University of the Built Environment
EST. 1919

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PG Dip Renewable Energy and AI

Programme Specification 2026-2027

Version: 1.00

Status: Final

Date: 26/02/2026

Summary Programme Details

Final Award

Award: Postgraduate Diploma
Title of (final) Programme: Renewable Energy and AI
Credit points: 120
Level of award: 7

Intermediate award(s)*

Intermediate award 1: Postgraduate Certificate Renewable Energy and AI
Credit points: 60
Level of award: 7

*Intermediate awards will be granted to students that exit the programme part way through if they have achieved sufficient credits in line with the Academic and Programme Regulations (opens new window).

Validation

Validating institution: University of the Built Environment
Date of last validation: November 2025
Date of next periodic review: November 2030
Date of commencement of first delivery: Autumn 2026
Duration: 1.5 years part-time
Maximum period of registration: In accordance with the Academic and Programme Regulations (opens new window).
UCAS Code/ HECoS Code: 100486
Programming Code: RDIPRAS
Other coding as required: N/A

QAA Guidance

UK Quality Code for Higher Education (opens new window)

QAA Credit Framework for England (opens a new window)

OfS Standards

Office for Students (OfS) Sector Recognised Standards (opens a new window)

Programme Overview

Rationale

The Postgraduate Diploma Energy and AI is for students wishing to undertake a selection of modules from the MSc Renewable Energy and AI programme. This programme is primarily aimed at those in industry seeking to gain additional specialist knowledge or Continuing Professional Development (CPD) in new areas.

Skills Development

The Postgraduate Diploma Renewable Energy and AI programme has been designed to address a critical skills gap at the intersection of renewable energy engineering and artificial intelligence. This programme establishes a new foundational platform where technical, analytical, and digital skills are developed in a coherent and progressive manner. From the outset, students gain a grounding in renewable energy principles, data literacy, and digital systems thinking, building the capacity to analyse, model, and interpret multi-source data from real-world energy systems.

This integrated structure ensures that learning is cumulative, interdisciplinary, and practice-led, rather than siloed within individual modules. Foundational concepts introduced early are revisited and deepened through applied virtual labs, cross-module exercises, and collaborative projects.

Entry Requirements

Entrants to this programme normally are required to have attained one of the following:

- a Bachelor’s Degree with honours at upper second standard (2:1) as a minimum in a relevant subject (engineering, computer science, environmental science, or business analytics), or equivalent; Or
- a Bachelor’s Degree with honours at lower second standard (2:2) as a minimum in a relevant subject (engineering, computer science, environmental science, or business analytics), or equivalent and be employed in a relevant role; Or
- a Bachelor’s Degree in a relevant subject (engineering, computer science, environmental science, or business analytics), or equivalent, plus three years’ experience in a relevant field; Or
- a Level 5 qualification as defined by Framework for Higher Education Qualifications for England, Wales and Northern Ireland (FHEQ) plus 5 years’ relevant experience; Or

- a professional qualification plus 5 years' relevant experience, two of which should be at senior management level.

All applicants will be required to provide a detailed personal statement or CV to support their application. An interview with a member of the programme team may be required where qualifications or previous experience need further clarification. Upon completion of the course, students will be well positioned to progress toward recognised professional qualifications, including Chartered Engineer (CEng), depending on their prior accredited learning and experience.

If an applicant does not meet the standard entry requirements University of the Built Environment will consider the application on an individual basis. In these cases, the application will be assessed by the Programme Leader or for students in Hong Kong by the Dean of School (International), who will give careful consideration to any professional and life experiences as well as any academic or vocational qualifications the applicant may hold. The applicant may be asked to provide a detailed personal statement and/or a reference or letter of support from an employer or mentor to support the application.

Applications are assessed in accordance with the University of the Built Environment Admissions and Recognition of Prior Learning (opens new window).

