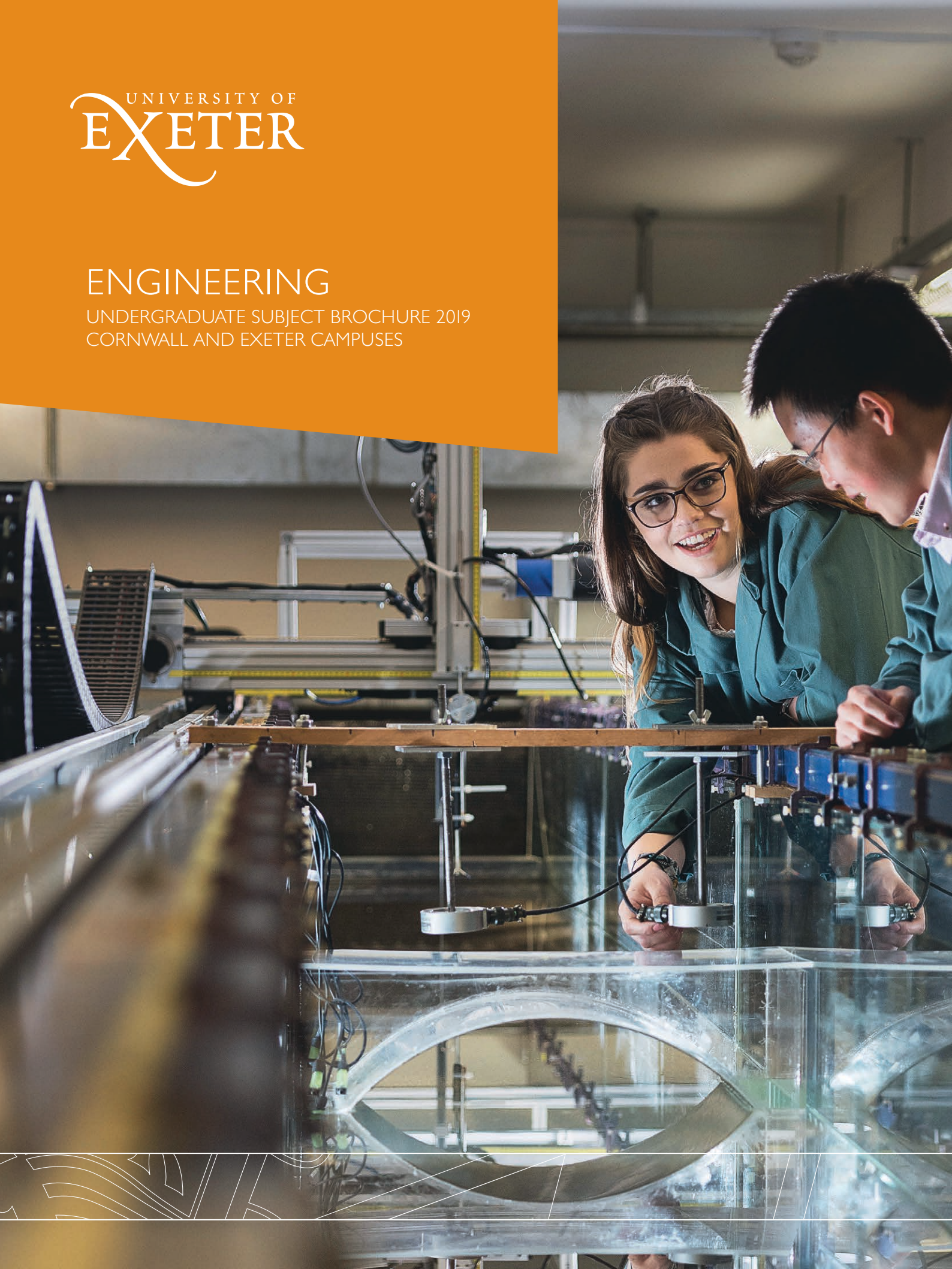
UNIVERSITY OF EXETER

ENGINEERING

UNDERGRADUATE SUBJECT BROCHURE 2019
CORNWALL AND EXETER CAMPUSES



CONTENTS

My student experience during the past three years did not disappoint. The courses are challenging and students are expected to work hard, but all academic and support staff have always been supportive and approachable. Exeter has provided me with opportunities to learn not only the technical aspects, but also the process of transforming information into knowledge.

Doug, studying Mechanical Engineering

ENGINEERING

7th in *The Complete University Guide 2019* for General Engineering

5th for Materials and Mineral Engineering in *The Guardian University Guide 2018*

86% of Engineering students in professional occupations or graduate-level further study within six months of graduating[1]

Industry experience available to all students through summer placements or Year in Industry

Hands-on courses with an emphasis on practical project work using specialist equipment

Engineering challenges lie at the heart of the most significant problems facing society. It is the driver of social and environmental innovation; from designing intelligent infrastructures to handpicking the material properties of tomorrow's space-launch vehicles, no project can happen without engineers.

Professional engineers often work together within multidisciplinary teams, solving problems collectively; this underpins how you will be taught. You will experience genuine engineering project challenges, working collaboratively with students from across the discipline to pit yourselves against problems that draw upon each of your specialist skills.

We offer a range of exciting, practical and professionally accredited specialist degrees covering the major engineering disciplines. Our programmes allow you to explore all the core engineering disciplines, allowing you to identify your area of interest. Your chosen specialism will then form the basis of your studies as you delve into the subject in greater depth, leading to a specialist degree at MEng or BEng level.

We have excellent links with industry, giving you the opportunity to undertake work experience as part of your degree, either as a summer placement or a 'Year in Industry'. You will also have the option to experience a period of study overseas in Europe, Canada, Japan, Hong Kong or South America. Our degrees are flexible – you can transfer from BEng to MEng or vice versa at any point up to the end of your second year.

Upon graduation you will start your professional career as an accredited engineer. You will possess the specialist knowledge, problem solving and collaborative skills that are essential to success, ready to pursue a career in a variety of sectors, or life in academic research.

ACCREDITATION

- ☐ The Joint Board of Moderators from four professional bodies (ICE, IStructE, IHE and CIHT) accredit our Civil Engineering programmes
- ☐ Our Electronic Engineering programmes are accredited by the IET
- ☐ Our Engineering and Management (Electronic) programmes are accredited by the IET and the Engineering and Management (Mechanical) programmes are accredited by the IMechE and IET
- ☐ The Mechanical programmes are accredited by the Institution of Mechanical Engineers and the Materials programmes by the Institute of Materials, Minerals and Mining

ice Institution of Civil Engineers

INSTITUTE OF HIGHWAY ENGINEERS

CIHT

The Institution of Structural Engineers

IET A new Institution from the IEE and IIE

Institution of MECHANICAL ENGINEERS

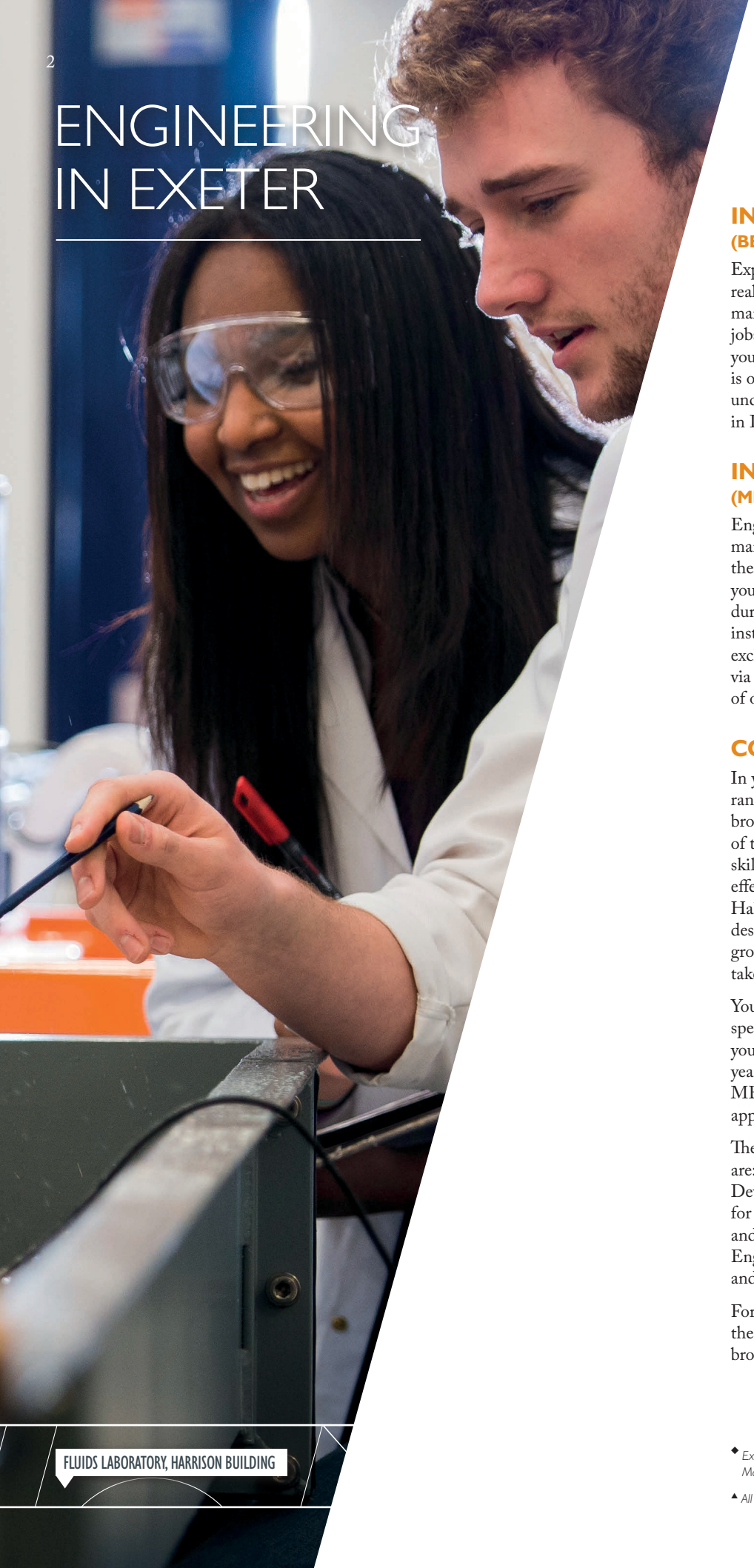
IOM3 The Institute of Materials, Minerals and Mining

ACCREDITED PROGRAMME

www.exeter.ac.uk/ug/engineering

[1] *Destination of Leavers from Higher Education Survey (DLHE) of 2015/16 undergraduates.*

ENGINEERING IN EXETER



FLUIDS LABORATORY, HARRISON BUILDING

INDUSTRIAL EXPERIENCE
(BEng AND MEng)

Experience of working in your chosen field is a real advantage when entering the graduate job market. It is also a great way to try out different jobs and to make contacts within companies you're interested in working for. This opportunity is open to all our engineers◆, and you can undertake this experience as either a full Year in Industry or a summer placement.

