# PROGRAMME SPECIFICATION

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# Award titles

**Programme Title(s)**

BEng Peirianneg Awyrenegol

BEng Aeronautical Engineering

BEng Peirianneg Awyrenegol (gyda lleoliad diwydiannol)

BEng Aeronautical Engineering (with industrial placement)

MEng Peirianneg Awyrenegol

MEng Aeronautical Engineering

BEng Peirianneg Fodurol

BEng Automotive Engineering

BEng Peirianneg Fodurol (gyda lleoliad diwydiannol)

BEng Automotive Engineering (with industrial placement)

MEng Peirianneg Fodurol

MEng Automotive Engineering

BEng Peirianneg Drydanol ac Electronig

BEng Electrical and Electronic Engineering

BEng Peirianneg Drydanol ac Electronig (gyda lleoliad diwydiannol)

BEng Electrical and Electronic Engineering (with industrial placement)

MEng Peirianneg Drydanol ac Electronig

MEng Electrical and Electronic Engineering

BEng Peirianneg Fecanyddol

BEng Mechanical Engineering

BEng Peirianneg Fecanyddol (gyda lleoliad diwydiannol)

BEng Mechanical Engineering (with industrial placement)

MEng Peirianneg Fecanyddol

MEng Mechanical Engineering

BEng Peirianneg Adnewyddadwy a Chynaliadwy

BEng Renewable and Sustainable Engineering

BEng Peirianneg Adnewyddadwy a Chynaliadwy (gyda lleoliad diwydiannol)

BEng Renewable and Sustainable Engineering (with industrial placement)

## Internal Programme Title(s) (if different to the title on the certificate)

BEng Electrical and Electronic Engineering (level 6 top-up)

## Programme to be included in Graduation Ceremonies

Yes

# Delivery period

Sept 2022-Sept 2026

# Intake points

Once a year: September intake

# Regulatory details

|  |
| --- |
| **Regulatory details** |
| **Awarding body** |
| Glyndŵr University |
| **Programme delivered by** |
| Glyndŵr University  MEng/BEng Aeronautical Engineering  MEng/BEng Automotive Engineering  MEng/BEng Electrical and Electronic Engineering  MEng/BEng Mechanical Engineering  MEng/BEng Renewable and Sustainable Engineering  BEng Aeronautical Engineering (with industrial placement)  BEng Automotive Engineering (with industrial placement)  BEng Electrical and Electronic Engineering (with industrial placement)  BEng Mechanical Engineering (with industrial placement)  BEng Renewable and Sustainable Engineering (with industrial placement)  Despark College  BEng Automotive Engineering  Dimensions International College  BEng Electrical and Electronic Engineering (level 6 top-up) |
| **Location of delivery** |
| Plas Coch Campus  Despark College – BEng (Hons) Automotive Engineering only  Dimensions International College – BEng Electrical and Electronic Engineering (level 6 top-up) only |
| **Faculty/Department** |
| Faculty of Arts, Science and Technology |
| **Exit awards available** |
| BEng (Ord) / Dip HE / Cert HE Aeronautical Engineering  BEng (Ord) / Dip HE / Cert HE Mechanical Engineering  BEng (Ord) / Dip HE / Cert HE Automotive Engineering  BEng (Ord) / Dip HE / Cert HE Renewable and Sustainable Engineering  BEng (Ord) / Dip HE / Cert HE Electrical & Electronic Engineering |
| **Professional, Statutory or Regulatory Body (PSRB) accreditation** |
| **This information is correct at the time of validation, please refer to the PSRB register for current accreditation status.**  The programmes have been developed in line with PSRB requirements, including IMechE, IET, RAes & EI. The new Engineering provision (home provision only) will also be put forward for accreditation during the EAB visit in 2023.  IMechE - [www.imeche.org](http://www.imeche.org)  IET - [www.theiet.org](http://www.theiet.org)  RAeS - [www.aerosociety.com](http://www.aerosociety.com)  EI - [www.energyinst.org](http://www.energyinst.org) |
| **Please add details of any conditions that may affect accreditation (e.g., is it dependent on choices made by a student?) *e.g., completion of placement.*** |
| The accreditation only applies to home provision. Programmes delivered at partner institutions are not accredited but partner students can still apply for professional engineer registration without an accredited qualification. |
| [**HECoS**](https://wgyou.glyndwr.ac.uk/wp-content/uploads/2018/12/JACStoHECoSmapping.pdf) **codes** |
| Aeronautical Engineering 100114  Automotive Engineering 100201  Electrical and Electronic Engineering 100163  Mechanical Engineering 100190  Renewable and Sustainable Engineering 100175 |
| [**UCAS**](mailto:admissions@glyndwr.ac.uk?subject=UCAS%20Code%20Request) **code** |
| BEng Aeronautical engineering BA22  BEng Automotive engineering  H431  BEng Electrical and Electronic engineering H600  BEng Mechanical engineering   BM22  BEng Renewable and Sustainable engineering   HH36  BEng Aeronautical Engineering (with industrial placement) AEIP  BEng Automotive Engineering (with industrial placement) AUIP  BEng Electrical and Electronic Engineering (with industrial placement) EEIP  BEng Mechanical Engineering (with industrial placement)         MGIP  BEng Renewable and Sustainable Engineering (with industrial placement)    RSIP  MEng Aeronautical engineering  MEAE  MEng Automotive engineering  MEAU  MEng Electrical and Electronic engineering MEEE  MEng Mechanical engineering    MEME  MEng Renewable and Sustainable engineering   MERS |
| **Relevant QAA subject benchmark statement/s** |
| QAA Subject Benchmark Statement Engineering (2019)  <https://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/subject-benchmark-statement-engineering.pdf?sfvrsn=1f2c881_16> |
| **Mode of study** |
| Full & part time |
| **Normal length of study** **for each mode of study** |
| FULL TIME  3-year Bachelor's degree  4-year Bachelor's with Foundation Year  4-year Bachelor's with Industrial Placement Year  4-year Integrated Masters  1 year Top-up Bachelor’s degree (Electrical and Electronic Engineering)  PART TIME  6 years bachelor's degree  8 years Integrated Masters |
| **Language of study** |
| **English** |
| **Transitional arrangements for re-validated provision if applicable** |
| For BEng Aeronautical and Mechanical Engineering the last intake will be the current 2021/22 academic year and we will then teach out. All students currently enrolled on the continuing programmes will be transferred onto the revalidation programme structures from September 2022. |
| **The following University Award Regulations apply to this programme** (*highlight the appropriate ones and delete the others)* |
| General Regulations and Definitions  Regulations for Bachelor's degrees, Diplomas, Certificates and Foundation Degrees  Regulations for Integrated master's degrees  Language Admissions Policy |

| **OFFICE USE ONLY** | |
| --- | --- |
| Date of validation event: | 16th June 2022 |
| Date of approval by Academic Board: | *22nd August 2022* |
| Approved Validation Period: | *5 years from Sept 2022* |
| Transitional arrangements approved (if revalidation) | *All students currently enrolled on the continuing programmes will be transferred onto the revalidation programme structures from September 2022, except for BEng Aeronautical and Mechanical Engineering which will be phased out.* |
| Date and type of revision: | 11 May 2023 |

### Criteria for admission to the programme

## Standard entry criteria

Entry requirements are in accordance with the University’s admissions policy, please click on the following link for more information. [Admissions policies](https://glyndwr.ac.uk/study/apply/admissions-policies/)

The University’s entry requirements are set out on our Admissions webpages

| Qualification | Entry requirements |
| --- | --- |
| Foundation Year | 48 – 72 Tariff points and /or relevant experience |
| 3-year Bachelor's degree | 80 – 112 Tariff points |
| Integrated Masters (4 years) | 120 Tariff points |

These figures are intended as a general guide. Each application is considered individually.

International entry qualifications are outlined on the [UK National Information Centre for global qualifications and skills (UK ENIC](https://www.enic.org.uk/)) As equivalent to the relevant UK entry qualification.

In addition to the academic entry requirements, all applicants whose first language is not English or Welsh must demonstrate English language proficiency.

European students are able to provide this evidence in a number of ways (please see [academic-entry-requirements](https://glyndwr.ac.uk/International-students/academic-entry-requirements/) for details), including IELTS.

International students are required to provide an English Language Certificate which meets the requirements of the University *(please see* [*English-language-requirements*](https://glyndwr.ac.uk/International-students/English-language-requirements/) *for details).*

## Non-Standard entry criteria

For direct entry to the Level 6 of the programme, applicants must have achieved a qualification at Level 5 or better in a relevant discipline. Entry to the programme may be gained by students who can present one of the pieces of evidence listed below:

1. Have passed a Dip HE in a relevant discipline.
2. Have passed a French DUT.
3. Have achieved a minimum of 120 ECTS credits in a relevant discipline.
4. Have passed a Foundation Degree or HND in a cognate discipline.
5. Have passed a qualification from an EU or other overseas country equivalent, as defined as equivalent NARIC, to a DipHE or better in a relevant discipline.

### Record of Prior (Experiential) learning

Applicants may enter the programme at various levels with Recognition of Prior Learning (RPL) or Recognition of Prior Experiential learning (RPEL) in accordance with the University General Regulations. Any programme specific restrictions are outlined below.

### DBS Requirements

No DBS checks are required for students to undertake the programmes concerned in this programme specification. In line with the Universities Disciplinary Procedure for Students, all students are required to disclose a criminal record acquired during the student’s enrolment with the University.

### Suitability for Practice Procedure

N/A

### Aims of the programme

The key aim of the programmes is to develop intellectual and application skills through knowledge acquisition, problem solving, deductive skills, synthesis, analysis, and evaluation. This also encompasses social and environmental implications.

The graduates from the programmes will

* be pragmatic, taking a systematic approach and the logical and practical steps necessary for often complex concepts to become reality.
* seek to achieve sustainable solutions to problems and have strategies for being creative, innovative, and overcoming difficulties by employing their skills, knowledge and understanding in a flexible manner.
* be skilled at solving problems by applying their numerical, computational, analytical, and technical skills, using appropriate tools.
* be risk, cost and value-conscious, and aware of their ethical, social, cultural, environmental, health and safety, and wider professional responsibilities.
* be familiar with the nature of business and enterprise in the creation of economic and social value appreciate the global dimensions of engineering, commerce, and communication;
* be able to formulate and operate within appropriate codes of conduct, when faced with an ethical issue.
* be professional in their outlook, be capable of team working, be effective communicators, and be able to exercise responsibility and sound management approaches.

### Distinctive features of the programmes

Distinctive features of BEng (Hons) Aeronautical Engineering programme

The BEng (Hons) Aeronautical Engineering programme aims to equip graduates with knowledge, understanding and skills of aeronautical engineering-based subjects and their applications in aeronautical and mechanical industries, such as aerodynamics, engineering mechanics, engineering design, aircraft structures and vibration, thermodynamics, propulsion, aircraft design, aircraft stability, and control, modern aircraft technology, etc. This includes the use of variety of computer-aided design and analysis tools, such as industry-required MATLAB/Simulink, Computer Aided Design, Finite Element Analysis (FEA) and Computational Fluid Dynamics (CFD) tools. It also aims to provide the breadth and depth of learning, skills, and attitudes for graduates to meet the future needs of a rapidly changing technology and business environment. The graduates will be equipped with analytical, computational, design and transferable skills, and including an awareness of social and environmental implications, and will be able to play leading professional roles in Aeronautical Engineering and related industries, to show initiative, to take responsibility and to make decisions in complex and unpredictable situations.

Career opportunities are wide ranging and the present shortage of practising engineers in the fields of aeronautical, mechanical, and manufacturing engineering will lead to an increased demand from industry in future years. Students on these programmes in the past have been successful in seeking employment as engineering professionals with renowned organisations such as Airbus, British Airways, Jaguar Cars Ltd, J C Bamford Excavators Limited (JCB), Kellogg’s Co. of Great Britain Ltd, Kronospan Ltd, Rolls Royce plc, Siemens, and Toyota Motor Manufacturing Ltd.

Distinctive features of MEng Aeronautical Engineering programme

The MEng Aeronautical Engineering programme covers all the learning outcomes of the BEng (Hons) Aeronautical Engineering and beyond to provide a greater range and depth of specialist knowledge, within a research and industrial environment, as well as a broader and more general academic base.

The study of the MEng Aeronautical Engineering is designed as an integrated whole from entry to completion, lasting for 4 years, with the earlier parts being delivered in common with a parallel BEng (Hons) Aeronautical Engineering. The MEng degree meets the expectations of the qualifications descriptor for master's degrees. The period of study at the lower level meets the expectations of the BEng (Hons) Aeronautical Engineering.

A 60-credit Industrial Placement and Project is integrated in the MEng programme, which enhances students’ industrial experience and further brighten students’ career opportunities.

The MEng Aeronautical Engineering programme aims to produce graduates with knowledge, understanding and skills of aeronautical engineering-based subjects and their applications in aeronautical and mechanical industries, such as advanced aerodynamics, engineering mechanics, engineering design, aircraft structures and vibration analysis, thermodynamics, propulsion, aircraft design, aircraft stability, advance flight mechanics and control, modern aircraft technology, composite design and applications, intelligence advanced control systems design, etc., including the use of variety of computer-aided design and analysis tools, such as industry-highly-required MATLAB/Simulink, Computer Aided Design, Finite Element Analysis (FEA) and Computational Fluid Dynamics (CFD) tools. It also aims to provide the breadth and depth of learning, skills, and attitudes for graduates to meet the future needs of a rapidly changing technology and business environment. The graduates will be equipped with analytical, computational, design and transferable skills, and including an awareness of social and environmental implications, and will be able to play leading professional roles in Aeronautical Engineering and related industries, to show initiative, to take responsibility and to make decisions in complex and unpredictable situations.

Career opportunities are wide ranging and the present shortage of practising engineers in the fields of aeronautical, mechanical, and manufacturing engineering which should lead to an increased demand from industry in future years. Students on these programmes in the past have been successful in seeking employment as engineering personnel with renown organisations such as Airbus, British Airways, Jaguar Cars Ltd, J C Bamford Excavators Limited (JCB), Kellogg’s Co. of Great Britain Ltd, Kronospan Ltd, Rolls Royce plc, Siemens, Toyota Motor Manufacturing Ltd, to name a few.

Distinctive features of BEng (Hons) Mechanical Engineering programme

BEng (Hons) Mechanical Engineering programme comprises fit-for-purpose teaching and a research experience which provides a solid background for a career in the engineering and manufacturing industry sector.

Lecturers are leaders in their fields with extensive industrial experience. Many of them are recognized by the IMechE. Glyndwr University is equipped with up-to-date teaching facilities including manufacturing facilities for Computer Numerical Control (CNC) machining, 3D printing or programme specific labs.

The programme provides the opportunity to combine practical aspects of day-to-day engineering as well as simulation-based projects. The university operates a computer lab with industry relevant software, e.g., MATLAB/Simulink, Computer Aided Design, Finite Element Analysis (FEA) and Computational Fluid Dynamics (CFD) tools.

An open and friendly atmosphere enhances the students’ learning experience. Strong links to local, national, and international companies ensure teaching is industry relevant and provides students with the best possible starting point into their engineering career paths taking on key roles in industry and public services.

Distinctive features of MEng Mechanical Engineering programme

The MEng Mechanical Engineering programme covers all the learning outcomes of the BEng (Hons) Mechanical Engineering and goes beyond it to provide a greater range and depth of specialist knowledge, within a research and industrial environment, as well as a broader and more general academic base.

The study of the MEng Mechanical Engineering is designed as an integrated whole from entry to completion, lasting for 4 years, with the earlier parts being delivered in common with a parallel BEng (Hons) Mechanical Engineering. The MEng degree meets the expectations of the qualifications descriptor for master's degrees. The period of study at the lower level meets the expectations of the BEng (Hons) Mechanical Engineering.

A 60-credit Industrial Placement and Project is integrated in the MEng programme, which enhances students’ industrial experience and further brighten students’ career opportunities.

The MEng Mechanical Engineering programme comprises fit-for-purpose teaching and a research experience which provides a solid background for a career in the engineering and manufacturing industry sector.

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An open and friendly atmosphere enhances the students’ learning experience. Strong links to local, national, and international companies ensure the standard of teaching is industry relevant and they provide students with the best possible starting point into their engineering career paths taking on key roles in industry and public services.

Distinctive features of BEng (Hons) Automotive Engineering programme

Glyndŵr University has a proven track of success in Automotive Engineering and Motorsport. The BEng (Hons) Automotive Engineering course aims to prepare candidates with the general knowledge and skills of the modern engineering scene as well as the specific areas of modern automotive chassis and powertrain design, analysis, development, and optimisation. It contains a set of key modules covering automotive systems, automotive dynamics and powertrain analysis, design, etc., covering the essential aspects of the modern automotive engineering field. This provides a solid background for a career in the automotive engineering and motorsport sectors.

The BEng (Hons) Automotive Engineering programme is also available as a full-time three-year programme at Despark College, Malaysia.

Lecturers and supporting staff have industrial experience as required by the professional body (EAB) and are practitioners (track racing, car building). The laboratories at Glyndŵr University are equipped with up-to-date specialist equipment and vehicles. The programme provides the opportunity to combine practical aspects as well as simulation-based projects. The university operates a computer lab with industry relevant software, e.g., MATLAB/Simulink, Computer Aided Design, Finite Element Analysis (FEA) and Computational Fluid Dynamics (CFD) tools.

An open and inclusive culture supports the positive nature of the students’ learning experience. Strong links to local, national, and international companies ensure the standard of teaching is industry relevant and they provide students with clarity and insight into their professional career paths.

Distinctive features of MEng Automotive Engineering programme

The MEng Automotive Engineering programme covers all the learning outcomes of the BEng (Hons) Automotive Engineering and goes beyond it to provide a greater range and depth of specialist knowledge, within a research and industrial environment, as well as a broader and more general academic base.

The study of the MEng Automotive Engineering is designed as an integrated whole from entry to completion, lasting for 4 years, with the earlier parts being delivered in common with a parallel BEng (Hons) Automotive Engineering. The MEng degree meets the expectations of the qualifications descriptor for master's degrees. The period of study at the lower level meets the expectations of the BEng (Hons) Automotive Engineering.

A 60-credit Industrial Placement and Project is integrated in the MEng programme, which enhances students’ industrial experience and further brighten students’ career opportunities.

Glyndŵr University has a proven track of success in Automotive Engineering and Motorsport. The MEng Automotive Engineering course aims to prepare candidates with the knowledge and skills on the areas of modern automotive chassis and powertrain design, analysis, development, and optimisation. It contains a set of key modules covering automotive systems, automotive dynamics and powertrain analysis, design, etc., covering the essential aspects of the modern automotive engineering field. This provides a solid background for a career in the automotive engineering and motorsport sectors.

Lecturers and supporting staff have industrial experience as required by the professional body (EAB) and are practitioners (track racing, car building). The laboratories at Glyndŵr University are equipped with up-to-date specialist equipment and vehicles. The programme provides the opportunity to combine practical aspects as well as simulation-based projects. The university operates a computer lab with industry relevant software, e.g., MATLAB/Simulink, Computer Aided Design, Finite Element Analysis (FEA) and Computational Fluid Dynamics (CFD) tools.

An open and inclusive culture supports the positive nature of the students’ learning experience. Strong links to local, national, and international companies ensure the standard of teaching is industry relevant and they provide students with clarity and insight into their professional career paths.

Distinctive features of BEng (Hons) Renewable and Sustainable Engineering programme

The UK and many other counties worldwide have signed legally binding contracts to reduce carbon dioxide emissions by 100% in 2050. This will mean a transition from traditional fossil fuel energy sources to renewable and sustainable energies. This BEng (hons) programme offers a graduate a chance to access this exciting, dynamic, and highly innovative field.