English language requirements

All University of the Built Environment programmes are taught and assessed in English. The applicant will therefore be required to demonstrate adequate proficiency in the language before being admitted to a course:

- GCSE Grade 4 (or c) or above in English Language or English Literature, or an equivalent qualification. For further information on equivalent qualifications please contact: admissions@ube.ac.uk
- Grade 6.0 or above, with at least 6.0 in the reading and writing modules, in the International English Language Testing System (IELTS) academic test administered by the British Council.
- 88 or above in the Internet option, 230 or above in the computer-based option or 570 or above in the paper-based option, of the Teaching of English as a Foreign Language (TOEFL) test.
- Grade 4 (or C) or above in English (Language or Literature) at A/S Level.
- HKDSE (Hong Kong Diploma of Secondary Education) Grade 3, or HKALE (Hong Kong Advanced Level Examination – Advanced Level & Advanced Supplementary Level) Grade E, or HKCEE (Hong Kong Certificate of Education Examination) Grade 3-5 or Grade A-D (Syllabus B only).

Applicants with a bachelor's degree that has been taught and examined in the English medium can be considered for entry in the absence of the qualifications detailed above if applying for a non-apprenticeship programme.

Technical requirements

As this programme is delivered through supported online learning and Virtual Laboratory environments, students are expected to have access to suitable technology to engage fully with interactive content, simulation platforms, and digital collaboration tools.

To participate effectively, students should have:

- Regular access to a reliable computer or laptop capable of running standard office software and web-based virtual lab applications.
- A stable broadband internet connection sufficient for video conferencing, virtual lab participation, and accessing multimedia learning materials.
- A modern web browser (e.g., Chrome, Edge, or Firefox) compatible with the University's Virtual Learning Environment (VLE).
- Audio and video functionality (microphone and webcam) for participation in live sessions, presentations, and assessments.

Specialist software used within the virtual laboratories will be cloud-hosted or browser-accessible, ensuring students can engage fully without requiring high-end local hardware or complex installations. The programme primarily uses open-source or widely accessible platforms such as Python (via Spyder or Jupyter environments), which are available globally. Guidance on accessing these platforms and any optional software tools will be provided during induction and at the start of each module.

Recognition of prior learning (RPL) or recognition of prior experiential learning (RPEL) routes into the programme.

University of the Built Environment policy and procedures for Recognition of Prior Experiential Learning (RPEL) and Recognition of Prior Learning (RPL) are set out in the University of the Built Environment Admissions and Recognition of Prior Learning (opens new window). This policy statement takes precedence in any such decision.

University of the Built Environment also recognises credit awarded by higher education degree awarding bodies in accordance with the relevant higher education qualifications framework and allows that credit to count towards module exemption from the programme.

Normally at least one-third of any award must be accumulated as a result of learning assessed by the University, subject to any overriding Professional, Statutory and Regulatory Body requirements.

Programme Progression

For details of progression arrangements, please view the Academic and Programme Regulations (opens new window). Successful completion of the PG Dip will enable the student to apply for the full MSc Renewable Energy and AI programme, or to conduct further research.

Award Regulations

For details of award arrangements, please view the Academic and Programme Regulations (opens new window).

Career Prospects

This programme supports students in furthering their professionalism within industry and will enhance their career path opportunities. It enables students to decide whether to progress to a full Masters programme and then into roles including:

- Grid operations and smart infrastructure planning;
- Renewable energy system design and engineering (solar PV, wind, storage);
- Energy data analytics and forecasting (AI, machine learning, digital twins);
- Clean transport infrastructure (EV charging networks, hydrogen);
- Energy consultancy and project development
- Sustainability and decarbonisation strategy teams (public or private sector);
- Research and development in intelligent energy systems;
- Climate-tech startups and energy AI platforms; and Digital innovation roles in energy technology companies.

Programme Aims

Programme aims

The PG Dip Renewable Energy and AI is designed for graduates from engineering, science, or similar/related disciplines (e.g. environmental science, or computer science) who seek to develop the interdisciplinary expertise and digital capabilities necessary to lead in the global clean energy transition.

The programme also prepares students with a foundation for further professional development and extension of their knowledge, in preparation for further academic study, including completion of a Master's award.