INTERNATIONAL STUDY
(MEng ONLY)

Engineering is an international profession and many graduates will work overseas for part of their careers. Many of our programmes provide you with the opportunity to spend half a year during your third year at one of our partner institutions in Europe under the Erasmus exchange scheme, or spend a year further afield via international exchange agreements as a part of one of our MEng programmes.

CORE FIRST YEAR

In your first year at Exeter you will study a wide range of engineering specialisms, gaining a broad overview of the multidisciplinary nature of the subject. This 'core' first year provides the skills and adaptability to work and communicate effectively across the spectrum of disciplines. Half a day a week is devoted to engineering design activities, where you will work in small groups in the labs and workshops. You will also take part in a Group Project.▲

You then have the flexibility to study any of our specialist engineering disciplines at the end of your first year, while at the end of your second year you can also transfer between the BEng and MEng versions of the programmes, subject to appropriate performance.

The modules that make up your core first year are: Engineering Entrepreneurship and Skills Development 1, Core Engineering 1, Electronics for Engineers: Core Engineering 2, Materials and Manufacturing: Core Engineering 2, Engineering Mechanics: Core Engineering 2 and Engineering Mathematics.

For information about each module, please read the module descriptors section of this subject brochure on page 14.

◆ *Except Engineering Entrepreneurship and Civil Engineering Site Management.*

▲ *All programmes except Civil Engineering Degree Apprenticeship.*

SINGLE HONOURS

BEng/MEng Civil Engineering (EXETER)

BEng H200 3 yrs
with Year in Industry H208 4 yrs
MEng H202 4 yrs
with Year in Industry H209 5 yrs
with International Study H207 4 yrs
AAA-ABB | IB: 36-32 | BTEC: DDD-DDM
Required subjects: GCE AL Maths✚ grade B and another science❖ subject at grade B; IB Maths HL5 and another science subject HL5.

- ☐ Civil Engineers create and manage societal infrastructures
- ☐ Content covers practical engineering knowledge with interpersonal skills
- ☐ Civil Engineering interfaces with electrical, mechanical, chemical and managerial engineering and processes
- ☐ Study over three (BEng) or four years (MEng)
- ☐ Spend a Year in Industry as part of this degree

Year 1 Please see 'Core First Year'.

Year 2 You will be able to investigate your own project ideas and at the end of the year you'll take part in a civil engineering residential field course.

Year 3 By the third year you will have selected two key areas in which to specialise, from structural engineering, CAD, geotechnical engineering or water engineering. You will carry out an individual project under the supervision of a member of academic staff with expertise in your chosen area.

Year 4 (MEng only) Further your specialism, strengthening your understanding of either civil, structural, geotechnical, water or environmental engineering. You will work on a major interdisciplinary group project which will further develop your engineering and project management skills.

MEng Civil and Environmental Engineering (EXETER)

MEng H290 4 yrs
with Year in Industry H293 5 yrs
with International Study H292 4 yrs
AAA-ABB | IB: 36-32 | BTEC: DDD-DDM
Required subjects: GCE AL Maths✚ grade B and another science❖ subject at grade B; IB Maths HL5 and another science subject HL5.

- ☐ Environmental problems are increasingly becoming key problems at a local, national and global scale
- ☐ Capitalises on our expertise in civil engineering, water and climate systems
- ☐ Similar to Civil Engineering, but with more focus on water management in your final year
- ☐ Undertake industrial experience as a named part of your degree title
- ☐ Spend a Year in Industry as part of this degree

Year 1 Please see 'Core First Year'.

Year 2 The core and optional modules will take a more specialised pathway with a focus on civil engineering and its applications, to large scale water systems and the impact of climate change.

Year 3 Emphasis is on understanding how to manage and work in a world where a changing climate has great impacts on planning, design, construction and operation. For example, changing rainfall patterns will bring significant new challenges to the design and maintenance of urban water supplies around the globe. You will undertake a substantial individual project with an environmental theme, along with other civil engineering modules.

Year 4 You will carry out an interdisciplinary group project, industrial case studies and study advanced aspects of civil and environmental engineering, such as urban drainage design, water management and hydroinformatics. In addition you will develop a solid understanding of programming for engineering, resulting in the ability to form algorithms to solve problems.

BEng/MEng Electronic Engineering (EXETER)

BEng H610 3 yrs
with Year in Industry H611 4 yrs
MEng H601 4 yrs
with Year in Industry HPD1 5 yrs
with International Study H1C0 4 yrs
AAA-ABB | IB: 36-32 | BTEC: DDD-DDM
Required subjects: GCE AL Maths✚ grade B and another science❖ subject at grade B; IB Maths HL5 and another science subject HL5.

- ☐ Design, develop and test devices, systems or equipment
- ☐ Study over three (BEng) or four years (MEng)
- ☐ Spend a Year in Industry as part of this degree

Year 1 Please see 'Core First Year'.

Year 2 Specialise in a specific area while still maintaining some common modules with the Mechanical Engineering and Engineering and Management programmes. You will be able to investigate some project ideas of your own and work on an analogue or digital design for your case study. You will learn how modern communication networks function and understand the principles of electronic design in cars and aeroplanes.

Year 3 By Year 3, you will have narrowed down your specialisms to two of the following areas: communications engineering, electromagnetics, CAD or consumer electronics engineering. You will carry out an individual project under the supervision of a member of academic staff with expertise in your chosen area.

Year 4 (MEng only) In your final year you will specialise further, strengthening your understanding in either computer electronics, consumer electronics, software systems or operational systems engineering. You will study lean thinking and sustainability in industry and work on a major group project to further develop your engineering and project management skills.

✚ and ❖ *see Entry Requirements box on page 6.*

BEng/MEng Electronic Engineering with Computer Science (EXETER)

BEng HG6K 3 yrs
with Year in Industry HG65 4 yrs
MEng HG64 4 yrs
with Year in Industry IH62 5 yrs
with International Study IH16 4 yrs
AAA-ABB | IB: 36-32 | BTEC: DDD-DDM
Required subjects: GCE AL Maths+ grade B and another science* subject at grade B; IB Maths HL5 and another science subject HL5.

- ☐ Study hardware and software aspects of modern systems and computers
- ☐ Shared aim of developing products and services that provide solutions to problems
- ☐ Learn from lecturers across two disciplines
- ☐ Study over three (BEng) or four years (MEng)
- ☐ Spend a Year in Industry as part of this degree

Year 1 Please see 'Core First Year'.

Year 2 Specialise in electronics and computer science modules, giving you the freedom to choose your own degree path. This allows you to research and further your knowledge in particular interest areas such as software engineering or machine learning.

Year 3 Further specialisation allows you to choose modules that offer advanced courses in a wide range of topics. Industry-linked projects also take place and work placement opportunities such as the Commercial and Industrial Experience module are recommended. This variety of learning gives you advanced knowledge, practical work experience and the confidence to conduct individual research.

Year 4 (MEng only) Study a wide range of advanced modules. Many include advanced practical project work with modules such as lean thinking and sustainability enabling you the opportunity to visit companies and learn hands-on skills from top-class manufacturing experts such as Alcoa Howmet, Hymid Ltd, Jaguar/Land Rover and BD Diagnostics.

BEng/MEng Engineering (EXETER)

BEng H101 3 yrs
MEng H104 4 yrs
AAA-ABB | IB: 36-32 | BTEC: DDD-DDM
Required subjects: GCE AL Maths+ grade B and another science* subject at grade B; IB Maths HL5 and another science subject HL5.

- ☐ General programme allowing you to study topics across any of the disciplines
- ☐ Designed for students who are undecided about what engineering pathway interests them
- ☐ Typically, students who study this programme switch onto one of the accredited, specialist degrees at the end of their first year

BEng/MEng Engineering with Management (EXETER)

BEng HN12 3 yrs
with Year in Industry HN13 4 yrs
MEng H704 4 yrs
with Year in Industry NH13 5 yrs
with International Study HN1F 4 yrs
AAA-ABB | IB: 36-32 | BTEC: DDD-DDM
Required subjects: GCE AL Maths+ grade B and another science* subject at grade B; IB Maths HL5 and another science subject HL5.

- ☐ Combines mechanical and electronic engineering with enhanced theory and practice in engineering management
- ☐ Ideal for individuals who enjoy working with people, coordinating projects and leadership
- ☐ Frequent visits to manufacturing and service industries companies
- ☐ Study over three (BEng) or four years (MEng)
- ☐ Spend a Year in Industry as part of this degree

Year 1 Please see 'Core First Year'.

Year 2 Begin to specialise in your programme area while still maintaining some common modules with Mechanical Engineering and electronic engineering. You will be able to investigate your own project ideas and work on the management aspects of designing a product or a project. You will learn how modern manufacturing systems work while maintaining a broad view of electronics design, civil engineering project methods and control engineering.

Year 3 By Year 3, you will have narrowed down your specialisms to two of the following areas: mechanical engineering, manufacturing engineering, or electronics engineering. You will have a broad choice of subjects within these disciplines and will carry out an individual project under the supervision of a member of academic staff with expertise in your chosen area.

Year 4 (MEng only) Specialise further and study lean thinking and sustainability in industry. You will also work on a major group project to further develop your engineering and project management skills.

BEng/MEng Engineering Entrepreneurship (EXETER)

BEng H705 3 yrs
MEng H700 4 yrs
AAA-ABB | IB: 36-32 | BTEC: DDD-DDM
Required subjects: GCE AL Maths+ grade B and another science* subject at grade B; IB Maths HL5 and another science subject HL5.

- ☐ A pioneering programme, designed to support innovators and entrepreneurs in the fields of mechanical and electronic engineering
- ☐ Four years of experiential learning, culminating in the launch of your own business
- ☐ Aimed at aspiring engineers and designers with a flare for business and the uncanny ability to solve complex problems

Year 1 – THINK Please see 'Core First Year'.

Year 2 – THINK From the second year the core and optional modules take a more specialised pathway with a focus on mechanical or electronic engineering.

Year 3 – TRY During this year you will start putting what you have learnt into practice.