The programme aims to provide an up-to-date overview of all renewable energy sources. This includes the engineering skills associated with selecting, designing, and installing the apparatus to capture, as well as store, convert and transfer energy into useful forms.

As well as the engineering aspects this programme also covers energy economics and markets including cost/ benefit/ tariff/risk analysis of renewables compared with traditional fossil fuel and nuclear energy sources. Socio-economic, energy security and political issues are addressed as well as environmental factors of different energy sources.

In addition to the specialist renewable energy and sustainable modules the programme also delivers a wide range of related supporting subjects including:

* Mechanical and electrical engineering
* Engineering modelling and structural analysis.
* Structures
* Business research, etc.

The future of renewable energy will have reliance on innovative forward-thinking businesses, politicians, engineers, and managers and as such this programme encourages creativity and entrepreneurship to produce solutions to real world problems.

The diverse and unique mix of skills gained in completing this programme is designed to equip a student with a wide range of employability skills not only within renewable energy but many other engineering sectors. This has the potential to result in opportunities to seek employment worldwide within the energy sector.

Distinctive features of MEng Renewable and Sustainable Engineering programme

The MEng Renewable and Sustainable Engineering programme covers all the learning outcomes of the BEng (Hons) Renewable and Sustainable Engineering and goes beyond it to provide a greater range and depth of specialist knowledge, within a research and industrial environment, as well as a broader and more general academic base.

The study of the MEng Renewable and Sustainable Engineering is designed as an integrated whole from entry to completion, lasting for 4 years, with the earlier parts being delivered in common with a parallel BEng (Hons) Renewable and Sustainable Engineering. The MEng degree meets the expectations of the qualifications descriptor for master's degrees. The period of study at the lower level meets the expectations of the BEng (Hons) Renewable and Sustainable Engineering.

A 60-credit Industrial Placement and Project is integrated in the MEng programme, which enhances students’ industrial experience and further brighten students’ career opportunities.

The UK and many other counties worldwide have signed legally binding contracts to reduce carbon dioxide emissions by 80% in 2050. This will mean a transition from traditional fossil fuel energy sources to renewable and sustainable energies. This MEng programme offers a graduate a chance to access this exciting, dynamic, and highly innovative field.

The programme aims to provide an up-to-date overview of all renewable energy sources. This includes the engineering skills associated with selecting, designing, and installing the apparatus to capture, as well as store, convert and transfer energy into useful forms.

As well as the engineering aspects this programme also covers energy economics and markets including cost/ benefit/ tariff/risk analysis of renewables compared with traditional fossil fuel and nuclear energy sources. Socio-economic, energy security and political issues are addressed as well as environmental factors of different energy sources.

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Distinctive features of BEng (Hons) Electrical & Electronic Engineering programme

The BEng (Hons) Electrical & Electronic Engineering programme aims to produce graduates with knowledge and skills in electrical and electronic engineering-based subjects and their applications in electrical and electronic industries, such as analogue and digital electronics, embedded systems, electrical power engineering, industrial automation, and programmable logic controllers (PLCs), electronic design and testing, digital signal processing and electronic design and testing.

The programme of study includes the use of a variety of computer-aided design and analysis tools such as MathWorks MATLAB, Siemens Step 7 and National Instruments Multisim.

The programme also aims to provide the breadth and depth of learning, skills, and attitudes for graduates to meet the future needs of a rapidly changing technology and business environment. The graduates will be equipped with analytical, computational, design and transferable skills, including an awareness of social, environmental, and ethical implications, and will be able to play leading professional roles in electrical and electronic engineering and related industries by showing initiative and taking responsibility to make decisions in complex and unpredictable situations.

Career opportunities are wide ranging and to prepare the students to fill the present shortage of practising engineers in the fields of electrical engineering, specialisms at level 6 within the electrical route of the programme features an optional module in power electronics and electrical machines. To prepare students for the fast-changing roles in electronic engineering, the electronic route of the programme includes an optional module in Wireless Communication and Antennas.

Distinctive features of MEng Electrical and Electronic Engineering programme

The MEng Electrical & Electronic Engineering programme covers all the learning outcomes of the BEng (Hons) Electrical & Electronic Engineering programme and goes beyond it to provide a greater range and depth of specialist knowledge, within a research and industrial environment, as well as a broader and more general academic base.

The study of the MEng Electrical & Electronic Engineering programme is designed to be an integrated programme from entry to completion, lasting for 4 years, with the earlier parts being delivered in common with a parallel BEng (Hons) Electrical & Electronic Engineering programme. The MEng degree meets the expectations of the qualifications descriptor for master's degrees.

A 60-credit Industrial Placement and Project is integrated in the MEng programme, which enhances students’ industrial experience to improve students’ career opportunities.

The MEng Electrical & Electronic Engineering programme aims to produce graduates with knowledge and skills in electrical and electronic engineering-based subjects and their applications in industry, such as convertors drives and energy systems, renewable technology and storage integration engineering, and intelligent system design and control engineering.

The graduates will be equipped with analytical, computational, design and transferable skills, including an awareness of social and environmental implications, and will be able to play leading professional roles in electrical and electronic engineering related industries, to show initiative and to take responsibility in making decisions in an area of engineering which is continually developing and changing with technical developments.

Career opportunities are wide ranging, and the present shortage of practising engineers in the fields of electrical and electronic engineering has produced an increased demand for graduates in the field of electrical and electronic engineering.

### Credit Accumulation and exit awards

Exit Awards

Successful completion of 120 credits at Level 4 entitles the student to the exit award of Certificate of Higher Education (in one of the corresponding areas listed below)

* Aeronautical Engineering
* Automotive Engineering
* Electrical and Electronic engineering
* Mechanical Engineering
* Renewable and Sustainable Engineering

Successful completion of 240 credits including a minimum of 120 credits at Level 5 entitles the student to a Diploma of Higher Education (in one of the corresponding areas listed below)

* Aeronautical Engineering
* Automotive Engineering
* Electrical and Electronic Engineering
* Mechanical Engineering
* Renewable and Sustainable Engineering

Successful completion of 300 credits including a minimum of 60 credits at Level 6 and 120 credits at Level 5 entitles the student to a Bachelor’s degree (Ordinary) (in one of the corresponding areas listed below)

* Aeronautical Engineering
* Automotive Engineering
* Electrical and Electronic Engineering
* Mechanical Engineering
* Renewable and Sustainable Engineering

### Programme Structure Diagram, including delivery schedule

All MEng/BEng programmes have some shared modules and specialist modules. The following diagrams shows the overview of all the programmes (at different levels) in columns with modules in rows. This demonstrates the commonality and distinctiveness of the grouping of the modules. This structure facilitates the streamlined and efficient delivery of common topics/modules whilst enabling the specialisms of the programmes to be delivered to the relevant groups.

**MEng/BEng (Hons) Engineering (Specialisms) - Part-Time & Full-Time**

**Level 4**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Aeronautical Engineering** | **Automotive Engineering** | **Mechanical Engineering** | **Renewable & Sustainable Engineering** | **Electrical & Electronic Engineering** |
|  | Level 4 | | | | |
| SEM (1) | ENG461 Engineering Mathematics | | | | |
| ENG4B1 Introduction to Electrical & Mechanical Engineering Science | | | | |
| ENG4B2 CAD and Production Science | | | | |
| SEM (2) | ENG4B3 Engineering Professional Development | | | | |
| ENG4B4 Materials and Environment | | | | COM439 Problem Solving with Programming |
| ENG4B5 Modern Aircraft Technology | ENG492 Automotive Systems | ENG4B6 Mechanical Systems | ENG4B7 Future Energy Systems & Sustainability | ENG467 Analogue and Digital Electronics |

**MEng/BEng (Hons) Engineering (Specialisms) - Part-Time & Full-Time**

**Level 5**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Aeronautical Engineering** | **Automotive Engineering** | **Mechanical Engineering** | **Renewable & Sustainable Engineering** | **Electrical & Electronic Engineering** |
|  | **Level 5** | | | | |
| SEM (1) | ENG5A4 Engineering Futures – Research, Ethics, and Sustainability | | | | |
| ENG537 Further Engineering Mathematics | | | | |
| ENG5A5 Mechanics, Structures & FEA | | | | ENG5B4 Intelligent Control System Design |
| SEM (2) | ENG5A6 Computer Aided Manufacturing | | | ENG565 Electrical Power Engineering | |
| ENG5A7 Flight Mechanics, Avionics and Control | ENG557 Automotive Design | ENG5A9 Machine Design and Manufacturing | ENG5B2 Wind and Hydro Energy Engineering | ENG5AC Industrial Automations & PLCs |
| ENG538 Thermo-fluids and Propulsion | ENG5A8 Automotive Powertrains & Fluids | ENG5B1 Fluid Mechanics and Thermodynamics | ENG5B3 Solar and Biomass Energy Engineering | ENG53E Embedded Systems |
| 1 Year | ENG5B5 Industrial Placement[[1]](#footnote-2) | | | | |

**BEng (Hons) Engineering (Specialisms) - Part-Time & Full-Time**

**Level 6**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Aeronautical Engineering** | **Automotive Engineering** | **Mechanical Engineering** | **Renewable & Sustainable Engineering** | **Electrical & Electronic Engineering** |
|  | **Level 6** | | | | |
| SEM (1) | ENG6A5 Mechanical Engineering Modelling & Simulation | | | **[Option.1]**  ENG6A5 Mechanical Engineering Modelling & Simulation | ENG6C2 Digital Signal Processing |
| **[Option.2]**  ENG6A6 Electrical and Electronic Engineering Modelling & Simulation |
| ENG687 Aerodynamics | ENG6B1 Automotive Dynamics | ENG6AC Machine and Production System | ENG6B7 Smart grids, storage, and energy mix | ENG60D Electronics Design and Testing |
| ENG6A7 Aircraft Design & Flight Stability | ENG6B2 Modern Automotive Powertrains | ENG6B5 Advanced Engineering Design and Manufacturing | **[Option.1]** ENG6B8 Energy saving, Low carbon and recycling systems | **[Option.1]** ENG6C1 Wireless Communication and Antennas |
| **[Option.2]** ENG6B9 Power Electronics and Electrical Machines | |
| SEM (2) | **[Option.1]** ENG6A8 Professional Engineering | | | ENG6A8 Professional Engineering | |
| **[Option.2]**  ENG6A9 Advanced Structures and Vibrations | **[Option.2]**  ENG6B3 Motorsport Practice | **[Option.2]**  ENG6B6 Manufacturing Systems and Sustainable Engineering |
| SEM (1-2) | ENG6AG Project (40 Credits) | | | | |

**MEng Engineering (Specialisms) - Part-Time & Full-Time**

**Level 6** (Level 4 & 5 are in line with BEng Engineering (specialism), respectively)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Aeronautical Engineering** | **Automotive Engineering** | **Mechanical Engineering** | **Renewable & Sustainable Engineering** | **Electrical & Electronic Engineering** |
|  | **Level 6** | | | | |
| SEM (1) | ENG6A5 Mechanical Engineering Modelling & Simulation | | | **[Option.1]**  ENG6A5 Mechanical Engineering Modelling & Simulation | ENG6C2 Digital Signal Processing |
| **[Option.2]**  ENG6A6 Electrical and Electronic Engineering Modelling & Simulation |
| ENG687 Aerodynamics | ENG6B1 Automotive Dynamics | ENG6AC Machine and Production Systems | ENG6B7 Smart grids, storage, and energy mix | ENG60D Electronic Design and Testing |
| ENG6A7 Aircraft Design & Flight Stability | ENG6B2 Modern Automotive Powertrains | ENG6B5 Advanced Engineering Design and Manufacturing | **[Option.1]**  ENG6B8 Energy saving, Low carbon and recycling systems | **[Option.1]**  ENG6C1 Wireless Communication and Antennas |
| **[Option.2]**  ENG6B9 Power Electronics and Electrical Machines | |
| SEM (2) | ENG6C4 Industrial Placement and Project  (60 Credits) | | | | |

**MEng Engineering (Specialisms) - Part-Time & Full-Time**

**Level 7**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Aeronautical Engineering** | **Automotive Engineering** | **Mechanical Engineering** | **Renewable & Sustainable Engineering** | **Electrical & Electronic Engineering** |
|  | **Level 7** | | | | |
| SEM (1) | ENG776 Group Design Project  (40 Credits) | | | | |
| SEM (1) | ENG777 Mechanical Engineering Systems Modelling & Simulation | | | ENG777 or ENG778 Mechanical/Electrical and Electronic Engineering Systems Modelling & Simulation | ENG778 Electrical and Electronics Engineering Systems Modelling & Simulation |
| SEM (2) | **[Opt.1]** ENG781 Renewable Technology & Storage Integration Engineering  Or  **[Opt.2]** ENG782 Intelligent System Design & Control Engineering  Or  **[Opt.3]** ENG783 Design with Composites-Theory & Practice (Excl. MEng Electrical & Electronic Engineering) | | | | |
| ENG779 Applied Aerodynamics | ENG784 Modern & Innovative Powertrains | ENG766 Structural Integrity & Optimisation | ENG787 Energy Reduction & Sustainability | ENG789 Convertors, Drives and Energy Systems |
| ENG780 Advanced Flight Mechanics & Control | ENG785 Advanced Automotive Chassis Design | ENG786 Digital Manufacture | ENG788 Climate Change, Consequences, Solution & Policies | ENG790 Circuit Design Analysis & Testing |

**MEng/BEng (Hons) Aeronautical Engineering**

## Full-time delivery for MEng/BEng (Hons) Aeronautical Engineering

| **Level** | **Module Code** | **Module Title** | **Credit Value** | **Core/Option** | **Delivery (i.e., semester 1,2)** |
| --- | --- | --- | --- | --- | --- |
| Level 4 | ENG461 | Engineering Mathematics | 20 | Core | 1 |
| Level 4 | ENG4B1 | Introduction to Electrical & Mechanical Engineering Science | 20 | Core | 1 |
| Level 4 | ENG4B2 | CAD and Production Science | 20 | Core | 1 |
| Level 4 | ENG4B3 | Engineering Professional Development | 20 | Core | 2 |
| Level 4 | ENG4B4 | Materials and Environment | 20 | Core | 2 |
| Level 4 | ENG4B5 | Modern Aircraft Technology | 20 | Core | 2 |
| Level 5 | ENG5A4 | Engineering Futures – Research, Ethics, and Sustainability | 20 | Core | 1 |
| Level 5 | ENG537 | Further Engineering Mathematics | 20 | Core | 1 |
| Level 5 | ENG5A5 | Mechanics, Structures & FEA | 20 | Core | 1 |
| Level 5 | ENG5A6 | Computer Aided Manufacturing | 20 | Core | 2 |
| Level 5 | ENG5A7 | Flight Mechanics, Avionics and Control | 20 | Core | 2 |
| Level 5 | ENG538 | Thermo-fluids and Propulsion | 20 | Core | 2 |
| Level 6 | ENG6AG | Project [1] | 40 | Core | 1, 2 |
| Level 6 | ENG6A5 | Mechanical Engineering Modelling & Simulation | 20 | Core | 1 |
| Level 6 | ENG6B1 | Automotive Dynamics | 20 | Core | 1 |
| Level 6 | ENG6B2 | Modern Automotive Powertrains | 20 | Core | 1 |
| Level 6 | ENG6A8 | Professional Engineering [1] | 20 | Option | 2 |
| Level 6 | ENG6B3 | Motorsport Practice [1] | 20 | Option | 2 |
| Level 6 | ENG6C4 | Industrial Placement and Project [2] | 60 | Core | 2 |
| Level 7 | ENG776 | Group Design Project [2] | 40 | Core | 1 |
| Level 7 | ENG777 | Mechanical Engineering Systems Modelling & Simulation [2] | 20 | Core | 1 |
| Level 7 | ENG779 | Applied Aerodynamics [2] | 20 | Core | 2 |
| Level 7 | ENG780 | Advanced Flight Mechanics & Control [2] | 20 | Core | 2 |
| Level 7 | ENG781 | Renewable Technology & Storage Integration Engineering [2] | 20 | Option | 2 |
| Level 7 | ENG782 | Intelligent System Design & Control Engineering [2] | 20 | Option | 2 |
| Level 7 | ENG783 | Design with Composites-Theory & Practice [2] | 20 | Option | 2 |

[1] Modules for BEng (Hons) programmes only.

[2] Modules for MEng programmes only.

## Part-time delivery for MEng/BEng (Hons) Aeronautical Engineering

| **Level** | **Module Code** | **Module Title** | **Credit Value** | **Core/Option** | **Delivery (i.e., semester 1,2)** | **Year of Study** |
| --- | --- | --- | --- | --- | --- | --- |
| Level 4 | ENG461 | Engineering Mathematics | 20 | Core | 1 | Y1 |
| Level 4 | ENG4B2 | CAD and Production Science | 20 | Core | 1 | Y1 |
| Level 4 | ENG4B3 | Engineering Professional Development | 20 | Core | 2 | Y1 |
| Level 4 | ENG4B1 | Introduction to Electrical & Mechanical Engineering Science | 20 | Core | 1 | Y2 |
| Level 4 | ENG4B4 | Materials and Environment | 20 | Core | 2 | Y2 |
| Level 4 | ENG4B5 | Modern Aircraft Technology | 20 | Core | 2 | Y2 |
| Level 5 | ENG5A4 | Engineering Futures – Research, Ethics, and Sustainability | 20 | Core | 1 | Y3 |
| Level 5 | ENG537 | Further Engineering Mathematics | 20 | Core | 1 | Y3 |
| Level 5 | ENG5A7 | Flight Mechanics, Avionics and Control | 20 | Core | 2 | Y3 |
| Level 5 | ENG5A5 | Mechanics, Structures & FEA | 20 | Core | 1 | Y4 |
| Level 5 | ENG5A6 | Computer Aided Manufacturing | 20 | Core | 2 | Y4 |
| Level 5 | ENG538 | Thermo-fluids and Propulsion | 20 | Core | 2 | Y4 |
| Level 6 | ENG6A5 | Mechanical Engineering Modelling & Simulation | 20 | Core | 1 | Y5 |
| Level 6 | ENG687 | Aerodynamics | 20 | Core | 1 | Y5 |
| Level 6 | ENG6A8 | Professional Engineering [1] | 20 | Option | 2 | Y5 |
| Level 6 | ENG6A9 | Advanced Structures and Vibrations [1] | 20 | Option | 2 | Y5 |
| Level 6 | ENG6AG | Project | 40 | Core | 1, 2 | Y6 |
| Level 6 | ENG6A7 | Aircraft Design & Flight Stability | 20 | Core | 1 | Y6 |
| Level 7 | ENG777 | Mechanical Engineering Systems Modelling & Simulation [2] | 20 | Core | 1 | Y7 |
| Level 7 | ENG779 | Applied Aerodynamics [2] | 20 | Core | 2 | Y7 |
| Level 7 | ENG780 | Advanced Flight Mechanics & Control [2] | 20 | Core | 2 | Y7 |
| Level 7 | ENG776 | Group Design Project [2] | 40 | Core | 1 | Y8 |
| Level 7 | ENG781 | Renewable Technology & Storage Integration Engineering [2] | 20 | Option | 2 | Y8 |
| Level 7 | ENG782 | Intelligent System Design & Control Engineering [2] | 20 | Option | 2 | Y8 |
| Level 7 | ENG783 | Design with Composites-Theory & Practice [2] | 20 | Option | 2 | Y8 |

[1] Modules for BEng (Hons) programmes only.

[2] Modules for MEng programmes only.