The educational aims of the PG Dip Renewable Energy and AI are to:

- Deliver a **contemporary and applied** curriculum that integrates renewable energy technologies with intelligent systems, data analytics, and sustainability-focused engineering practice.
- Provide students with an **effective technical understanding of renewable systems**—including solar PV, wind, storage, and clean electrification—together with competence in **digital tools, AI applications, and ethical frameworks** relevant to sustainable energy transitions.
- Equip students with the ability to **analyse, model, and optimise complex energy systems** using system thinking, intelligent decision tools, and lifecycle-based design approaches.
- Promote the development of **critical thinking, interdisciplinary problem-solving, and data-driven innovation** for energy resilience, decarbonisation, and sustainable infrastructure design.
- Support students in becoming reflective, ethical, and digitally fluent professionals who can **collaborate across sectors and disciplines** to advance global sustainability goals.
- Enable learners to apply their knowledge in **real-world and industry-informed contexts** through virtual labs and applied projects.
- The programme also aims to **support life-long learning and continuing professional development**, while providing a robust foundation for those wishing to pursue further academic study at Master's level in renewable energy, intelligent systems, or sustainable engineering.

Market and internationalisation

This programme is designed with a global outlook, recognising that renewable energy challenges and opportunities span national boundaries. The PG Dip

MSc Renewable Energy and AI Specification

Renewable Energy and AI addresses the technical, digital, and policy dimensions of energy systems in a way that is internationally transferable and globally informed.

The programme draws on case studies, datasets, and policy frameworks from a broad selection of global regions, including but not limited to the UK, EU, Middle East, Asia, Africa, and the Americas. This approach exposes students to diverse energy infrastructures, policy environments, and sustainability objectives, fostering critical analysis and adaptability across international contexts. By working with international industry insights and cross-regional datasets, students develop a global mindset, and practical skills suited to both local applications and transnational projects, preparing them to contribute meaningfully to the global clean energy transition, wherever their careers take them.

Programme Structure

Module List

Code	Module	Level	Credits	Core/ Elective
REN7ESP	Renewable Energy and Sustainable Power Systems	7	20	Core
REN7DAE	Data, AI and Ethics for Sustainable Energy Engineering	7	20	Core
REN7STR	Systems Thinking and Infrastructure for the Renewable Transition	7	20	Core
REN7CER	Clean Electrification: Renewables, Storage, EVs and Hydrogen	7	20	Core
REN7AID	AI-Driven Decision Systems for Energy Planning	7	20	Core
REN7ERS	Engineering Resilience in System Design	7	20	Core

Notes

Credits are part of the Credit Accumulation and Transfer System (CATS). Two UK credits are equivalent to one European Credit Transfer System (ECTS) credit.

Students entering with exemptions may see a change to their study route.

Learning Outcomes

Having successfully completed the programme, the student will have met the following learning outcomes.

A – Knowledge and understanding

Learning Outcomes		Relevant modules
A7.1	Demonstrate a critical and systematic understanding of the scientific and engineering principles underpinning renewable energy systems.	REN7ESP, REN7CER
A7.2	Critically evaluate data science and AI concepts, models, and algorithms within the context of sustainable energy engineering, including ethical, societal, and regulatory dimensions.	REN7DAE, REN7AID
A7.3	Apply systems thinking to conceptualise and evaluate the interdependencies and emergent behaviours across renewable energy infrastructures and digital systems.	REN7STR
A7.4	Develop advanced knowledge of lifecycle, techno-economic and environmental assessment approaches for evaluating long-term system resilience and sustainability.	REN7ERS
A7.5	Synthesise interdisciplinary knowledge of renewable technologies, intelligent decision tools, and infrastructure planning to support the clean energy transition globally.	REN7STR, REN7CER, REN7AID

B – Intellectual skills

Learning Outcomes		Relevant modules
B7.1	Critically analyse, interpret, and evaluate complex technical, economic, and environmental information related to renewable energy systems.	REN7ESP, REN7CER, REN7ERS
B7.2	Exercise independent judgement in applying AI and intelligent decision systems to energy-related challenges, considering uncertainty and risk.	REN7DAE, REN7AID

Learning Outcomes		Relevant modules
B7.3	Apply systems-based reasoning to model and optimise energy networks, recognising feedback loops, interactions, and wider socio-technical implications.	REN7STR, REN7ERS
B7.4	Design, justify, and evaluate innovative engineering solutions that acknowledge potential tensions and pursue alignment between sustainability, resilience, and profitability within real-world contexts.	REN7CER, REN7AID, REN7ERS
B7.5	Critically appraise research literature and construct robust, evidence-based arguments in energy and sustainability debates.	REN7DAE, REN7STR