Year 4 – DO (MEng only) The MEng programme has two different routes into Year 4:

At the beginning of Term 2 of Year 3 (January/February) you will apply for your start-up funding. If successful, you will enrol onto the MEng Engineering and Entrepreneurship (Start-up Pathway), start your business and develop your entrepreneurship and skills through modules, with opportunities to work in creative spaces. All other students enrol onto the MEng Engineering and Entrepreneurship (Innovation Pathway), which will give you the opportunity to work on a group project supported by mentors from industry.

BEng/MEng Materials Engineering (EXETER)

BEng H190 3 yrs
with Year in Industry H193 4 yrs
MEng H191 4 yrs
with Year in Industry H194 5 yrs
with International Study H198 4 yrs
AAA-ABB | IB: 36-32 | BTEC: DDD-DDM
Required subjects: GCE AL Maths✚ grade B and another science❖ subject at grade B; IB Maths HL5 and another science subject HL5.

- ☐ Subject is at the interface between materials science and engineering
- ☐ Many exciting developments are in materials engineering, for example: nanotechnology, artificial replacement, aerospace and smart composites
- ☐ Programme is suited to those with an interest in a technology development field
- ☐ Study over three (BEng) or four years (MEng)
- ☐ Spend a Year in Industry as part of this degree

Year 1 Please see 'Core First Year'.

Year 2 You will start to specialise in materials engineering while still maintaining some common modules with Mechanical Engineering. You will be able to investigate your own project ideas, and learn about what it takes to design, manufacture, and test a device and product in a competitive environment.

Year 3 In Year 3 you will focus on materials engineering and computational engineering which are complementary to each other. You will learn ways to calculate the failure mode of materials, theoretical and numerical approaches in analysing mechanical systems and also the use of software packages to design products.

Year 4 (MEng only) In your final year you will specialise further, thereby strengthening your understanding of state-of-the-art designs in materials engineering and stress analysis. You will work on a major group project which will further develop your engineering and project management skills, as well as studying lean thinking and sustainability in industry.

BEng/MEng Mechanical Engineering (EXETER)

BEng H300 3 yrs
with Year in Industry H304 4 yrs
MEng H302 4 yrs
with Year in Industry H307 5 yrs
with International Study H309 4 yrs
AAA-ABB | IB: 36-32 | BTEC: DDD-DDM
Required subjects: GCE AL Maths✚ grade B and another science❖ subject at grade B; IB Maths HL5 and another science subject HL5.

- ☐ Encompases materials, manufacturing, areodynamics, thermodynamics and more
- ☐ Suitable for those looking to pursue careers as professional engineers employed by industry or research laboratories, or those interested in management
- ☐ Study over three (BEng) or four years (MEng)
- ☐ Spend a Year in Industry as part of this degree

Year 1 Please see 'Core First Year'.

Year 2 You will start to specialise in mechanical engineering while still maintaining some common modules with civil engineering and materials engineering. You will be able to investigate your own project ideas, and work on the appropriate structural forms and stress analysis methods in your chosen case study. You'll also learn what it takes to design, manufacture and test a device and product in a competitive environment.

Year 3 Focus your study on the complementary areas of thermofluids, manufacturing and computational engineering. You will learn ways to model fluid flows and compute the energy efficiencies of designs and processes, theoretical and numerical approaches in analysing mechanical systems, and also the use of software such as finite element packages.

Year 4 (MEng only) Specialise further, strengthening your understanding of designs in computer aided engineering, stress analysis and simulation models. You will work on a major group project which will further develop your engineering and project management skills, as well as studying lean thinking and sustainability in industry.

BEng Civil Engineering (Degree Apprenticeship) (EXETER)

5 yrs | AAA-ABB | IB: 36-32| BTEC: DDD-DDM
Required subjects: GCE AL Maths✚ grade B and another science❖ subject at grade B; IB Maths HL5 and another science subject HL5.

- ☐ Gain a fully-funded Exeter degree, while earning a salary
- ☐ Developed in partnership with Laing O'Rourke and EDF Energy
- ☐ Gain relevant industry experience from day one of your studies
- ☐ Delivered through a mix of on-campus residentials, online learning and work-based projects
- ☐ Apply directly to specific vacancies in addition to your UCAS choices

BEng Civil Engineering Site Management is a full undergraduate degree, studied over five years.

While elements of the degree will be studied during time at work, the majority of your tuition will fall within four two-week residentials, delivered by University of Exeter academic staff.

Residential courses are structured around your modules and comprise of lectures, seminars and workshops. You will also meet one-to-one with your academic lecturer and get to know your peers.

✚ and ❖ see Entry Requirements box on page 6.

The lecturers are all academics working on various projects, and their passion for their chosen area of study comes through in their teaching. We have practical sessions which relate directly to what we're learning, allowing us to see and understand how theories are put into practice. We also have tutorial sessions, which involve working through problems with your lecturer or a PhD student. It is an opportunity to ask questions, and discuss in more detail the content that you're covering in lectures.

Once I have completed my degree, I hope to go into further study – I would love to do a PhD and be at the forefront of research into new and exciting engineering materials.

Rianna, studying
MEng Materials Engineering

ENTRY REQUIREMENTS: MORE INFO

*GCE AL/AS science includes: Biology/Human Biology▲; Chemistry; Computing; Design and Technology; Electronics; Environmental Studies; Geography; Geology; Maths/Pure Maths/Further Maths▲; Physical Education; Physics; Psychology; Science (applied); Statistics.

▲ *If more than one of these is taken they would only count as one 'science' but could count as two A levels towards our general requirements.*

✚**Programme requirement** Candidates may offer GCE AL Maths, Pure Maths or Further Maths.

A level
GCE AL Maths✚ grade B and another science subject at grade B.

IB
IB Maths HL5 and another science subject HL5. Applicants achieving IB Maths SL7 plus IB HL5 in Physics will also be considered.

BTEC Extended Diploma (2010)
Applicants studying one of the following BTEC Extended Diplomas will be considered without a GCE AL science subject, GCE AL Maths is still required: Applied Science, Building Services Engineering, Construction and the Built Environment, Electrical/Electronic Engineering, Engineering, Manufacturing Engineering, Operations and Maintenance Engineering, Mechanical Engineering, Environmental Sustainability.

BTEC Extended Diploma (2016)
Applicants studying one of the following new BTEC Extended Diplomas will be considered without a GCE AL science subject or GCE AL Maths providing they have taken the mandatory unit 'Calculus to Solve Engineering Problems' AND the optional unit 'Further Engineering Mathematics': Engineering, Electrical/Electronic Engineering, Mechanical Engineering, Computer Engineering, Manufacturing Engineering, Aeronautical Engineering.

LEARNING AND TEACHING IN EXETER

Engineering at Exeter combines a breadth of academic expertise with a caring and supportive learning environment. Our programmes make use of a variety of teaching styles with contact hours ranging from 25-32 hours each week (depending on year of programme) including:

- ☐ Lectures for the presentation of new topics and class exercises
- ☐ Workshops where you will learn how to operate equipment for future use
- ☐ Small group tutorials where you complete problem solving activities, and recover any content in lectures
- ☐ Independent or group practical project work, with consultation sessions with staff
- ☐ Engineering Design Activities (EDAs), where you will gain direct experience of putting your engineering design expertise into practice
- ☐ Organised tutorials with staff

FACILITIES

The Harrison building is the 'home' of Engineering on the Streatham Campus. It has multiple engineering laboratories including an aerodynamics laboratory, thermodynamics and energy laboratory, structures laboratory, materials laboratory, electronics laboratory and a brand new fabrication laboratory.

ASSESSMENT

Modules are measured by a combination of continuous assessment through small practical exercises, project work, essay writing, presentations and exams.

All of our programmes are assessed in a similar way. During the first two years, you will have an approximately even mix of exams and coursework. Then, in the third year, 25 per cent of the year is taken up by the individual project. For those going on to the fourth year, the group project takes up 50 per cent of the year.

Your first year doesn't count towards your final degree classification, but you do have to pass it in order to progress. If you study a three-year programme, assessments in the final two years both count towards your classification and if you study a four-year programme then the final three years all contribute.

STUDY SPACE IN HARRISON BUILDING

Computing space	Independent study space	Student meeting rooms	Software you can access
☐ 30 x Linux i7 ☐ Over 180 individual HP i7 machines	Newly built 'Engine Room', several study 'pods' and communal zones located throughout the department.	Bookable meeting spaces in the department reserved exclusively for students.	Matlab, Python, AutoCAD, Solidworks, MikTex, Abaqus, Ansys, Witness, ASTA Powerproject

PROJECTS

During your final year you can complete a one-term project, which may be theoretical or experimental, and is normally undertaken in a pair. Projects are normally inspired by research in the department, although you may propose your own topic for investigation.

Athena SWAN Bronze Award

The Athena SWAN Charter recognises and celebrates good employment practice for women working in Science, Technology, Engineering, Mathematics and Medicine (STEMM) in higher education and research. We believe it is vitally important that women are adequately represented in what has traditionally been a male-dominated area and we strive for equality. The University is proud to have held a Bronze institutional award since 2011. We were awarded a Bronze award at departmental level in 2014, and later gained a Silver award in 2016.

YOUR SUCCESSFUL CAREER – ENGINEERING

RECENT GRADUATES ARE NOW WORKING FOR▲:

- Huawei
- Jaguar Land Rover
- Ministry of Defence
- Transport for London
- Barclays
- Royal Air Force
- Dyson
- IBM
- EDF Energy

CAREERS SERVICES

We have a dedicated, award-winning Careers Service, with offices at our Exeter and Penryn campuses, ensuring you have access to careers advisors, mentors and the tools you need to succeed in finding employment in your chosen field on graduation. We offer the Exeter Award and the Exeter Leaders Award which include employability-related workshops, skills events, volunteering and employment which will contribute to your career decision-making skills and success in the employment market. Our graduates compete very successfully in the employment market, with many employers targeting the University when recruiting new graduates. For further information about our Careers Service please visit: **www.exeter.ac.uk/careers**

Engineering at Exeter will shape you into a multitalented individual, who is able to succeed in a wide variety of professional roles.

