Prifysgol **Wrecsam**
Wrexham University

Programme Specification

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UG Programme Directory
PG Programme Directory

Section 1 Regulatory Details

Awarding body	Wrexham University
Teaching institution	Wrexham University
Final award and programme title (Welsh)	FdEng Peirianneg Ddiwydiannol (Gweithgynhyrchu a Chynhyrchu)
Final award and programme title (English)	FdEng Industrial Engineering (Electrical and Automation)
Exit awards and titles	CertHE Industrial Engineering
Credit requirements	• FdEng: 240 credits in total including a minimum of 120 credits at level 5 • Cert HE: A minimum of 120 credits at level 4
Does the programme offer Foundation Year route?	No
Placement / Work based learning	Within part-time industrial programmes, students are expected to be in a relevant full-time position and to apply relevant learning to their workplace through applied projects and utilising real-world examples within their assessments.
Length and level of the placement	Work-based learning modules include ENG4A2 and ENG5AD.
Faculty / Department	Faculty of Arts, Computing and Engineering
HECoS Code	100163
Intake Points	Three intakes per year, Sept, Jan and May
Mode of Attendance	Part time
Normal Programme Length	2 years
Mode of Study and Location of delivery	Campus based at Plas Coch Campus
Language of delivery	English
Welsh Medium Provision	The programmes will be delivered through the medium of English. Students are entitled to submit assessments in the medium of Welsh.
Professional, Statutory or Regulatory Body (PSRB) accreditation	The programme is accredited by IET 2 years from September 2024 to August 2026 in partial fulfilment of knowledge and understanding requirement for IEng (Backdating from Sept 2022 to August 2024) Monitoring visit in 2025/26
External reference points	Subject Benchmark Statement; Engineering February 2019 QAA Foundation Degree Characteristics Statement 2020

	The Accreditation of Higher Education Programmes (AHEP)
Entry Requirements	The University website sets out the approved entry requirements for each programme, including minimum qualifications and English Language requirements 48-72 UCAS tariff points from an appropriate Level 3 qualification. Applicants must be employed in an appropriate role in industry. Advice and guidance to applicants regarding their appropriate experience and their industrial background will be offered by the academic programme team.
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 Regulations.
Is DBS check required on entry?	No
Does the Suitability for Practice Procedure apply to the programme?	No
Derogation to Academic Regulations	• Whilst the pass mark is 40% overall, each element of assessment (where there is more than one assessment) requires a minimum pass mark of 30%. • Failure up to 20 credits may be compensated at level 4 only. Major individual and group-based project modules must not be compensated.
Date of Approval	22 August 2022
Date and type of Revision	17/03/2023 APSC approval to replace ENG497 with ENG4B8, ENG496 assessment type changed to 100% portfolio 28/08/2024 APSC approval of change of assessment for ENG4B8 & ENG5AG

Section 2 Programme Details

Aims of the programme

The key aim of the programmes is to develop the intellectual and application skills of individuals by means of personal management, knowledge acquisition, problem analysis, deductive skills, synthesis and evaluation of solutions, and including an awareness of social and environmental implications, in preparation for:
   • A career as a professional engineer in industry;
   • A management role in industry;
   • Life-long learning and an appreciation of the value of education in continuing professional development.

The programme has been designed to provide students with the essential knowledge, skills and techniques which underpin and enhance the learning process. They will be encouraged to develop a positive, reflective and professional approach to their learning, taking

responsibility for their own progression and career development. These transferable skills enable and promote sustainable lifelong learning and continuing professional development within their professional field or sector. The Foundation degree programme is designed to provide an opportunity for part time students to apply their knowledge, skills and ideas within their own working environment.

Programme Structure Diagram, including delivery schedule

September Intake

Level	Module Code	Module Title	Credit Value	Core/ Option	Delivery (i.e. S1,2)	Year of Study
4	ENG461	Engineering Mathematics	20	Core	S1	Y1
4	ENG4B8	Fundamentals of Electrical and Electronic Engineering	20	Core	S1	Y1
4	ENG499	Mechanical Engineering	20	Core	S2	Y1
4	ENG4B2	CAD and Production Science	20	Core	S2	Y1
4	ENG4A1	Engineering Management	20	Core	S3	Y1
4	ENG4A2	Work Based Investigation and Learning	20	Core	S1-3	Y1
5	ENG565	Electrical Power Engineering	20	Core	S1	Y2
5	ENG537	Further Engineering Mathematics	20	Core	S1	Y2
5	ENG5AC	Industrial Automation & PLCs	20	Core	S2	Y2
5	ENG5AE	Instrumentation & Condition Monitoring	20	Core	S2	Y2
5	ENG5AJ	Modern Manufacture, Sustainability & Industry 4.0	20	Core	S3	Y2
5	ENG5AD	Industrial Project	20	Core	S1-3	Y2