C – Subject practical skills

Learning Outcomes		Relevant modules
C7.1	Configure and simulate renewable energy systems, applying performance metrics and site-specific data.	REN7ESP
C7.2	Pre-process, train, validate, and evaluate AI models on energy datasets (numerical and image-based), considering responsible AI principles.	REN7DAE
C7.3	Explore and apply digital infrastructure approaches for the analysis and optimisation of renewable system performance, drawing on examples such as IoT, digital twins, and automation platforms where appropriate.	REN7STR
C7.4	Design and test energy storage, EV, and hydrogen integration strategies using digital simulations and performance modelling.	REN7CER
C7.5	Build and deploy intelligent decision support systems (e.g. forecasting, scheduling, optimisation models) for renewable energy planning.	REN7AID
C7.6	Apply lifecycle assessment, financial modelling, and stress-testing to assess renewable energy project resilience and long-term viability.	REN7ERS

D - Key / Transferable skills

Learning Outcomes		Relevant modules
D7.1	Communicate complex technical and research findings effectively to specialist and non-specialist audiences through written, oral, and digital formats.	ALL
D7.2	Work independently and collaboratively in virtual teams, demonstrating leadership, negotiation, and project management skills.	ALL
D7.3	Employ digital literacy and advanced problem-solving skills to address unfamiliar and evolving challenges in renewable energy and sustainability.	ALL
D7.4	Exercise autonomy in managing learning, demonstrating initiative, adaptability, and reflective professional practice.	ALL
D7.5	Critically evaluate the ethical and societal implications of decisions in energy system design and AI deployment.	REN7DAE, REN7STR, REN7ERS

Delivery Structure for part-time study route

Autumn (UK) Entry

Year 1, Semester 1

Module Code	Module Name	Level
REN7ESP	Renewable Energy and Sustainable Power Systems	7
REN7DAE	Data, AI and Ethics for Sustainable Energy Engineering	7

Year 1, Semester 2

Module Code	Module Name	Level
REN7CER	Clean Electrification: Renewables, Storage, EVs and Hydrogen	7
REN7AID	AI-Driven Decision Systems for Energy Planning	7

MSc Renewable Energy and AI Specification

Year 2, Semester 1

Module Code	Module Name	Level
REN7STR	Systems Thinking and Infrastructure for the Renewable Transition	7
REN7ERS	Engineering Resilience in System Design	7

Module Summaries

Core Modules

REN7ESP Renewable Energy and Sustainable Power Systems
This module introduces the technical foundations of renewable energy and sustainable power systems, exploring the role of renewable technologies in achieving global decarbonisation goals. Students will study the principles, performance, and integration of key renewable energy sources, including solar PV, wind, hydro, and bioenergy, while examining how these interact with power networks, storage, and demand-side management. Emphasis is placed on system design, grid integration, and the challenges of delivering resilient and sustainable energy infrastructure.

Learning is supported through lectures, case studies, and virtual labs based on real-world datasets supplied by industry partners, ensuring students gain experience with the same data and tools used in professional practice. Assessments are similarly designed around industry-informed scenarios, enabling students to analyse renewable energy performance and evaluate sustainable power solutions within the wider context of the clean energy transition.

REN7DAE Data, AI and Ethics for Sustainable Energy Engineering
This module explores the intersection of data science, artificial intelligence, and ethical frameworks in the context of sustainable energy engineering. Students will learn how data-driven methods and AI techniques (such as neural networks, optimisation, and intelligent control) can be applied to renewable energy systems, while also critically evaluating ethical and societal implications of digitalisation in the energy transition.

Learning is delivered through lectures, industry-informed case studies, and practical AI labs using real-world renewable energy datasets provided by academic and industrial partners. This ensures that students gain both the technical capability and ethical literacy required to deploy intelligent solutions responsibly within the global drive for net zero, with reference to the United Nations Sustainable Development Goals (UN SDGs) and Environmental, Social and Governance (ESG) principles.

MSc Renewable Energy and AI Specification

REN7STR Systems Thinking and Infrastructure for the Renewable Transition
This module introduces systems thinking as a framework for analysing, designing, and managing the infrastructure required to support the renewable energy transition. Students will learn how to model energy systems holistically, considering interdependencies between technical, social, environmental, and economic dimensions. Using digital tools and scenario modelling (including digital twins), the module provides the knowledge and practical skills to evaluate system-wide impacts, infrastructure resilience, and pathways for achieving net zero.