**MEng/BEng (Hons) Automotive Engineering**

## Full-time delivery for MEng/BEng (Hons) Automotive Engineering

| **Level** | **Module Code** | **Module Title** | **Credit Value** | **Core/Option** | **Delivery (i.e., semester 1,2)** |
| --- | --- | --- | --- | --- | --- |
| Level 4 | ENG461 | Engineering Mathematics | 20 | Core | 1 |
| Level 4 | ENG4B1 | Introduction to Electrical & Mechanical Engineering Science | 20 | Core | 1 |
| Level 4 | ENG4B2 | CAD and Production Science | 20 | Core | 1 |
| Level 4 | ENG4B3 | Engineering Professional Development | 20 | Core | 2 |
| Level 4 | ENG4B4 | Materials and Environment | 20 | Core | 2 |
| Level 4 | ENG492 | Automotive Systems | 20 | Core | 2 |
| Level 5 | ENG5A4 | Engineering Futures – Research, Ethics, and Sustainability | 20 | Core | 1 |
| Level 5 | ENG537 | Further Engineering Mathematics | 20 | Core | 1 |
| Level 5 | ENG5A5 | Mechanics, Structures & FEA | 20 | Core | 1 |
| Level 5 | ENG5A6 | Computer Aided Manufacturing | 20 | Core | 2 |
| Level 5 | ENG557 | Automotive Design | 20 | Core | 2 |
| Level 5 | ENG5A8 | Automotive Powertrains & Fluids | 20 | Core | 2 |
| Level 6 | ENG6AG | Project [1] | 40 | Core | 1, 2 |
| Level 6 | ENG6A5 | Mechanical Engineering Modelling & Simulation | 20 | Core | 1 |
| Level 6 | ENG6B1 | Automotive Dynamics | 20 | Core | 1 |
| Level 6 | ENG6B2 | Modern Automotive Powertrains | 20 | Core | 1 |
| Level 6 | ENG6A8 | Professional Engineering [1] | 20 | Option | 2 |
| Level 6 | ENG6B3 | Motorsport Practice [1] | 20 | Option | 2 |
| Level 6 | ENG6C4 | Industrial Placement and Project [2] | 60 | Core | 2 |
| Level 7 | ENG776 | Group Design Project [2] | 40 | Core | 1 |
| Level 7 | ENG777 | Mechanical Engineering Systems Modelling & Simulation[2] | 20 | Core | 1 |
| Level 7 | ENG785 | Advanced Automotive Chassis Design [2] | 20 | Core | 2 |
| Level 7 | ENG784 | Modern & Innovative Powertrains [2] | 20 | Core | 2 |
| Level 7 | ENG781 | Renewable Technology & Storage Integration Engineering [2] | 20 | Option | 2 |
| Level 7 | ENG782 | Intelligent System Design & Control Engineering [2] | 20 | Option | 2 |
| Level 7 | ENG783 | Design with Composites-Theory & Practice [2] | 20 | Option | 2 |

[1] Modules for BEng (Hons) programmes only.

[2] Modules for MEng programmes only.

## Part-time delivery for MEng/BEng (Hons) Automotive Engineering

| **Level** | **Module Code** | **Module Title** | **Credit Value** | **Core/Option** | **Delivery (i.e., semester 1,2)** | **Year of Study** |
| --- | --- | --- | --- | --- | --- | --- |
| Level 4 | ENG461 | Engineering Mathematics | 20 | Core | 1 | Y1 |
| Level 4 | ENG4B2 | CAD and Production Science | 20 | Core | 1 | Y1 |
| Level 4 | ENG4B3 | Engineering Professional Development | 20 | Core | 2 | Y1 |
| Level 4 | ENG4B1 | Introduction to Electrical & Mechanical Engineering Science | 20 | Core | 1 | Y2 |
| Level 4 | ENG4B4 | Materials and Environment | 20 | Core | 2 | Y2 |
| Level 4 | ENG492 | Automotive Systems | 20 | Core | 2 | Y2 |
| Level 5 | ENG5A4 | Engineering Futures – Research, Ethics, and Sustainability | 20 | Core | 1 | Y3 |
| Level 5 | ENG537 | Further Engineering Mathematics | 20 | Core | 1 | Y3 |
| Level 5 | ENG557 | Automotive Design | 20 | Core | 2 | Y3 |
| Level 5 | ENG5A5 | Mechanics, Structures & FEA | 20 | Core | 1 | Y4 |
| Level 5 | ENG5A6 | Computer Aided Manufacturing | 20 | Core | 2 | Y4 |
| Level 5 | ENG5A8 | Automotive Powertrains & Fluids | 20 | Core | 2 | Y4 |
| Level 6 | ENG6A5 | Mechanical Engineering Modelling & Simulation | 20 | Core | 1 | Y5 |
| Level 6 | ENG6B1 | Automotive Dynamics | 20 | Core | 1 | Y5 |
| Level 6 | ENG6A8 | Professional Engineering [1] | 20 | Option | 2 | Y5 |
| Level 6 | ENG6B3 | Motorsport Practice [1] | 20 | Option | 2 | Y5 |
| Level 6 | ENG6AG | Project | 40 | Core | 1, 2 | Y6 |
| Level 6 | ENG6B2 | Modern Automotive Powertrains | 20 | Core | 1 | Y6 |
| Level 7 | ENG777 | Mechanical Engineering Systems Modelling & Simulation[2] | 20 | Core | 1 | Y7 |
| Level 7 | ENG785 | Advanced Automotive Chassis Design [2] | 20 | Core | 2 | Y7 |
| Level 7 | ENG784 | Modern & Innovative Powertrains [2] | 20 | Core | 2 | Y7 |
| Level 7 | ENG776 | Group Design Project [2] | 40 | Core | 1 | Y8 |
| Level 7 | ENG781 | Renewable Technology & Storage Integration Engineering [2] | 20 | Option | 2 | Y8 |
| Level 7 | ENG782 | Intelligent System Design & Control Engineering [2] | 20 | Option | 2 | Y8 |
| Level 7 | ENG783 | Design with Composites-Theory & Practice [2] | 20 | Option | 2 | Y8 |

[1] Modules for BEng (Hons) programmes only.

[2] Modules for MEng programmes only.

**MEng/BEng (Hons) Mechanical Engineering**

## Full-time delivery for MEng/BEng (Hons) Mechanical Engineering

| **Level** | **Module Code** | **Module Title** | **Credit Value** | **Core/Option** | **Delivery (i.e., semester 1,2)** |
| --- | --- | --- | --- | --- | --- |
| Level 4 | ENG461 | Engineering Mathematics | 20 | Core | 1 |
| Level 4 | ENG4B1 | Introduction to Electrical & Mechanical Engineering Science | 20 | Core | 1 |
| Level 4 | ENG4B2 | CAD and Production Science | 20 | Core | 1 |
| Level 4 | ENG4B3 | Engineering Professional Development | 20 | Core | 2 |
| Level 4 | ENG4B4 | Materials and Environment | 20 | Core | 2 |
| Level 4 | ENG4B6 | Mechanical Systems | 20 | Core | 2 |
| Level 5 | ENG5A4 | Engineering Futures – Research, Ethics, and Sustainability | 20 | Core | 1 |
| Level 5 | ENG537 | Further Engineering Mathematics | 20 | Core | 1 |
| Level 5 | ENG5A5 | Mechanics, Structures & FEA | 20 | Core | 1 |
| Level 5 | ENG5A6 | Computer Aided Manufacturing | 20 | Core | 2 |
| Level 5 | ENG5A9 | Machine Design and Manufacturing | 20 | Core | 2 |
| Level 5 | ENG5B1 | Fluid Mechanics and Thermodynamics | 20 | Core | 2 |
| Level 6 | ENG6AG | Project [1] | 40 | Core | 1, 2 |
| Level 6 | ENG6A5 | Mechanical Engineering Modelling & Simulation | 20 | Core | 1 |
| Level 6 | ENG6AC | Machine and Production Systems | 20 | Core | 1 |
| Level 6 | ENG6B5 | Advanced Engineering Design and Manufacturing | 20 | Core | 1 |
| Level 6 | ENG6A8 | Professional Engineering [1] | 20 | Option | 2 |
| Level 6 | ENG6B6 | Manufacturing Systems and Sustainable Engineering [1] | 20 | Option | 2 |
| Level 6 | ENG6C4 | Industrial Placement and Project [2] | 60 | Core | 2 |
| Level 7 | ENG776 | Group Design Project [2] | 40 | Core | 1 |
| Level 7 | ENG777 | Mechanical Engineering Systems Modelling & Simulation [2] | 20 | Core | 1 |
| Level 7 | ENG786 | Digital Manufacture | 20 | Core | 2 |
| Level 7 | ENG766 | Structural Integrity & Optimisation | 20 | Core | 2 |
| Level 7 | ENG781 | Renewable Technology & Storage Integration Engineering [2] | 20 | Option | 2 |
| Level 7 | ENG782 | Intelligent System Design & Control Engineering [2] | 20 | Option | 2 |
| Level 7 | ENG783 | Design with Composites-Theory & Practice [2] | 20 | Option | 2 |

[1] Modules for BEng (Hons) programmes only.

[2] Modules for MEng programmes only.

## Part-time delivery for MEng/BEng (Hons) Mechanical Engineering

| **Level** | **Module Code** | **Module Title** | **Credit Value** | **Core/Option** | **Delivery (i.e., semester 1,2)** | **Year of Study** |
| --- | --- | --- | --- | --- | --- | --- |
| Level 4 | ENG461 | Engineering Mathematics | 20 | Core | 1 | Y1 |
| Level 4 | ENG4B2 | CAD and Production Science | 20 | Core | 1 | Y1 |
| Level 4 | ENG4B3 | Engineering Professional Development | 20 | Core | 2 | Y1 |
| Level 4 | ENG4B1 | Introduction to Electrical & Mechanical Engineering Science | 20 | Core | 1 | Y2 |
| Level 4 | ENG4B4 | Materials and Environment | 20 | Core | 2 | Y2 |
| Level 4 | ENG4B6 | Mechanical Systems | 20 | Core | 2 | Y2 |
| Level 5 | ENG5A4 | Engineering Futures – Research, Ethics, and Sustainability | 20 | Core | 1 | Y3 |
| Level 5 | ENG537 | Further Engineering Mathematics | 20 | Core | 1 | Y3 |
| Level 5 | ENG5A9 | Machine Design and Manufacturing | 20 | Core | 2 | Y3 |
| Level 5 | ENG5A5 | Mechanics, Structures & FEA | 20 | Core | 1 | Y4 |
| Level 5 | ENG5A6 | Computer Aided Manufacturing | 20 | Core | 2 | Y4 |
| Level 5 | ENG5B1 | Fluid Mechanics and Thermodynamics | 20 | Core | 2 | Y4 |
| Level 6 | ENG6A5 | Mechanical Engineering Modelling & Simulation | 20 | Core | 1 | Y5 |
| Level 6 | ENG6AC | Machine and Production Systems | 20 | Core | 1 | Y5 |
| Level 6 | ENG6A8 | Professional Engineering [1] | 20 | Option | 2 | Y5 |
| Level 6 | ENG6B6 | Manufacturing Systems and Sustainable Engineering [1] | 20 | Option | 2 | Y5 |
| Level 6 | ENG6AG | Project | 40 | Core | 1, 2 | Y6 |
| Level 6 | ENG6B5 | Advanced Engineering Design and Manufacturing | 20 | Core | 1 | Y6 |
| Level 7 | ENG777 | Mechanical Engineering Systems Modelling & Simulation [2] | 20 | Core | 1 | Y7 |
| Level 7 | ENG786 | Digital Manufacture | 20 | Core | 2 | Y7 |
| Level 7 | ENG766 | Structural Integrity & Optimisation | 20 | Core | 2 | Y7 |
| Level 7 | ENG776 | Group Design Project [2] | 40 | Core | 1 | Y8 |
| Level 7 | ENG781 | Renewable Technology & Storage Integration Engineering [2] | 20 | Option | 2 | Y8 |
| Level 7 | ENG782 | Intelligent System Design & Control Engineering [2] | 20 | Option | 2 | Y8 |
| Level 7 | ENG783 | Design with Composites-Theory & Practice [2] | 20 | Option | 2 | Y8 |

[1] Modules for BEng (Hons) programmes only.

[2] Modules for MEng programmes only.

**MEng/BEng (Hons) Electrical and Electronic Engineering**

## Full-time delivery for MEng/BEng (Hons) Electrical and Electronic Engineering

| **Level** | **Module Code** | **Module Title** | **Credit Value** | **Core/Option** | **Delivery (i.e., semester 1,2)** |
| --- | --- | --- | --- | --- | --- |
| Level 4 | ENG461 | Engineering Mathematics | 20 | Core | 1 |
| Level 4 | ENG4B1 | Introduction to Electrical & Mechanical Engineering Science | 20 | Core | 1 |
| Level 4 | ENG4B2 | CAD and Production Science | 20 | Core | 1 |
| Level 4 | ENG4B3 | Engineering Professional Development | 20 | Core | 2 |
| Level 4 | COM439 | Problem Solving with Programming | 20 | Core | 2 |
| Level 4 | ENG467 | Analogue and Digital Electronics | 20 | Core | 2 |
| Level 5 | ENG5A4 | Engineering Futures – Research, Ethics, and Sustainability | 20 | Core | 1 |
| Level 5 | ENG537 | Further Engineering Mathematics | 20 | Core | 1 |
| Level 5 | ENG5B4 | Intelligent Control System Design | 20 | Core | 1 |
| Level 5 | ENG565 | Electrical Power Engineering | 20 | Core | 2 |
| Level 5 | ENG5AC | Industrial Automations & PLCs | 20 | Core | 2 |
| Level 5 | ENG53E | Embedded Systems | 20 | Core | 2 |
| Level 6 | ENG6AG | Project [1] | 40 | Core | 1, 2 |
| Level 6 | ENG6C2 | Digital Signal Processing | 20 | Core | 1 |
| Level 6 | ENG60D | Electronic Design and Testing | 20 | Core | 1 |
| Level 6 | ENG6C1 | Wireless Communication and Antennas | 20 | Option | 1 |
| Level 6 | ENG6B9 | Power Electronics and Electrical Machines | 20 | Option | 1 |
| Level 6 | ENG6A8 | Professional Engineering [1] | 20 | Core | 2 |
| Level 6 | ENG6C4 | Industrial Placement and Project [2] | 60 | Core | 2 |
| Level 7 | ENG776 | Group Design Project [2] | 40 | Core | 1 |
| Level 7 | ENG778 | Electrical and Electronics Engineering Systems Modelling & Simulation [2] | 20 | Core | 1 |
| Level 7 | ENG789 | Convertors, Drives and Energy Systems [2] | 20 | Core | 2 |
| Level 7 | ENG790 | Circuit Design Analysis and Testing [2] | 20 | Core | 2 |
| Level 7 | ENG781 | Renewable Technology & Storage Integration Engineering [2] | 20 | Option | 2 |
| Level 7 | ENG782 | Intelligent System Design & Control Engineering [2] | 20 | Option | 2 |

[1] Modules for BEng (Hons) programmes only.

[2] Modules for MEng programmes only.

## Part-time delivery for MEng/BEng (Hons) Electrical and Electronic Engineering

| **Level** | **Module Code** | **Module Title** | **Credit Value** | **Core/Option** | **Delivery (i.e., semester 1,2)** | **Year of Study** |
| --- | --- | --- | --- | --- | --- | --- |
| Level 4 | ENG461 | Engineering Mathematics | 20 | Core | 1 | Y1 |
| Level 4 | ENG4B2 | CAD and Production Science | 20 | Core | 1 | Y1 |
| Level 4 | ENG4B3 | Engineering Professional Development | 20 | Core | 2 | Y1 |
| Level 4 | ENG4B1 | Introduction to Electrical & Mechanical Engineering Science | 20 | Core | 1 | Y2 |
| Level 4 | COM439 | Problem Solving with Programming | 20 | Core | 2 | Y2 |
| Level 4 | ENG467 | Analogue and Digital Electronics | 20 | Core | 2 | Y2 |
| Level 5 | ENG5A4 | Engineering Futures – Research, Ethics, and Sustainability | 20 | Core | 1 | Y3 |
| Level 5 | ENG537 | Further Engineering Mathematics | 20 | Core | 1 | Y3 |
| Level 5 | ENG5AC | Industrial Automations & PLCs | 20 | Core | 2 | Y3 |
| Level 5 | ENG5B4 | Intelligent Control System Design | 20 | Core | 1 | Y4 |
| Level 5 | ENG565 | Electrical Power Engineering | 20 | Core | 2 | Y4 |
| Level 5 | ENG53E | Embedded Systems | 20 | Core | 2 | Y4 |
| Level 6 | ENG6C2 | Digital Signal Processing | 20 | Core | 1 | Y5 |
| Level 6 | ENG6A8 | Professional Engineering [1] | 20 | Core | 2 | Y5 |
| Level 6 | ENG6C1 | Wireless Communication and Antennas | 20 | Option | 1 | Y5 |
| Level 6 | ENG6B9 | Power Electronics and Electrical Machines | 20 | Option | 1 | Y5 |
| Level 6 | ENG60D | Electronic Design and Testing | 20 | Core | 1 | Y6 |
| Level 6 | ENG6AG | Project | 40 | Core | 1, 2 | Y6 |
| Level 7 | ENG778 | Electrical and Electronics Engineering Systems Modelling & Simulation [2] | 20 | Core | 1 | Y7 |
| Level 7 | ENG789 | Convertors, Drives and Energy Systems [2] | 20 | Core | 2 | Y7 |
| Level 7 | ENG790 | Circuit Design Analysis and Testing [2] | 20 | Core | 2 | Y7 |
| Level 7 | ENG776 | Group Design Project [2] | 40 | Core | 1 | Y8 |
| Level 7 | ENG781 | Renewable Technology & Storage Integration Engineering [2] | 20 | Option | 2 | Y8 |
| Level 7 | ENG782 | Intelligent System Design & Control Engineering [2] | 20 | Option | 2 | Y8 |

[1] Modules for BEng (Hons) programmes only.

[2] Modules for MEng programmes only.

**MEng/BEng (Hons) Renewable and Sustainable Engineering**

## Full-time delivery for MEng/BEng (Hons) Renewable and Sustainable Engineering

| **Level** | **Module Code** | **Module Title** | **Credit Value** | **Core/Option** | **Delivery (i.e., semester 1,2)** |
| --- | --- | --- | --- | --- | --- |
| Level 4 | ENG461 | Engineering Mathematics | 20 | Core | 1 |
| Level 4 | ENG4B1 | Introduction to Electrical & Mechanical Engineering Science | 20 | Core | 1 |
| Level 4 | ENG4B2 | CAD and Production Science | 20 | Core | 1 |
| Level 4 | ENG4B3 | Engineering Professional Development | 20 | Core | 2 |
| Level 4 | ENG4B4 | Materials and Environment | 20 | Core | 2 |
| Level 4 | ENG4B7 | Future Energy Systems & Sustainability | 20 | Core | 2 |
| Level 5 | ENG5A4 | Engineering Futures – Research, Ethics, and Sustainability | 20 | Core | 1 |
| Level 5 | ENG537 | Further Engineering Mathematics | 20 | Core | 1 |
| Level 5 | ENG5A5 | Mechanics, Structures & FEA | 20 | Core | 1 |
| Level 5 | ENG565 | Electrical Power Engineering | 20 | Core | 2 |
| Level 5 | ENG5B2 | Wind and Hydro Energy Engineering | 20 | Core | 2 |
| Level 5 | ENG5B3 | Solar and Biomass Energy Engineering | 20 | Core | 2 |
| Level 6 | ENG6AG | Project [1] | 40 | Core | 1, 2 |
| Level 6 | ENG6A6 | Electrical and Electronic Engineering Modelling & Simulation | 20 | Option | 1 |
| Level 6 | ENG6A5 | Mechanical Engineering Modelling & Simulation | 20 | Option | 1 |
| Level 6 | ENG6B7 | Smart grids, storage, and energy mix | 20 | Core | 1 |
| Level 6 | ENG6B8 | Energy saving, Low carbon and recycling systems | 20 | Option | 1 |
| Level 6 | ENG6B9 | Power Electronics and Electrical Machines | 20 | Option | 1 |
| Level 6 | ENG6A8 | Professional Engineering [1] | 20 | Core | 2 |
| Level 6 | ENG6C4 | Industrial Placement and Project [2] | 60 | Core | 2 |
| Level 7 | ENG776 | Group Design Project [2] | 40 | Core | 1 |
| Level 7 | ENG777 | Mechanical Engineering Systems Modelling & Simulation [2] | 20 | Option | 1 |
| Level 7 | ENG778 | Electrical and Electronics Engineering Systems Modelling & Simulation [2] | 20 | Option | 1 |
| Level 7 | ENG787 | Energy Reduction & Sustainability [2] | 20 | Core | 2 |
| Level 7 | ENG788 | Climate Change, Consequences, Solution & Policies [2] | 20 | Core | 2 |
| Level 7 | ENG781 | Renewable Technology & Storage Integration Engineering [2] | 20 | Option | 2 |
| Level 7 | ENG782 | Intelligent System Design & Control Engineering [2] | 20 | Option | 2 |
| Level 7 | ENG783 | Design with Composites-Theory & Practice [2] | 20 | Option | 2 |

[1] Modules for BEng (Hons) programmes only.

