] Environmental Management. The principal objective is to train 'Structural Design Engineers' who have a fair understanding of Materials and Methods for designing low whole-life carbon structures.

This course is designed to give you the opportunity to:



1. Gain an in-depth knowledge and understanding of the most recent theories and practices in Civil Engineering;
2. Gain an understanding of principles and significance of sustainability and deploying these principles to enhance design and operation efficiency;
3. Gain an appreciation of climate emergency and the role of construction sector to combat this through reducing the whole-life carbon footprint;
4. Develop techniques for analyzing and solving problems within the Civil Engineering context.
5. Understand the role of the engineer as an important professional in society and the sustainable built environment.
6. Deal with complex issues both systematically and creatively, make sound judgements in the absence of complete data, and communicate conclusions clearly to specialist and non- specialist audiences and stakeholders;
7. Demonstrate self-direction and originality in solving problems, and act autonomously in planning and implementing tasks at a professional level;
8. Advancing learner's industry readiness through engagement with industry experts and *real work experience**, within the core elements of learning and assessment.

What you will learn:

Knowledge

- How to demonstrate comprehensive and critical understanding of the latest theories and practices in Analysis and Design of sustainable engineering systems and built environment, and planning techniques
- How to have a critical understanding of relevant scientific principles of the specialisation.
- To be aware of new and emerging technologies.
- How to develop appropriate models for solving problems in sustainable engineering systems, and the ability to assess the limitations of particular cases.
- How to collect and analyse research data and using appropriate engineering tools to tackle unfamiliar problems, such as those with uncertain or incomplete data.

Thinking skills

- How to apply original thought to the development of practical solutions for products, systems, components or processes.
- How to develop a thorough understanding of current practice and its limitations, and some appreciation of likely new developments.
- How to make critical evaluations of risks through some understanding of the basis of such risks.

Subject-Based Practical skills

- How to carry out a research project
- How to interpret experimental and analysis data
- How to use various computer analysis and design packages and develop appropriate models
- How to complete design projects and develop appropriate conceptual schemes



- How to apply engineering techniques taking account of a range of commercial and industrial constraints

Skills for life and work (general skills)

- How to develop interpersonal skills, contribute and work effectively in a team
- How to exercise initiative and personal responsibility, which may be as a team member or leader.
- How to learn new theories, concepts, methods etc and apply these in unfamiliar situations.
- How to develop, monitor and update a plan, to reflect a changing operating environment.
- How to learn independently and effectively; and to be able to present and convey complex technical information to other professionals and the public both verbally and in writing

Learning and Teaching

Knowledge is developed through

- Lectures
- Tutorials
- Seminars
- Site visits

Thinking skills are developed through

- Coursework
- Mini projects
- Research dissertation

Practical skills are developed through

- Experiments
- Design projects
- Planning of work required for the research dissertation
- Industrial placements, as appropriate

Skills for life and work (general skills) are developed through

- Seminars
- Coursework
- Presentation of research
- Research dissertation

In addition, the industrial placement will provide opportunities to apply key technical knowledge and skills learnt in the taught modules, enhance their communication and interpersonal skills and improve their employment potential.

Assessment



Knowledge is assessed by:

- Coursework
- Examinations
- Research dissertation

Thinking skills are assessed by:

- Solutions to practical problems
- Evaluation of literature
- Evaluation of experimental data

Practical skills are assessed by:

- Use of design aids
- Use of computer aided design packages
- Experiments
- Preparation of research dissertation

Skills for life are assessed by:

- Seminars
- Design drawings
- Research dissertation
- Oral examinations

Students with disabilities and/or particular learning needs should discuss assessments with the Course Leader to ensure they are able to fully engage with all assessment within the course.

Work or Study Placements

Students on the placement version of the course will undertake an internship within a partner organisation and complete a 120 P-credit Industrial Placement Module. The module is graded at either Pass or Fail, assessed by the partner industrial organisation and the University and grades reflected on the students' academic transcripts.

The industrial placement component is for a duration of an academic year, ie, normally 30 weeks including minimum 24 weeks of delivery time. It starts after students have completed the 1st year of study, ie, all the taught modules and the dissertation component of the MSc course which together form 180 credits.

Students on the two-year MSc with placement courses must pass all taught modules of their respective course plus dissertation, ie, 180 credits, before they become eligible to progress to the next stage and undertake industrial placement.

Students on the MSc course with placement will also normally be required to fulfil the 80% attendance requirement (on all modules) to be eligible to progress to the industrial placement module.

Students unable to meet the above requirements and progress successfully will normally be moved to the one-year full-time version of the course and their student visa, if any, will be curtailed accordingly.

The structure of the extended version of the MSc courses that includes the industrial placement is summarised in the following table:

For September intake: Term 1 (Y1: Sep – Jan) Term 2 (Y1: Jan – May) Term 3 (Y1: May – Sep) End of July Y1 Term 1 and 2 (Y2: Sep – May)	Taught modules Taught modules Dissertation Deadline for confirming placement Industrial placement
For January intake: Term 2 (Y1: Jan – May) Term 1 (Y1: Sep – Jan) Term 2 (Y1: Jan – May) End of March Term 3 and 1 (Y2: May – Jan)	Taught modules Taught modules Dissertation Deadline for confirming placement Industrial placement

Students must check the Academic Calendar for start and end of term dates.