The module is delivered through lectures, interactive labs, and scenario-based exercises grounded in real-world datasets and case studies provided by industry partners. This applied approach equips students with the analytical and professional skills needed to navigate the complexities of energy infrastructure planning and renewable system integration at multiple scales.

REN7CER Clean Electrification: Renewables, Storage, EVs and Hydrogen
This module explores the technologies and strategies underpinning clean electrification as a cornerstone of the global energy transition. It examines how renewable generation, energy storage, electric vehicles, and hydrogen systems can be integrated to enable reliable, decarbonised power systems. Students will engage with technical design, operational challenges, and innovation opportunities while applying simulation platforms, digital labs, and real-world case studies based on industry datasets to understand the role of clean electrification in achieving net zero targets.

REN7AID AI-Driven Decision Systems for Energy Planning
This module focuses on the use of intelligent decision-support systems to guide complex choices in clean energy planning. Unlike earlier module, Data, AI and Ethics for Sustainable Energy Engineering, which introduce the fundamentals of AI and data-driven methods, this module emphasises strategic decision-making under uncertainty, multi-criteria optimisation, and the balancing of technical, economic, and societal trade-offs.

Students will work with advanced modelling techniques, stochastic methods, and optimisation frameworks to address planning challenges such as renewable integration, infrastructure expansion, and energy policy design. Drawing on industry and international case studies, students will apply decision-support tools to evaluate competing transition pathways, manage risk, and justify evidence-based strategies for resilient and sustainable energy futures.

REN7ERS Engineering Resilience in System Design
This module provides students with the knowledge and skills to design, evaluate, and optimise energy systems with resilience and sustainability at their core. It

introduces lifecycle assessment, techno-economic analysis, and strategies for managing uncertainty, risk, and long-term performance in renewable energy systems.

Learning is supported through lectures, case studies, and practical modelling labs that use real-world industry datasets and international case material. Students will engage with resilience-based engineering design frameworks, applying lifecycle and techno-economic methods to propose robust, cost-effective, and adaptive solutions for future energy infrastructure.

University of the Built Environment Competence Standards

All undergraduate and postgraduate students are expected to meet the basic academic competencies laid out in the admissions criteria for their degree programme. Additionally, University of the Built Environment students are expected to meet the following competency standards:

1. **Competence Standard**: The ability to work independently and/or as part of a team, for the purposes of research, collective problem solving and communication of results/findings.

Justification: Professionals in the built environment are required to work with a variety of stake holders to achieve joint and individual targets. University of the Built Environment graduates should be capable in both settings

2. **Competence Standard:** The ability to exercise self-learning and use acquired theoretical and practical knowledge.

Justification: Students in higher education are required to engage in self-directed learning to achieve learning outcomes. Support is available from University of the Built Environment to acquire these skills.

3. **Competence Standard:** The ability to effectively present key facts, ideas, problem solutions, results etc. using verbal, expressive, and/or written communication.

Justification: Professionals within the built environment sector are required to present information to colleagues, clients, and other stakeholders in a variety of formats. University of the Built Environment graduates should be able to display these skills.

4. **Competence Standard:** The ability to submit work within agreed time frames.

Justification: Working to deadlines is a key requirement of professionals in the built environment. University of the Built Environment courses have a maximum period of registration that must align with accrediting PSRBs.

5. **Competence Standard**: The ability to use digital resources as an aid to research, analysis, problem solving and presentation.

Justification: University of the Built Environment's delivery method is entirely online with no physical campus. Support is available to assist with use of digital resources.

6. **Competence Standard:** The ability of learners to express and develop ideas using digital literacy in English.

Justification: University of the Built Environment is an online institution based in the UK. Students must have the ability to communicate in English through University of the Built Environment's online platforms.

7. **Competence:** The ability to critically interpret qualitative and/or quantitative data

Justification: Built environment professionals are required to handle both qualitative and quantitative data. University of the Built Environment's assessments also require critical interpretation, support is available to develop these skills.

8. **Competence:** Knowledge of the general principles and practices of professional codes of conduct.

Justification: Students seeking professional accreditation are also advised to consult the relevant PSRB which identifies key competencies for various levels of professional competence.