[2] Modules for MEng programmes only.

## Part-time delivery for BEng (Hons) Renewable and Sustainable Engineering

| **Level** | **Module Code** | **Module Title** | **Credit Value** | **Core/Option** | **Delivery (i.e., semester 1,2)** | **Year of Study** |
| --- | --- | --- | --- | --- | --- | --- |
| Level 4 | ENG461 | Engineering Mathematics | 20 | Core | 1 | Y1 |
| Level 4 | ENG4B2 | CAD and Production Science | 20 | Core | 1 | Y1 |
| Level 4 | ENG4B3 | Engineering Professional Development | 20 | Core | 2 | Y1 |
| Level 4 | ENG4B1 | Introduction to Electrical & Mechanical Engineering Science | 20 | Core | 1 | Y2 |
| Level 4 | ENG4B4 | Materials and Environment | 20 | Core | 2 | Y2 |
| Level 4 | ENG4B7 | Future Energy Systems & Sustainability | 20 | Core | 2 | Y2 |
| Level 5 | ENG5A4 | Engineering Futures – Research, Ethics, and Sustainability | 20 | Core | 1 | Y3 |
| Level 5 | ENG537 | Further Engineering Mathematics | 20 | Core | 1 | Y3 |
| Level 5 | ENG5B2 | Wind and Hydro Energy Engineering | 20 | Core | 2 | Y3 |
| Level 5 | ENG5A5 | Mechanics, Structures & FEA | 20 | Core | 1 | Y4 |
| Level 5 | ENG565 | Electrical Power Engineering | 20 | Core | 2 | Y4 |
| Level 5 | ENG5B3 | Solar and Biomass Energy Engineering | 20 | Core | 2 | Y4 |
| Level 6 | ENG778 | Electrical and Electronic Engineering Modelling & Simulation | 20 | Option | 1 | Y5 |
| Level 6 | ENG777 | Mechanical Engineering Modelling & Simulation | 20 | Option | 1 | Y5 |
| Level 6 | ENG6A8 | Professional Engineering [1] | 20 | Core | 2 | Y5 |
| Level 6 | ENG6B9 | Power Electronics and Electrical Machines | 20 | Option | 1 | Y5 |
| Level 6 | ENG6B8 | Energy saving, Low carbon and recycling systems | 20 | Option | 1 | Y5 |
| Level 6 | ENG6B7 | Smart grids, storage, and energy mix | 20 | Core | 1 | Y6 |
| Level 6 | ENG6AG | Project | 40 | Core | 1, 2 | Y6 |
| Level 7 | ENG777 | Mechanical Engineering Systems Modelling & Simulation [2] | 20 | Option | 1 | Y7 |
| Level 7 | ENG778 | Electrical and Electronics Engineering Systems Modelling & Simulation [2] | 20 | Option | 1 | Y7 |
| Level 7 | ENG787 | Energy Reduction & Sustainability [2] | 20 | Core | 2 | Y7 |
| Level 7 | ENG788 | Climate Change, Consequences, Solution & Policies [2] | 20 | Core | 2 | Y7 |
| Level 7 | ENG781 | Renewable Technology & Storage Integration Engineering [2] | 20 | Option | 2 | Y8 |
| Level 7 | ENG782 | Intelligent System Design & Control Engineering [2] | 20 | Option | 2 | Y8 |
| Level 7 | ENG783 | Design with Composites-Theory & Practice [2] | 20 | Option | 2 | Y8 |
| Level 7 | ENG776 | Group Design Project [2] | 40 | Core | 1 | Y8 |

[1] Modules for BEng (Hons) programmes only.

[2] Modules for MEng programmes only.

### Intended learning outcomes of the programme

## MEng/BEng (Hons) Aeronautical Engineering

## Knowledge and Understanding (MEng/BEng (Hons) Aeronautical Engineering)

|  | Level 4 | Level 5 | Level 6 | Level 6 (Hons) | Level 7 |
| --- | --- | --- | --- | --- | --- |
| A1 | Acquire knowledge of mathematics, statistics natural science, and engineering concepts and principles relevant to engineering. | Develop sound application of analytical techniques, and general and specialist engineering knowledge and understanding. | Develop critical analysis of analytical techniques, and the general and specialist engineering knowledge and understand complex engineering systems. | Maintain and extend critical analysis of analytical techniques, and the general and specialist engineering knowledge and critical understanding of complex engineering systems. | Maintain and extend critical analysis of analytical techniques, and the general and specialist engineering knowledge and critical evaluation of complex engineering systems. Much of the knowledge will be at the forefront of the subject of study and informed by a critical awareness of new developments and the wider context of engineering. |
| A2 | Describe current technologies and their uses within engineering. | Explain current and future technologies and develop an awareness of the sustainability implications. | Critically analyse current issues and prospects at the forefront of the discipline. | Critically evaluate current issues and prospects in technology advances in the discipline. | Extend the critical evaluation and analysis of current issues and synthesise prospects at the forefront of the discipline. |
| A3 | Identify and illustrate design processes, explain the applied methodologies, and develop an awareness of the environmental, commercial, economic, and social context of engineering processes, and outline relevant legal requirements governing engineering activities, including personnel, health & safety. | Review and evaluate the design process and the applied methodologies. This will involve consideration of applicable health & safety, diversity, inclusion, cultural, societal, environmental, and commercial matters, codes of practice and industry standards. | Design solutions for problems with consideration of applicable health & safety, diversity, inclusion, cultural, societal, environmental, and commercial matters, codes of practice and industry standards. | Design solutions for complex problems that meet a combination of societal, user, business and customer need as appropriate. This will involve consideration of applicable health & safety, diversity, inclusion, cultural, societal, environmental, and commercial matters, codes of practice and industry standards. | Develop technological solutions for complex problems that evidence some originality and meet a combination of societal, user, business and customer need as appropriate. This will involve consideration of applicable health & safety, diversity, inclusion, cultural, societal, environmental, and commercial matters, codes of practice and industry standards. |
| A4 | Describe modern aircraft technologies and identify scientific principles relevant to the advances in modern aircraft. | Explain the scientific principles governing the design and analysis of aircraft structure, dynamics, and control. | Critically analyse modern aircraft design, and knowledge of aerodynamics, flight mechanics, flight stability and control, and structural vibration analysis. | Critically analyse and evaluate modern aircraft design and analysis technologies, and knowledge of aerodynamics, flight mechanics, flight stability and control, and structural vibration analysis. | Maintain and extend comprehensive knowledge and critical application of modern aircraft design and analysis technologies, and an in-depth understanding of aerodynamics, flight mechanics, and flight control. |

## Intellectual Skills (MEng/BEng (Hons) Aeronautical Engineering)

|  | Level 4 | Level 5 | Level 6 | Level 6 (Hons) | Level 7 |
| --- | --- | --- | --- | --- | --- |
| B1 | Identify problems and potential causes and effects. | Identify and analyse problems and use diagnostic methods to recognise causes and achieve satisfactory solutions. | Critically identify and analyse problems and use diagnostic methods to recognise causes and to implement an engineering task to achieve satisfactory solutions. | Identify a project, critically evaluate the requirements of the project, and plan the work and resources needed to enable effective implementation of an engineering task or project with consideration for cost, quality, safety, and environmental impact. | Identify and define project requirements, problems, and opportunities, and plan the work and resources needed to enable effective implementation of a significant engineering task or project, based on a strong application of legal requirements, appropriate ethical conduct and associated risks that may occur and with consideration for cost, quality, safety, and environmental impact. |
| B2 | Apply given tools/ methods to the solution of well-defined problems and begin to appreciate the complexity of the issues | Identify the appropriate investigations and apply an integrated or systems approach to the solution of broadly defined problems. | Identify the appropriate investigations and apply an integrated or systems approach to the solution of broadly defined problems with consideration of budget and resource elements. | Identify the appropriate investigations, apply an integrated or systems approach to the solution of complex problems, and manage (organise, direct and control), programme or schedule, budget and resource elements of engineering tasks or projects. | Identify the appropriate investigations and research needed to undertake the design, development and critical analysis required to complete an engineering task and conduct these activities effectively, apply an integrated or systems approach to the solution of complex problems, and manage (organise, direct and control), programme or schedule, budget and resource elements of a significant engineering task or project. |
| B3 | Analyse well-defined problems reaching conclusions. Select and apply appropriate computational and analytical techniques to model well-defined problems. | Analyse broadly defined problems reaching substantiated conclusions. Select and apply appropriate computational and analytical techniques to model broadly defined problems, recognising the limitations of the techniques employed. | Critically analyse broadly defined problems to reach substantiated conclusions. Select and apply appropriate computational and analytical techniques to model broadly defined problems, recognising the limitations of the techniques employed. | Critically analyse and evaluate complex problems to reach substantiated conclusions. Select and apply appropriate computational and analytical techniques to model complex problems, recognising the limitations of the techniques employed. | Formulate and critically analyse complex problems to reach substantiated conclusions. Select and apply appropriate computational and analytical techniques to model complex problems, discussing the limitations of the techniques employed. |
| B4 | Form opinions based upon knowledge and understanding of the subject in question and evaluate the environmental and societal impact of solutions to broadly defined problems. | Present arguments to uphold decisions following an evaluation of a particular subject. Evaluate the environmental and societal impact of solutions to broadly defined problems. | Assess, interpret, and implement decisions following an evaluation of a particular subject. Evaluate the environmental and societal impact of solutions to broadly defined problems. | Assess, interpret, and implement decisions with an awareness of technical, economic, and commercial implications. Critically evaluate the environmental and societal impact of solutions to complex problems and minimise adverse impacts. | Assess, interpret, and implement decisions with a critical awareness of technical, economic, and commercial implications. Critically evaluate the environmental and societal impact of solutions to complex problems (to include the entire life cycle of a product or process) and minimise adverse impacts. |

## Subject Skills (MEng/BEng (Hons) Aeronautical Engineering)

|  | Level 4 | Level 5 | Level 6 | Level 6 (Hons) | Level 7 |
| --- | --- | --- | --- | --- | --- |
| C1 | Conduct given laboratory experiments to investigate engineering principles and properties of devices and systems. | Devise laboratory experiments to prove engineering principles and properties of devices and systems. | Conduct and analyse experiments, adapting experimental procedures to novel situations, if necessary, critically analysing experimental data in detail, and drawing conclusions. | Conduct and critically analyse experiments, adapting experimental procedures to novel situations, if necessary, critically analysing experimental data in detail, and drawing comprehensive conclusions. | Use practical laboratory and workshop skills to investigate complex problems. Conduct and critically analyse experiments, adapting experimental procedures to novel situations, if necessary, critically analysing experimental data in detail, and drawing comprehensive conclusions. |
| C2 | Design and construct devices and systems to meet given performance criteria. | Design and construct devices/systems and devise methods of testing to check for given performance criteria. | Design, construct and test devices and systems to meet given performance criteria, including the use of computer-based tools where appropriate. | Design, construct, test and critically evaluate devices and systems to meet given performance criteria, including the use of computer-based tools. | Design, construct, test and critically evaluate devices and systems to meet given performance criteria, including the use of computer-based tools. |
| C3 | Monitor processes or systems and develop an awareness of possible improvements. | Monitor processes or systems, trend processes and make predictions, to bring about continuous improvement. | Extract and evaluate information relating to trends and processes to make predictions, to solve engineering problems. | Critically analyse and evaluate processes, techniques or systems relating to unfamiliar problems with an awareness of quality issues and their application to continuous improvement. | Critically analyse and evaluate processes, techniques or systems relating to complex problems with a critical awareness of quality issues and their application to continuous improvement. |
| C4 | Perform data acquisition and conduct investigation on modern aircraft technology applications. | Conduct structural strength and dynamic stability analyses in a modern aircraft design process. | Systematically plan and carry out aircraft structural, dynamic, stability, and control analysis and design. | Deal with the issues of aircraft structural vibration, dynamic and control design, and analysis systematically and creatively, and make sound engineering judgements. | Deal with the issues of complex and innovative aircraft configuration, structure, dynamic and control design, and analysis systematically and creatively, and make sound engineering judgements. |

## Practical, Professional and Employability Skills (MEng/BEng (Hons) Aeronautical Engineering)

|  | Level 4 | Level 5 | Level 6 | Level 6 (Hons) | Level 7 |
| --- | --- | --- | --- | --- | --- |
| D1 | Propose and plan a self-directed individual programme of investigation. | Plan, undertake and report a self-directed individual programme of investigation and design. | Propose, plan, undertake and report a self-directed individual programme of investigation, design, and implementation. | Propose, plan, undertake and report a self-directed individual programme of investigation, design, and implementation. | Synthesise, propose, plan, undertake and report a self-directed individual programme of investigation, design, and implementation. |
| D2 | Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity. | Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity. | Use a risk management process to identify, critically evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity. | Use a risk management process to identify, critically evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity. | Use a risk management process to identify, critically evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity. |
| D3 | Use oral, written, and electronic methods for the communication of technical and other information. | Use oral, written, and electronic methods for competent communication of technical and other information. | Communicate effectively on complex engineering matters with technical and non-technical audiences. | Communicate effectively on complex engineering matters with technical and non-technical audiences, evaluating the effectiveness of the methods used. | Communicate effectively on complex engineering matters with technical and non-technical audiences, evaluating the effectiveness of the methods used. Identify problems, bias, and recommendations effectively through graphical, written, and verbal forms of communication. |
| D4 | Identify basic information and suitable sources, carry out searches and bring information together in a way that ensures work is accurate, clear, and properly saved. | Plan how to obtain and use required information for the purpose of an activity and use appropriate structures and procedures to explore and develop information. | Use information technology to source information, to prepare reports, to model performance using specialised software packages. | Use information technology competently to source information, to prepare reports, to model performance using specialised software packages. | Use information technology competently - to source information and synthesise solutions, to prepare reports, to model performance using specialised software packages. |
| D5 | Work reliably without close supervision accepting responsibility for tasks undertaken. Use CPD to maintain competence and reflective practice | Demonstrate the ability to work reliably and effectively without supervision accepting responsibility for tasks undertaken. Make effective use of CPD to ensure ongoing competence at the level of future intended practice. | Be able to reflect on own performance and self-management. Plan and record self-learning and development as the foundation for lifelong learning/CPD. | Evaluate and reflect on own performance and self-management. Plan and record self-learning and development as the foundation for lifelong learning/CPD. | Evaluate and reflect on own performance and self-management. Plan and record self-learning and development as the foundation for lifelong learning/CPD. |
| D6 | Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct. | Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct. | Interpret the role of the engineer as a manager of themselves and of others, ensuring professional and ethical conduct and acting within the legal framework governing engineering activities. | Interpret the role of the engineer as a manager of themselves and of others, ensuring the highest level of professional and ethical conduct and acting within the legal framework governing engineering activities. | Interpret the role of the engineer as a manager of themselves and of others, ensuring the highest level of professional and ethical conduct and acting within the legal framework governing engineering activities. |

**MEng/BEng (Hons) Automotive Engineering**

## Knowledge and Understanding (MEng/BEng (Hons) Automotive Engineering)

|  | Level 4 | Level 5 | Level 6 | Level 6 (Hons) | Level 7 |
| --- | --- | --- | --- | --- | --- |
| A1 | Acquire knowledge of mathematics, statistics natural science, and engineering concepts and principles relevant to engineering. | Develop sound application of analytical techniques, and general and specialist engineering knowledge and understanding. | Develop critical analysis of analytical techniques, and the general and specialist engineering knowledge and understand complex engineering systems. | Maintain and extend critical analysis of analytical techniques, and the general and specialist engineering knowledge and critical understanding of complex engineering systems. | Maintain and extend critical analysis of analytical techniques, and the general and specialist engineering knowledge and critical evaluation of complex engineering systems. Much of the knowledge will be at the forefront of the particular subject of study and informed by a critical awareness of new developments and the wider context of engineering. |
| A2 | Describe current technologies and their uses within engineering. | Explain current and future technologies and develop an awareness of the sustainability implications. | Critically analyse current issues and prospects at the forefront of the discipline. | Critically evaluate current issues and prospects in technology advances in the discipline. | Extend the critical evaluation and analysis of current issues and synthesise prospects at the forefront of the discipline. |
| A3 | Identify and illustrate design processes, explain the applied methodologies, and develop an awareness of the environmental, commercial, economic, and social context of engineering processes, and outline relevant legal requirements governing engineering activities, including personnel, health & safety. | Review and evaluate the design process and the applied methodologies. This will involve consideration of applicable health & safety, diversity, inclusion, cultural, societal, environmental, and commercial matters, codes of practice and industry standards. | Design solutions for problems with consideration of applicable health & safety, diversity, inclusion, cultural, societal, environmental, and commercial matters, codes of practice and industry standards. | Design solutions for complex problems that meet a combination of societal, user, business and customer need as appropriate. This will involve consideration of applicable health & safety, diversity, inclusion, cultural, societal, environmental, and commercial matters, codes of practice and industry standards. | Develop technological solutions for complex problems that evidence some originality and meet a combination of societal, user, business and customer need as appropriate. This will involve consideration of applicable health & safety, diversity, inclusion, cultural, societal, environmental, and commercial matters, codes of practice and industry standards. |
| A4 | Describe different automotive systems, including both traditional car and electrical car, and the knowledge and skills in workshop practices. | Be able to explain key concepts in automotive engineering and specify vehicle performance and automotive engines. | Model automotive powertrains and critically analyse the key indicators of car stability and dynamics. | Critically evaluate automotive engineering and be able to solve complex problems pertaining to them. | Maintain and extend comprehensive analysis and critical evaluation of automotive engineering design, analysis, evaluation, and testing. |