RECENT GRADUATES ARE NOW WORKING AS▲:

- Mechanical Engineer
- Electronic Engineer
- Design Engineer
- Civil Engineer
- Software Engineer
- Power Generation Engineer
- Investment Banker
- Materials Engineer
- Project Engineer

▲ *This information has been taken from the Destinations of Leavers from Higher Education (DLHE) Surveys 2014/15. Please note that, due to data protection, the job titles and organisations are listed independently and do not necessarily correspond.*

INDUSTRY EXPERIENCE

Experience of working in your chosen field is a real advantage when entering the graduate job market. It is also a great way to try out different jobs and to make contacts within companies you're interested in working for. Our degrees are available with a Year in Industry option◆ or the chance to undertake a summer placement (6-10 week internship between Years 2 and 3). Both of these experiences will contribute towards your final degree classification.

◆ *All programmes except Engineering Entrepreneurship and Civil Engineering Site Management.*

I have learnt valuable skills in both my Engineering and Business modules. This blend of content will allow me to secure a job in any sector, even ones that aren't related to Engineering!

Katie, studying
MEng Mechanical Engineering

ENGINEERING MODULES IN EXETER

For up-to-date details of all our programmes and modules, please check **www.exeter.ac.uk/ug/engineering**
Years 2-4 are indicative and the actual modules offered may vary from year to year. A selection is detailed below.

KEY C = Core
● = Optional

Year 1 Modules

Module Name	Civil Engineering	Civil and Environmental Engineering	Electronic Engineering	Electronic Engineering and Computer Science	Engineering and Entrepreneurship	Engineering and Management	Materials Engineering	Mechanical Engineering	Civil Engineering (Degree apprenticeship)
Core Engineering I	C	C	C	C	C	C	C	C	C
Electronics for Engineers: Core Engineering 2	C	C	C	C	C	C	C	C	
Engineering Mathematics	C	C	C	C	C	C	C	C	
Engineering Mechanics: Core Engineering 2	C	C	C		C	C	C	C	
Materials and Manufacturing: Core Engineering 2	C	C	C		C	C	C	C	
Engineering Entrepreneurship and Skills Development I					C				
Programming				C					
Object-Oriented Programming				C					
Professional Studies and Skills Development A	C	C	C	C		C	C	C	C
Foundation Mathematics for Engineers									C

Year 2 Modules

Module Name	Civil Engineering	Civil and Environmental Engineering	Electronic Engineering	Electronic Engineering and Computer Science	Engineering and Entrepreneurship	Engineering and Management	Materials Engineering	Mechanical Engineering	Civil Engineering (Degree apprenticeship)
Advanced Mathematics for Engineers									C
Analogue and Digital Electronics Design			C	C	●	●			
Basic Mechanics									C
Communication and Networking Technologies			C	C					
Construction Methods and Materials	C	C							
Computer Languages and Representations				●					
Control Engineering			C	●	C	C		C	
Geotechnics I	C	C							
Group Software Engineering Project				C					
Introduction to Mechanical Engineering Design					●	●	C	C	
Management and Management Science	C	C	C	●	C	C	C	C	
Manufacturing Systems					C	C			
Materials									C
Materials Engineering							C		
Mathematical Modelling of Engineering Systems	C	C	C	C	C	C		C	
Mobile and Ubiquitous Computing				●					
Modelling and Control Engineering							C		
PICS, Microcontrollers and Microprocessors			C	●	●	●			
Engineering Entrepreneurship and Skills Development 2					C				
Professional Studies and Skills Development B	C	C	C			C	C	C	C
Scientific Programming in C			C		●	●			
Social and Professional Issues of the Information Age				C					
Software Development				C					
Solid Mechanics	C	C			●	●	C	C	
Structures	C	C					C	C	
The C Family				●					
Thermofluid Engineering	C	C			●	●	C	C	

Year 3 Modules

Module Name	Civil Engineering	Civil and Environmental Engineering	Electronic Engineering	Electronic Engineering and Computer Science	Engineering and Entrepreneurship	Engineering and Management	Materials Engineering	Mechanical Engineering	Civil Engineering (Degree apprenticeship)
Civil Engineering Design Studies	C	●							
Civil Engineering Hydraulics	C	C							
Commercial and Industrial Experience	●	●	●	●	●	●	●	●	
Communications Engineering			C	●		●			
Computability and Complexity				●					
Computational Engineering					●	●	●	●	
Computer Aided Engineering Drawing	●	●	●	●	●	●	●	●	
Computer Graphics				●					
Construction Site Management									C
Cryptography					●				
Database Theory and Design				●					
Digital Signal Processing			C	●	●	●			
Electromagnetics and Wave Propagation			C	●	●	●			
Electronic Engineering Design Studies			C	●	●	●			
Energy and the Environment			●	●				●	
Engineering in Society and Company Finance	C	C	C	C	C	C	C	C	
Enterprise Computing				●					
Geotechnics 1									C
Geotechnics 2	C	C							
Graphs, Networks and Algorithms	●	●			●		●		
High-performance Computing and Distributed Systems				●					
Individual Project	C	C	C	C		C	C	C	
Industrial Awareness and Problem Solving					C				

Module Name	Civil Engineering	Civil and Environmental Engineering	Electronic Engineering	Electronic Engineering and Computer Science	Engineering and Entrepreneurship	Engineering and Management	Materials Engineering	Mechanical Engineering	Civil Engineering (Degree apprenticeship)
Learning from Data				●					
Management of Processes and People					●	C			
Management of Product Development					C	C		●	
Manufacturing					●	●	C	●	
Market Research and Business Planning					C				
Materials					●	●	C	●	
Mechanics									C
Mechanical Engineering Design Studies					●	●	C	C	
Nature-Inspired Computation				●					
Nonlinear Systems and Control					●	●	●	●	
Numerics and Optimisation					●				
Operations Management					●	●		●	
Structures									C
Structural Dynamics					●	●		●	
Structural Engineering	C	C							
Structural Materials									C
Systems, Series and Transforms					●				
Thermofluids and Energy Conversion					●	●	C	●	
Water Resources and Pollution Control	●	C							

Year 4 Modules (MEng only)

Module Name	Civil Engineering	Civil and Environmental Engineering	Electronic Engineering	Electronic Engineering and Computer Science	Engineering and Entrepreneurship	Engineering and Management	Materials Engineering	Mechanical Engineering	Civil Engineering (Degree apprenticeship)
Advanced Computational Fluid Dynamics					●			●	
Advanced Geotechnical Engineering	●	●							
Advanced Materials Engineering							●	●	
Advanced Structural Engineering	●								
Agile, Lean and Competitive Enterprise					●				
BIM and Temporary Works									C
Business Start-up Project					C				
Civil Engineering Design Studies									C
Computer Modelling and Simulation				●					
Computer Vision				●					
Computational Techniques for Engineers	●			●		●	●	●	
Conceptual Design of Buildings	●	●							
Engineering Entrepreneurship and Skills Development 3					C				
Engineering in Society and Company Finance				●					C
Engineering Materials and the Environment					●	●	●	●	
Evolutionary Computation and Optimisation			●						
Group Project	C	C	C	C	C	C	C	C	
Hydroinformatics Tools	●	●							
Introduction to Earthquake Engineering	●								
Lean Thinking and Sustainability in Industry					C				
Machine Learning				●					
Manufacturing Supply Chain Management			●		●	●		●	
Mechanics of Materials	●						●	●	
Mechatronics: Sensors and Machine Automation			●	●	●	●		●	
Metamaterials: Science, Technology and Applications					●				
Multivariable State-Space Control			●	●	●	●		●	

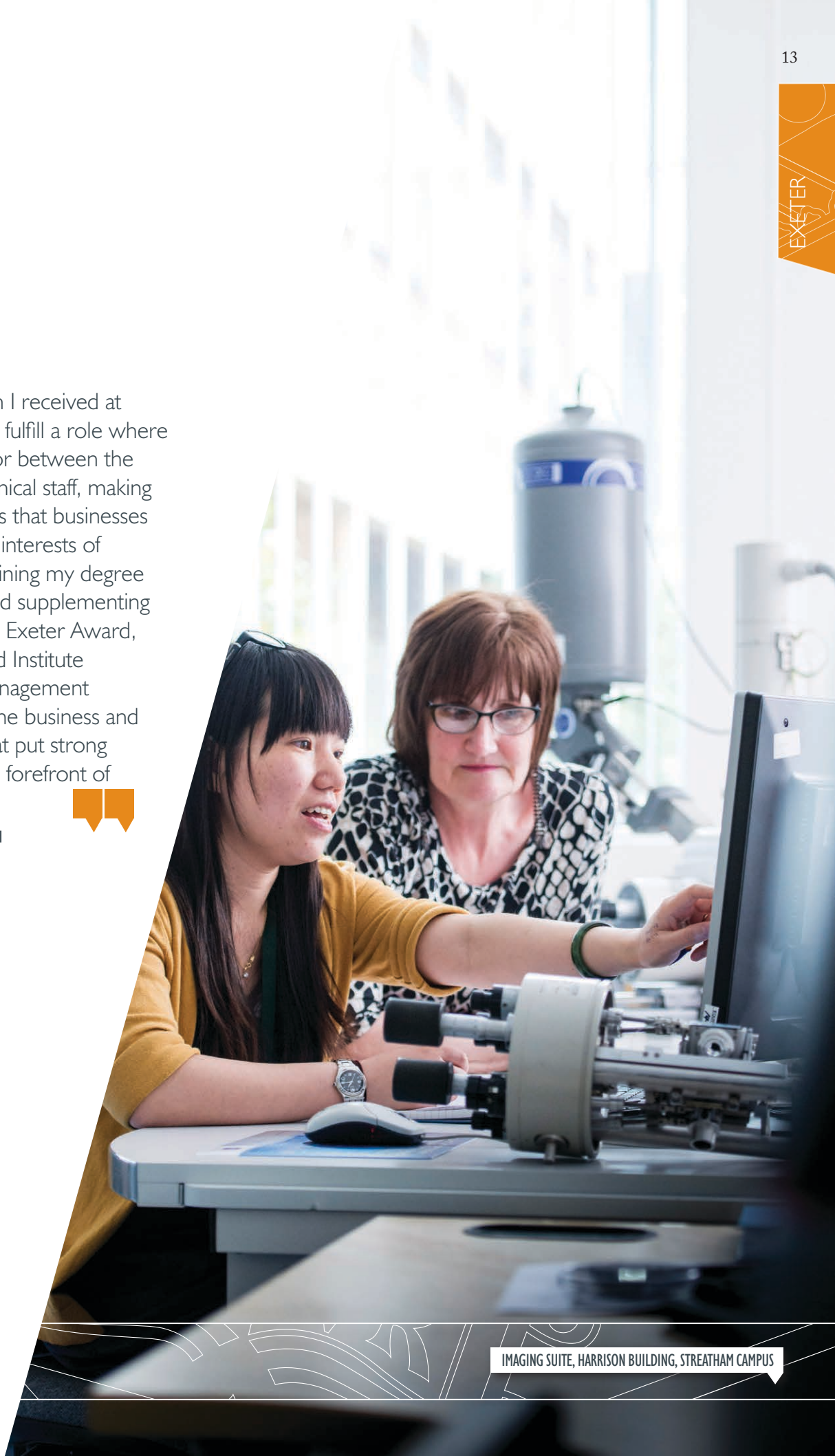
Module Name	Civil Engineering	Civil and Environmental Engineering	Electronic Engineering	Electronic Engineering and Computer Science	Engineering and Entrepreneurship	Engineering and Management	Materials Engineering	Mechanical Engineering	Civil Engineering (Degree apprenticeship)
Nature-Inspired Computation			●	●					
Numerical Simulation for Scientists and Engineers			●						
Project Management						●			
Project Management and Accounting									C
Programming for Engineering	●	●			●	●	●	●	
Safety and Sustainable Development									C
Structural Health and Performance Monitoring	●								
Sustainable Engineering		●	C	C		●	●	●	
Systems Analysis in Engineering	●	●	●		●	●		●	
Urban Drainage and Waste Water Management		●							
Vibration Engineering	●							●	
Water and Environmental Systems		●							
Water Management in Developing Countries	●	●							
Water Supply and Distribution Management	●	●							