Learning, Teaching and Assessment

Learning and Teaching

Knowledge and understanding

The teaching, learning and assessment strategy for the programme is guided by the University-wide Learning, Teaching and Assessment Strategy (LTAS 2020-2025). The approach adopted is student-centred learning design, that supports the educational needs of our diverse student community. Learning has been designed with flexibility in mind to support students to adopt their own learning experience best suited to their needs.

Students are taught through online learning resources available to them, including customised text material, study papers, learning activities and interactive media. These are complemented by a variety of Lecturer-facilitated sessions and interactions, using a range of media for enhancement of the learning experience.

Students are encouraged to research beyond the material provided and undertake self-directed learning throughout their programme.

Module delivery follows a standard format, incorporating a range of subject appropriate resources suitable for the online learner. This may include, but is not limited to, audio-visual presentations, interactive case studies and online journals.

AI Competence Framework and Student Preparedness

While AI is introduced at both foundational and applied levels within the PG Dip Renewable Energy and AI, the programme has been intentionally designed around a Level 2 AI competence model. In this framework:

- Level 1 focuses on core coding, algorithmic development, and mathematical foundations typically associated with computer science or data science specialisms;
- Level 2 emphasises the application and adaptation of existing AI and machine learning algorithms using appropriate software tools and renewable energy datasets; and
- Level 3 involves engagement with user-facing AI tools and automated platforms (e.g. "black box" environments such as ChatGPT or AutoML).

The Postgraduate Diploma Renewable Energy and AI aligns with Level 2 competence, enabling students to develop practical proficiency in applying and interpreting AI tools, algorithms, and data-driven workflows within the renewable energy domain. Students will learn to:

- Deploy and adapt machine learning and deep learning algorithms to analyse renewable energy data;
- Evaluate AI model performance, bias, and ethical implications in decision-making; and
- Integrate these insights within real-world renewable energy case studies through the programme's Virtual Laboratories.

To ensure inclusivity, the programme does not require advanced programming or computer science prerequisites. Instead, structured learning activities, scaffolded exercises, and guided virtual lab sessions progressively build the computational and analytical literacy needed to use AI tools effectively. Students from engineering, environmental, and related scientific backgrounds will therefore be supported in developing the competence to deploy, adapt, and critically evaluate AI solutions relevant to energy systems without the need for extensive prior coding experience.

This approach ensures that graduates possess the applied, ethically informed, and industry-relevant AI capabilities necessary to drive innovation in renewable energy engineering and digital sustainability.

Intellectual skills

Learning and teaching methods are applied to enable the development of cognitive skills. These skills are aligned to those used by renewable energy engineers, AI engineers, energy analysts, and sustainable systems designers, but also meet the needs of working in other industries. These skills are developed through interaction with multi-media learning resources, self-directed learning and via participation in student-centred learning activities. The approach to assessment is lecturer-guided and formative feedback on these skills is given appropriate emphasis.

Students are encouraged to develop and apply their knowledge and understanding through a range of online activities and exercises. These require students to apply research and analysis to industry issues.

Subject practical skills

Graduates of the PG Dip Renewable Energy and AI will acquire a range of subject-specific practical skills that are directly applicable to both academic research and professional practice in the energy and sustainability sectors. These include:

- System configuration and modelling: the ability to simulate and analyse the performance of renewable energy systems using digital and data-driven tools (developed in REN7ESP Renewable Energy and Sustainable Power Systems).
- Application of AI to energy data: pre-processing, training, and evaluating machine learning models on energy datasets while addressing ethical and responsible AI considerations (developed in REN7DAE Data, AI and Ethics for Sustainable Energy Engineering).
- Systems analysis and infrastructure planning: application of systems thinking frameworks and digital twin technologies to map and evaluate complex interdependencies across energy networks (developed in REN7STR Systems Thinking and Infrastructure for the Renewable Transition).
- Integration and optimisation: design and simulation of clean electrification pathways including renewables, storage, EVs, and hydrogen systems (developed in REN7CER Clean Electrification: Renewables, Storage, EVs and Hydrogen).
- Decision support and forecasting: construction of intelligent decision tools and optimisation models to support planning, scheduling, and operational

decision-making in energy systems (developed in REN7AID AI-Driven Decision Systems for Energy Planning).

