



## **Programme Specification**

### **Energy Technology and Management {Foundation} [GCET]**

Version: 2022-23, v2.0, 14 Mar 2024

#### **Contents**

<b>Programme Specification</b> .....	<b>1</b>
<b>Section 1: Key Programme Details</b> .....	<b>2</b>
Part A: Programme Information .....	2
<b>Section 2: Programme Overview, Aims and Learning Outcomes</b> .....	<b>3</b>
Part A: Programme Overview, Aims and Learning Outcomes .....	3
Part B: Programme Structure.....	8
Part C: Higher Education Achievement Record (HEAR) Synopsis .....	11
Part D: External Reference Points and Benchmarks .....	11
Part E: Regulations .....	12

## Section 1: Key Programme Details

### Part A: Programme Information

**Programme title:** Energy Technology and Management {Foundation} [GCET]

**Highest award:** BSc (Hons) Energy Technology and Management

**Interim award:** BSc Energy Technology and Management

**Interim award:** DipHE Energy Technology and Management

**Interim award:** CertHE Energy Technology and Management

**Awarding institution:** UWE Bristol

**Affiliated institutions:** Global College of Engineering and Technology (GCET)

**Teaching institutions:** Global College of Engineering and Technology (GCET)

**Study abroad:** No

**Year abroad:** No

**Sandwich year:** Yes

**Credit recognition:** No

**School responsible for the programme:** FET Dept of Geography & Environmental Mgmt, Faculty of Environment & Technology

**Professional, statutory or regulatory bodies:** Not applicable

**Modes of delivery:** Full-time, Sandwich

**Entry requirements:** Thanawiya amma (General Secondary School Certificate) or the one year certificate with an overall mark of 70%, or above

Thanawiya amma (General Secondary School Certificate) with an overall mark of 65% or above PLUS a mark of over 60% in each stage of the GCET Foundation Studies Programme

PLUS

A minimum overall score of IELTS 5.5, or equivalent

Further details of entry requirements for applicants holding the IB Diploma or A Levels can be found at

<http://www1.uwe.ac.uk/whatcanistudy/applyingtouwe/undergraduateapplications/entryrequirements.aspx>

Applicants holding more advanced qualifications may be considered for entry to the programme with advanced standing on an individual basis

**For implementation from:** 01 September 2022

**Programme code:** J91000

## **Section 2: Programme Overview, Aims and Learning Outcomes**

### **Part A: Programme Overview, Aims and Learning Outcomes**

**Overview:** The programme is inter-disciplinary in its design and enables students to develop an understanding of the trends, policy and action relevant to energy systems today. It introduces students to key stages of the energy system, from generation and distribution, to storage and use. Students will be equipped with the knowledge and skills needed to understand the drivers, complexities and innovations of each stage and will be introduced to practical examples and a variety of national and global case studies. The programme identifies the importance of taking climate action and draws out the wide-ranging change that is underway across the world to transition away from hydrocarbons and to move towards a sustainable and zero carbon future. The programme considers the nature of this necessary change across all parts of the energy system, with this action targeting a multitude of domains and sectors across a range of spatial scales. Students will gain an understanding of the approaches used to gather, analyse and visualise energy data (e.g. through big data analytics), with a view to enhancing energy efficiency and improving demand-side management on small and large scales. Students will be introduced to current and emerging energy technologies, and to the type of professionals and innovators that are involved with their development and application. In addition to gaining an

understanding of the science and technology underpinning this infrastructure, students will also be introduced to the steps for planning, delivering and managing energy projects. These projects can be large, complex and potentially contentious, so students will also be introduced to the importance of site design and location, environmental assessment, and stakeholder engagement. Students will also be introduced to the processes through which projects are funded, and the wide-ranging roles and responsibilities that different groups and actors have for ensuring project success (including end energy consumers).

**Features of the programme:** The programme responds to the needs of a widening range of vocations related to energy. These roles include those aligned to the development of energy technology, policy formulation and implementation, and the operation and management of energy systems. The programme will also be relevant to those students wishing to develop careers in the broader climate change and sustainability sector, including those linked to resource and environmental management.

The programme aims to produce graduates who will contribute effectively to interdisciplinary teams in a wide range of sectors. Such a goal will be supported by the programme's broad commitment to both knowledge and skill development, with students gaining competencies from the formulation and application of policy, to an understanding of the science and technology that underpins energy infrastructure.

**Educational Aims:** The programme aims to provide an academically rigorous and intellectually stimulating environment that is intended to develop graduates who:

Recognise the global priorities that exist for sustainable energy, and the nexus that energy has with other sustainable goals and challenges.

Identify the economic, policy and regulatory frameworks through which energy investments are channelled, and the processes through which energy projects are appraised, consented and delivered.

Evaluate options for the generation, distribution, storage and utilisation of energy and

make recommendations for transitioning towards a zero-carbon world.

