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 Dalian Polytechnic University
Final award and programme title (Welsh)	BEng (Anrh) Peirianneg Mecatroneg
Final award and programme title (English)	BEng (Hons) Mechatronics Engineering
Exit awards and titles	Dip HE / Cert HE Mechatronics Engineering
Credit requirements	• BEng (Hons) Mechatronics Engineering degree: 360 credits in total including a minimum of 120 credits at level 6 • Dip HE Mechatronics Engineering: 240 credits in total including a minimum of 120 credits at level 5 or higher • Cert HE Mechatronics Engineering: A minimum of 120 credits at level 4 or higher
Does the programme offer Foundation Year route?	No
Placement / Work based learning	Work related learning embedded in the curriculum.
Length and level of the placement	N/A
Faculty / Department	FACE
HECoS Code	100184
Intake Points	September
Mode of Attendance	Full time
Normal Programme Length	'4+0' pathway: 4 years full time at Dalian Polytechnic University in China '2+2' pathway: 2 years full time at Dalian Polytechnic University (for level 4 and 5 study) plus 2 years full time at Wrexham University in UK (for final year level 5 and 6 study) '3+1' pathway: 3 years full time at Dalian Polytechnic University (for level 4 and 5 study) plus 1 year full time at Wrexham University in UK (for final year level 6 study)
Mode of Study and Location of delivery	Campus based - Dalian Polytechnic University in China.

	Students will also have opportunities to take "2+2 (first two years in DPU and the final two years in WU" or "3+1 (first three years in DPU and the final year in WU" pathway for their degree programme studies.
Language of delivery	English and Chinese for the period of programme studied in DPU. English for the period of programme studied in WU.
Welsh Medium Provision	The programmes will be delivered through the medium of English and Chinese. Students are entitled to submit assessments in the medium of Welsh.
Professional, Statutory or Regulatory Body (PSRB) accreditation	N/A This information is correct at the time of validation, please refer to the PSRB register for current accreditation status.
External reference points	*QAA Subject Benchmark Statements (Engineering)* *QAA Characteristics Statements* Higher Education Credit Framework CQFW
Entry Requirements	Candidate is required to pass the China national matriculation examination. (Gaokao). Students desiring to take "2+2" or "3+1" pathway for their degree programme studies must meet both progression requirements for level 5 (for "2+2" pathway) or level 6 (for "3+1" pathway) and Wrexham University's English language requirements for international students.
Record of Prior (Experiential) learning	N/A
Is DBS check required on entry?	N/A
Does the Suitability for Practice Procedure apply to the programme?	N/A
Derogation to Academic Regulations	None
Date of Approval	22 July 2025
Date and type of Revision	

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 to:

- 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.

Thus, provides the breadth of learning, skills and attitudes for graduates to meet the future needs of a rapidly changing technology and business environment.

Programme Structure Diagram, including delivery schedule

The programmes will be delivered on a full-time basis, with students being available for lectures across five days each week. The three levels (level 4, level 5 and level 6) of the programme will be delivered in 4 academic years in Dalian Polytechnic University in China for full-time students, or the first two academic years to cover the level 4 modules and two level 5 modules (ENG5AT and ENG5AW) of the programme in Dalian Polytechnic University in China and the final two years (the 3rd and 4th academic years) to cover four level 5 modules (ENG5AP, ENG5AQ, ENG5AR and ENG5AX) and all level 6 modules of the programme in Wrexham University in UK, or the first three academic years to cover the level 4 and level 5 of the programme will be delivered in Dalian Polytechnic University in China and the final year (the 4th academic year) to cover level 6 of the programme in Wrexham University in UK. Each level consists of 120 credits, made up of 20 credit modules on the whole, with the exceptions of the level six individual engineering projects which are of 40 credits.

Full-time delivery

Level	Module Code	Module Title	Credit Value	Core/ Option	Delivery (i.e. semester 1,2)
Level 4	ENG4AH	Engineering Mathematics	20	Core	Year one, Semester 1, 2
Level 4	ENG4AF	Engineering Design Practice and Professional Development	20	Core	Year one, Semester 1, 2
Level 4	ENG4AL	Electrical Engineering	20	Core	Year two, Semester 1
Level 4	ENG4AJ	Mechanical Engineering	20	Core	Year two, Semester 1