January Intake:

Level	Module Code	Module Title	Credit Value	Core/ Option	Delivery (i.e. S1,2)	Year of Study
4	ENG499	Mechanical Engineering	20	Core	S2	Y1
4	ENG4B2	CAD and Production Science	20	Core	S2	Y1
4	ENG4A1	Engineering Management	20	Core	S3	Y1
4	ENG4A2	Work Based Investigation and Learning	20	Core	S2-3-1	Y1&2
4	ENG461	Engineering Mathematics	20	Core	S1	Y2
4	ENG4B8	Fundamentals of Electrical and Electronic Engineering	20	Core	S1	Y2
5	ENG5AC	Industrial Automation & PLCs	20	Core	S2	Y2
5	ENG5AE	Instrumentation & Condition Monitoring	20	Core	S2	Y2
5	ENG5AJ	Modern Manufacture, Sustainability & Industry 4.0	20	Core	S3	Y2
5	ENG5AD	Industrial Project	20	Core	S1-3	Y2&3
5	ENG565	Electrical Power Engineering	20	Core	S1	Y3
5	ENG537	Further Engineering Mathematics	20	Core	S1	Y3

May Intake:

Level	Module Code	Module Title	Credit Value	Core/ Option	Delivery (i.e. S1,2)	Year of Study
4	ENG4A1	Engineering Management	20	Core	S3	Y1
4	ENG4A2	Work Based Investigation and Learning	20	Core	S3-1-2	Y1&2
4	ENG461	Engineering Mathematics	20	Core	S1	Y2
4	ENG4B8	Fundamentals of Electrical and Electronic Engineering	20	Core	S1	Y2
4	ENG499	Mechanical Engineering	20	Core	S2	Y2
4	ENG4B2	CAD and Production Science	20	Core	S2	Y2
5	ENG5AJ	Modern Manufacture, Sustainability & Industry 4.0	20	Core	S3	Y2
5	ENG5AD	Industrial Project	20	Core	S3-1-2	Y2
5	ENG565	Electrical Power Engineering	20	Core	S1	Y3
5	ENG537	Further Engineering Mathematics	20	Core	S1	Y3
5	ENG5AE	Instrumentation & Condition Monitoring	20	Core	S2	Y3
5	ENG5AC	Industrial Automation & PLCs	20	Core	S2	Y3

Programme Learning Outcomes

FdEng Knowledge and understanding

	Level 4	Level 5
A1	Develop an understanding of mathematical concepts or principles relevant to Industrial Engineering.	Apply mathematical concepts or principles relevant to Industrial Engineering problems.
A2	Identify and explain scientific principles relevant to Industrial Engineering.	Develop scientific principles and demonstrate an understanding of relevant applications within Industrial Engineering.
A3	Develop an awareness of current technologies and their uses within Industrial Engineering.	Appraise current and future technologies within Industrial Engineering and develop an awareness of the sustainability implications.
A4	N/A	Apply a comprehensive knowledge of industrial process systems to validate new system architecture.

Intellectual skills

	Level 4	Level 5
B1	Identify problems and potential causes and effects.	Identify and analyse problems and use diagnostic methods to recognise causes and achieve satisfactory solutions.
B2	Identify, organise and use resources to complete tasks safely and efficiently	Identify, organise and use resources effectively to complete tasks, with consideration for cost, quality, safety and environmental impact.
B3	Apply given tools/methods to a well-defined problem and begin to appreciate the complexity of the issues.	Recognise and define key elements of problems and choose appropriate methods for their resolution in a considered manner.
B4	Form opinions based upon knowledge and understanding of the subject in question.	Present arguments to uphold decisions following an evaluation of a particular subject.