Consider the form that future energy infrastructure will take and appraise the potential social, economic and environmental implications that selected interventions or technologies could give rise to.

Articulate the opportunities and challenges for improving energy efficiency across a variety of sectors and spatial scales.

Understand science and technology relevant to the design and application of energy systems, and be able to interpret and recommend technical designs.

Identify and exhibit professional attributes commensurate with those who work in the field of energy and environmental management

Pursue independent study, research and investigations to undertake enquiry into novel and unfamiliar concepts.

Communicate and operate effectively either as individuals or as members of a team.

### **Programme Learning Outcomes:**

On successful completion of this programme graduates will achieve the following learning outcomes.

### **Programme Learning Outcomes**

- PO1. Recognise the global priorities that exist for sustainable energy, and the nexus that energy has with other sustainable goals and challenges.
- PO2. Identify the economic, policy and regulatory frameworks through which energy investments are channelled, and the processes through which energy projects are appraised, consented and delivered.
- PO3. Evaluate options for the generation, distribution, storage and utilisation of energy and make recommendations for transitioning towards a zero-carbon world.

- PO4. Consider the form that future energy infrastructure will take and appraise the potential social, economic and environmental implications that selected interventions or technologies could give rise to.
- PO5. Articulate the opportunities and challenges for improving energy efficiency across a variety of sectors and spatial scales.
- PO6. Understand science and technology relevant to the design and application of energy systems, and be able to interpret and recommend technical designs.
- PO7. Identify and exhibit professional attributes commensurate with those who work in the field of energy and environmental management.
- PO8. Pursue independent study, research and investigations to undertake enquiry into novel and unfamiliar concepts.
- PO9. Communicate and operate effectively either as individuals or as members of a team.

**Assessment strategy:** The assessment strategy has been designed to test the programme learning outcomes and includes a mix of different assessment types. These include reports and essays, examinations, presentations and design projects. A dissertation is included as a capstone project at year three.

The programme includes the following assessment formats:

Academic essays to enable students / apprentices to demonstrate academic research, inquiry, reflection, and thoughtful argumentation underpinned by academic robustness.

Presentations to allow demonstration of effective communication skills, interpersonal skills, confidence, professional presentation skills, and controlled assessment consideration of knowledge and understanding

Reports and practice submissions to allow demonstration of professional research, inquiry, reflection, and effective argumentation underpinned by practice robustness.

Portfolio submissions to enable holistic assessment of both practice and professional

skills, knowledge and understanding including design/visual skills.

Assessment will include requirements for both independent and group based work, supporting demonstration of personal and professional skills such as self-reliance, negotiation, mediation, advocacy, independent study, inter-personal skills, project management, and presentation skills (written, visual, and oral).

A core concept underpinning the programme is the intention to create graduates with academic and professional knowledge and understanding, but also practice competence and personal/professional skills.

The assessment strategy is key to the enabling of this, with assessments balancing the academic needs of Higher Education study with the ability to require students / apprentices to create practice orientation assessment outputs which demonstrate professional ability and competencies. As noted above, graduates will not only understand their subject and discipline, they will also have the skills and abilities required to work effectively within organisations aligned with energy technology and management.

The assessment strategy further requires students / apprentices to demonstrate technological skills and the use of a range of software packages.

The programmatic approach to assessment ensures that across the programme of study the full range of assessment formats are mapped appropriately. Modules will provide opportunities for formative support and guidance and set clear expectations with respect to both formative and summative forms of assessment. Opportunities will be provided for students to gain feedback from staff and, where appropriate, programme peers.

**Student support:**

**Part B: Programme Structure****Year 1**

Students must take 120 credits from the modules in Year 1.

**Year 1 Compulsory Modules**

Students must take 120 credits from the modules in Compulsory Modules.

<b>Module Code</b>	<b>Module Title</b>	<b>Credit</b>
UBGMPPR-30-0	Environment and Sustainability 2022-23	30
UFMFBG-30-0	Foundation Mathematics: Algebra and Calculus 2022-23	30
UFMFAG-30-0	Foundation Mechanics 2022-23	30
UBLMPA-30-0	Foundation Year Project 2022-23	30

**Year 2**

Students must take 120 credits from the modules in Year 2.

**Year 2 Compulsory Modules**

Students must take 120 credits from the modules in Compulsory Modules.

<b>Module Code</b>	<b>Module Title</b>	<b>Credit</b>
UFMFN3-30-1	Design, Materials and Manufacturing 2023-24	30
UFMFF3-15-1	Energy and Thermodynamics 2023-24	15
UBGLR1-30-1	Energy: Systems, Trends and Policies 2023-24	30
UBGMJ9-30-1	Environmentalism, Society and Governance 2023-24	30
UBGMHM-15-1	Sustainable Technologies 2023-24	15



**Year 3**

Students must take 120 credits from the modules in Year 3.

**Year 3 Compulsory Modules**

Students must take 105 credits from the modules in Compulsory Modules.