## Intellectual Skills (MEng/BEng (Hons) Automotive Engineering)

|  | Level 4 | Level 5 | Level 6 | Level 6 (Hons) | Level 7 |
| --- | --- | --- | --- | --- | --- |
| B1 | Identify problems and potential causes and effects. | Identify and analyse problems and use diagnostic methods to recognise causes and achieve satisfactory solutions. | Critically identify and analyse problems and use diagnostic methods to recognise causes and to implement an engineering task to achieve satisfactory solutions. | Identify a project, analyse the requirements of the project, and plan the work and resources needed to enable effective implementation of an engineering task or project with consideration for cost, quality, safety, and environmental impact. | Identify and define project requirements, problems, and opportunities, and plan the work and resources needed to enable effective implementation of a significant engineering task or project, based on a strong understanding of legal requirements, appropriate ethical conduct and associated risks that may occur and with consideration for cost, quality, safety, and environmental impact. |
| B2 | Apply given tools/ methods to the solution of well-defined problems and begin to appreciate the complexity of the issues | Identify the appropriate investigations and apply an integrated or systems approach to the solution of broadly defined problems. | Identify the appropriate investigations and apply an integrated or systems approach to the solution of broadly defined problems with consideration of budget and resource elements. | Identify the appropriate investigations, apply an integrated or systems approach to the solution of complex problems, and manage (organise, direct and control), programme or schedule, budget and resource elements of engineering tasks or projects. | Identify the appropriate investigations and research needed to undertake the design, development and critical analysis required to complete an engineering task and conduct these activities effectively, apply an integrated or systems approach to the solution of complex problems, and manage (organise, direct and control), programme or schedule, budget and resource elements of a significant engineering task or project. |
| B3 | Analyse well-defined problems reaching conclusions. Select and apply appropriate computational and analytical techniques to model well-defined problems. | Analyse broadly defined problems reaching substantiated conclusions. Select and apply appropriate computational and analytical techniques to model broadly defined problems, recognising the limitations of the techniques employed. | Critically analyse broadly defined problems to reach substantiated conclusions. Select and apply appropriate computational and analytical techniques to model broadly defined problems, recognising the limitations of the techniques employed. | Critically analyse complex problems to reach substantiated conclusions. Select and apply appropriate computational and analytical techniques to model complex problems, recognising the limitations of the techniques employed. | Formulate and critically analyse complex problems to reach substantiated conclusions. Select and apply appropriate computational and analytical techniques to model complex problems, discussing the limitations of the techniques employed. |
| B4 | Form opinions based upon knowledge and understanding of the subject in question and evaluate the environmental and societal impact of solutions to broadly defined problems. | Present arguments to uphold decisions following an evaluation of a particular subject. Evaluate the environmental and societal impact of solutions to broadly defined problems. | Assess, interpret, and implement decisions following an evaluation of a particular subject. Evaluate the environmental and societal impact of solutions to broadly defined problems. | Assess, interpret, and implement decisions with an awareness of technical, economic, and commercial implications. Critically evaluate the environmental and societal impact of solutions to complex problems and minimise adverse impacts. | Assess, interpret, and implement decisions with a critical awareness of technical, economic, and commercial implications. Critically evaluate the environmental and societal impact of solutions to complex problems (to include the entire life cycle of a product or process) and minimise adverse impacts. |

## Subject Skills (MEng/BEng (Hons) Automotive Engineering)

|  | Level 4 | Level 5 | Level 6 | Level 6 (Hons) | Level 7 |
| --- | --- | --- | --- | --- | --- |
| C1 | Conduct given laboratory experiments to investigate engineering principles and properties of devices and systems. | Devise laboratory experiments to prove engineering principles and properties of devices and systems. | Conduct and analyse experiments, adapting experimental procedures to novel situations if necessary, critically analysing experimental data in detail, and drawing conclusions. | Conduct and critically analyse experiments, adapting experimental procedures to novel situations, if necessary, critically analysing experimental data in detail, and drawing comprehensive conclusions. | Use practical laboratory and workshop skills to investigate complex problems. Conduct and critically analyse experiments, adapting experimental procedures to novel situations if necessary, critically analysing experimental data in detail, and drawing comprehensive conclusions. |
| C2 | Design and construct devices and systems to meet given performance criteria. | Design and construct devices/systems and devise methods of testing to check for given performance criteria. | Design, construct and test devices and systems to meet given performance criteria, including the use of computer-based tools where appropriate. | Design, construct, test and critically evaluate devices and systems to meet given performance criteria, including the use of computer-based tools. | Design, construct, test and critically evaluate devices and systems to meet given performance criteria, including the use of computer-based tools. |
| C3 | Monitor processes or systems and develop an awareness of possible improvements. | Monitor processes or systems, trend processes and make predictions, to bring about continuous improvement. | Extract and evaluate information relating to trends and processes to make predictions, to solve engineering problems. | Critically analyse and evaluate processes, techniques or systems relating to unfamiliar problems with an awareness of quality issues and their application to continuous improvement. | Critically analyse and evaluate processes, techniques or systems relating to complex problems with a critical awareness of quality issues and their application to continuous improvement. |
| C4 | Be able to describe automotive manufacture and the impact of powertrains on the general design of a vehicle. | Be able to design and implement automotive chassis and powertrains. | Be able to find solutions to an automotive specific field, using various tools and techniques, including numerical simulation. | Be able to deal with the complex evaluation and to find solutions to an automotive specific field, using various tools and techniques, including numerical simulation. | Be able to conduct critical evaluation and to develop comprehensive and innovative solutions to complex automotive engineering problems using various tools and techniques, including numerical simulation. |

## Practical, Professional and Employability Skills (MEng/BEng (Hons) Automotive Engineering)

|  | Level 4 | Level 5 | Level 6 | Level 6 | Level 7 |
| --- | --- | --- | --- | --- | --- |
| D1 | Propose and plan a self-directed individual programme of investigation. | Plan, undertake and report a self-directed individual programme of investigation and design. | Propose, plan, undertake and report a self-directed individual programme of investigation, design, and implementation. | Propose, plan, undertake and report a self-directed individual programme of investigation, design, and implementation. | Synthesise, propose, plan, undertake and report a self-directed individual programme of investigation, design, and implementation. |
| D2 | Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity. | Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity. | Use a risk management process to identify, critically evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity. | Use a risk management process to identify, critically evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity. | Use a risk management process to identify, critically evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity. |
| D3 | Use oral, written, and electronic methods for the communication of technical and other information. | Use oral, written, and electronic methods for competent communication of technical and other information. | Communicate effectively on complex engineering matters with technical and non-technical audiences. | Communicate effectively on complex engineering matters with technical and non-technical audiences, evaluating the effectiveness of the methods used. | Communicate effectively on complex engineering matters with technical and non-technical audiences, evaluating the effectiveness of the methods used. Identify problems, bias, and recommendations effectively through graphical, written, and verbal forms of communication. |
| D4 | Identify basic information and suitable sources, carry out searches and bring information together in a way that ensures work is accurate, clear, and properly saved. | Plan how to obtain and use required information for the purpose of an activity and use appropriate structures and procedures to explore and develop information. | Use information technology to source information, to prepare reports, to model performance using specialised software packages. | Use information technology competently - to source information, to prepare reports, to model performance using specialised software packages. | Use information technology competently - to source information, to prepare reports, to model performance using specialised software packages. |
| D5 | Work reliably without close supervision accepting responsibility for tasks undertaken. Use CPD to maintain competence and reflective practice | Demonstrate the ability to work reliably and effectively without supervision accepting responsibility for tasks undertaken. Make effective use of CPD to ensure ongoing competence at the level of future intended practice. | Be able to reflect on own performance and self-management. Plan and record self-learning and development as the foundation for lifelong learning/CPD. | Evaluate and reflect on own performance and self-management. Plan and record self-learning and development as the foundation for lifelong learning/CPD. | Evaluate and reflect on own performance and self-management. Plan and record self-learning and development as the foundation for lifelong learning/CPD. |
| D6 | Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct. | Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct. | Interpret the role of the engineer as a manager of themselves and of others, ensuring professional and ethical conduct and acting within the legal framework governing engineering activities. | Interpret the role of the engineer as a manager of themselves and of others, ensuring the highest level of professional and ethical conduct and acting within the legal framework governing engineering activities. | Interpret the role of the engineer as a manager of themselves and of others, ensuring the highest level of professional and ethical conduct and acting within the legal framework governing engineering activities. |

**MEng/BEng (Hons) Mechanical Engineering**

## Knowledge and Understanding (MEng/BEng (Hons) Mechanical Engineering)

|  | Level 4 | Level 5 | Level 6 | Level 6 (Hons) | Level 7 |
| --- | --- | --- | --- | --- | --- |
| A1 | Acquire knowledge of mathematics, statistics natural science, and engineering concepts and principles relevant to engineering. | Develop sound application of analytical techniques, and general and specialist engineering knowledge and understanding. | Develop critical analysis of analytical techniques, and the general and specialist engineering knowledge and understand complex engineering systems. | Maintain and extend critical analysis of analytical techniques, and the general and specialist engineering knowledge and critical understanding of complex engineering systems. | Maintain and extend critical analysis of analytical techniques, and the general and specialist engineering knowledge and critical evaluation of complex engineering systems. Much of the knowledge will be at the forefront of the particular subject of study and informed by a critical awareness of new developments and the wider context of engineering. |
| A2 | Describe current technologies and their uses within engineering. | Explain current and future technologies and develop an awareness of the sustainability implications. | Critically analyse current issues and prospects at the forefront of the discipline. | Critically evaluate current issues and prospects in technology advances in the discipline. | Extend the critical evaluation and analysis of current issues and synthesise prospects at the forefront of the discipline. |
| A3 | Identify and illustrate design processes, explain the applied methodologies, and develop an awareness of the environmental, commercial, economic, and social context of engineering processes, and outline relevant legal requirements governing engineering activities, including personnel, health & safety. | Review and evaluate the design process and the applied methodologies. This will involve consideration of applicable health & safety, diversity, inclusion, cultural, societal, environmental, and commercial matters, codes of practice and industry standards. | Design solutions for problems with consideration of applicable health & safety, diversity, inclusion, cultural, societal, environmental, and commercial matters, codes of practice and industry standards. | Design solutions for complex problems that meet a combination of societal, user, business and customer need as appropriate. This will involve consideration of applicable health & safety, diversity, inclusion, cultural, societal, environmental, and commercial matters, codes of practice and industry standards. | Develop technological solutions for complex problems that evidence some originality and meet a combination of societal, user, business and customer need as appropriate. This will involve consideration of applicable health & safety, diversity, inclusion, cultural, societal, environmental, and commercial matters, codes of practice and industry standards. |
| A4 | Describe different types of materials and their impact on manufacturing. | Explain materials behaviour in combination with applied machine design. | Critically analyse engineering design in the area of mechanical engineering. | Critically evaluate modern mechanical engineering design, analysis, and testing. | Be able to develop comprehensive analysis and critical evaluation on modern mechanical engineering design, analysis, evaluation, and testing. |

## Intellectual Skills (MEng/BEng (Hons) Mechanical Engineering)

|  | Level 4 | Level 5 | Level 6 | Level 6 (Hons) | Level 7 |
| --- | --- | --- | --- | --- | --- |
| B1 | Identify problems and potential causes and effects. | Identify and analyse problems and use diagnostic methods to recognise causes and achieve satisfactory solutions. | Critically identify and analyse problems and use diagnostic methods to recognise causes and to implement an engineering task to achieve satisfactory solutions. | Identify a project, analyse the requirements of the project, and plan the work and resources needed to enable effective implementation of an engineering task or project with consideration for cost, quality, safety, and environmental impact. | Identify and define project requirements, problems, and opportunities, and plan the work and resources needed to enable effective implementation of a significant engineering task or project, based on a strong understanding of legal requirements, appropriate ethical conduct and associated risks that may occur and with consideration for cost, quality, safety, and environmental impact. |
| B2 | Apply given tools/ methods to the solution of well-defined problems and begin to appreciate the complexity of the issues | Identify the appropriate investigations and apply an integrated or systems approach to the solution of broadly defined problems. | Identify the appropriate investigations and apply an integrated or systems approach to the solution of broadly defined problems with consideration of budget and resource elements. | Identify the appropriate investigations, apply an integrated or systems approach to the solution of complex problems, and manage (organise, direct and control), programme or schedule, budget and resource elements of engineering tasks or projects. | Identify the appropriate investigations and research needed to undertake the design, development and critical analysis required to complete an engineering task and conduct these activities effectively, apply an integrated or systems approach to the solution of complex problems, and manage (organise, direct and control), programme or schedule, budget and resource elements of a significant engineering task or project. |
| B3 | Analyse well-defined problems reaching conclusions. Select and apply appropriate computational and analytical techniques to model well-defined problems. | Analyse broadly defined problems reaching substantiated conclusions. Select and apply appropriate computational and analytical techniques to model broadly defined problems, recognising the limitations of the techniques employed. | Critically analyse broadly defined problems to reach substantiated conclusions. Select and apply appropriate computational and analytical techniques to model broadly defined problems, recognising the limitations of the techniques employed. | Critically analyse complex problems to reach substantiated conclusions. Select and apply appropriate computational and analytical techniques to model complex problems, recognising the limitations of the techniques employed. | Formulate and critically analyse complex problems to reach substantiated conclusions. Select and apply appropriate computational and analytical techniques to model complex problems, discussing the limitations of the techniques employed. |
| B4 | Form opinions based upon knowledge and understanding of the subject in question and evaluate the environmental and societal impact of solutions to broadly defined problems. | Present arguments to uphold decisions following an evaluation of a particular subject. Evaluate the environmental and societal impact of solutions to broadly defined problems. | Assess, interpret, and implement decisions following an evaluation of a particular subject. Evaluate the environmental and societal impact of solutions to broadly defined problems. | Assess, interpret, and implement decisions with an awareness of technical, economic, and commercial implications. Critically evaluate the environmental and societal impact of solutions to complex problems and minimise adverse impacts. | Assess, interpret, and implement decisions with a critical awareness of technical, economic, and commercial implications. Critically evaluate the environmental and societal impact of solutions to complex problems (to include the entire life cycle of a product or process) and minimise adverse impacts. |

## Subject Skills (MEng/BEng (Hons) Mechanical Engineering)

|  | Level 4 | Level 5 | Level 6 | Level 6 (Hons) | Level 7 |
| --- | --- | --- | --- | --- | --- |
| C1 | Conduct given laboratory experiments to investigate engineering principles and properties of devices and systems. | Devise laboratory experiments to prove engineering principles and properties of devices and systems. | Conduct and analyse experiments, adapting experimental procedures to novel situations if necessary, critically analysing experimental data in detail, and drawing conclusions. | Conduct and critically analyse experiments, adapting experimental procedures to novel situations if necessary, critically analysing experimental data in detail, and drawing comprehensive conclusions. | Use practical laboratory and workshop skills to investigate complex problems. Conduct and critically analyse experiments, adapting experimental procedures to novel situations if necessary, critically analysing experimental data in detail, and drawing comprehensive conclusions. |
| C2 | Design and construct devices and systems to meet given performance criteria. | Design and construct devices/systems and devise methods of testing to check for given performance criteria. | Design, construct and test devices and systems to meet given performance criteria, including the use of computer-based tools where appropriate. | Design, construct, test and critically evaluate devices and systems to meet given performance criteria, including the use of computer-based tools. | Design, construct, test and critically evaluate devices and systems to meet given performance criteria, including the use of computer-based tools. |
| C3 | Monitor processes or systems and develop an awareness of possible improvements. | Monitor processes or systems, trend processes and make predictions, to bring about continuous improvement. | Extract and evaluate information relating to trends and processes to make predictions, to solve engineering problems. | Critically analyse and evaluate processes, techniques or systems relating to unfamiliar problems with an awareness of quality issues and their application to continuous improvement. | Critically analyse and evaluate processes, techniques or systems relating to complex problems with a critical awareness of quality issues and their application to continuous improvement. |
| C4 | Be able to describe the different stages of the design process and will be able to apply these principles to machines and machine components. | Be able to demonstrate skills of effective design, modelling and performance analysing of basic structural systems to machines and machine components. | Be able to analyse mechanical engineering solutions and make sound engineering judgment to solve related problems and/or to develop new design approaches. | Be able to deal with the complex evaluation and find solutions to mechanical engineering problems using various tools and techniques, including numerical simulation. | Be able to conduct critical evaluation and to develop comprehensive solutions to complex mechanical engineering problems using various tools and techniques, including numerical simulation. |

## Practical, Professional and Employability Skills (MEng/BEng (Hons) Mechanical Engineering)

|  | Level 4 | Level 5 | Level 6 | Level 6 (Hons) | Level 7 |
| --- | --- | --- | --- | --- | --- |
| D1 | Propose and plan a self-directed individual programme of investigation. | Plan, undertake and report a self-directed individual programme of investigation and design. | Propose, plan, undertake and report a self-directed individual programme of investigation, design, and implementation. | Propose, plan, undertake and report a self-directed individual programme of investigation, design, and implementation. | Synthesise, propose, plan, undertake and report a self-directed individual programme of investigation, design, and implementation. |
| D2 | Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity. | Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity. | Use a risk management process to identify, critically evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity. | Use a risk management process to identify, critically evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity. | Use a risk management process to identify, critically evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity. |
| D3 | Use oral, written, and electronic methods for the communication of technical and other information. | Use oral, written, and electronic methods for competent communication of technical and other information. | Communicate effectively on complex engineering matters with technical and non-technical audiences. | Communicate effectively on complex engineering matters with technical and non-technical audiences, evaluating the effectiveness of the methods used. | Communicate effectively on complex engineering matters with technical and non-technical audiences, evaluating the effectiveness of the methods used. Identify problems, bias, and recommendations effectively through graphical, written, and verbal forms of communication. |
| D4 | Identify basic information and suitable sources, carry out searches and bring information together in a way that ensures work is accurate, clear, and properly saved. | Plan how to obtain and use required information for the purpose of an activity and use appropriate structures and procedures to explore and develop information. | Use information technology to source information, to prepare reports, to model performance using specialised software packages. | Use information technology competently - to source information, to prepare reports, to model performance using specialised software packages. | Use information technology competently - to source information, to prepare reports, to model performance using specialised software packages. |
| D5 | Work reliably without close supervision accepting responsibility for tasks undertaken. Use CPD to maintain competence and reflective practice | Demonstrate the ability to work reliably and effectively without supervision accepting responsibility for tasks undertaken. Make effective use of CPD to ensure ongoing competence at the level of future intended practice. | Be able to reflect on own performance and self-management. Plan and record self-learning and development as the foundation for lifelong learning/CPD. | Evaluate and reflect on own performance and self-management. Plan and record self-learning and development as the foundation for lifelong learning/CPD. | Evaluate and reflect on own performance and self-management. Plan and record self-learning and development as the foundation for lifelong learning/CPD. |
| D6 | Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct. | Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct. | Interpret the role of the engineer as a manager of themselves and of others, ensuring professional and ethical conduct and acting within the legal framework governing engineering activities. | Interpret the role of the engineer as a manager of themselves and of others, ensuring the highest level of professional and ethical conduct and acting within the legal framework governing engineering activities. | Interpret the role of the engineer as a manager of themselves and of others, ensuring the highest level of professional and ethical conduct and acting within the legal framework governing engineering activities. |

