PRIFYSGOL ABERYSTWYTH UNIVERSITY

Undergraduate studies in

Engineering

Contents

Important information

The programme information published in this brochure was correct at time of going to print (November 2024) and may be subject to change. Prospective students are advised to check the definitive programme information, including entry requirements, that is available on our website before making an application, to ensure that the programme meets their needs.

Welcome

We are delighted that you are considering an undergraduate degree in Engineering at Aberystwyth University. We pride ourselves on teaching core principles and essential industry skills through teamwork and a 'can-do' approach to problem-solving.

If you choose to study with us at Aberystwyth University, you will study in a stimulating environment with lecturers who will bring their enthusiasm, skills and world-leading knowledge to your learning. Our programmes aim to develop the next generation of engineers, innovators, leaders and entrepreneurs. We ensure that you participate in an environment where you can learn, engage and co-create solutions to meet the demands of an increasingly complex and rapidly changing environment.

Visit us at an Open Day or Applicant Visiting Day to discover what makes Aberystwyth such an incredible place to study. You can be sure to receive a warm welcome from a team of leading academics who will show you how they focus on your development and help you create the skills and competences needed to be successful.

I very much look forward to meeting you either at an Open Day or Applicant Visiting Day, or indeed when you are a student here.

Professor Nigel Copner, Head of Engineering

Why study Engineering?

Skills in electrical and electronic engineering are essential in a world that seeks net zero, medical breakthroughs, and the advancement of the devices and systems we use every day. According to the IEA's World Energy Outlook (2021), the low-carbon agenda is expected to create around 13 million new jobs globally by 2030, most of which will require skills in electrical and electronic engineering.

All of our Engineering degree schemes are informed by both industry and the excellent research conducted in the Engineering field. Our new BEng and MEng degree schemes in Electrical and Electronic Engineering incorporate a key focus on sustainability and have been created with employability in mind. These degrees also have the option of a foundation year or an integrated year in industry taken after your second year, so as to develop your commercial networks and insight. There has never been a better time to build skills in a discipline with such huge demand and one in which we seek global solutions.