It is ultimately the student's responsibility to secure their placement. The University will offer guidance and support; and recommend students to our industrial partners who are interested in participating in the course. But the onus to find and secure the placement is on the students. If they are unable to secure a placement at the end of taught modules, they will be transferred back to the full time taught course without the placement component and the student visa, if applicable, will be curtailed accordingly by UKVI.

Students undertaking the Placement Module will also normally need to meet the following requirements:

- 80% attendance at the 12 week employability module workshops and classes.
- Registration on the UEL Employment Hub with CV and Covering Letter uploaded.
- Details of placement provided to the Placement Officer by 31st July (Sept starters) and 31st March (January starters).
- Placement Agreement form signed by the student and partner organisation at least 3 weeks before the placement start date.

Course Structure

At least 90 credits (50%) of the taught and dissertation modules on course are technical.

All courses are credit-rated to help you to understand the amount and level of study that is needed.

One credit is equal to 10 hours of directed study time (this includes everything you do e.g. lecture, seminar and private study).

Credits are assigned to one of 5 levels:

- 3 Equivalent in standard to GCE 'A' level and is intended to prepare students for year one of an undergraduate degree course.
- 4 Equivalent in standard to the first year of a full-time undergraduate degree course.
- 5 Equivalent in standard to the second year of a full-time undergraduate degree course.
- 6 Equivalent in standard to the third year of a full-time undergraduate degree course.
- 7 Equivalent in standard to a Masters degree.

Courses are made up of modules that are each credit weighted.

The module structure of this course is as per below.

NB. Students need to take 120 credits of core modules, ONE 30 credit OPTION module from a total of 4 in Batch 1 and ONE 30 credit OPTION module from a total 4 in Batch 2.

Level	Module Code	Module Title	Credit Weighting	Core/Option	Available by Distance Learning ? Y/N
7	EG7065	Mental Wealth Professional Life (Applied Research)	60	Core*, **	N
7	EG7005	Design in Steel and Concrete	30	Core	N
7	EG7066	Circular Economy and Sustainability	30	Core	N
Batch 1 (Choose ONE module)					
7	EG7006	Advanced Structural Analysis	30	Option	N
7	EG7032	Highway and Railway Engineering	30	Option	N
7	EG7004	Soil Structure Engineering	30	Option	N
7	EG7033	Structural Stability and Dynamics	30	Option	N



Batch 2 (Choose ONE module)					
7	EG7067	Environmental Impact Assessment	30	Option	N
7	EG7037	Environmental Sustainable Engineering and Logistics	30	Option	N
7	CN7031	Big Data Analytics	30	Option	N
7	EG7031	Intelligent transport systems	30	Option	N
7	EG7021	Industrial Placement	120P	Core for MSc with Industrial Placement	N
<p><i>Please note: Optional modules might not run every year, the course team will decide on an annual basis which options will be running, based on student demand and academic factors, in order to create the best learning experience.</i></p>					
<p>Additional detail about the course module structure:</p> <p>* For PGDip course, you will write a written coursework to reflect on your knowledge gained from 'Engineering Management' theme of EG7065 module. You will not write a dissertation report.</p> <p>** Students will be counselled to choose research topics and work towards writing a 'Technical' dissertation on technical topics and include consideration of aspects of environmental and sustainability implications, ethical, health and safety, contractual, legal, quality and cost in the construction sector.</p> <p>A core module for a course is a module which a student must have passed (i.e. been awarded credit) in order to achieve the relevant named award. An optional module for a course is a module selected from a range of modules available on the course.</p>					

The overall credit-rating of the Masters course (not including the industrial placement) is 180 credits. If for some reason you are unable to achieve this credit you may be entitled to an intermediate award, the level of the award will depend on the amount of credit you have accumulated. You can read the University Student Policies and Regulations on the UEL website.

Course Specific Regulations

None

Typical Duration

For those not on a student visa, it is possible to move from full-time to part-time study and vice-versa to accommodate any external factors such as financial constraints or domestic commitments. Many of our students make use of this flexibility and this may impact on the overall duration of their study period.

Course without industrial placement

The duration of this course is one calendar year full-time if enrolment is in September, and two calendar years part-time. For January enrolment, the duration becomes 15 months full time, and 27 months part-time. The full-time structure is summarised in the following Table.

For September intake: Term 1 (Y1: Sep – Jan) Term 2 (Y1: Jan – May) Term 3 (Y1: May – Sep)	Taught modules Taught modules Dissertation
For January intake: Term 2 (Y1: Jan – May) Term 1 (Y1: Sep – Jan) Term 2 (Y2: Jan – May)	Taught modules Taught modules Dissertation

Course with industrial placement

The course with industrial placement is offered in full-time mode only. The duration of this course is two academic years (including the industrial placement element). See “Work or Study Placements” section for more detail.

The time limit for completion of a course is four years after first enrolment on the course.

Further Information

More information about this course is available from:

- The UEL web site (www.uel.ac.uk)
- The course handbook
- Module study guides
- UEL Manual of General Regulations (available on the UEL website)
- UEL Quality Manual (available on the UEL website)
- School web pages
- The Employability HUB

All UEL courses are subject to thorough course approval procedures before we allow them to commence. We also constantly monitor, review and enhance our courses by listening to student and employer views and the views of external examiners and advisors.



Additional costs:

Whilst students will be provided with all necessary equipment on-campus in order to complete their course, it is recommended that they have access to their own personal PC/laptop (of a suitable specification to meet the minimum requirements to run Revit (see [here](#))), and internet access in order that they can work when off campus.

Alternative Locations of Delivery

N/A