**MEng/BEng (Hons) Electrical and Electronic Engineering**

## Knowledge and Understanding (MEng/BEng (Hons) Electrical and Electronic Engineering)

|  | Level 4 | Level 5 | Level 6 | Level 6 (Hons) | Level 7 |
| --- | --- | --- | --- | --- | --- |
| A1 | Acquire knowledge of mathematics, statistics natural science, and engineering concepts and principles relevant to engineering. | Develop sound application of analytical techniques, and general and specialist engineering knowledge and understanding. | Develop critical analysis of analytical techniques, and the general and specialist engineering knowledge and understand complex engineering systems. | Maintain and extend critical analysis of analytical techniques, and the general and specialist engineering knowledge and critical understanding of complex engineering systems. | Maintain and extend critical analysis of analytical techniques, and the general and specialist engineering knowledge and critical evaluation of complex engineering systems. Much of the knowledge will be at the forefront of the particular subject of study and informed by a critical awareness of new developments and the wider context of engineering. |
| A2 | Describe current technologies and their uses within engineering. | Explain current and future technologies and develop an awareness of the sustainability implications. | Critically analyse current issues and prospects at the forefront of the discipline. | Critically evaluate current issues and prospects in technology advances in the discipline. | Extend the critical evaluation and analysis of current issues and synthesise prospects at the forefront of the discipline. |
| A3 | Identify and illustrate design processes, explain the applied methodologies, and develop an awareness of the environmental, commercial, economic, and social context of engineering processes, and outline relevant legal requirements governing engineering activities, including personnel, health & safety. | Review and evaluate the design process and the applied methodologies. This will involve consideration of applicable health & safety, diversity, inclusion, cultural, societal, environmental, and commercial matters, codes of practice and industry standards. | Design solutions for problems with consideration of applicable health & safety, diversity, inclusion, cultural, societal, environmental, and commercial matters, codes of practice and industry standards. | Design solutions for complex problems that meet a combination of societal, user, business and customer need as appropriate. This will involve consideration of applicable health & safety, diversity, inclusion, cultural, societal, environmental, and commercial matters, codes of practice and industry standards. | Develop technological solutions for complex problems that evidence some originality and meet a combination of societal, user, business and customer need as appropriate. This will involve consideration of applicable health & safety, diversity, inclusion, cultural, societal, environmental, and commercial matters, codes of practice and industry standards. |
| A4 | Describe different types of electrical and electronic components. | Explain electrical and electronic components in the context of electrical and electronic circuit design. | Critically analyse electrical and electronic engineering in the context of the design, analysis, and testing of electrical and electronic circuits and systems. | Critically evaluate electrical and electronic engineering in the context of the design, analysis, and testing of electrical and electronic circuits and systems. | Be able to develop comprehensive analysis and critical evaluation of electrical and electronic design, analysis, evaluation, and testing in the context of industrial and manufacturing practices. |

## Intellectual Skills (MEng/BEng (Hons) Electrical and Electronic Engineering)

|  | Level 4 | Level 5 | Level 6 | Level 6 (Hons) | Level 7 |
| --- | --- | --- | --- | --- | --- |
| B1 | Identify problems and potential causes and effects. | Identify and analyse problems and use diagnostic methods to recognise causes and achieve satisfactory solutions. | Critically identify and analyse problems and use diagnostic methods to recognise causes and to implement an engineering task to achieve satisfactory solutions. | Identify a project, analyse the requirements of the project, and plan the work and resources needed to enable effective implementation of an engineering task or project with consideration for cost, quality, safety, and environmental impact. | Identify and define project requirements, problems, and opportunities, and plan the work and resources needed to enable effective implementation of a significant engineering task or project, based on a strong understanding of legal requirements, appropriate ethical conduct and associated risks that may occur and with consideration for cost, quality, safety, and environmental impact. |
| B2 | Apply given tools/ methods to the solution of well-defined problems and begin to appreciate the complexity of the issues | Identify the appropriate investigations and apply an integrated or systems approach to the solution of broadly defined problems. | Identify the appropriate investigations and apply an integrated or systems approach to the solution of broadly defined problems with consideration of budget and resource elements. | Identify the appropriate investigations, apply an integrated or systems approach to the solution of complex problems, and manage (organise, direct and control), programme or schedule, budget and resource elements of engineering tasks or projects. | Identify the appropriate investigations and research needed to undertake the design, development and critical analysis required to complete an engineering task and conduct these activities effectively, apply an integrated or systems approach to the solution of complex problems, and manage (organise, direct and control), programme or schedule, budget and resource elements of a significant engineering task or project. |
| B3 | Analyse well-defined problems reaching conclusions. Select and apply appropriate computational and analytical techniques to model well-defined problems. | Analyse broadly defined problems reaching substantiated conclusions. Select and apply appropriate computational and analytical techniques to model broadly defined problems, recognising the limitations of the techniques employed. | Critically analyse broadly defined problems to reach substantiated conclusions. Select and apply appropriate computational and analytical techniques to model broadly defined problems, recognising the limitations of the techniques employed. | Critically analyse complex problems to reach substantiated conclusions. Select and apply appropriate computational and analytical techniques to model complex problems, recognising the limitations of the techniques employed. | Formulate and critically analyse complex problems to reach substantiated conclusions. Select and apply appropriate computational and analytical techniques to model complex problems, discussing the limitations of the techniques employed. |
| B4 | Form opinions based upon knowledge and understanding of the subject in question and evaluate the environmental and societal impact of solutions to broadly defined problems. | Present arguments to uphold decisions following an evaluation of a particular subject. Evaluate the environmental and societal impact of solutions to broadly defined problems. | Assess, interpret, and implement decisions following an evaluation of a particular subject. Evaluate the environmental and societal impact of solutions to broadly defined problems. | Assess, interpret, and implement decisions with an awareness of technical, economic, and commercial implications. Critically evaluate the environmental and societal impact of solutions to complex problems and minimise adverse impacts. | Assess, interpret, and implement decisions with a critical awareness of technical, economic, and commercial implications. Critically evaluate the environmental and societal impact of solutions to complex problems (to include the entire life cycle of a product or process) and minimise adverse impacts. |

## Subject Skills (MEng/BEng (Hons) Electrical and Electronic Engineering)

|  | Level 4 | Level 5 | Level 6 | Level 6 (Hons) | Level 7 |
| --- | --- | --- | --- | --- | --- |
| C1 | Conduct given laboratory experiments to investigate engineering principles and properties of devices and systems. | Devise laboratory experiments to prove engineering principles and properties of devices and systems. | Conduct and analyse experiments, adapting experimental procedures to novel situations, if necessary, critically analysing experimental data in detail, and drawing conclusions. | Conduct and critically analyse experiments, adapting experimental procedures to novel situations, if necessary, critically analysing experimental data in detail, and drawing comprehensive conclusions. | Use practical laboratory and workshop skills to investigate complex problems. Conduct and critically analyse experiments, adapting experimental procedures to novel situations, if necessary, critically analysing experimental data in detail, and drawing comprehensive conclusions. |
| C2 | Design and construct devices and systems to meet given performance criteria. | Design and construct devices/systems and devise methods of testing to check for given performance criteria. | Design, construct and test devices and systems to meet given performance criteria, including the use of computer-based tools where appropriate. | Design, construct, test and critically evaluate devices and systems to meet given performance criteria, including the use of computer-based tools. | Design, construct, test and critically evaluate devices and systems to meet given performance criteria, including the use of computer-based tools. |
| C3 | Monitor processes or systems and develop an awareness of possible improvements. | Monitor processes or systems, trend processes and make predictions, to bring about continuous improvement. | Extract and evaluate information relating to trends and processes to make predictions, to solve engineering problems. | Critically analyse and evaluate processes, techniques or systems relating to unfamiliar problems with an awareness of quality issues and their application to continuous improvement. | Critically analyse and evaluate processes, techniques or systems relating to complex problems with a critical awareness of quality issues and their application to continuous improvement. |
| C4 | Be able to describe the different stages of the design process and will be able to apply these principles to electrical and electronic components. | Be able to demonstrate skills of effective design, modelling and performance analysing of basic electrical and electronic machines and components. | Be able to analyse solutions to electrical and electronic engineering problems using various tools and techniques, including numerical simulation. | Be able to deal with the complex evaluation and find solutions to electrical and electronic engineering problems using various tools and techniques, including numerical simulation. | Be able to conduct critical evaluation and to develop comprehensive solutions to complex electrical and electronic engineering problems using various tools and techniques, including numerical simulation. |

## Practical, Professional and Employability Skills (MEng/BEng (Hons) Electrical and Electronic Engineering)

|  | Level 4 | Level 5 | Level 6 | Level 6 (Hons) | Level 7 |
| --- | --- | --- | --- | --- | --- |
| D1 | Propose and plan a self-directed individual programme of investigation. | Plan, undertake and report a self-directed individual programme of investigation and design. | Propose, plan, undertake and report a self-directed individual programme of investigation, design, and implementation. | Propose, plan, undertake and report a self-directed individual programme of investigation, design, and implementation. | Synthesise, propose, plan, undertake and report a self-directed individual programme of investigation, design, and implementation. |
| D2 | Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity. | Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity. | Use a risk management process to identify, critically evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity. | Use a risk management process to identify, critically evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity. | Use a risk management process to identify, critically evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity. |
| D3 | Use oral, written, and electronic methods for the communication of technical and other information. | Use oral, written, and electronic methods for competent communication of technical and other information. | Communicate effectively on complex engineering matters with technical and non-technical audiences. | Communicate effectively on complex engineering matters with technical and non-technical audiences, evaluating the effectiveness of the methods used. | Communicate effectively on complex engineering matters with technical and non-technical audiences, evaluating the effectiveness of the methods used. Identify problems, bias, and recommendations effectively through graphical, written, and verbal forms of communication. |
| D4 | Identify basic information and suitable sources, carry out searches and bring information together in a way that ensures work is accurate, clear, and properly saved. | Plan how to obtain and use required information for the purpose of an activity and use appropriate structures and procedures to explore and develop information. | Use information technology to source information, to prepare reports, to model performance using specialised software packages. | Use information technology competently - to source information, to prepare reports, to model performance using specialised software packages. | Use information technology competently - to source information, to prepare reports, to model performance using specialised software packages. |
| D5 | Work reliably without close supervision accepting responsibility for tasks undertaken. Use CPD to maintain competence and reflective practice | Demonstrate the ability to work reliably and effectively without supervision accepting responsibility for tasks undertaken. Make effective use of CPD to ensure ongoing competence at the level of future intended practice. | Be able to reflect on own performance and self-management. Plan and record self-learning and development as the foundation for lifelong learning/CPD. | Evaluate and reflect on own performance and self-management. Plan and record self-learning and development as the foundation for lifelong learning/CPD. | Evaluate and reflect on own performance and self-management. Plan and record self-learning and development as the foundation for lifelong learning/CPD. |
| D6 | Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct. | Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct. | Interpret the role of the engineer as a manager of themselves and of others, ensuring professional and ethical conduct and acting within the legal framework governing engineering activities. | Interpret the role of the engineer as a manager of themselves and of others, ensuring the highest level of professional and ethical conduct and acting within the legal framework governing engineering activities. | Interpret the role of the engineer as a manager of themselves and of others, ensuring the highest level of professional and ethical conduct and acting within the legal framework governing engineering activities. |

**MEng/BEng (Hons) Renewable and Sustainable Engineering**

## Knowledge and Understanding (MEng/BEng (Hons) Renewable and Sustainable Engineering)

|  | Level 4 | Level 5 | Level 6 | Level 6 (Hons) | Level 7 |
| --- | --- | --- | --- | --- | --- |
| A1 | Acquire knowledge of mathematics, statistics natural science, and engineering concepts and principles relevant to engineering. | Develop sound application of analytical techniques, and general and specialist engineering knowledge and understanding. | Develop critical analysis of analytical techniques, and the general and specialist engineering knowledge and understand complex engineering systems. | Maintain and extend critical analysis of analytical techniques, and the general and specialist engineering knowledge and critical understanding of complex engineering systems. | Maintain and extend critical analysis of analytical techniques, and the general and specialist engineering knowledge and critical evaluation of complex engineering systems. Much of the knowledge will be at the forefront of the particular subject of study and informed by a critical awareness of new developments and the wider context of engineering. |
| A2 | Describe current technologies and their uses within engineering. | Explain current and future technologies and develop an awareness of the sustainability implications. | Critically analyse current issues and prospects at the forefront of the discipline. | Critically evaluate current issues and prospects in technology advances in the discipline. | Extend the critical evaluation and analysis of current issues and synthesise prospects at the forefront of the discipline. |
| A3 | Identify and illustrate design processes, explain the applied methodologies, and develop an awareness of the environmental, commercial, economic, and social context of engineering processes, and outline relevant legal requirements governing engineering activities, including personnel, health & safety. | Review and evaluate the design process and the applied methodologies. This will involve consideration of applicable health & safety, diversity, inclusion, cultural, societal, environmental, and commercial matters, codes of practice and industry standards. | Design solutions for problems with consideration of applicable health & safety, diversity, inclusion, cultural, societal, environmental, and commercial matters, codes of practice and industry standards. | Design solutions for complex problems that meet a combination of societal, user, business and customer need as appropriate. This will involve consideration of applicable health & safety, diversity, inclusion, cultural, societal, environmental, and commercial matters, codes of practice and industry standards. | Develop technological solutions for complex problems that evidence some originality and meet a combination of societal, user, business and customer need as appropriate. This will involve consideration of applicable health & safety, diversity, inclusion, cultural, societal, environmental, and commercial matters, codes of practice and industry standards. |
| A4 | Describe factors and issues of energy production, and to demonstrate an understanding of the social, economic, and environmental issues surrounding sustainability and energy security. | Explain key concepts in renewable energy, and to design and specify renewable energy schemes predicting energy output with sound judgment considering the environmental, economic, and social consequences. | Critically analyse renewable energies and strategies to solve problems pertaining to them. | Critically evaluate renewable energies and strategies to solve complex problems pertaining to them and to analyse and critically apprise current and emerging technologies. | Maintain and extend comprehensive analysis and critical evaluation of renewable energies and strategies to solve complex problems pertaining to them and to analyse and critically apprise current and emerging technologies. |

## Intellectual Skills (MEng/BEng (Hons) Renewable and Sustainable Engineering)

|  | Level 4 | Level 5 | Level 6 | Level 6 (Hons) | Level 7 |
| --- | --- | --- | --- | --- | --- |
| B1 | Identify problems and potential causes and effects. | Identify and analyse problems and use diagnostic methods to recognise causes and achieve satisfactory solutions. | Critically identify and analyse problems and use diagnostic methods to recognise causes and to implement an engineering task to achieve satisfactory solutions. | Identify a project, analyse the requirements of the project, and plan the work and resources needed to enable effective implementation of an engineering task or project with consideration for cost, quality, safety, and environmental impact. | Identify and define project requirements, problems, and opportunities, and plan the work and resources needed to enable effective implementation of a significant engineering task or project, based on a strong understanding of legal requirements, appropriate ethical conduct and associated risks that may occur and with consideration for cost, quality, safety, and environmental impact. |
| B2 | Apply given tools/ methods to the solution of well-defined problems and begin to appreciate the complexity of the issues | Identify the appropriate investigations and apply an integrated or systems approach to the solution of broadly defined problems. | Identify the appropriate investigations and apply an integrated or systems approach to the solution of broadly defined problems with consideration of budget and resource elements. | Identify the appropriate investigations, apply an integrated or systems approach to the solution of complex problems, and manage (organise, direct and control), programme or schedule, budget and resource elements of engineering tasks or projects. | Identify the appropriate investigations and research needed to undertake the design, development and critical analysis required to complete an engineering task and conduct these activities effectively, apply an integrated or systems approach to the solution of complex problems, and manage (organise, direct and control), programme or schedule, budget and resource elements of a significant engineering task or project. |
| B3 | Analyse well-defined problems reaching conclusions. Select and apply appropriate computational and analytical techniques to model well-defined problems. | Analyse broadly defined problems reaching substantiated conclusions. Select and apply appropriate computational and analytical techniques to model broadly defined problems, recognising the limitations of the techniques employed. | Critically analyse broadly defined problems to reach substantiated conclusions. Select and apply appropriate computational and analytical techniques to model broadly defined problems, recognising the limitations of the techniques employed. | Critically analyse complex problems to reach substantiated conclusions. Select and apply appropriate computational and analytical techniques to model complex problems, recognising the limitations of the techniques employed. | Formulate and critically analyse complex problems to reach substantiated conclusions. Select and apply appropriate computational and analytical techniques to model complex problems, discussing the limitations of the techniques employed. |
| B4 | Form opinions based upon knowledge and understanding of the subject in question and evaluate the environmental and societal impact of solutions to broadly defined problems. | Present arguments to uphold decisions following an evaluation of a particular subject. Evaluate the environmental and societal impact of solutions to broadly defined problems. | Assess, interpret, and implement decisions following an evaluation of a particular subject. Evaluate the environmental and societal impact of solutions to broadly defined problems. | Assess, interpret, and implement decisions with an awareness of technical, economic, and commercial implications. Critically evaluate the environmental and societal impact of solutions to complex problems and minimise adverse impacts. | Assess, interpret, and implement decisions with a critical awareness of technical, economic, and commercial implications. Critically evaluate the environmental and societal impact of solutions to complex problems (to include the entire life cycle of a product or process) and minimise adverse impacts. |

## Subject Skills (MEng/BEng (Hons) Renewable and Sustainable Engineering)

|  | Level 4 | Level 5 | Level 6 | Level 6 Hons) | Level 7 |
| --- | --- | --- | --- | --- | --- |
| C1 | Conduct given laboratory experiments to investigate engineering principles and properties of devices and systems. | Devise laboratory experiments to prove engineering principles and properties of devices and systems. | Conduct and analyse experiments, adapting experimental procedures to novel situations, if necessary, critically analysing experimental data in detail, and drawing conclusions. | Conduct and critically analyse experiments, adapting experimental procedures to novel situations, if necessary, critically analysing experimental data in detail, and drawing comprehensive conclusions. | Use practical laboratory and workshop skills to investigate complex problems. Conduct and critically analyse experiments, adapting experimental procedures to novel situations, if necessary, critically analysing experimental data in detail, and drawing comprehensive conclusions. |
| C2 | Design and construct devices and systems to meet given performance criteria. | Design and construct devices/systems and devise methods of testing to check for given performance criteria. | Design, construct and test devices and systems to meet given performance criteria, including the use of computer-based tools where appropriate. | Design, construct, test and critically evaluate devices and systems to meet given performance criteria, including the use of computer-based tools. | Design, construct, test and critically evaluate devices and systems to meet given performance criteria, including the use of computer-based tools. |
| C3 | Monitor processes or systems and develop an awareness of possible improvements. | Monitor processes or systems, trend processes and make predictions, to bring about continuous improvement. | Extract and evaluate information relating to trends and processes to make predictions, to solve engineering problems. | Critically analyse and evaluate processes, techniques or systems relating to unfamiliar problems with an awareness of quality issues and their application to continuous improvement. | Critically analyse and evaluate processes, techniques or systems relating to complex problems with a critical awareness of quality issues and their application to continuous improvement. |
| C4 | Be able to describe climate change and the way humans contribute to it with the use of fossil fuels, how various current energy systems work and the need for effective energy storage and carbon free solutions. | Be able to deal with renewable energy scheme designs and feasibility studies, making sound engineering judgements. | Be able to analyse and creatively deal with renewable energy scheme designs and feasibility studies systematically, making sound engineering judgements on energy storage and carbon free solutions. | Be able to critically analyse climate change and the way humans contribute to it with the use of fossil fuels, and to analyse how various current energy systems work and the need for effective energy storage and carbon free solutions. | Be able to demonstrate comprehensive knowledge and a critical evaluation of climate change and the way humans contribute to it with the use of fossil fuels, to analyse how various current energy systems work and the need for effective energy storage and carbon free solutions, and to conduct critical evaluation and to develop comprehensive solutions to sustainable energy systems. |

## Practical, Professional and Employability Skills (MEng/BEng (Hons) Renewable and Sustainable Engineering)

|  | Level 4 | Level 5 | Level 6 | Level 6 (Hons) | Level 7 |
| --- | --- | --- | --- | --- | --- |
| D1 | Propose and plan a self-directed individual programme of investigation. | Plan, undertake and report a self-directed individual programme of investigation and design. | Propose, plan, undertake and report a self-directed individual programme of investigation, design, and implementation. | Propose, plan, undertake and report a self-directed individual programme of investigation, design, and implementation. | Synthesise, propose, plan, undertake and report a self-directed individual programme of investigation, design, and implementation. |
| D2 | Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity. | Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity. | Use a risk management process to identify, critically evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity. | Use a risk management process to identify, critically evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity. | Use a risk management process to identify, critically evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity. |
| D3 | Use oral, written, and electronic methods for the communication of technical and other information. | Use oral, written, and electronic methods for competent communication of technical and other information. | Communicate effectively on complex engineering matters with technical and non-technical audiences. | Communicate effectively on complex engineering matters with technical and non-technical audiences, evaluating the effectiveness of the methods used. | Communicate effectively on complex engineering matters with technical and non-technical audiences, evaluating the effectiveness of the methods used. Identify problems, bias, and recommendations effectively through graphical, written, and verbal forms of communication. |
| D4 | Identify basic information and suitable sources, carry out searches and bring information together in a way that ensures work is accurate, clear, and properly saved. | Plan how to obtain and use required information for the purpose of an activity and use appropriate structures and procedures to explore and develop information. | Use information technology to source information, to prepare reports, to model performance using specialised software packages. | Use information technology competently - to source information, to prepare reports, to model performance using specialised software packages. | Use information technology competently - to source information, to prepare reports, to model performance using specialised software packages. |
| D5 | Work reliably without close supervision accepting responsibility for tasks undertaken. Use CPD to maintain competence and reflective practice | Demonstrate the ability to work reliably and effectively without supervision accepting responsibility for tasks undertaken. Make effective use of CPD to ensure ongoing competence at the level of future intended practice. | Be able to reflect on own performance and self-management. Plan and record self-learning and development as the foundation for lifelong learning/CPD. | Evaluate and reflect on own performance and self-management. Plan and record self-learning and development as the foundation for lifelong learning/CPD. | Evaluate and reflect on own performance and self-management. Plan and record self-learning and development as the foundation for lifelong learning/CPD. |
| D6 | Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct. | Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct. | Interpret the role of the engineer as a manager of themselves and of others, ensuring professional and ethical conduct and acting within the legal framework governing engineering activities. | Interpret the role of the engineer as a manager of themselves and of others, ensuring the highest level of professional and ethical conduct and acting within the legal framework governing engineering activities. | Interpret the role of the engineer as a manager of themselves and of others, ensuring the highest level of professional and ethical conduct and acting within the legal framework governing engineering activities. |

### Learning and teaching strategy

The MEng/BEng Engineering provisions have shared and subject specific modules, allowing students to collaborate, engage, and explore their respective chosen programme. The philosophy of the programme reflects and develops the University’s strategic mission and aims. The learning and teaching strategy for the programmes accords fully with Glyndŵr University’s Active Learning Framework (ALF) and Strategy for Supporting Student Learning and Achievement (SSSLA) and has been informed by the QAA Subject Benchmark statement for Engineering (2019).