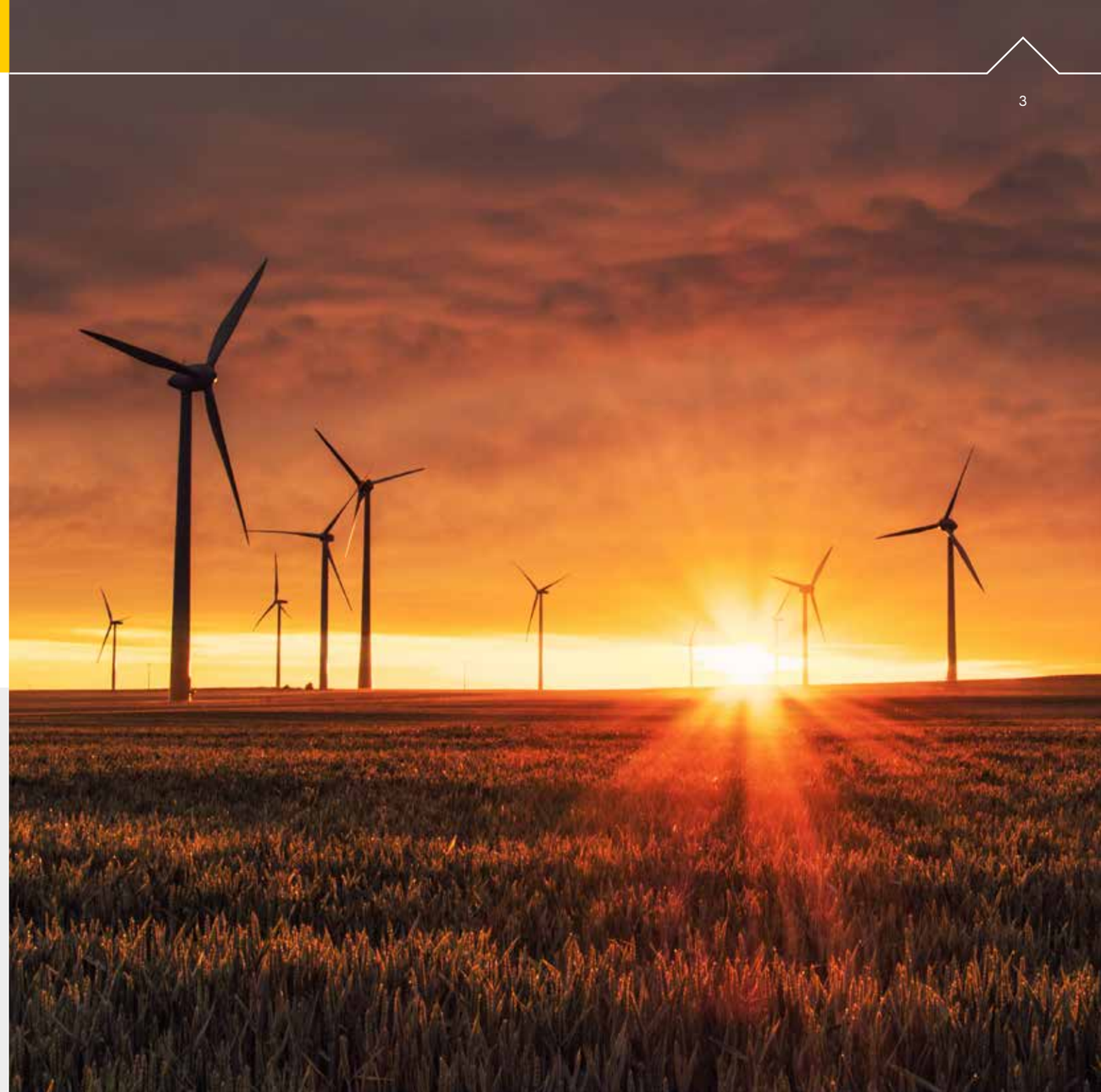
We have a number of other well-established degree programmes at undergraduate level, such as Engineering Physics, Robotics and Embedded Systems Engineering, as well as Software Engineering; all of which leverage the expertise of world class researchers to build skills and confidence that will be in great demand in the future.

Should you wish to continue your studies beyond undergraduate level, we currently offer Masters courses in Space Engineering, Wireless Communications and Radio Frequency Systems Engineering, and Engineering Management, alongside our MEng Sustainable Electrical and Electronic Engineering.

Employability

One of our particular strengths is our wide-ranging and deep-rooted links with industry, which create opportunities to undertake applied research, transfer knowledge and help develop new impactful and far-reaching products. All of our modules are informed by our excellent research and the current/future needs of the industry.

During your studies you will gain important insight from industrialists and entrepreneurs who will deliver talks on their career journeys and the lessons they have learnt. During your time at Aberystwyth, we will provide career guidance, options of industrial placements, alongside commercial networking opportunities to ensure that your career opportunities and success are maximised.



Our courses

Single Honours

Electrical and Electronic Engineering

BEng (Hons) | 163H | 3 years

Skills in electrical and electronic engineering are essential in a world that seeks net zero, medical breakthroughs and many of the devices and systems we use every day. In studying the Electrical and Electronic Engineering degree you will develop these essential skills, from analogue and digital electronics to real-life applications like communications and renewables.

At Aberystwyth we embed a 'can do' approach to problem-solving within this degree programme with employability in mind, so that on graduation our students will have the confidence, skills and knowledge to effectively deliver in these extremely lucrative opportunities, whether they are industrial or commercially based, and contribute positively to our changing world.