Year 5 modules (Degree Apprenticeship only)

Module Name	Civil Engineering (Degree apprenticeship)
Computer Aided Engineering Drawing	●
Conceptual Design of Buildings	●
Fluid Mechanics	●
Geotechnics 2	C
Individual Project	C
Sustainable Engineering	●
Structural Engineering	C
Temporary Works Design	●

The education I received at Exeter allowed me to fulfill a role where I work as the translator between the business and the technical staff, making sure that the strategies that businesses commit to reflect the interests of everyone in it. Combining my degree with management, and supplementing it further by doing the Exeter Award, Leadership Award and Institute of Leadership and Management Certificate provided the business and leadership context that put strong communication at the forefront of my skillset.

Roze, MEng Engineering and Management graduate



IMAGING SUITE, HARRISON BUILDING, STREATHAM CAMPUS

MODULES IN EXETER CONTINUED

Please note that availability of all modules is subject to timetabling constraints and that not all modules may be available every year. For up-to-date details of all our programmes and modules, please check the undergraduate section of our website at **www.exeter.ac.uk/ug/engineering**

YEAR 1

Core Engineering 1	This varied module will give you a taster of the skills you need to analyse a range of engineering problems. You will acquire knowledge of materials, structures, mechanics and electronics, which will enable you to experience the multidisciplinary nature of engineering practice, and every area of this module provides a vital grounding for all disciplines.
Electronics for Engineers: Core Engineering 2	Electrical engineers encounter two main types of signals – analog and digital – so this module is divided into two parts. The analogue section gives you an overview of the fundamentals of semiconductors and semiconductor devices. In the digital section, you will study Boolean algebra and fundamentals of logic gates for the design of combinational and sequential logic circuits and their practical applications.
Engineering Mathematics	Go deeper into mathematics than you have likely gone before, and cover topics that are fundamental to engineers in their professional careers. In particular, there will be a strong emphasis on the direct application of mathematics to engineering problems.
Engineering Mechanics: Core Engineering 2	In this module, you will encounter fluid and solid static equations and principles, including tension compression, learn how to calculate forces from stagnant fluids, stresses on beams, etc. In a hands-on laboratory session, you will measure the force from a water jet, heating different surfaces, and then illustrate your results in diagrams.
Materials and Manufacturing: Core Engineering 2	You will learn how to relate basic theory to current technology such as carbon nanotubes, nanocomposites and rapid manufacture techniques. Furthermore, the module will introduce you to the fundamental material solids that engineers use, such as metals, polymers, composites, glasses and ceramics.
Engineering Entrepreneurship and Skills Development 1	You will work in teams, and create businesses bidding to win a tender from a client to design and manufacture a product. Assessment of the module will be authentic to real-world situations and will encourage you to think about materials, efficiency, sustainability, durability and profitability. You will also give a presentation to pitch your idea, develop drawings and write a report on the development process. Aligned with this, students individually learn key engineering skills such as AutoCAD, Solidworks and Excel, and apply these to the group project.
Programming	We use computers in almost all aspects of our daily lives and throughout science, so it is easy to take them for granted. However, in order that we can use computers to solve new problems and create new things, we have to be able to program them. This module introduces you to programming and problem solving with a computer. You will learn how to formulate an algorithm to solve a problem, and you will acquire the skills to write, test and debug programs.
Object-Orientated Programming	This module will introduce you to object-oriented problem-solving methods and provide you with object-oriented (OO) techniques for the analysis, design and implementation of solutions. We will introduce you to these concepts, and you will develop skills with a new programming language. By the end of this module, you will be able to apply these skills to design and implement small applications.

Foundation Mathematics for Engineers	Learning to think and express yourself in mathematical terms is an essential part of your becoming an engineer who is able to describe engineering processes and systems to solve problems. This module will help you develop the mathematical skills necessary to complete your engineering degree programme.
Professional Studies and Skills Development A	This module aims to enhance both your engineering design and manufacturing skills, but also embed key skills such as group work and professionalism. To be aware of the problems of engineering design, it is important to do this yourself. In groups, you will design build and test model structures made of various materials and document the results. Aligned with this students individually learn key engineering skill such as AutoCAD and Solidworks, and apply these to the group project.

YEAR 2

Advanced Mathematics for Engineers	This module will help you enhance your learning from Foundation Mathematics for Engineers and further develop the mathematical skills necessary to complete your engineering degree programme. In particular, there will be a strong emphasis on the direct application of mathematics to engineering problems.
Analogue and Digital Electronics Design	This practical, hands on module teaches you how to design, simulate, build and test real electronic systems. You will get the chance to design basic analogue and digital circuit building blocks, including transistor amplifiers, integrated circuit amplifiers, filters, oscillators, counters, decoders, adders, latches and multiplexers. Furthermore, you will devise complex digital systems using programmable logic, such as PALs and FPGAs.
Basic Mechanics	On completing this module, you will be familiar with the basics of fluid and solid principles by which practically all static and hydrostatic problems are solved; you will have an excellent foundation in critical measurement techniques and be proficient in using a hydraulic bench; in this case, equipped with a pump and simple system to measure flow rate.
Communication and Networking Technologies	Communications and networking technologies are rapidly evolving, and have revolutionised the ways in which we socialise and network in business. This module gives you the chance to gain in-depth knowledge of these technologies, and the ways in which they are used. You will learn all about protocols – the set of rules and instructions that computers and other devices follow when they communicate with each other across a network.
Construction Methods and Materials	This module offers you the chance to specialise in civil engineering for the first time, introduces you to new skills (such as surveying) and provides you with the opportunity to gain career counselling from professional engineers. Bringing together all the civil engineering elements learned over the first three semesters, the module gives you the chance to see how these skills fuse together through design exercises and fieldwork. Furthermore, the module brings civil engineering materials, such as steel and concrete, into focus, and you will undertake projects that build on your conceptual design techniques, by devising a railway footbridge and a sustainable urban drainage system.
Control Engineering	This module will give you a fundamental understanding of the basic concepts of mathematical modelling and control engineering. It starts by providing the necessary mathematical foundation; including Laplace transform techniques and theorems, for modelling and analysing the dynamics of engineering systems. You will learn about the modelling of engineering systems, including mechanical, electrical and electro-mechanical systems, using differential equations and transfer function analysis. Furthermore, you will analyse the fundamental concept of feedback and its impact on system dynamics and control in detail, making use of a case study involving speed control of a DC motor.
Geotechnics 1	Geotechnics is the science of predicting the behaviour of the Earth and its various materials, using scientific methods and engineering principles. This module introduces the basic concepts of engineering geology, site investigation, soil classification, rock mass characterisation, seepage and shear strength of soil, and their practical applications in geotechnical engineering. It also covers a range of laboratory experiments that are routinely carried out in geotechnical investigation.

Group Software Engineering Project	The main objectives of this module are to introduce key aspects of software engineering to you in a practical way. Aspects of software engineerng that will be covered in this module include application of object-oriented programming techniques to large-scale software system development, requirements analysis, human computer interface (HCI) design, software system design and development, software system testing and software system integration and deployment.
Introduction to Mechanical Engineering Design	Engineering design is a complex activity, which combines very technical aspects with more creative ones. In this hands-on module, you will learn a rigorous method of design (Total Design), which will give you an understanding of the real design-manufacture-test process. You will produce engineering drawings and appreciate their use as a method of unambiguous communication.
Management and Management Science	This course shows you how engineering managers may deploy tools and techniques, such as statistics, design and data analysis and economical and project planning aspects, to make business decisions. It will enhance your understanding of how basic economic theories affect markets, and give you an appreciation of how to apply economical techniques to the engineered business environment. You will learn the application of elementary statistics for presentation, analysis and inference in quality control in manufacturing. You will also learn about the concepts and relevance of design and project planning, and their delivery in successful business management. Coursework will include practical sessions using relevant project planning computer software.
Manufacturing Systems	Study an advanced investigation of materials, applications and high-tech manufacturing systems; focussing mainly on composite laminates and robotics. You will learn to design a composite; using, for example, carbon fibres, to get the required properties. Furthermore, you will analyseaspects of robotics, from how this technology functions, to the use of robots for industrial purposes.
Materials	You will learn how to relate basic theory to current technology, such as state-of-the-art materials and rapid manufacture techniques. Furthermore, the module will introduce you to the fundamental material solids that engineers use, such as metals, polymers, composites, glasses and ceramics.
Materials Engineering	Materials engineers are at the cutting edge, with their understanding of the properties and behaviours of different substances crucial in the development of technologies. Furthermore, these advances in materials can drive the creation of new products, and even industries.This module is designed to further your understanding of the properties of different materials, such as metals, alloys, polymers, ceramics and composites. You will look at how modern day devices depend on the electrical, optical and thermal properties of these materials. Moreover, this hands on module gives you two chances to test the materials in the laboratory for yourself.
Mathematical Modelling of Engineering Systems	This module will introduce you to mathematical models of engineering systems. You will learn standard methods of systems analysis using transform methods (algorithms). The aim of this course is to teach you to analyse quantitatively engineering problems, by making you aware of the various approaches to problem-solving, and of how to assess the relative merits of those approaches. The module will also help you improve your awareness of the interrelationship between design and analysis, between a real system and a model.
Modelling and Control Engineering	Gain a fundamental understanding of the basic concepts of mathematical modelling and control engineering. You will learn about the modelling of engineering systems, including mechanical, electrical and electro-mechanical systems, using differential equations and transfer function analysis. Furthermore, you will analyse the fundamental concept of feedback and its impact on system dynamics and control in detail, making use of a case study involving speed control of a DC motor.
PICS, Microcontrollers and Microprocessors	In this module, you will be introduced to the fundamental principles of the design, operation and application of PICS, microcontrollers and microprocessors and to assembly language programming for the Microchip PIC16MCU series devices.
Engineering Entrepreneurship and Skills Development 2	This module will propel you into the next level of your entrepreneurship skills development. You will be taught valuable skills such as networking, psychometric testing and commercial awareness and immediately put them into practice to impress your peers. You will be pitching yourself against competitors at the University of Exeter.
Professional Studies and Skills Development B	The module includes Civil Engineering Design Activities (EDAs) conducted in a group setting, involving the application of engineering principles to the solution of practical problems. These EDAs provide useful experience of project team work, real engineering design and practical construction skills. You will continue to reflect on your experiences by keeping a logbook or journal of your findings both within the module and through work-based activities.
Scientific Programming in C	A knowledge of a computing language and how to write programs to solve physics related problems is a valuable transferable skill. It is taught though a series of practical sessions in which the student will initially learn to understand the logic of the source code and are required to modify the code for a number of prepared projects. This module teaches the C programming lanaguage, but the principles involved are applicable to almost every procedural programming language.