Level	Module Code	Module Title	Credit Value	Core/ Option	Delivery (i.e. semester 1,2)
Level 4	ENG4AG	Engineering Materials & Manufacturing	20	Core	Year two, Semester 2
Level 4	ENG4AK	Electronics Technology	20	Core	Year two, Semester 2
Level 5	ENG5AW	Further Engineering Mathematics	20	Core	Year two, Semester 1
Level 5	ENG5AT	Structures Analysis and Finite Element Analysis	20	Core	Year two, Semester 2
Level 5	ENG5AQ	Instrumentation and Control	20	Core	Year three, Semester 1
Level 5	ENG5AP	Industrial Electronics and Applications	20	Core	Year three, Semester 1
Level 5	ENG5AX	Industrial Automation and PLCs	20	Core	Year three, Semester 2
Level 5	ENG5AR	Mechanical and Manufacturing Systems and Business Management	20	Core	Year three, Semester 2
Level 6	ENG6AK	Mechatronic Applications	20	Core	Year four, Semester 1
Level 6	ENG6AJ	Manufacturing and Production Systems	20	Core	Year four, Semester 1
Level 6	ENG6AL	Power Electronics and Electric Drives	20	Core	Year four, Semester 1
Level 6	ENG6AH	Maintenance and Safety Systems	20	Option	Year four, Semester 1
Level 6	ENG6AQ	Industry 4.0	20	Option	Year four, Semester 1
Level 6	ENG6AM	Further Control Systems Engineering	20	Option	Year four, Semester 1
Level 6	ENG6AP	Individual Engineering Project	40	Core	Year four, Semester 2

Programme Learning Outcomes

Undergraduate template

No.	Learning Outcome	K	I	S	P	Level 4	Level 5	Level 6 (Hons)	Optional Ref (PSRB standards)
1	Model and analyse complex engineering systems using appropriate mathematical methods, while recognising the limitations of such analysis.	☒	☐	☐	☐	☒	☒	☒	
2	Demonstrate a wide knowledge and a comprehensive understanding of complex engineering systems and the ability to analyse and synthesise such engineering principles and systems.	☒	☐	☐	☐	☒	☒	☒	
3	Apply advanced problem-solving skills and technical knowledge to all aspects of the design process and methodology.	☒	☐	☐	☐	☒	☒	☒	
4	Demonstrate critical awareness of operational, environmental, cultural and ethical implications, and the need for sustainable development.	☒	☐	☐	☐	☒	☒	☒	
5	Display a critical awareness of current issues and future prospects at the forefront of the discipline.	☒	☐	☐	☐	☒	☒	☒	
6	Demonstrate an ability to critically appraise existing controlled processes, make judgements, and propose and formulate a new mechatronics system through a programme of self-managed learning.	☒	☐	☐	☐	☒	☒	☒	
7	Innovate in solving novel and challenging problems and be aware of the limitations of the solutions.	☐	☒	☐	☐	☒	☒	☒	
8	Critically assess the resources and techniques used to complete tasks, and to achieve engineering objectives. Recommend new techniques or use of resources based on a strong understanding of legal requirements, appropriate ethical conduct and associated risks that may occur before, during and after the task has been completed.	☐	☒	☐	☐	☒	☒	☒	
9	Critically appraise engineering problems. Generate and analyse data to solve complex engineering problems.	☐	☒	☐	☐	☒	☒	☒	
10	Assess, interpret and implement decisions with a critical awareness of technical, economic, environmental, social and commercial implications.	☐	☒	☐	☐	☒	☒	☒	
11	Conduct and analyse experiments, adapting experimental procedures to novel situations if necessary, analysing experimental data in detail, and drawing comprehensive conclusions.	☐	☐	☒	☐	☒	☒	☒	

No.	Learning Outcome	K	I	S	P	Level 4	Level 5	Level 6 (Hons)	Optional Ref (PSRB standards)
12	Design, construct, test and evaluate devices and systems to meet given performance criteria, including the use of computer-based tools.	☐	☐	☒	☐	☒	☒	☒	
13	Analyse and evaluate processes, techniques or systems relating to unfamiliar problems with an awareness of quality issues and their application to continuous improvement.	☐	☐	☒	☐	☒	☒	☒	
14	Propose, plan, undertake and report a self-directed individual programme of critical investigation, application design and implementation.	☐	☐	☒	☐	☒	☒	☒	
15	Identify problems, bias and recommendations effectively through graphical, written and verbal forms of communication.	☐	☐	☐	☒	☒	☒	☒	
16	Use information technology competently to source information, to prepare reports, to model performance using specialised software packages.	☐	☐	☐	☒	☒	☒	☒	
17	Evaluate and reflect on own performance and self-management.	☐	☐	☐	☒	☒	☒	☒	
18	Evaluate and reflect on own performance and self-management. Plan and record self-learning and development as the foundation for lifelong learning/CPD.	☐	☐	☐	☒	☒	☒	☒	
19	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.	☐	☐	☐	☒	☒	☒	☒	
20		☐	☐	☐	☐	☐	☐	☐	

The progression of the programme learning outcomes at different levels are listed below:

<u>Knowledge and Understanding</u>

	Level 4	Level 5	Level 6 (Hons)
K1	Develop an understanding of mathematical concepts or principles relevant to engineering.	Apply mathematical concepts or principles relevant to engineering problems.	Model and analyse complex engineering systems using appropriate mathematical methods, while recognising the limitations of such analysis.
K2	Identify and explain scientific principles relevant to engineering.	Develop scientific principles and demonstrate an understanding of relevant applications within engineering.	Demonstrate a wide knowledge and a comprehensive understanding of complex engineering systems and the ability to analyse and synthesise such engineering principles and systems.
K3	Illustrate the design and develop process for an engineering system and explain the applied methodology.	Investigate the problem behind the design process and the applied methodology.	Apply advanced problem-solving skills and technical knowledge to all aspects of the design process and methodology.