You will benefit from:

- a strong practical element within the course to equip you with the professional and applied 'can do' skills you will need for the workplace
- a strong sustainability theme so you can appreciate the importance of low carbon solutions for our future world and develop appropriate skills for the growing renewable energy markets
- modules which range across the disciplines of physics, computer science and mathematics to give you a thorough grounding in the science underpinning engineering
- modelling packages such as COMSOL and Zemax which are sought-after commercial skills, especially as we move towards net zero.

Employability

Engineering is a key enabling technology around the globe and provides a stimulating and rewarding career choice. Electrical and Electronic Engineering has excellent employment opportunities within the green technology industries, aerospace and automotive industries, in communications and networking, telecommunications and defence, life science, artificial intelligence, machine learning, and the emerging area of the Internet of Things.

Module list

Below is an indicative list of modules that you may study on this course.

First year:

- Analogue and Digital Electronics
- Calculus *
- Algebra and Differential Equations *
- Introduction to Programming *
- Electricity, Magnetism and Matter *
- Professional and Sustainable Industrial Practice
- Laboratory Techniques for Experimental Physicists and Engineers. *

Second year:

- Power and Machine
- Signals and Communication
- Robotics and Embedded Systems
- Sensors, Electronics and Instrumentation
- Mathematical Physics *
- Practical Research Skills. *

Final year:

- Communication Engineering and Applications
- Systems Engineering
- Engineering Control Theory
- Fundamentals of Machine Learning
- Optoelectronic Devices, Sensors and the Internet
- Project (with Project Management). *

See our website for the optional modules you may select to develop your specialist interests.

* also available partially or entirely through the medium of Welsh.

Key Facts

Typical offer:
UCAS tariff points: 120-112
IB: 30-28.

Assessment weighting:
57% coursework, 43% exams.

Field trips/fieldwork: No.

Also available:

163Y	Integrated year in industry.
163F	Integrated foundation year.
163M	Integrated Masters.
163I	Integrated Masters with integrated year in industry.

Engineering Physics

BEng (Hons) | 179H | 3 years

Engineering Physics focuses on the application of physical principles and techniques to engineering and technology — two demanding industries. At Aberystwyth, we prepare you with the knowledge and skills of physics training that are required for producing engineering solutions in real-world situations.

This course has a strong practical IT element and an opportunity to gain expertise in specialist topics such as micro and nano-electronics, applied photonics, materials design and production, quantum technology, robotics, solar energy and space instrumentation. With the opportunity to take a year in industry we are confident that our innovative teaching and opportunities can equip you for the future.

The Integrated Masters (MEng) degree (168F) includes an integrated industrial placement and an additional year of study where you will gain professional training and research skills.

You will benefit from:

- studying a degree accredited by the Institute of Physics
- the option of a year in industry to develop practical experience of applying the skills acquired in the first two years of study
- specialist facilities include mechanical, electronics and robotics workshops, materials fabrication and characterisation, optical and space instrumentation and analogue planetary terrains
- being taught by researchers who are involved in the current space missions and engineering low dimensional materials (eg graphene).

Employability

A degree in Engineering Physics will prepare you for a career as an engineer or scientist in areas such as industrial research and development, product development and national research laboratories. Employment sectors include energy, photonics, space, IT, health and education.

Accredited by:

IOP Institute of Physics

Module list

Below is an indicative list of modules that you may study on this course.

First year:

- Algebra and Differential Equations *
- Calculus *
- Communication and Technology
- Dynamics, Waves and Heat *
- Electricity, Magnetism and Matter *
- Further Algebra and Calculus *
- Laboratory Techniques for Experimental Physicists and Engineers *
- Modern Physics
- Physics Career Planning and Skills Development *.

Second year:

- Electricity and Magnetism *
- Mathematical Physics *
- Numerical Techniques for Physicists
- Optics
- Practical Research Skills *
- Principles of Quantum Mechanics
- Sensors, Electronics & Instrumentation
- Thermodynamics.

Final year:

- Concepts in Condensed Matter Physics
- Engineering Control Theory
- Particles, Quanta and Fields
- Professional Skills in Engineering
- Project (with Project Management) *
- Semiconductor Technology
- Systems Engineering.