The modules are taught through a combination of lectures, seminars, and workshops. An active and inclusive approach is used to engage learners in the topics and will involve individual, group work and flipped learning experiences aligned to the university’s Active Learning Framework (ALF). The approach offers students a flexible and adaptive learning experience that can accommodate a range of options that includes both on campus learning and digital resources and mechanisms as a learning blend, as appropriate. This may include synchronous and asynchronous learning.

The Moodle VLE and other on-line materials and resources will be available to support learning. ALF offers a balance between the classroom elements and digitally enabled activity incorporating flexible and accessible resources and flexible and accessible feedback to support learning.

The approach taken towards teaching and learning is based on ALF of learning designed to enable and maximise the abilities of the students to work in a wide variety of fields and disciplines within engineering. Thus, they are enabled to become independent, autonomous, and reflective whilst also developing collaborative, strategic and professional capacities. They will develop and demonstrate critical analytical skills and problem-solving capabilities and the ability to be creative, proactive, and innovative. To this end, a variety of teaching and learning methods will be provided.

The team recognises that the learning and teaching strategy should reflect the different requirements of the students. To achieve this the team have agreed the following strategy:

1. To ensure that the teaching methods adopted for classroom and related activity are planned to ensure that tutors use a range of examples, reflecting the diversity of experiences when explaining the application of theory to practice.
2. To ensure that group discussions, case study / problem solving activity relate to and reflect the various aspects of practice represented within the classroom.
3. Where guest lecturers are used, they will be briefed by the module tutor to ensure that they are aware of the student profile and that the proposed presentation / lecture accommodates this.
4. Students will be supported by tutorial discussions between the tutor and students to ensure that the proposed learning reflects the practice needs of the students.
5. To ensure that the assessment strategy and methods of assessment are sufficiently flexible to enable students to apply and demonstrate their learning in a context which is relevant to them.

The learning and teaching methods adopted reflect the QAA descriptors in the following ways:

1. Lectures are used to impart key information and show case new ways of working which will enable students to develop a sound understanding of the principles of their field of study as well as identifying new ways of working.
2. Case studies, role plays, and group working will be used to facilitate application of the principles more widely. They will also be used to prompt discussion and practise problem solving skills. This will also allow students to evaluate the appropriateness of different approaches to solving problems.
3. The use of portfolios facilitates reflection on the qualities necessary for employment, requiring the exercise of personal responsibility and decision making. Additionally, they will allow students to identify the limits of their knowledge and skills and identify strategies for development.
4. Assessments are used to facilitate learning as well as providing an indication of student achievement.

The programme team has developed a strategic approach to delivering learning and teaching which meets the needs of the student group, enables skills development, allows for the practical application of knowledge, and encourages students to become reflective practitioners. The balance between face-to-face lectures and directed study is detailed within the module specifications. Students will be encouraged, through classroom activities and assessments, to reflect on both their own and organisational behaviour to improve their performance as well as giving them the knowledge and confidence to contribute towards the development of their organisational performance.

Knowledge and Understanding: Acquisition of knowledge is by means of lectures, practical and laboratory-based exercises, investigative exercises involving searching of various sources, directed reading and further reading. Pre-written notes will have a role in supporting these activities. Understanding is developed through tutorials, discussion, evaluation exercises and individual exercise sheets.

Intellectual Skills: These skills are developed by the students undertaking individual activities, within tutorials and practical sessions, or by being required to contribute to group activities. In each case, throughout the course a range of problems are set requiring the student to carry out information searches, analysis, design formulation, synthesis, test definition, modelling (software based), methodology or by calculation. Reflective self-evaluation forms part of this. Critical evaluation is encouraged via debate and discussion in the tutorials.

Intellectual Skills: Intellectual skills include communication skills, ability to work in a group or on one’s own, management of time, use of computers and other technology, the application of calculations (the discipline of regularly attending and contributing to classes exercises the transferable skills of self-management and time management). Each module specification provides examples of transferable skills covered within its learning outcomes. Beyond this most modules require performance in several skill areas including self-management, communication, and use of computer packages. All of these are monitored by the module tutors and feedback given.

Practical, Professional and Employability Skills: These skills are developed by student to conduct their analysis, synthesis, evaluation, and problem in their programme module studies. The active learning processes in their assignments or projects, group-learning activity are designed to practice and enhance their skills.

VLE (Virtual Learning Environment)

Extensive use is made of Glyndŵr University’s VLE, Moodle, to enhance the learning experience. Moodle is used by staff to provide information about the courses and individual modules, and as a repository of lecture notes and links to other sources of information. It can also be used for interactive activities such as quizzes and exercises.

### The Wrexham Glyndwr Graduate

At Glyndŵr University we aim to help students develop and enhance key employability skills and capabilities during their study. There are three key areas with different attributes, attitudes and skillsets and the aim is to help students to have the opportunity to enhance and develop skills such as resilience, adaptability, confidence, team working, emotional intelligence and communication, creativity and acting ethically and sustainably. Programmes are designed to enable students to develop and enhance these skills via module content, module learning outcomes and assessment opportunities. Each module will help provide different opportunities for developing and enhancing these capabilities, referred to as

the [Glyndŵr Graduate Framework](https://glyndwr.ac.uk/careers/glyndwr-graduate-/).

The Careers team are available to provide information, advice and guidance and access to resources for potential students, current students, and graduates. WGUConnect provides students with access to an online directory of vacancies.

The Careers team can support students with employability and interview skills such as use of the STAR (Situation, Task, Action, Result) technique that many recruiters use to gather relevant information about a specific capability that the job requires.

### Work based/placement learning statement

**BEng route**

For those students studying the BEng route only, work based/placement learning is featured in the optional placement year that takes place at the end of level 5. There will be specific support for any BEng students taking the placement year, including a robust reporting system. The full details of the placement process are explained in the placement handbook. Students are expected to find and secure a suitable placement opportunity. This could be done independently or in collaboration with a member of staff at the University or in partnership with the WRL unit.

During the Placement, we ask that the student be assigned a Mentor, to support them while on placement. This person should be a member of staff with whom the student is likely to have daily contact. The role of the Mentor is to act as a critical friend who will be able to provide general guidance, advice, and support for the student with the achievement of the placement-based tasks.

A Placement Supervisor from the University will maintain contact with the setting and visit the student once during the placement. Where appropriate, the monitoring visit may be carried out remotely. The Placement Supervisor will also be there to support each student.

The Industrial Placement will normally take place during the academic year (October to May), as if over the two normal University semesters. As such its duration should normally be in the region of 24 weeks, no less than 20 weeks, and no more than 28 weeks.

Students returning from placement to their level 6 (final year) will be invited to take part in the Engineering (re)Freshers’ Week activities that will be held in the first week of each new academic year following the end of the placement. This will give returning students an opportunity to meet their new peer groups and to become familiar with any changes to University processes or practice that may have occurred whilst they were on placement.

**MEng route**

Work based/placement learning for MEng is integrated in the Industrial Placement and Project module, which is an integral component of the integrated MEng degree programmes. It will normally be for 16 weeks (including statutory holiday), commencing February to May.

Although it will be the student responsibility to find their own placement, the University via its Work Related Learning unit will offer significant help and support. It is anticipated that a placement officer will be appointed to be in regular contact with both students and companies/organisations.

The search for student’s placement for the Industrial Placement and Project will commence at the end of Level 5 for arrangements to be established in October. By beginning of December, students will visit their intended placement with the Module Leader or their Academic Supervisor and the Placement Officer to devise the project outline. The objectives of the work to be undertaken by the student will be discussed and agreed with the employer (or work placement provider), the student and the Industrial Placement and Project Module Leader/Academic Supervisor to ensure that the work to be undertaken by the student is both of value to the employer and meets the requirements of the module learning outcomes.

The objectives (learning outcomes), and the means of the student achieving them, will be articulated, and formalised through a Learning Agreement agreed and signed by all stakeholders. Hence, the Module Leader/Academic Supervisor will arrange a meeting with the employer/ Industrial Supervisor and the student to discuss and agree the following which will be monitored on a regular basis throughout the period of the student’s placement.

* How the Industrial Placement and Project module operates.
* How the placement provider will ensure that the student will have access to a working environment that enables them to confirm knowledge, develop skills and demonstrate competence to achieve the module learning outcomes.
* How the student will evidence appropriate work.
* The role and responsibility of the module leader in supporting the student and liaising with the employer.
* The role and responsibility of the employer/ Industrial Supervisor in supporting the student at work.
* The role and responsibility of the student in terms of achieving academic objectives and conducting themselves professionally at work.

The employer/ Industrial Supervisor’s professional profile will be assessed by the Module Leader to ensure their experience is appropriate to support the student. Separate placement handbooks for employers/ Industrial Supervisor and students will be provided. Additionally, the employer/ Industrial Supervisor will be briefed by the Module Leader on the programme requirements so they will be fully prepared to provide support and guidance to the student.

During the Industrial Placement and Project, the Academic Supervisor will maintain contact with the student and the employer/ Industrial Supervisor on an on-going basis according to the individual requirements of both either in person, by telephone, by e-mail, or by video conferencing. Irrespective of the amount of informal contact already made during the placement at least three formal meetings will be arranged to enable the Module Leader/Academic Supervisor along with the Placement Officer to discuss the student’s progress with the employer/ Industrial Supervisor and student both on an individual and joint basis. Items for discussion at these meetings will include, but not be limited to:

* Student’s progress towards previously identified objectives.
* Any additional support needs of the employer or student.
* Student’s ability to apply new knowledge and skills.
* Actual benefit to the student and employer of the application of new knowledge and skills.
* Application of practical, professional and employability skills demonstrated by the student.
* Student and employer module-related documentation.

Upon completion of placement the Module Leader will be responsible for marking the assessments with contributions from the employer and will undertake a formal review of the placement with the student making use of the employer/ Industrial Supervisor feedback material. This formal review will discuss, but not be restricted to:

* Success in terms of meeting identified objectives.
* Enabling or limiting factors affecting achievement of objectives.
* Ability to apply new learning and skills at work.
* Ability to apply practical, professional and employability skills.
* Individual reflection leading to identification and definition of academic and vocational progress.

The Module Leader will be responsible for ensuring parity of student experience within the individual placement through reviewing all Learning Agreements.

In exceptional circumstances where the Industrial Placement and Project has been terminated at no fault of the student, it will continue at Glyndŵr University as a simulated work-based project.

### Welsh medium provision

Students are entitled to submit assessments in the medium of Welsh. When a student elects to submit the assessment in the Welsh language, the Coleg Cymraeg Cenedlaethol can support the team with additional resources and external subject specific assessors. In addition, Welsh language personal tutorials can be made available for students and Welsh students can seek Welsh language placements in a work-based setting.

### Assessment strategy

The programme team are committed to delivering an assessment strategy which is in line with SSSLA and ALF and reflects the requirements of the QAA Subject Benchmark Statement Engineering (2019).

A wide range of assessment methods have been adopted in the programmes to meet diverse learning styles and enable the students to meet modular and programme requirements, through either individual or group assessment, and students will be informed as to whether assessment is of a diagnostic, formative, or summative nature. The assessment methods used reflect the needs of the student group and allows for the knowledge and learning outcomes of the programme to be tested as well as allowing for the development and assessment of practical and transferable skills.

There is a commitment to enable students to focus on their own learning needs and to use assessment as a means for evaluating their own practice.

Professional body requirements have been integrated into module assessment to foster developmental progression on the programmes, with cognisance paid to how these assessments may impact upon the student’s final grade achievement.

Where assessed group work is undertaken, students will be expected, through the production of meeting notes and action plans, to demonstrate that they have contributed equally to the task. This element of personal contribution will determine the individual’s overall module assessment. i.e., not all students within a group should expect the same mark.

With respect to exams, to meet the criteria for accreditation, AHEP4 mapping and to measure learning outcomes, exams are designed so that all answers must be answered, rather than providing a choice.

**Knowledge and Understanding**

Assessment of Knowledge and Understanding in engineering modules is principally by means of unseen examinations at Levels 5 6, and 7, although experimentation with novel assessment methods such as portfolio preparation and presentation are being introduced. Many modules use ‘in-class test’ assessment involving practical work or written investigative assignments.

**Intellectual Skills**

Small-scale and highly specific problems are tested by means of an unseen examination component, particularly prevalent in the mathematical and analytical modules. In many modules, particularly in the Project (Honours) (L6), Industrial Placement and Project (L6), and Group Design Project (L7) modules, larger scale design exercises are set and assessed by means of a report reflecting on the activity carried out.

**Practical Skills**

Assessment of practical skills is covered entirely within practical exercises and the associated reporting, particularly project-based modules. In these modules, practical demonstrations are required as part of a presentation.

**Grading**

Assessment will be graded using the suggested criteria grid detailed in line with SSSLA, the criteria will be contextualised for each assessment. All work will be assessed by tutors at Glyndŵr University. Students will receive written feedback within the target times set out by Glyndŵr University.

**Plagiarism**

Where practicable, Turnitin will be used a tool to support students to develop their academic writing style as well as to detect plagiarism or collaboration.

**Double Marking and Moderation**

All module assessments will be internally verified with a sample being moderated by the external examiner in accordance with Glyndŵr University’s Regulatory Requirements.

**Extenuating Circumstances and Deadlines for Submission**

Students will be informed of the penalties which apply for non-submission. Students will be made aware of the procedure relating to extenuating circumstances and will be encouraged to work closely with their tutors should they require support and guidance on this matter.

**Feedback to students**

Feedback, both formal and informal is given to students throughout the programme. Feedback may be verbal, given during tutorials or lab exercises, where both student and lecturer can identify problems and steps can be taken to improve future work. Feedback is presented as part of a continuous assessment plan, such as the development of a portfolio; this may be verbal or written feedback, or it may be formal written feedback, as in the case of assignment marking with comments.

It should be noted that much of the feedback, not only identifies problems along with suitable guidance, but also highlights the student’s achievements. This approach usually works better than simply “must try harder.”

In some cases, ‘progressive feedback’ is the most suitable approach, particularly when there are many problems with an individual student’s work. i.e., do not try to mend everything all at once, as this can lead to the student becoming demoralised, but rather work on the most important aspects first, whilst introducing other improvements later.

**Assessment Methods**

Formative assessment is essential to learning in its aim is to give appropriate and timely feedback to students on their learning, and to help them to improve their future work. Assessment methods will be appropriate for the outcome being assessed. In addition to formal examination, some other forms of the assessments are used.

**In-Class Tests**

In-class tests will comprise distinct types of ‘unseen’ assessment, such as an ‘unseen’ paper, or Moodle quiz/questions sat in a controlled environment. An exception to the unseen element is when a case study is required for reference. In-class tests will take place in an appropriate time after the corresponding module contents have been delivered.

Indicative feedback of results will be provided to students within three weeks of the submission date. Official results will be provided in the form of a transcript after assessment boards have been convened.

**Assignment**

This is a single task given to the student in the form of a ‘brief’ defining the assignment requirements at or near the beginning of the module. This may require the student to carry out investigations and literature searches in their own time and under their own initiative or it may require independent problem solving based on work covered in the lectures/tutorials. The work is normally required in the form of a formal report submitted by a given deadline. Sometimes a presentation, either individually or as a group forms part of the assessment.

**Portfolio**

This is a term referring to a collection of small, and diverse, exercises whose individual marks are brought together in a single folder to form a single in-course mark. Examples are where a series of laboratory exercises form part of the module. Feedback is given after each exercise (called formative assessment) so that a student is aware of progress made on an on-going basis.