MATERIALS LABORATORY, HARRISON BUILDING, STREATHAM CAMPUS

Social and Professional Issues of the Information Age	The module aims to provide you with the tools to reflect upon your role in the interface between digital technologies and society and on the moral and ethical use of information and information systems. By taking this module, you will become aware of your legal responsibilities and rights as an IT professional and as a user of digital technologies. The module will cover ethical theories, computer law and professional codes of conduct, and will address the ways in which broader areas of law (eg, defamation, contracts, privacy and freedom of information legislation) impact upon technology users and IT professionals.
Software Development	The module will introduce you to software design and development concepts and methods, alongside intermediate and advanced constructs and concepts in the Java programming language, and the programming paradigms these relate to. This includes generic programming (and Java generics), concurrent programming (via Java threads), design patterns, networked programs and nested inner classes. We will also cover widespread tools in software development, including version control, unit testing and code coverage.
Solid Mechanics	Structures fail when they are overloaded and calculating the internal stresses and strains within solid objects allows you to design safe, efficient structures. In this module, building on the first year introduction to mechanics, you will explore how static and dynamic forces act within solid bodies.
Structures	You will increase your ability with mathematical analysis and in particular its application to solving problems in structures. Moreover, you will have further developed your experimental skills and awareness of health and safety practice within engineering.
Thermofluid Engineering	This module introduces the theory and practice of engineering fluid mechanics, thermodynamics and heat transfer; progressing you to the next level of studying fluid flow and energy. You will explore aspects such as flow in pipes and channels, as well as examining turbines and the mathematical modelling of fluid dynamics in general. Also, you will be introduced to fundamentals of thermodynamics and heat transfer and explore their application in analysing steam operated power plants and design of heat exchangers.

YEAR 3

Civil Engineering Design Studies	This module brings to life the civil engineering profession by practically introducing you to every aspect of construction management, analysing real design case studies and by taking a more advanced look at composite structure. An outstanding opportunity is also offered here to connect with industry via a student counselling scheme enabling you to interview mentors in their workplace.
Civil Engineering Hydraulics	Hydraulic engineering is concerned with the flow and transportations of fluids, and hydraulic systems use the force of liquids to transmit power. This module gives you the understanding you need to analyse and modify existing hydraulic systems and design new systems to British standards.
Commercial and Industrial Experience	This module will provide you with an opportunity to undertake practical work experience in a business, commercial or public sector setting that is of direct relevance to your development as an experienced professional. You will apply the knowledge and skills from taught modules to authentic problem solving in the work place which will give you important insights into your potential job role once you graduate from university.
Communications Engineering	Communications lie at the heart of our modern-day society and because of this our communication systems need to deal with ever-increasing amounts of information, to operate at ever-increasing speeds and to use lower and lower powers. In this module you will learn how to modern communication systems, such as wired and wireless technologies and optical fibre systems, meet such demands and, importantly, how to design modern communication links from a systems-level perspective.
Construction Site Management	This module introduces you to new skills, such as surveying and provides you with the opportunity to gain career counselling from professional engineers. The module gives you the chance to see how these skills fuse together through design exercises and fieldwork.
Digital Signal Processing	In this module you learn about the theory that lies behind the enormous popularity and power of Digital Signal Processing (DSP), as well as learning how to design and implement real-world DSP systems.
Electromagnetics and Wave Propagation	Malaria testing has come a long way, with the advent of new technology, using electronics rather than blood samples to measure malaria's magnetic movement in the blood. This module brings such groundbreaking developments to life, with Exeter staff at the forefront of these advancements delivering the lectures.

Electronic Engineering Design Studies	This module relates technical subjects studied during the course of the electronic engineering programmes to case studies of their application to electronic products and/or services. These case studies emphasise the implications of the selection of particular designs and technologies on industrial issues of profitability, manufacturing, product competitiveness and cash flow in a variety of company environments.
Engineering in Society and Company Finance	This module will provide you with essential knowledge for all engineers, which will benefit you in your future career. It will impart a basic understanding of engineering ethics: the legal and moral responsibility that comes with being an engineering professional, to your employer, to public safety, and to the environment. The concept of sustainability will be introduced and explained. In addition, you will gain basic training in standard financial documents: balance sheets, income statements, cash flow forecasts, and profit and loss statements. You will also learn how to do simple manufacturing and project costing.
Geotechnics 2	A good knowledge of the philosophies and techniques of geotechnical design and analysis are essential elements of the training of civil engineers, and this module will give you a useful grounding in these important topics. You will get the chance to interpret geological features in the field and gain experience of field observation and measurement techniques, site investigation and preliminary design of a civil engineering structure.
Individual Project	The Individual Project module will enable you to put into practice your research, project management and engineering skills, engaging you in the development of your own real world solution to an engineering problem or challenge. From clearly articulating the rationale for your project, to scoping and refining the design and finished product, you will work individually to apply the knowledge gained from other modules in your degree programme. You will be expected to innovate, create and present your engineering solution, honing your entrepreneurial as well as academic and practical skills.
Industrial Awareness and Problem Solving	This module is a mix of academic and practitioner led (industry and start-up) sessions supported by case review. These will demonstrate contemporary challenges, technologies and solutions, both from a theoretical and real-world business perspective. You will hear first-hand what challenges industry face, the different ways to deal with those challenges and what the considerations are for business.
Management of Processes and People	The purpose of this module is to systematically introduce you to the principles, methods and tools of TQM theory. By the end of this module, you are expected to be equipped with enhanced engineering management skills and the attributes of continuous improvement thinking, be able to look at the quality of a company from a global perspective with the simultaneous consideration of process, human and statistical measurement factors and quality culture, be competent to apply the appropriate methods and tools to identify the root causes of quality problems and solve these problems.
Management of Product Development	This module introduces you to management concepts and techniques and takes you through the whole engineering procedure from marketing your product idea; exploring fundamentals like patents and intellectual property, to ensuring that your design fulfils customer requirements; and use techniques like QFD or House of Quality in which market needs and major product aspects are analysed to guide your design.
Manufacturing	This module offers an advanced investigation of materials, applications and high-tech manufacturing systems; focusing mainly on composite laminates and robotics. You will learn to design a composite; using, for example, carbon fibres, to get the required properties. Furthermore, you will analyse aspects of robotics, from how this technology functions, to use of robots for industrial purposes.
Market Research and Business Planning	The module will cover the full validation process of a business idea and also business generation from the idea to minimum viable product (MVP), through to scaling to an established business. This will include utilising tools such as the Business Model and Value Proposition Canvass, which will result in a full business plan.
Materials	This module builds on the materials science content of the core course and equips you with a deeper understanding of the deformation, strengthening and failure of materials, including surface processes. You will learn about failed components and the processes and techniques of materials analysis.
Mechanics	Engineers designing structures are often required to balance competing demands such as the requirement to be cheap to manufacture/assemble, to have low weight, and yet be strong and safe. Such demands require engineers to master a set of analytical skills, many of which are tackled in this module. Structures fail when they are overloaded and calculating the internal stresses and strains within solid objects allows you to design safe, efficient structures. On this module, building on the first year introduction to mechanics, you will explore how static and dynamic forces act within solid bodies.

Mechanical Engineering Design Studies	This module teaches you the practical aspects of mechanical engineering design. Drawing on your previous knowledge, you'll embark on project work, as part of a small design team, to identify a new, exciting product; providing a unique function or solving a real world problem.
Structures	This module builds on earlier modules to give you exposure to real structures problems and will help you to develop a fuller understanding of the mechanical behaviour of structures and its application to engineering design.
Structural Engineering	A good knowledge of the philosophies and techniques of structural design and analysis are essential elements of the training of civil engineers. In this module you will learn about these philosophies and techniques, and their application to the design of steel and reinforced concrete structures. In hands-on laboratory sessions, you will learn about factors such as elasticity, cracking, tensile strength, shear and flexure – through observation and analysis.
Structural Materials	The module brings civil engineering materials, such as steel, concrete and others, into focus, and you will undertake projects that build on your conceptual design techniques, by devising a railway footbridge and a sustainable urban drainage system.
Thermofluids and Energy Conversion	Thermofluids comprises thermodynamics – the flow and conversion of heat energy into other forms. Meanwhile, fluid dynamics is the study of how fluids move and the forces on them.
Water Resources and Pollution Control	This module will acquaint you with current practices in water quality management, including the operational principles of water and wastewater treatment plants. You will learn about the water cycle, methods of treating polluted water so it can be reused, water behavior and flows, water-borne diseases and methods of disinfection, and ways of building sustainable systems.