* also available partially or entirely through the medium of Welsh.

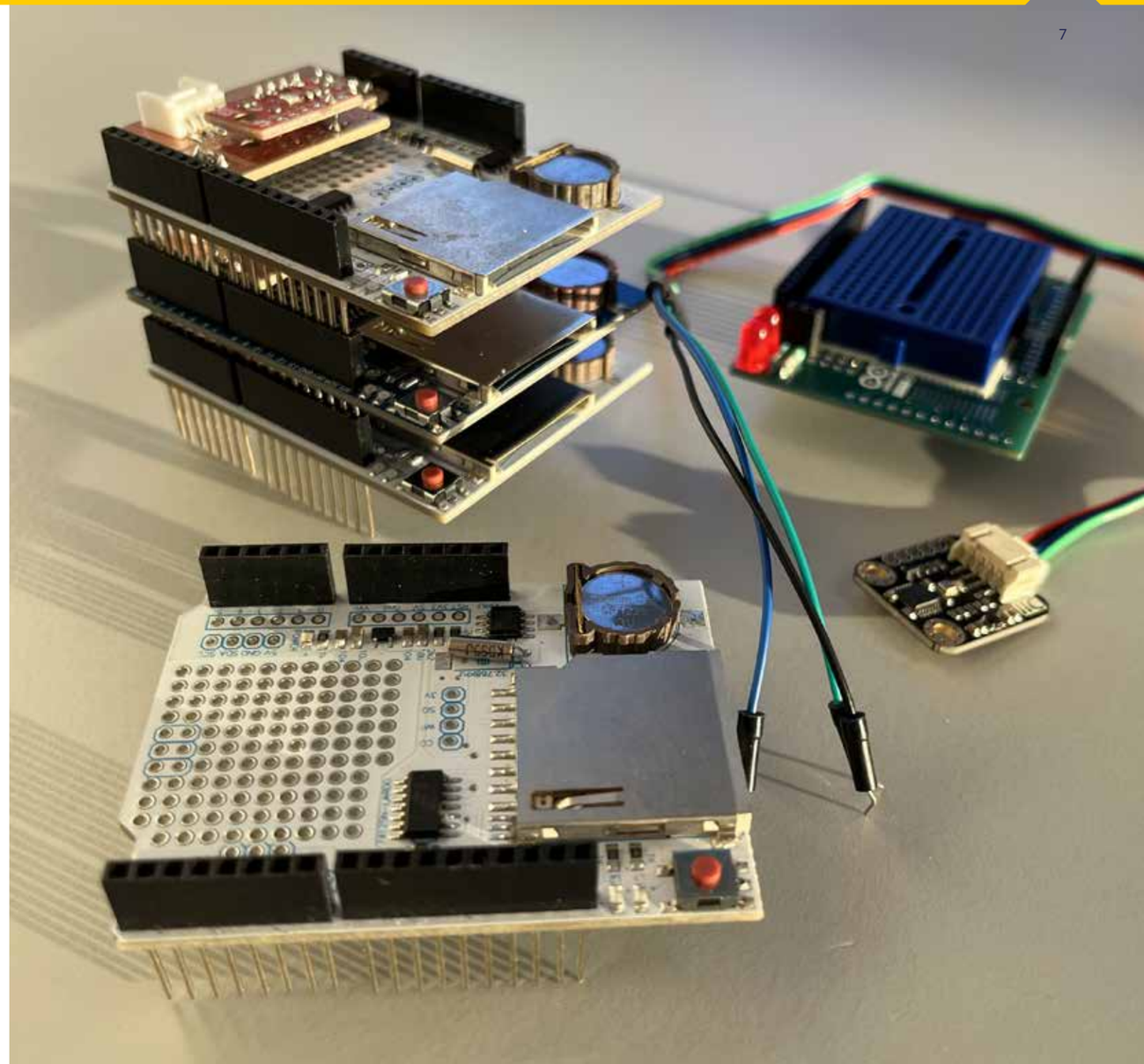
Key Facts

Typical offer:
BEng - UCAS tariff points: 120-112 to include B in A level Physics and Mathematics
IB: 30-28 with 5 points in Physics and Mathematics at Higher Level.