- Lifecycle and resilience assessment: application of lifecycle assessment, financial modelling, and stress-testing frameworks to evaluate the resilience and long-term viability of renewable energy systems (developed in REN7ERS Engineering Resilience in System Design).

Key/Transferable skills

The BE Ready Orientation sets out the importance of transferable skills. These skills are developed through the programme, utilising study, and assessment. This can be via virtual learning environment (VLE) discussion, tuition discussion, problem-solving exercises, which are conducted individually or in groups, and coursework, which provides the ideal combination to internalise these aspects though different learning methods. The Study Skills area of the VLE is a further resource for support in developing these skills.

The learning activities in this programme require students to undertake research, evaluate their findings and develop solutions. The teaching of module topics requires students' engagement with a range of online activities that develop research and evaluation skills and cultivate a systematic approach to problem solving. Engagement with the University of the Built Environment learning community develops communication and collaboration skills. Additional support for transferrable skills is delivered via the joint programme webinars delivered to the student throughout the year. Students also have the opportunity to develop transferrable skills through formative and summative opportunities within the modules.

Assessment

The assessment strategy for the programme is guided by the University of the Built Environment-wide Learning, Teaching and Assessment Strategy (LTAS 2020-2025). The aim of University of the Built Environment's assessments is to allow students an opportunity to demonstrate what they have learned using a range of formats and which encourage critical self-reflection linked to personal development. To support this, assessments are clearly related to module learning outcomes and the activities within the module support students in achieving these.

University of the Built Environment's practice is to require assessments to be vocationally and professionally relevant. Assessments are built that have direct application to industry standards, and that enable students to learn through real world scenarios and working practice. This involves the generation of tasks based on problems, scenarios or case studies from recent real-world situations that reflect and/or replicate the vocational requirements of the industry and the international nature of the subject matter. All elements of assessments are discipline-specific for each programme as well as supporting the acquisition and promotion of transferable skills, including research skills development.

Formative assessment and feedback opportunities are provided throughout the programme in a variety of formats to motivate, guide and develop students through their learning. Students are required to complete various pieces of coursework in the modules which are assessed within set time frames. Detailed feedback is provided on lecturer-assessed work, which explains how the mark was derived, what was done well and what could be improved for future assessments. Objective testing is also utilised in formative (including self-assessment) and summative assessment. Individual projects in the final stage are assessed in accordance with their own guidelines and marking schemes.

All assessment contributing to award is subject to moderation policies. Moderation at University of the Built Environment is designed to reflect the quality of the student submission and the benchmark standards for the various levels of undergraduate study. Moderation of marking accords with QAA recommended best practice to ensure that marking criteria have been fairly, accurately, and consistently applied during first marking.

Wherever possible, assessments will be based on real-world data, live industry projects, and international case studies to ensure professional relevance and applicability across diverse contexts.

Assessment Diet

The types of assessments used on this programme will include coursework (such as essays, reports, portfolios, reflections, problem or short questions or video presentations), computer-based assessments, and computer marked assessments (CMAs). The exact combinations of assessment will vary from module to module.

In general, there will be 2 assessments per module. The first assessment is usually either coursework or a CMA. The second assessment is usually coursework. Some modules may have up to a maximum of 4 assessments.

Shared Assessments:

- **REN7ESP Renewable Energy and Sustainable Power Systems and REN7DAE Data, AI and Ethics for Sustainable Energy Engineering)**
- **REN7CER Clean Electrification: Renewables, Storage, EVs and Hydrogen and REN7AID AI-Driven Decision Systems for Energy Planning**

Sharing assessments between modules allows the student to investigate the topic in a wider context, explore how different themes link together, and allow for parallel thinking. Each assessment consists of two parts with separate word counts relating to each module.

Students can complete these modules separately as the assessment elements are stand-alone, meaning they will only submit the part that relates to the module they are taking. If a student fails one module, they will only need to re-submit the section for that module. Please see the relevant module descriptors for further information. An example of how this integration is achieved in practice is provided in Appendix C, which outlines the shared assessment model between REN7ESP and REN7DAE.