YEAR 4 (MEng ONLY)

Advanced Computational Fluid Dynamics	The aim of the module is to extend your practical understanding of CFD and to complement this with a comprehension of numerical and modelling issues. You will study the theoretical aspects of numerical simulation through directed study and interaction in tutorials, and will continue to develop your modelling skills through project work, on topics decided in discussion with lecturers.
Advanced Geotechnical Engineering	Knowledge of the behaviour of soils is a crucial part of geotechnical engineering. In this module you will learn advanced concepts in soil mechanics, including study of elasticity, plasticity, stress paths, and soil behavior. Using analytical and mathematical skills, you will develop your ability to undertake advanced geotechnical modelling. The focus is on the constitutional modelling of soils in the context of critical state theory.
Advanced Materials Engineering	Materials engineers are often at the cutting edge. Their understanding of the properties and behaviours of different substances is crucial in the development of technologies – and advances in materials can drive the creation of new products and even new industries. This module will expose you to current developments in biomaterials, materials for energy, and nano-composites.
Advanced Structural Engineering	In recent decades, the understanding of structural engineering came on in leaps and bounds, and the depth and breadth of knowledge in this field has continued to gather pace. Using the case study method, you will further refine your knowledge of the most current and advanced concepts in designing and assessing safe structures. This module covers specific challenges, such as computational modelling, plate bending theory, limit analysis, buckling and twisting, thermal integrity, vibration, and earthquake design.
BIM and Temporary Works	Building Information Modelling (BIM) is a collaborative process that can be applied throughout the lifecycle of a project. The BIM process delivers an integrated set of digital geometric models, data and documentation, capturing information that builds over the lifecycle of the project. This module will help you to develop the skills required of a civil engineer working in today's construction industry. It will provide insight into the subjects of temporary works and BIM and will equip you with the knowledge and skills to apply your learning in the work environment.

Business Start-up Project	This module helps you develop and launch a new enterprise, in the form of a new business start-up. You will have successfully researched, written and pitched your idea to the Boyden Enterprise Board, the module now centres on the development of your idea and applying it to the entrepreneurial process in order to create a tangible new venture. The module will give you a pragmatic insight into the processes and systems important in business model generation, and into improving the probability of success.
Civil Engineering Design Studies	This module brings to life the civil engineering profession by practically introducing you to every aspect of construction management, analysing real design case studies and by taking a more advanced look at composite structure. An outstanding opportunity is also offered here to connect with industry via a student counselling scheme enabling you to interview mentors in their workplaces.
Engineering Entrepreneurship and Skills Development 3	This module brings together and consolidates all your learning from the degree course to give you the skills, confidence and ability to launch your own business. You will work with a mentor, to create your personal development plan, and learn and experience what it means to be an entrepreneur.
Group Project	Working in an engineering environment requires excellent teamworking skills, and by developing the attributes you will need to become an effective and cooperative member of the group will make you a valued employee. This module aims to provide experience of working as part of a project team in a situation close to one that might be found in an industrial or commercial setting.
Hydroinformatics Tools	On this module, you will improve your understanding of water systems (supply, drainage, flood management, structural/non-structural measures, risk management, their impact on social structures/interactions, etc), ICT and operations research techniques (simulation, optimisation, data mining/machine learning, Geographic Information Systems, Bayesian Belief Networks, etc) with a view of integrating them into a systems analytic context to analyse and solve problems in water resource design, planning and management practice.
Introduction to Earthquake Engineering	The module aims to present a very strong mathematical and physical foundation for analysing and designing for seismic response of structures which will enable you to 'see through' formal code-based design approaches. This will be continuously reinforced using an in-house developed simulator used since 2000 for training students in structural dynamics. The module will provide a complete rationalisation of the earthquake engineering problem from the perspective of source (seismic hazard), path (structure dynamic behaviour) and performance (risk assessment).
Lean Thinking and Sustainability in Industry	This module is designed to broaden your understanding of the operations and management of a variety of industrial organisations and provide you with a greater degree of industrial awareness. It aims to ensure you will graduate usable operational management confidence and skills focusing on Lean Concepts, such as Lean manufacturing, the Toyota Production System and Six Sigma. In addition, the module will broaden your knowledge of environmental and sustainability issues and health and safety.
Mechatronics: Sensors and Machine Automation	Aimed at both electrical and mechanical engineers this modules combines major components of electronic and mechanical engineering to explore how mechanical systems are instrumented and controlled, right from defining the control problem, instrumentation selection through to final control.
Project Management and Accounting	This module assumes no prior knowledge. It is designed to give you a combination of theoretical project management and financial assessment tools based on an experience-based approach to practical project management. Many real-life examples are used to illustrate aspects of project failure.
Safety and Sustainable Development	The module covers the key aspects of health, safety and environmental management that future managers, engineers will need to know and find useful in their future lives and careers. The course and material is biased towards the extractives industry and is pragmatic as well as academic in nature.
Sustainable Engineering	This module discusses the interdependency between changes required across all activities of human life across all scales with a focus on sustainability across the built environment. This module will make you think across disciplines with the goal of evaluating sustainability on a whole system basis including resource supply and demand, energy supply and demand and sustainable management.
Systems Analysis in Engineering	This module will give you an understanding of how systems analysis can support the planning, design and management of engineering systems, including water and environmental systems. The module covers a number of systems analysis tools including simulation, optimisation and decision making techniques, and enhances your theoretical and practical knowledge of their application to real world problems.
Urban Drainage and Waste Water Management	This module covers engineering and environmental aspects of the drainage of rainwater and wastewater from areas of human development. The content includes basic principles and engineering best practice, with the latter being mainly (but not exclusively) based on UK practice. Relevant aspects of urban drainage are considered, such as design, analysis, modelling, operation and maintenance including health and safety issues, system rehabilitation, flooding and sustainable water management.

Vibration Engineering	This module will provide you with basic knowledge and understanding relevant to vibration engineering of large civil engineering structures. Particular emphasis will be given to theoretical concepts of single- (SDOF) and multiple-degree-of-freedom (MDOF) systems which form foundations of general structural dynamics for dealing with wind, blast and impact engineering disciplines. The module will then focus you on specific problems of environmental vibrations affecting serviceability of structures occupied and dynamically excited by humans (floors, footbridges and grandstands) or by ground-borne vibrations due to over and underground traffic, construction and blasting.
Water and Environmental Systems	You will investigate the current practices and issues in planning and management of water and environmental systems in the UK and around the world. Through case studies taken from real-world studies published by academics and consultants, this module will allow you to identify key drivers, future uncertainties and trends underlying water management, and explore various designs, techniques, computer models, and hydroinformatics tools for control and management of water and environmental systems.
Water Management in Developing Countries	This module is aimed at looking to develop your understanding of water management issues, implications and potential interventions meeting developing countries' complex needs and resources constraints. The module aims to cover a range of engineering, design and sustainability aspects associated with the three urban water flows (water supply, storm water and wastewater) management.
Water Supply and Distribution Management	The module will provide you with the theoretical and practical knowledge and understanding of classical and contemporary issues related to the management of water supply and distribution systems. You will learn about different types of water sources, how to build, calibrate and use various models to optimally (re)design and/or operate water distribution systems. Furthermore, you will learn how to use manage pressures, leakage, demands and water quality, all in an integrated risk-based asset management type framework with the aim to identify more sustainable and resilient solutions to practical, real-life problems.

YEAR 5 (DEGREE APPRENTICESHIP ONLY)

Computer Aided Engineering Drawing	Computer software has revolutionised the ways in which we create and modify engineering drawings and designs. This module gives you the chance to investigate the use of computer aided drawing tools for a variety of engineering applications, from creating 3D engineering designs to producing 2D drawings. You will also enhance your employment prospects by developing your skills in a variety of CAD programs used worldwide by engineers in many industries.
Conceptual Design of Buildings	This module discusses principles governing the conceptual design of buildings and their implementation in engineering practice. In particular, you will know about form and functionality, actions on buildings, structural design of tall buildings, sustainability and passive buildings, construction and demolition, resilience of buildings, operation and performance tracking.
Fluid Mechanics	Hydraulic engineering is concerned with the flow and transportations of fluids, and hydraulic systems use the force of liquids to transmit power. This module gives you the understanding you need to analyse and modify existing hydraulic systems and design new systems to British standards.
Geotechnics 2	A good knowledge of the philosophies and techniques of geotechnical design and analysis are essential elements of the training of civil engineers, and this module will give you a useful grounding in these important topics. You will get the chance to interpret geological features in the field and gain experience of field observation and measurement techniques, site investigation and preliminary design of a civil engineering structure.
Individual Project	The Individual Project module will enable you to put into practice your research, project management and engineering skills, engaging you in the development of your own real world solution to an engineering problem or challenge. From clearly articulating the rationale for your project, to scoping and refining the design and finished product, you will work individually to apply the knowledge gained from other modules in your degree programme. You will be expected to innovate, create and present your engineering solution, honing your entrepreneurial as well as academic and practical skills.
Structural Engineering	In this module you will learn about these philosophies and techniques, and their application to the design of steel and reinforced concrete structures. In hands-on laboratory sessions, you will learn about factors such as elasticity, cracking, tensile strength, shear and flexure – through observation and analysis.

Sustainable Engineering	The built environment accounts for the majority of carbon emissions in the Western world with up to 50 per cent of all emissions coming from buildings in the form of heating, cooling and lighting. By transforming the built environment to be more sustainable, it can play a major role in reducing the threat of climate change. This module discusses the interdependency between changes required across all activities of human life across all scales with a focus on sustainability across the built environment.
Temporary Works Design	These design modules aim to provide you with the tools and understanding to do so. Delivered by an experienced design engineer, delegates will be given step-by-step direction in designing common elements of temporary works.

The University of Exeter enables students to enter onto a general Engineering course and decide on the specialism they wish to pursue at the end of their first year. This gave me more time to discover the parts of engineering which I really enjoyed and gave me all-round knowledge of the sector; having an appreciation of the other engineering disciplines and has really helped get me ahead during my career.

I loved the structure of my course; there was a great mix of engineering, business and project management modules to choose from, meaning that I got to build both my technical and soft skills; after all, great engineers need to be able to sell and communicate the innovative ideas they develop!

David Randall, Civil Engineering graduate

MECHANICAL WORKSHOP, HARRISON BUILDING

MINING ENGINEERING

5th for Materials and Mineral Engineering in *The Guardian University Guide 2018*

5th for Materials Technology in *The Times and The Sunday Times Good University Guide 2017*

Accredited by the Institute of Materials, Minerals and Mining (IOM3), with 80% of Mining Engineering students in graduate level employment or further study within six months of graduating[1]

Top 16 in the world for Mining and Minerals Engineering in the *QS World University Rankings 2018*

[1] *Destination of Leavers from Higher Education Survey (DLHE) of 2015/16.*

"I chose to study Mining in Cornwall because of the amazing location, community feel and heritage of Camborne School of Mines. I didn't have any intention of going anywhere else. In the future I want to promote sustainable and ethical mining across the world, but with a particular focus on the developing world."