Assessment weighting: 60-40% coursework and 40-60% exams.

Field trips/fieldwork: Away day careers workshops.

Also available:
179G Integrated year in industry.
168F Integrated Masters with integrated year in industry.



Robotics and Embedded Systems Engineering

BEng (Hons) | 132A | 3 years

Our research-active staff provide hands-on support to guide you through building and running intelligent systems while ensuring reliability in unpredictable real-world situations. Work in this area requires not only a deep understanding of software, but also of the operation in the physical world and the underlying mathematics describing it.

As well as gaining a firm foundation in computing skills, you will develop specialised skills in artificial intelligence, robotics and systems engineering. Our optional year in industry is a crucial way for you to gain practical experience of applying the skills you acquired during your first two years of study. It will also help you stand out from your competitors when applying for jobs.

You will benefit from:

- opportunities to work with research staff in facilities such as the smart home lab and robotics workshop
- a wealth of knowledge from lecturers in the Mathematics, Physics, and Computer Science departments
- a range of specialised research equipment including robotic rovers, sailing robots, robotic arms and UAVs.

Employability

Graduates have a strong background in computing that will prepare them for a range of careers in the computing industry. In addition, the specific skills gained on this course are an ideal preparation for working in the aerospace and automotive industries and the emerging area of the Internet of Things.

Module list

Below is an indicative list of modules that you may study on this course.

First year:

- Algebra and Differential Equations *
- Calculus *
- Introduction to Programming *
- Electricity, Magnetism and Matter *
- Problems and Solutions
- Study Skills for Computer Science *
- Programming Using an Object-Oriented Language *.

Second year:

- Algorithm Design and Data Structures *
- Artificial Intelligence
- Mathematical Physics *
- Sensors, Electronics and Instrumentation
- Robotics and Embedded Systems
- Software Engineering *.

Final year:

- Major Project *
- Professional Issues in the Computing Industry
- Systems Engineering
- Engineering Control Theory
- Robotic Applications.

See our website for the optional modules you may select to develop your specialist interests.

* also available partially or entirely through the medium of Welsh.