	Level 4	Level 5	Level 6 (Hons)
K4	Develop an awareness of implications of operational, environmental, social, economic, and sustainability issues on engineering development.	Appraise the impacts of operational, environmental, social, economic, and sustainability issues on engineering projects.	Demonstrate critical awareness of operational, environmental, cultural and ethical implications, and the need for sustainable development.
K5	Develop an awareness of current technologies and their uses within engineering.	Critically appraise current and future technologies and develop an awareness of the sustainability implications.	Display a critical awareness of current issues and future prospects at the forefront of the discipline.
K6	Identify and describe components and theory used in modern and emerging mechatronics systems in industry.	Apply a comprehensive knowledge of industrial process systems to validate new system architecture.	Demonstrate an ability to critically appraise existing controlled processes, make judgements, and propose and formulate a new mechatronics system through a programme of self-managed learning.

Intellectual Skills

	Level 4	Level 5	Level 6 (Hons)
I1	Identify problems and potential causes and effects.	Identify and analyse problems and use diagnostic methods to recognise causes and achieve satisfactory solutions.	Innovate in solving novel and challenging problems and be aware of the limitations of the solutions.
I2	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 impacts.	Critically assess the resources and techniques used to complete tasks, and to achieve engineering objectives. Recommend new techniques or use of resources based on a strong understanding of legal requirements, appropriate ethical conduct and associated risks that may occur before, during and after the task has been completed.
I3	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.	Critically appraise engineering problems. Generate and analyse data to solve complex engineering problems.
I4	Form opinions based upon knowledge and understanding of the subject in question	Present arguments to uphold decisions following an evaluation of a particular subject.	Assess, interpret and implement decisions with a critical awareness of technical, economic, environmental, social and commercial implications.

Subject Skills

	Level 4	Level 5	Level 6 (Hons)
S1	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, analysing experimental data in detail, and drawing comprehensive conclusions.
S2	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, test and evaluate devices and systems to meet given performance criteria, including the use of computer-based tools.
S3	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.	Analyse and evaluate processes, techniques or systems relating to unfamiliar problems with an awareness of quality issues and their application to continuous improvement.
S4	Propose a self-directed individual programme of investigation.	Plan, undertake and report a self-directed individual programme of investigation and plan a feasible programme of design.	Propose, plan, undertake and report a self-directed individual programme of critical investigation, application design and implementation.

Practical, Professional and Employability Skills

	Level 4	Level 5	Level 6 (Hons)
P1	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.	Identify problems, bias and recommendations effectively through graphical, written and verbal forms of communication.
P2	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 competently to source information, to prepare reports, to model performance using specialised software packages.
P3	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	Evaluate and reflect on own performance and self-management.
P4	Use CPD to maintain competence and reflective practice.	Make effective use of CPD to ensure ongoing competence at the level of future intended practice.	Evaluate and reflect on own performance and self-management. Plan and record self-learning and development as the foundation for lifelong learning/CPD.
P5	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.

Learning and teaching strategy

The learning and teaching strategy for the programmes accords fully with Wrexham 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 (2023). 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 learning and teaching strategy reflect the different requirements of the students:

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.

Assessment strategy

For all modules for the programme of BEng (Hons) Mechatronics Engineering, an assessment strategy which is student centred and reflects the requirements of the QAA Subject Benchmark Statement Engineering (2023) is adopted.

The programme provides 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.

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, and where possible synthesising their university learning.

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.

Grading:
Assessment will be graded using the suggested criteria grid detailed within Wrexham University's Assessment Guidance Handbook, the criteria will be contextualised for each assessment. All work will be assessed by tutors at Wrexham University or at Dalian Polytechnic University. Students will receive written feedback within the target times set out by Wrexham 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 Wrexham University's Regulatory Requirements, which is also adopted by Dalian Polytechnic University for the programme delivery.

Extenuating Circumstances and Deadlines for Submission:
Students will be given a schedule of assessment submission dates for the year. They 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 modules, for example, the module of Individual Engineering Project, 'progressive feedback' will be used to give students good step-by-step supports during their course studies, particularly when there are many problems with an individual student's work.

The 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.

In Course Tests
In course tests are usually an 'unseen' paper sat in an invigilated environment. An exception to the unseen element is when a case study is required for reference. 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.

Note: The in-course tests will be set in a similar style to a formal written examination, with a similar type of paper and with a similar level of academic rigour. However, it will be sat under the supervision of the programme team, rather than under the central university administration, in order to provide flexibility in the timing of the assessment activity.

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 perhaps 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.

Some modules use continuous assessment whereby a set of progressive exercises are used to build up to the achievement of a major task. Each exercise is given a mark (called summative assessment) and feedback given, usually during class, in order to help with the next stage.

The final mark is a combination of these marks. It is also the preferred method of assessment for the project, as the student project develops there are interim points for assessment which are inclusive of VLE quizzes, presentations, log books, and staged formal reports. The feedback to the student is thus also continuous and assists the students to achieve their potential.

For some modules, a 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.

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/