Subject skills

	Level 4	Level 5
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.
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.
C3	Monitor processes or systems and develop an awareness of possible improvements.	Monitor processes or systems, trend processes and make predictions, in order to bring about continuous improvement.
C4	Propose and plan a self-directed individual programme of investigation.	Plan and undertake and report a self-directed individual programme of investigation and design.
C5	N/A	Formulate and implement solutions to complex new and existing automation problems

Practical, professional and employability skills

	Level 4	Level 5
D1	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.
D2	Use oral, written and digital methods for the communication of technical and other information.	Use oral, written and digital methods for effective communication of technical and other information.
D3	Apply safe systems of work.	Manage and apply safe systems of work.
D4	Work reliably without close supervision accepting responsibility for tasks undertaken	Demonstrate the ability to work reliably and effectively without supervision accepting responsibility for tasks undertaken.

Learning and teaching strategy

The programme is informed and guided by the Active Learning Framework (ALF), which incorporates a blended learning approach. This approach is a key part of the delivery and involves teaching, learning support, and the delivery of online sessions. The embedding of ALF provides students with a more flexible approach to their learning and is fundamental in giving all students equal opportunity to succeed. This is embedded in the University's Strategy for Supporting Student Learning and Achievement (SSSLA), which aims to 'drive the development of the pedagogic approaches required to enable flexible, accessible and inclusive curriculum delivery. It seeks to assist the student to become an independent learner, delivering subject skills alongside the embedding of skills for employment. The curriculum is designed to encourage an appreciation for learning. Learning is enriched by appropriate underpinnings, current research, industrial applications and the development of transferable skills.

The team recognises that the learning and teaching strategy should reflect the different requirements of part time, industrial students. In order to achieve this the team have agreed the following strategy:

1. A key feature of FdEng programmes is that the majority of learning and training takes place 'on-the-job' while students are engaged in work activity. It is therefore fundamental that a student's work will provide a source for learning, an environment for learning and the key context for learning. This is recognised by the team and supported by the programme leader linking the work-place to the programme of study.
2. To ensure that the teaching methods adopted for classroom and related activity are planned effectively so that tutors use a range of examples, reflecting the diversity of experiences when explaining the application of theory to practice. This will also provide the opportunity for students to bring their work-based experiences back into the teaching space and develop a shared learning network with their peers.
3. To ensure that group discussions, case study / problem solving activity relate to and reflect the different aspects of practice represented within the classroom.
4. 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.
5. Students will be supported by tutorial discussions between the tutor and student to ensure that the proposed learning reflects the practice needs of the student.
6. 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.
7. Academic skills will be embedded into all programmes and modules. This will be evident through the key skills mapping to learning outcomes in module specifications. These skills will be developed through learning and teaching activities, online support, formative and summative assessment. Students will be made aware of the importance of academic skills and the embedding of these will be reviewed periodically by the programme team.

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 and critically evaluative 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 in order to improve their performance as well as giving them the knowledge and confidence to contribute towards the development of their organisational performance.

Learning and Teaching are activities which operate at different levels simultaneously. To the student the immediate activity relates to the explicit topics being studied. However, transferable skills are also inherent in order for the student to both carry out the tasks and to develop. These elements are built into the modules comprising the programme as what might be called embedded issues. Other embedded issues, such as awareness of environmental impact, sustainability and commercial implications are also integrated in modules throughout the programme.

Assessment strategy

The programmes provide opportunities for formative, diagnostic and summative feedback. 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.

Formative assessment will be utilised in all modules to allow students to develop, improve and prepare for summative assessment. The form of this assessment will vary depending on the module and skills being developed. Some form of feedback will be provided. These formative opportunities and how feedback will be delivered will be explained to students at the start of the module and on module spaces.

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.

All assessment is underpinned by ALF and students will get the opportunity to demonstrate their academic skills in a variety of methods, with flexibility and accessibility being key factors. Assessment methods typically include formal exams, coursework, portfolios, continuous assessment and case studies. 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.

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. 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 Journals or Learning Logs; 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.

The unique nature of part time industrial programmes affords an opportunity to get employers involved with assessment where appropriate and applicable. Employers will be invited to become involved with the scope and nature of any project work, which will directly affect project outcomes and their assessment.

Disclaimer

Throughout quality assurance processes we have ensured that this programme engages with and is aligned to:

Academic Regulations: https://wrexham.ac.uk/academic-regulations-policies-and-procedures/
The University Skills Framework: https://wrexham.ac.uk/careers/skills-framework/
Welsh Language Policy: https://wrexham.ac.uk/about/welsh-at-wrexham-university/
Equality and Diversity Policy: https://wrexham.ac.uk/about/equality-and-diversity/
The Student Union offers support for students, please access their website
https://www.wrexhamglyndwrsu.org.uk/