Key Facts

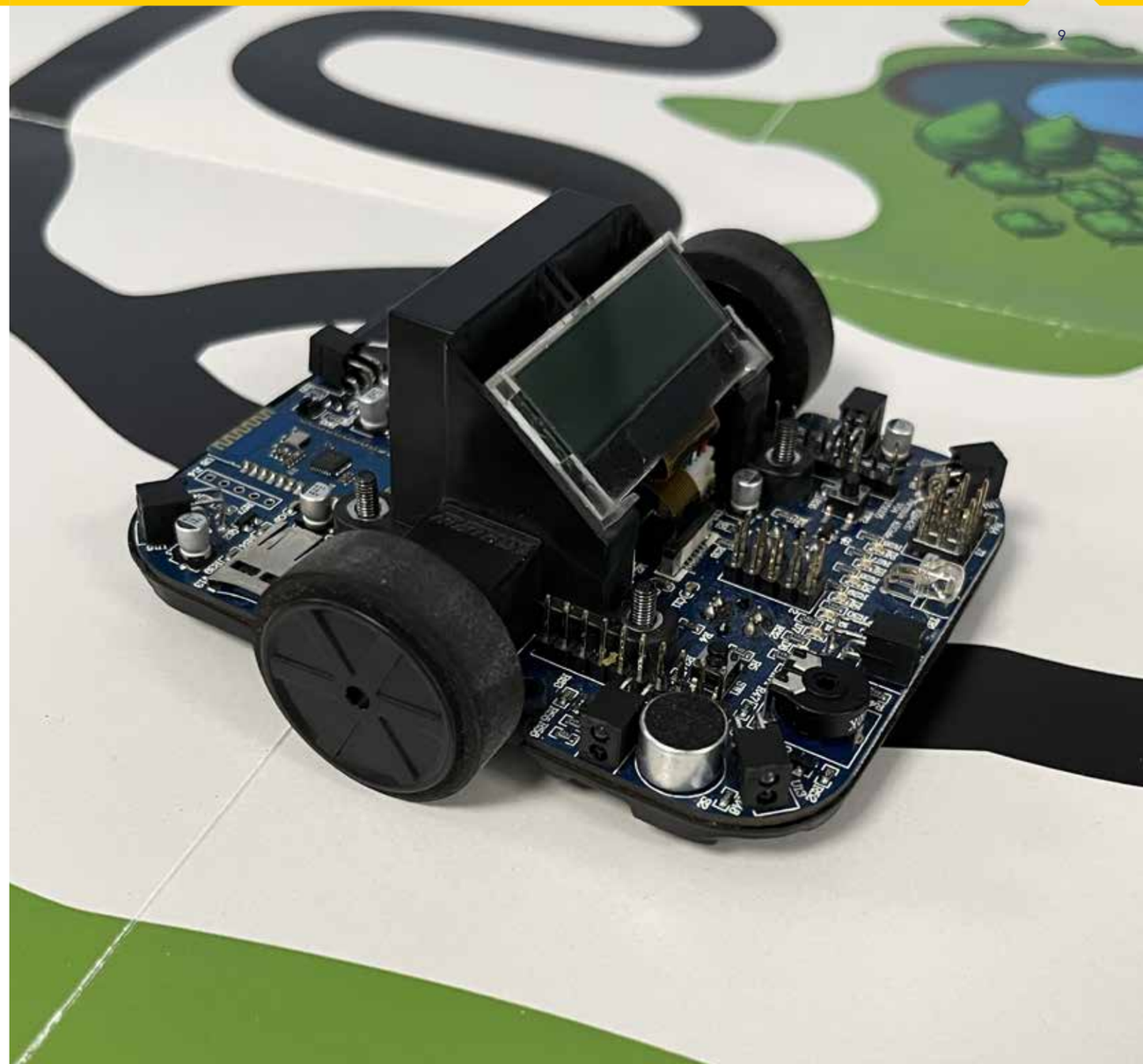
Typical offer:
UCAS tariff points: 120-104 to include B in A level Mathematics
IB: 30-28 with 5 points in Mathematics at Higher Level.

Assessment weighting:
48% coursework, 52% exams.

Field trips/fieldwork:
No.

Also available:

132B Integrated year in industry.
132C Integrated Masters.
132D Integrated Masters with integrated year in industry.



Software Engineering

BEng (Hons) | G600 | 4 years

Software Engineering is concerned with the production of large, high-quality, and often long-lived, software systems. Work in this area requires not only a deep understanding of software and related technologies, but also an appreciation of the management and professional issues associated with the development of large systems.

The Software Engineering degree emphasises professional engineering as well as computing skills. You will develop a deep understanding of software and related technologies, and appreciate the management and professional issues associated with the development of large systems. You will develop specialised skills in graphics and visualisation, artificial intelligence, robotics and mobile computing.

This degree includes an integrated year in industry, where you can acquire real-world experience to challenge yourself and create invaluable networking connections. Many of our students return from their industrial year with an offer of employment for when they graduate.

You will benefit from:

- studying a degree accredited by BCS — The Chartered Institute for IT
- regularly updated laboratories providing access to a full range of computing environments including Windows, Linux and MacOS
- core modules that focus on software engineering scenarios
- being taught by lecturers with close links to the software industry.

Employability

This degree provides appropriate skills for the majority of technical jobs in the software industry. Graduates have obtained positions in companies both large and small and also in government bodies. Our graduates are frequently complimented on their professional approach.