Virtual Labs

A distinctive feature of the PG Dip Renewable Energy and AI is the use of Virtual Laboratories (VR Labs) that provide students with realistic, data-driven, and interactive learning experiences aligned with industry practice. The Virtual Renewable Energy Lab serves as a digital environment through which students can conduct experiments, explore datasets, and develop applied AI solutions across all modules.

Each module within the programme contains one or more virtual labs that simulate real-world renewable energy systems and decision scenarios. Examples include solar PV performance simulation, wind turbine power curve exploration, energy mix optimisation, AI-based forecasting, and lifecycle resilience analysis. These labs use open-access software tools (Python, Spyder, and web-hosted simulations) and are supported by cloud-based or browser-accessible interfaces, ensuring accessibility to all students globally.

The Virtual Laboratories will be hosted securely within the University's Digital Campus environment or through approved cloud-based infrastructure, ensuring accessibility, data protection, and compliance with institutional digital learning policies.

The Virtual Laboratories play a central role in achieving the programme's learning outcomes and in supporting its alignment with the professional standards Through these interactive environments, students are able to:

- Apply engineering principles and artificial intelligence methods to authentic, data-driven renewable energy challenges.
- Develop advanced competencies in data analytics, system simulation, and ethical decision-making within digital engineering contexts.
- Enhance their employability by engaging with industry-standard tools, workflows, and datasets used across professional and research settings.
- Undertake both collaborative and independent inquiry into global sustainability issues, reinforcing critical thinking and professional practice in real-world scenarios.

Study Support

BE Ready Orientation

The purpose of BE Ready is to prepare students for online learning with the University but also to support students throughout their learning journey. Students are expected to visit BE Ready every semester for updates, welcome back week activities as well as advice specific to their level of study.

There are a variety of resources which will help students to get started. These include how to use the VLE, how to navigate a module, the University e-library and how to join a webinar. BE Ready also provides practical advice such as how to manage independent study, where to find our Study Skills resources and how to access academic or pastoral support. All this information is key to having a successful start to supported online learning with the University of the Built Environment.

Resources are available to support students with referencing and how to develop good academic practice to avoid academic misconduct. A range of study skills support materials are available to apprentices.

Student learning support

The programme is taught via the University of the Built Environment's VLE and academic facilitation and support is provided online giving student's access to the University Lecturers and other students worldwide.

The Education team will guide and support students' learning. Furthermore, all students who do not engage with initial assessment or the VLE will receive additional support from the Programme Team. Other University administrative teams provide support for assessments and technical issues including ICT. The University's VLE provides the main point of contact for students for these teams throughout the duration of their programme.

Each student, wherever their location, will have access to a wealth of library and online materials to support their studies. International students are able to use their local context when writing their assessments.

The Academic Support and Enhancement (ASET) team works with departments to promote student retention, achievement and success. This work is achieved through a multi-faceted approach, which consists of:

- delivering support tutorials to students identified as academically at risk to develop the academic skills needed for success;

- developing ‘self-serve’ support resources to enable students to develop their academic skills;
- delivering teaching webinars and drop-in sessions on academic skills;
- working with the Education team and other support teams to identify ways in which student success can be further facilitated.

Relevant research is also carried out to inform proactive interventions, and to develop policy and practice.

Disability, neurodiversity, and wellbeing related support is provided via a dedicated Disability and Welfare team at University of the Built Environment.

English language support

For those students whose first language is not English, or those students who wish to develop their English language skills, additional support is provided through online resources on the VLE in the resource ‘Developing Academic Writing’.

The resource includes topics such as sentence structure, writing essays and guidance for writing at Master’s level aimed at developing students’ study skills.

Personal and professional development

Students are undertaking vocational programmes that are intrinsically linked to the accrediting professional bodies. Students are encouraged and supported to understand the need for the recognition of these bodies and guided as to how to meet the professional membership requirements.

More generally, the University has a dedicated Careers Advisor to ensure students have appropriate access to careers education, information, advice and guidance.

Programme specific support

Each programme has a Programme Leader, as well as Module Leaders, Module Lecturers and Academic Support Tutors to support students throughout their time with the Programme.

University staff are accessible during normal UK working hours, during which they also monitor the 24/7 forums asynchronously and provide encouragement, assistance and necessary tutor and student feedback services.

Access to the University of the Built Environment e-Library is on a 24/7 basis and the University has a full-time librarian during normal UK working hours.