<b>Module Code</b>	<b>Module Title</b>	<b>Credit</b>
UBLMMU-30-2	Energy Conservation in the Built Environment 2024-25	30
UBLMH8-15-2	Energy Transformations 2024-25	15
UBGLS1-15-2	Energy: Planning and Assessment 2024-25	15
UBGMU9-15-2	Project and Risk Management 2024-25	15
UBGMKR-30-2	Researching Environmental Technology and Management 2024-25	30

**Year 3 Optional Modules**

Students must take 15 credits from the modules in Optional Modules.

<b>Module Code</b>	<b>Module Title</b>	<b>Credit</b>
UBGMWJ-15-2	Environmental Management in Organisations 2024-25	15
UBLLYF-15-2	Sustainability and Energy Simulations 2024-25	15

**Year 4**

Full time students must take 120 credits from the modules in Year 4.

Sandwich students must take 15 credits from the modules in Year 4.

**Year 4 Compulsory Modules (Full time)**

Full time student must take 120 credits from the modules in Compulsory Modules (Full time).

<b>Module Code</b>	<b>Module Title</b>	<b>Credit</b>
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UBLMGP-15-3	Energy Management and Performance Evaluation 2025-26	15
UFCF95-15-3	Entrepreneurial Skills 2025-26	15
UBGMQD-30-3	Extended Independent Project 2025-26	30
UBGLY9-15-3	Infrastructure Design and Implementation Project 2025-26	15
UBGMYQ-15-3	Professional Experience 2025-26	15
UBGMME-30-3	Water and Energy Futures 2025-26	30

#### Year 4 Compulsory modules (Sandwich)

Sandwich student must take 15 credits from the modules in Compulsory modules (Sandwich).

Module Code	Module Title	Credit
UBGLVX-15-3	Placement 2025-26	15

#### Year 5

Sandwich students must take 105 credits from the modules in Year 5.

#### Year 5 Compulsory Modules (Sandwich)

Sandwich students must take 105 credits from the modules in Compulsory modules (Sandwich).

Module Code	Module Title	Credit
UBLMGP-15-3	Energy Management and Performance Evaluation 2026-27	15
UFCF95-15-3	Entrepreneurial Skills 2026-27	15
UBGMQD-30-3	Extended Independent Project 2026-27	30
UBGLY9-15-3	Infrastructure Design and Implementation Project 2026-27	15
UBGMME-30-3	Water and Energy Futures 2026-27	30

**Part C: Higher Education Achievement Record (HEAR) Synopsis**

This programme responds to the global challenge for tackling climate change and to the need for developing new and innovative energy technologies that can effectively deliver a sustainable and zero carbon future. The programme develops an understanding of energy systems, and the trends, policies and actions that are transforming the generation, supply, storage and use of energy at a range of spatial scales. The programme is interdisciplinary with equally strong emphasis on integrated learning from and about how to conduct rigorous academic research and how it can be applied in practice. Professional, self-reflective skills are central to this programme which is designed to produce highly employable graduates.

The graduates of the Sandwich study mode in this programme have developed a diverse set of employability skills through the use of a substantive work-based experience and demonstrate an understanding of the connection between academic learning and professional practice.

**Part D: External Reference Points and Benchmarks**

Given its broad nature, the programme has been informed by the knowledge, understanding and skills presented by a variety of Benchmark Statements, including the following:

Earth sciences, environmental sciences and environmental studies (2019)

Engineering (2019)

Geography (2019)

Land, Construction, Real Estate and Surveying (2019)

Town and Country Planning (2019)

With respect to skills, the programme has sought to incorporate a variety of subject-based skills, such as those relating to academic research and professional investigation; collecting, analysing, evaluating and synthesising data; the identification and articulation of issues relating to energy technology and environmental management; the translation of theory and knowledge into practical

policies and actions; creative problem-solving skills and making propositions for action; and communicating with multi-disciplinary professionals and diverse stakeholder groups.

With respect to generic skills, the programme has sought to develop capabilities relating to preparing and presenting arguments; numeracy and use of statistical and quantitative data; numeracy and use of statistical and quantitative data; critical reflection with an understanding of the need for lifelong learning; managing and producing work to time on an individual basis; and working effectively in and with groups.

The programme is also lead by UWE's core principle of 'Advancing knowledge, inspiring people, transforming futures' and the guiding principles contained within Strategy 2030. Regard has also been had to UWE's Graduate Attributes Framework and the prompts for developing graduates that are self-reliant and connected; ready and able; enterprising; globally responsible; and future-facing.

Programme development has also been informed by the principles of Education for Sustainable Development and will also compliment and include the Sustainable Development Goals.

### **Part E: Regulations**

Approved to University Regulations and Procedures.

It is the Award Board's responsibility to determine whether the student's attainment at FHEQ Level 3 is sufficient to progress to Level 4.