BCS Accredited Degree

Module list

Below is an indicative list of modules that you may study on this course.

First year:
- Introduction to Computer Infrastructure
- Introduction to Programming *
- Problems and Solutions
- Study Skills for Computer Science *
- Programming Using an Object-Oriented Language *
- Information Security *
- Fundamentals of Web Development *.

Second year:
- Algorithm Design and Data Structures
- C and C++
- Modelling Persistent Data *
- Software Engineering *.

Third year:
- Industrial placement.

Final year:
- Major Project *
- Mobile Development with Android
- Professional Issues in the Computing Industry.

See our website for the optional modules you may select to develop your specialist interests.

* also available partially or entirely through the medium of Welsh.

Key Facts

Typical offer:
UCAS tariff points: 120-96
IB: 30-26.

Assessment weighting:
57% coursework, 43% exams.

Field trips/fieldwork:
No.

Also available:
G601 Integrated Masters.

Studying through the medium of Welsh

Aberystwyth University offers a high level of provision for students to be able to study through the medium of Welsh - one of the highest in Wales.

We offer all students with the opportunity to study part of their course through the medium of Welsh by offering a number of modules which can be studied partially or entirely through the medium of Welsh. You can study some modules in Welsh, even if you are studying mainly in English, and you can choose to submit your coursework in Welsh.

There are opportunities for students who are fluent in Welsh, in addition to those who are less confident or are learners. There are variations in undergraduate course modules and the amount that can be studied through the medium of Welsh.

'Addewidion Aber' is Aberystwyth University's commitment to develop Welsh-medium provisions following the University's Welsh-medium academic strategy. This is the most comprehensive plan of its kind by any university in Wales.

These pledges highlight what is special about Aberystwyth and how the University offers a complete Welsh experience to students, including:

- Flexible opportunities to study through the medium of Welsh in all departments
- Guaranteed Welsh-speaking Personal Tutor
- Bilingual work experience
- Guaranteed Welsh-medium accommodation
- Support for learning and improving your Welsh
- Money in your pocket for following between 5 and 40 credits in Welsh
- Free membership of the Welsh Students' Union (Undeb Myfyrwyr Cymraeg Aberystwyth)
- Space for Welsh-medium societies to meet

Global opportunities

Aberystwyth's Global Opportunities team offer an exciting range of options for you to go overseas as part of your degree: from short courses and volunteering opportunities in the summer, to a full semester or year abroad studying your chosen subject at one of our partner universities.

The University also offers a number of courses which include an integrated year studying abroad, enabling you to study at one of our European or international partner universities for one or two semesters during your third year, returning to Aberystwyth for your final year and graduation.

Reports have shown that students who study abroad are more attractive to employers and earn more than their peers. Take advantage of the opportunity of a lifetime while improving your critical skills by choosing to study abroad.

The application process

1 Apply through UCAS.com

Check the UCAS deadline on UCAS.com. Aberystwyth University institution code: A40.
TOP TIP: You'll be given a 10-digit UCAS ID number. Keep this to hand as you'll be asked for it many times.

2 The University will consider your application

TOP TIP: Use UCAS Hub to keep an eye on your application. At Aberystwyth we aim to make a decision within seven days.

3 The offer will show on UCAS Hub

The University's decision will show on UCAS Hub - if you've been made an offer, it will tell you what grades you need to achieve to secure your place.

4 Decide where to go

Once you've received all your offers, you'll need to decide which university you want to go to, within a set time. This is when you'll need to note which universities will be your Firm and Insurance choices.

5 Accommodation

Once you've chosen your Firm/Insurance choice you'll be invited to apply for accommodation.

6 Results day

UCAS Hub will tell you whether your place is confirmed at your Firm choice. If you don't get the grades you'd hoped for, you may want to consider entering Clearing.

7 Start packing!

Remember to keep an eye on your emails for information about arrival and welcome activities.

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