

## COURSE SPECIFICATION

Course Aim and Title	MSc Sustainable Energy Engineering
Intermediate Awards Available	PGDip Sustainable Energy Engineering PGCert Sustainable Energy Engineering
Teaching Institution(s)	UEL (on campus)
Alternative Teaching Institutions (for local arrangements see final section of this specification)	N/A
UEL Academic School	School of Architecture, Computing and Engineering
UCAS Code	N/A
Professional Body Accreditation	None
Relevant QAA Benchmark Statements	Engineering (October 2019)
Additional Versions of this Course	MSc Sustainable Energy Engineering with Industrial Placement  PgDip Sustainable Energy Engineering *  *This version of the course does not include the EG7030 Applied Research and Engineering Practice 1. Students who obtain the necessary credits to be awarded the PgDip may choose to not receive the PgDip but instead move to the MSc route by registering for EG7030.
Date Specification Last Updated	28-Feb-2022

### Course Aims and Learning Outcomes

This course is designed to give you an opportunity to learn on:

- Renewable energies, underpinning technologies, their security, supply, and socioeconomical implications;
- Enablers of sustainability, circularity, and waste management;
- thermo-mechanical principles behind generation of renewable energies including solar, wind, tidal, wave, hydro, geothermal, biomass and hydrogen;
- Environmental impacts and mitigations.

Course objectives are brought in four themes: Knowledge, Thinking, Practical, and General.

Through reading this MSc course, you are expected to gain,

#### **Knowledge**

- A comprehensive knowledge and understanding of essential facts, concepts, theories and principles of fuel cell, photovoltaics, energy storages, sustainable power systems.
- Knowledge and understanding of contemporary tools and technologies used to produce solutions relevant to the domain of sustainable energy sector, in line with a set of agreed requirements.
- A critical understanding of relevant scientific principles of the specialisation.
- An awareness of new and emerging technologies.
- A knowledge of how appropriate models can be developed for solving problems in engineering, and an ability to assess the limitations of particular cases.
- An ability for collection and analysis of research data and using appropriate engineering tools to tackle unfamiliar problems, such as those with uncertain or incomplete data.

### **Thinking skills**

- An ability to demonstrate innovative independent thinking, critical investigation, and analytical skills in the real-world problems related to sustainable energy systems, energy storages.
- An ability to identify and implement appropriate sustainable solutions.
- A thorough understanding of current practice and its limitations, and some appreciation of likely new developments.
- An ability to make critical evaluations of risks through some understanding of the basis of such risks.

### **Subject-Based Practical skills**

- An ability to carry out a research project, independently.
- An ability to interpret experimental and analysis data
- An ability to conduct design projects and develop conceptual schemes
- An ability to apply engineering techniques whilst taking account of a range of commercial and industrial constraints.

### **Skills for life and work (general skills)**

- An ability to communicate ideas effectively, both orally and in writing.
- An ability to work professionally as an individual and as in teams.
- Interpersonal skills, contributing to and working effectively in a team
- An ability to exercise initiative and personal responsibility, which may be as a team member or leader.

## 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

- Design projects
- Planning of work required for the research dissertation
- Industrial placements, as appropriate
- Research skills-based activities with feedback

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 your communication and interpersonal skills and improving your employment potential.

## Assessment

Knowledge is assessed by

- Coursework
- Examinations
- Research dissertation

Thinking skills are assessed by

- Coursework
- Devising 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 and simulation packages
- Preparation of a research dissertation

Skills for life and work (general skills) are assessed by

- Seminars
- Design drawings, simulations
- 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 a placement within a partner organisation (or by means of alternative arrangements such as projects led by industry and carried out on campus) to 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 — that is the entire taught modules and the dissertation component of the MSc course, all together forming 180 credits.

Students on the two-year MSc with placement courses in Engineering 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. They also need to demonstrate 80% attendance (in all modules).

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:

Intake point	Sep	Jan	May	Sep	Jan	May	Sep
September	A, B	C, D	E*	P			
Jan		C, D	Holidays	A, B	E*		P
May			C, D	A, B	E*		P

A, B, C and D = 30 credits module

E = 60 credits dissertation

P = 120 credits placement

\* = End of July is deadline for confirming placement

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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 and the School 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 31<sup>st</sup> July (Sept starters) and 31<sup>st</sup> March (January starters).
- Placement Agreement form signed by the student and partner organisation at least 3 weeks before the placement start date.

## Course Structure

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:

Level	Module Code	Module Title	Credit Weighting	Core/Option	Available by Distance Learning? Y/N

7	EG7030	Applied Research and Engineering Practice 1	60	Core*	N
7	EG7060	Mental Wealth: Professional Life	30	Core	N
7	EG7066	Circular Economy and Sustainability	30	Option	N
7	EG7067	Environmental Impact Assessment	30	Option	N
7	EG7025	Thermo-mechanical Energy Conversion	30	Core	N
7	EG7024	Renewable energy systems	30	Core	N
7	EG7021	Industrial Placement	120P	Core for MSc with Industrial Placement	N

*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.*

Additional detail about the course module structure:

\*Applied Research module is not available for PGDip course.

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.

The overall credit-rating of the Masters course (not including the industrial placement) is 180 credits. For PGDip courses, it is 120 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

NA
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## 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.

### **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](http://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:**

**Required:**

- Students should have steel toe-capped footwear when attending workshops or laboratories (approximately £50 upwards).

**Recommended:**

- Students are encouraged to have access to their own personal computing equipment (approximately £300 upwards) and reliable internet connection (price varies) for working off-campus.

Optional:

- There may be optional site visits / trips during the course. Students attending trips will be expected to pay towards travel and/or accommodation and/or subsistence costs and may be required to purchase personal protective equipment. Prices vary depending on the site visits / trips but any details will be advertised to students as soon as they become available.

### Alternative Locations of Delivery

N/A