**Course work**

For some modules, a course work for case study might be the most appropriate form of assessment whereby the student would investigate a particular scenario, software programme or an instrumentation system. They would analyse the ‘subject’ and convey their critical opinions; this could be verbally (oral presentation) or a short report. Frequently the student is given three or four scenarios to consider simultaneously, thereby enabling comparison of advantages and disadvantages.

| **Module code & title** | **Assessment type and weighting** | **Indicative submission date** |
| --- | --- | --- |
| ***Level 4 Modules*** |  |  |
| Engineering Mathematics | 50% In-class Test  50% In-class Test | Wk 7, Sem1  Wk 12, Sem 1 |
| Introduction to Electrical & Mechanical Engineering Science | 50% Portfolio  50% Portfolio | Wk 6, Sem1  Wk 11, Sem 1 |
| CAD and Production Science | 100% Portfolio | Wk 11, Sem 1 |
| Engineering Professional Development | 100% Portfolio | Wk 11, Sem 2 |
| Materials and Environment | 50% In-class Test  50% Written Assignment | Wk 7, Sem2  Wk 11, Sem 2 |
| Modern Aircraft Technology | 100% Portfolio | Wk 11, Sem 2 |
| Automotive Systems | 100% Portfolio | Wk 11, Sem 2 |
| Mechanical Systems | 100% Portfolio | Wk 11, Sem 2 |
| Future Energy Systems & Sustainability | 50% Exam  50% Coursework | Wk 11, Sem 2 |
| Analogue and Digital Electronics | 100% Portfolio | Wk 11, Sem 2 |
| COM439 Problem Solving with Programming | 50% Coursework  50% Coursework | Wk 7, Sem2  Wk 11, Sem 2 |
|  |  |  |
| ***Level 5 Modules*** |  |  |
| Engineering Futures – Research, Ethics, and Sustainability | 100% Portfolio | Wk 11, Sem 1 |
| Further Engineering Mathematics | 50% In-class Test  50% In-class Test | Wk 7, Sem1  Wk 12, Sem 1 |
| Mechanics, Structures & FEA | 50% Exam  50% Coursework | Wk 7, Sem1  Wk 11, Sem 1 |
| Computer Aided Manufacturing | 100% Portfolio | Wk 11, Sem 2 |
| Flight Mechanics, Avionics and Control | 50% Written Assignment  50% Exam | Wk 7, Sem2  Wk 12, Sem 2 |
| Thermo-fluids and Propulsion | 30% Coursework  70% Exam | Wk7, Sem2  Wk 12, Sem 2 |
| Automotive Powertrains & Fluids | 100% Exam | Wk 12, Sem 2 |
| Fluid Mechanics and Thermodynamics | 30% Coursework  70% Exam | Wk7, Sem2  Wk 12, Sem 2 |
| Automotive Design | 60% Portfolio  40% Presentation | Wk 11, Sem 2 |
| Machine Design and Manufacturing | 100% Portfolio | Wk 11, Sem 2 |
| Wind and Hydro Energy Engineering | 100% Coursework | Wk 11, Sem 2 |
| Solar and Biomass Energy Engineering | 100% Coursework | Wk 11, Sem 2 |
| Intelligent Control System Design | 100% Portfolio | Wk 12, Sem 1 |
| Electrical Power Engineering | 50% Portfolio  50% Exam | Wk 7, Sem2  Wk 12, Sem 2 |
| Industrial Automations & PLCs | 100% Portfolio | Wk 12, Sem 2 |
| Embedded Systems | 100% Portfolio | Wk 11, Sem 2 |
|  |  |  |
| ***Level 6 Modules*** |  |  |
| Project | 80% Written Assignment 20% Presentation | Wk 11, Sem 2 |
| Mechanical Engineering Modelling & Simulation | 100% Coursework | Wk 11, Sem 1 |
| Electrical and Electronic Engineering Modelling & Simulation | 100% Coursework | Wk 11, Sem 1 |
| Aerodynamics | 50% Written Assignment  50% Exam | Wk 7, Sem1  Wk 12, Sem 1 |
| Aircraft Design & Flight Stability | 50% Written Assignment 50% Exam | Wk 7, Sem 1  Wk 12, Sem 1 |
| Professional Engineering | 60% Group report  40% Portfolio | Wk 11, Sem 2  Wk 12, Sem2 |
| Advanced Structures and Vibrations | 100% Written Assignment | Wk 12, Sem 2 |
| Industrial Placement and Project | 100% Project | Wk11, Sem 2 |
| Automotive Dynamics | 100% Written Assignment | Wk 11, Sem 1 |
| Modern Automotive Powertrains | 100% Exam | Wk 12, Sem 1 |
| Motorsport Practice | 100% Portfolio | Wk 11, Sem 2 |
| Machine and Production Systems | 50% Case Study  50% Exam | Wk 7, Sem1  Wk 12, Sem 1 |
| Advanced Engineering Design and Manufacturing | 100% Written Assignment | Wk 12, Sem 1 |
| Manufacturing Systems and Sustainable Engineering | 50% Coursework  50% Exam | Wk 7, Sem2  Wk 12, Sem 2 |
| Smart Grids, Storage, and Energy Mix | 100% Exam | Wk 12, Sem 1 |
| Energy Saving, Low Carbon and Recycling Systems | 100% Portfolio | Wk 11, Sem 1 |
| Power Electronics and Electrical Machines | 50% Exam  50% Portfolio | Wk 12, Sem 1  Wk7, Sem1 |
| Wireless Communication and Antennas | 50% Coursework  50% Exam | Wk 7, Sem1  Wk 12, Sem 1 |
| Electronic Design and Testing | 100% Exam | Wk 12, Sem 1 |
| Digital Signal Processing | 100% Portfolio | Wk 12, Sem 1 |
|  |  |  |
| ***Level 7 Modules*** |  |  |
| Group Design Project | 100% Group Project | Wk 12, Sem 1 |
| Mechanical or Electrical & Electronic Engineering Systems Modelling & Simulation | 100%Coursework | Wk 12, Sem 1 |
| Applied Aerodynamics | 100% Coursework | Wk 12, Sem 2 |
| Advanced Flight Mechanics & Control | 100% Exam | Wk 12, Sem 2 |
| Renewable Technology & Storage Integration Engineering | 100%Coursework | Wk 12, Sem 1 |
| Intelligent System Design & Control Engineering | 100%Portfolio | Wk 12, Sem 1 |
| Design with Composites-Theory & Practice | 100%Coursework | Wk 12, Sem 1 |
| Modern & Innovative Powertrains | 100% Exam | Wk 12, Sem 2 |
| Advanced Automotive Chassis Design | 100% Coursework | Wk 12, Sem 2 |
| Structural Integrity & Optimisation | 100% Coursework | Wk 12, Sem 2 |
| Digital Manufacture | 100% Exam | Wk 12, Sem 2 |
| Energy Reduction & Sustainability | 100% Coursework | Wk 12, Sem 2 |
| Climate Change, Consequences, Solution & Policies | 100% Exam | Wk 12, Sem 2 |
| Convertors, Drives and Energy Systems | 100% Exam | Wk 12, Sem 2 |
| Circuit Design Analysis & Testing | 100% Exam | Wk 12, Sem 2 |

### Assessment and award regulations

## Derogations

A derogation from regulations has been approved for all BEng programmes which means that whilst the pass mark is 40% overall, each element of assessment (where there is more than one assessment) requires a minimum mark of 30%. For Level 7 modules of integrated masters degree, the pass mark is 50% overall and each element of assessment requires a minimum mark of 40%.

Failure may be compensated at the time of attempted level completion up to a maximum of 30 credits across all levels of the programme. Individual and Group based project module must not be compensated, including ENG5A4, ENG6AG and ENG6C4.

## Non-Credit Bearing assessment

N/A

## Borderline Classifications (Undergraduate programmes)

In considering borderline cases the Assessment Board shall raise the classification to the next level if all of the following criteria are met:

• At least 50% of the credits at level 6 fall within the higher classification.

• All level 6 modules must have been passed at the first attempt.

• The mark achieved for the Project module is within the higher classification.

## Ordinary Degrees

The BEng ordinary degree provides, at a professional level, the academic entry requirements to meet the Engineering Council definition of an Incorporated Engineer (IEng) and level-6 Project (40 credits) must be successfully completed in order to achieve the exit award of an ordinary degree.

## Restrictions for trailing modules (Taught Masters)

N/A

## Prerequisites for processing to MRes research component

N/A

### Accreditation

The programmes have been developed in line with PSRB requirements, including IMechE, IET, RAes & IE. The new Engineering provision will also be put forward for accreditation during the EAB visit in 2023.

IMechE - [www.imeche.org](http://www.imeche.org)

IET - [www.theiet.org](http://www.theiet.org)

RAeS - [www.aerosociety.com](http://www.aerosociety.com)

EI - [www.energyinst.org](http://www.energyinst.org)

The following programmes, i.e.:

* MEng Aeronautical Engineering
* MEng Automotive Engineering
* MEng Electrical and Electronic Engineering
* MEng Mechanical Engineering
* MEng Renewable and Sustainable Engineering

fully satisfy the education requirements for CEng (Chartered Engineer) registration.

The following programmes, i.e.:

* BEng Aeronautical Engineering
* BEng Automotive Engineering
* BEng Electrical and Electronic Engineering
* BEng Mechanical Engineering
* BEng Renewable and Sustainable Engineering

partially satisfy the education requirements for CEng (Chartered Engineer) registration. Further learning at Masters level is required.

### Quality Management

All provision is expected to comply with the University processes for quality assurance, the QAA Quality Code and any specific PSRB requirements to ensure the quality of the learning and teaching on the programme. The University uses the following mechanisms to help evaluate, enhance, and review programmes delivery:

Student Evaluation of Module Questionnaire

Student Voice Forum

Individual student feedback

Student representatives

Annual Monitoring reports

Periodic review and re-validation process

External Examiner reports

PSRB requirements and accreditation activities

National Student Survey (NSS)

### Support for Students

The University has a range of departments that offer support for students such as:

* Library & IT Resources
* Inclusion Services
* Careers Service
* Chaplaincy
* Counselling & Wellbeing
* Student Funding and Welfare
* Student Administration

Please access the Glyndŵr website at [www.glyndwr.ac.uk](http://www.glyndwr.ac.uk) to find out more about the Departments.

Glyndŵr Student Union offers support for students, please access their website at to find out more. <https://www.wrexhamglyndwrsu.org.uk/>

All students at Wrexham Glyndŵr University are allocated a Personal Tutor whose main responsibility is to act as the first point of contact for their personal students and to provide pastoral and academic support throughout their studies at the University.

### Equality and Diversity

Glyndŵr University is committed to providing access to all students and promotes equal opportunities in compliance with the Equality Act 2010 legislation. This programme complies fully with the University’s Equality and Diversity Policy, ensuring that everyone who has the potential to achieve in higher education is given the chance to do so. Please click on the following link for more information about [equality and diversity](https://glyndwr.ac.uk/about/equality-and-diversity/)

|  |  |
| --- | --- |
| **DATE OF APPROVAL** | |
| Date of programme delivery approval event: | 23 February 2023 |
| Date of approval by Academic Board: | 10 May 2023 |



**APPENDIX 1 – PARTNER PROVIDER SUPPLEMENT TO PROGRAMME SPECIFICATION**

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|  |
| --- |
| **Programme Title(s): BEng (Hons) Automotive Engineering**  *This is the intended award title from the definitive Programme Specification and what will be printed on the award certificate.* |

|  |  |
| --- | --- |
| 1 | **Awarding body** |
|  | Wrexham University |
| 2 | **Partner Provider** |
|  | Despark College |
| 3 | **Location of delivery** |
|  | Despark College, Lot 20, Jalan 51A/223, Section 51A, 46100, Petalingjaya, Selangor, Malaysia, 46100 |
| 4 | **Faculty/Department** |
|  | Faculty of Arts, Sciences and Technology |
| 5 | **Mode of study** |
|  | Full time |
| 6 | **Frequency / timing of intake/s** |
|  | 2 intake point per academic year (Sept & Jan) |
| 7 | **Language of study** |
|  | English |
| 8 | **Name of academic link (correct at the point of programme approval)** |
|  | Olivier Durieux |

*9* **GU Approved Partner Programme Delivery Schedule(s)**

**September intake – f/t**

|  |  |  |
| --- | --- | --- |
| **Year 1**  (Level 4) | **Year 2**  (Level 5) | **Year 3**  (Level 6) |
| **ENG461**  Engineering Maths  *Core Module*  *20 Credits*  Trimester 1 | **ENG537**  Further Engineering Maths  *Core Module*  *20 Credits*  Trimester 1 | **ENG60G**  Dissertation  *Core Module*  *40 Credits*  Trimester 2 |
| **ENG458**  Mechanical Science  *Core Module*  *20 Credits*  Trimester 1 | **ENG53B**  Business, Research & Professional Development  *Core Module*  *20 Credits*  Trimester 1 | **ENG685**  Engineering Modelling & Simulation  *Core Module*  *20 Credits*  Trimester 1 |
| **ENG459**  Electrical Science  *Core Module*  *20 Credits*  Trimester 1 | **ENG53C**  Engineering Mechanics & Design  *Core Module*  *20 Credits*  Trimester 1 | **ENG687**  Aerodynamics  *Core Module*  *20 Credits*  Trimester 1 |
| **ENG484**  Engineering Design Practice  *Core Module*  *20 Credits*  Trimester 2 | **ENG52J**  Structures Analysis  *Core Module*  *20 Credits*  Trimester 2 | **ENG692**  Automotive Dynamics & Powertrain Analysis  *Core Module*  *20 Credits*  Trimester 1 |
| **ENG490**  Materials & Manufacturing  *Core Module*  *20 Credits*  Trimester 2 | **ENG52M**  Internal Combustion Engine Systems  *Core Module*  *20 Credits*  Trimester 2 | **ENG690**  Structural Vibration  *Optional Module*  *20 Credits*  Trimester 1 |
| **ENG492**  Automotive Systems  *Core Module*  *20 Credits*  Trimester 2 | **ENG557**  Automotive Design  *Core Module*  *20 Credits*  Trimester 2 | **ENG691**  Composite Materials  *Optional Module*  *20 Credits*  Trimester 1 |

**January intake – f/t**

|  |  |  |
| --- | --- | --- |
| **Year 1**  (Level 4) | **Year 2**  (Level 5) | **Year 3**  (Level 6) |
| **ENG484**  Engineering Design Practice  *Core Module*  *20 Credits*  Trimester 2 | **ENG52J**  Structures Analysis  *Core Module*  *20 Credits*  Trimester 2 | **ENG692**  Automotive Dynamics & Powertrain Analysis  *Core Module*  *20 Credits*  Trimester 1 |
| **ENG490**  Materials & Manufacturing  *Core Module*  *20 Credits*  Trimester 2 | **ENG52M**  Internal Combustion Engine Systems  *Core Module*  *20 Credits*  Trimester 2 | **ENG690**  Structural Vibration  *Optional Module*  *20 Credits*  Trimester 2 |
| **ENG492**  Automotive Systems  *Core Module*  *20 Credits*  Trimester 2 | **ENG557**  Automotive Design  *Core Module*  *20 Credits*  Trimester 2 | **ENG691**  Composite Materials  *Optional Module*  *20 Credits*  Trimester 2 |
| **ENG461**  Engineering Maths  *Core Module*  *20 Credits*  Trimester 1 | **ENG537**  Further Engineering Maths  *Core Module*  *20 Credits*  Trimester 3 | **ENG60G**  Dissertation  *Core Module*  *40 Credits*  Trimester 3 |
| **ENG458**  Mechanical Science  *Core Module*  *20 Credits*  Trimester 1 | **ENG53B**  Business, Research & Professional Development  *Core Module*  *20 Credits*  Trimester 1 | **ENG685**  Engineering Modelling & Simulation  *Core Module*  *20 Credits*  Trimester 2 |
| **ENG459**  Electrical Science  *Core Module*  *20 Credits*  Trimester 1 | **ENG53C**  Engineering Mechanics & Design  *Core Module*  *20 Credits*  Trimester 1 | **ENG687**  Aerodynamics  *Core Module*  *20 Credits*  Trimester 2 |

*Trimesters in WGU are typically 14 weeks in duration.*

*Trimester 1 – Sept to Dec*

*Trimester 2 – Jan to May*

*Trimester 3 – June to Aug*

|  |  |
| --- | --- |
| **DATE OF APPROVAL** | |
| Date of programme delivery re-approval event: | 23 February 2023 |
| Date of approval by Academic Board: | 10 May 2023 |

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**APPENDIX 1 – PARTNER PROVIDER SUPPLEMENT TO PROGRAMME SPECIFICATION**

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|  |
| --- |
| **Programme Title(s): BEng (Hons) Electrical and Electronic Engineering**  *This is the intended award title from the definitive Programme Specification and what will be printed on the award certificate.*  *(to note this is a Level 6 top up offer however the title on the certificate will read as noted above)* |

|  |  |
| --- | --- |
| 1 | **Awarding body** |
|  | Wrexham University |
| 2 | **Partner Provider** |
|  | Dimensions International College |
| 3 | **Location of delivery** |
|  | Dimensions International College, 277 River Valley Road Singapore 238318 |
| 4 | **Faculty/Department** |
|  | Faculty of Arts, Science and Technology |
| 5 | **Mode of study** |
|  | Full time |
| 6 | **Frequency / timing of intake/s** |
|  | 4 intake point per academic year (July/October/January/April) |
| 7 | **Language of study** |
|  | English |
| 8 | **Name of academic link (correct at the point of programme approval)** |
|  | Andrew Sharp |

***9* GU Approved Partner Programme Delivery Schedule(s)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Glyndwr University Programme Academic Calendar (2023 - 2024)** | | | | | | | |
| **Part A - Programme Information** | | | | | | | |
| **General Programme Information** | | | | | | | |
| **Programme Name** | | | | **Cohort** | | **Teaching Start Date** | |
| *BEng (Hons) Electrical & Electronic Engineering (Top-Up Degree)* | | | | *BEEE 08* | | *2 Oct 2023* | |
| **Admissions Cut Off Date** | | | |  | |  | |
| *20 Oct 2023* | | | |  | |  | |
| **Term Information** | | | | | | | |
| **Semester** | **Dates** | | **Modules taught during the semester** | | | | |
| **Sem I** | 2-Oct-23 to 23-Dec-23 | | ENG6C1 Wireless Communication and Antennas  ENG6C2 Digital Signal Processing | | | | |
| **Sem II** | 8-Jan-24 to 30-Mar-24 | | ENG6A8 Professional Engineering  ENG60D Electronics Design and Testing | | | | |
| **Sem III** | 1-Apr-24 to 21-Jun-24 | | ENG6AG Project | | | | |
| **Sem IV** | 1-Jul-24 to 28-Sep-24 | |  | | | | |
| **Programme Assessment Information** | | | | | | | |
| **Module Codes / Title** | | **Credit Value** | **Assessment Method** | **Weighting (%)** | **Deadline for assignment submission / Exam Date** | **Deadline for feedback to students** | **Exam Board Date** |
| ENG6C1  Wireless Communication and Antennas | | 20 (Core) | Examination | 50 | 16 Dec 2023 | 22 Jan 2024 | Feb 2024 |
| Coursework | 50 | 23 Dec 2023 |
| ENG6C2  Digital Signal Processing | | 20 (Core) | Portfolio | 100 | 28 Dec 2023 |
| **Programme Assessment Information** | | | | | | | |
| **Module Codes / Title** | | **Credit Value** | **Assessment Method** | **Weighting (%)** | **Deadline for assignment submission / Exam Date** | **Deadline for feedback to students** | **Exam Board Date** |
| ENG6A8  Professional Engineering | | 20 (Core) | Group Project | 60 | 23 Mar 2024 | 20 Apr 2024 | Jun 2024 |
| Portfolio | 40 | 26 Mar 2024 |
| ENG60D  Electronics Design and Testing | | 20 (Core) | Examination | 100 | 30 Mar 2024 |
| **Programme Assessment Information** | | | | | | | |
| **Module Codes / Title** | | **Credit Value** | **Assessment Method** | **Weighting (%)** | **Deadline for assignment submission / Exam Date** | **Deadline for feedback to students** | **Exam Board Date** |
| ENG6AG  Project | | 40 (Core) | Written Assignment | 80 | 21 Sep 2024 | 19 Oct 2024 | Feb 2025 |
| Presentation | 20 | 28 Sep 2024 |

**Illustration of Term Dates and**

**Intake Structure**



Oct 22

Jan 23

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23



**Annual terms**

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Jan

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Jan 23

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April

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Intake

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24

Intake 3



* Our intakes are planned in sync with our term dates. Currently there are 4 semesters in a year, so we are proposing 4 corresponding intakes per year (*every Jan, Mar, Jun, Sep*) so new students are rolled in at the start of each semester. To create economies of scale, we will need to have 4 intakes. Should there be less than 4 intakes per year, it will have to be a permutation of the existing terms (*Jan and June, or Mar and Sep*) as we are currently running on a rolling intake, but we will still be running on a 4-semester year and the team will still have to make provision for 4 semesters with 2 intakes. This means that reduced intakes doesn’t result in a material change to the workload for administrators but will definitely translate to reduced student numbers.
* In essence, as DIMENSIONS is running the programmes on a rolling intake (ie. new students join existing students at the start of each semester), DIMENSIONS will only offer the curriculum for the academic year regardless of whether we are offering 2 intakes or 4, and no additional resources and/or examination board from Glyndŵr are needed since we are inserting a new intake at the start of each semester where there are already existing students.

1. Only applicable to industrial placement year route of Full time BEng (Hons) Engineering (Specialisms) [↑](#footnote-ref-2)