Hannah, studying Mining Engineering

DERBYSHIRE FIELD TRIP

Mining is a growing business, responding to the increasing demand for materials, largely driven by thriving production industries, including technology and construction.

At the same time, shifting attitudes are influencing how we mine; the industry is investing in a sustainable future and revolutionising the way materials are located, extracted and processed. As a global industry, mining is composed of a diverse collective of highly skilled individuals working in a variety of roles from prospecting to processing, or trading to reclamation.

Our programmes are taught in a practical environment; featuring extensive laboratory work and field trips to mine sites, both on the surface and underground. As well as practical and engineering skills, your programme can include project management and accounting, economics, safety and sustainable development. You will generally spend your second-year summer break gaining work experience anywhere from Australia to the UK, and will often be paid for doing so.

A degree in Mining from Exeter opens doors to many careers – in an industry this big and broad, there is a role for everyone; whether you are a leader, team worker, problem solver, environmentalist, designer, explorer, detailed planner or thrill-seeker!

ACCREDITATION

Our programmes are accredited by the Institute of Materials, Minerals and Mining and accredited under license from the UK regulator, the Engineering Council. Please note that MEng Mining Engineering with study abroad is not yet accredited as it is a new programme. We have a successful rate of achieving accreditation for our programmes.

The Institute of Materials, Minerals and Mining

ACCREDITED PROGRAMME

LABORIS GLORIA LUDI

www.exeter.ac.uk/ug/mining

MINING IN CORNWALL

SINGLE HONOURS

BEng/MEng Mining Engineering (CORNWALL)

BEng J110 3 yrs | AAB-BBB | IB: 34-30 | BTEC: DDD-DDM

MEng J113 4 yrs | AAB-ABB | IB: 34-32 | BTEC: DDD-DDM

Required subjects: GCE AL grade B in two science❖ subjects including either Physics or Chemistry; or GCE AL Maths✚ grade B and GCSE science or IB HL5 in two science subjects including either Physics or Chemistry or HL Maths and GCSE Maths grade C or 4.

- ☐ Multidisciplinary programme including elements of civil and mechanical engineering, geology, metallurgy, economics and health and safety
- ☐ Practical programme taught through frequent field trips
- ☐ Study over three (BEng) or four years (MEng)
- ☐ Option to complete industrial experience in the UK or abroad

Year 1 The first year of the programme is mainly devoted to general engineering principles together with geology, surveying, and an introduction to mining and minerals engineering. At the end of Year 1, a two-week surface surveying field course is held on campus.

Year 2 More emphasis is placed on mining subjects and management whilst the engineering and geology topics from Year 1 are further developed. In the summer between Years 2 and 3, you will work in the extractive industry for at least eight weeks, and you can choose to conduct this overseas if you wish.

Year 3 This year's modules are very closely connected to mining. Mine design, geotechnical engineering, mining geology and minerals management are developed further. You will also carry out a mining feasibility study where you will work in small groups to design and cost a mining project. Throughout Year 3 you will work on an individual research project in your area of interest, under the supervision of a member of academic staff.

Year 4 (MEng only) During your final year you will conduct two major projects; an individual research project and a group design project. Each project will teach you valuable skills, essential for your future career in industry or research. In addition, you will study modules in design, processing, automation and modelling.

LEARNING AND TEACHING IN CORNWALL

Teaching methods include a combination of formal lectures, hands-on practical classes and field-based teaching. Laboratory classes using our extensive teaching collections and petrographic microscopes develop your understanding of the major groups of rocks, minerals and fossils. Project work often involves use of our world-class analytical mineralogical facilities.

You will also undertake a series of field trips to several Cornish mines. During your second year, residential trips are taken to operational mines in the UK. We also hope to be able to offer an opportunity to spend time at an international mine in the third year.

On average you will spend 20 hours per week in taught activities at the University and will be expected to carry out a further 20 hours per week in independent study.

During the second and third year of your programme, you will complete a major project, which forms an important component of the third year of the degree programme. This project may involve geological mapping, a research project or a company placement, which may be paid.

Additionally, throughout your studies you will have a personal tutor. This individual will be able to help with areas that you may be finding challenging and also discuss and develop ideas with you.

ASSESSMENT

Assessment is undertaken throughout each term via a combination of formal exams and associated coursework. You will have to pass the assessment in the first year in order to progress, but the marks do not contribute to your final degree classification.

✚ and ❖ see *Entry Requirements box on page 41*.

YOUR SUCCESSFUL CAREER – MINING

RECENT GRADUATES ARE NOW WORKING FOR▲:

- Rio Tinto
- BAM Nuttall
- Glencore
- Costain
- Fugro
- Randgold
- Panoramic Resources

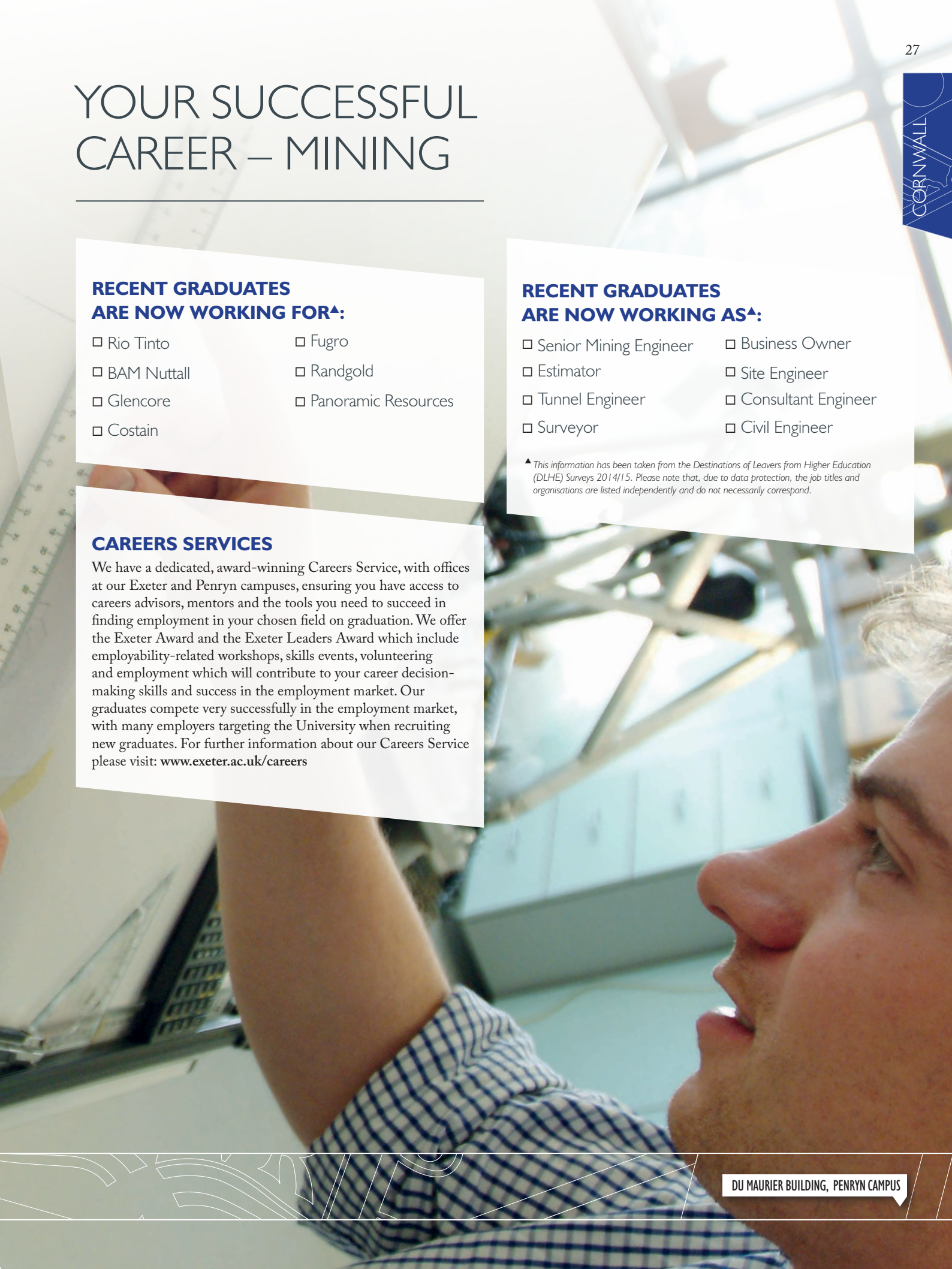
RECENT GRADUATES ARE NOW WORKING AS▲:

- Senior Mining Engineer
- Estimator
- Tunnel Engineer
- Surveyor
- Business Owner
- Site Engineer
- Consultant Engineer
- Civil Engineer

▲ *This information has been taken from the Destinations of Leavers from Higher Education (DLHE) Surveys 2014/15. Please note that, due to data protection, the job titles and organisations are listed independently and do not necessarily correspond.*

CAREERS SERVICES

We have a dedicated, award-winning Careers Service, with offices at our Exeter and Penryn campuses, ensuring you have access to careers advisors, mentors and the tools you need to succeed in finding employment in your chosen field on graduation. We offer the Exeter Award and the Exeter Leaders Award which include employability-related workshops, skills events, volunteering and employment which will contribute to your career decision-making skills and success in the employment market. Our graduates compete very successfully in the employment market, with many employers targeting the University when recruiting new graduates. For further information about our Careers Service please visit: **www.exeter.ac.uk/careers**



DU MAURIER BUILDING, PENRYN CAMPUS

MINING MODULES

Please note that availability of all modules is subject to timetabling constraints and that not all modules may be available every year. For up-to-date details of all our programmes and modules, please check the undergraduate section of our website at **www.exeter.ac.uk/ug/mining**

YEAR 1

Electrical and Electronic Principles	This hands-on module gives you the chance to explore basic electrical and electronic concepts, using a combination of a theoretical and practical approach to applications and troubleshooting.
Engineering Mechanics	An introduction to the topic of Engineering Mechanics. No prior knowledge of the subject is required. This module is suitable for non-specialist students and is recommended for interdisciplinary pathways. As well as attending lectures, you will take part in two hands-on laboratory sessions.
Geology	An overview of what the study of geology involves, including its practical applications (mineral and hydrocarbon resources, rock engineering, volcanic and seismic risk). You will learn about minerals and the principal rock types, and how they form; as well as the internal structure of the Earth and how plate tectonics controls many processes and large-scale geomorphological features. In practicals you will have hands-on experience of different minerals and rocks, and an introduction to geological maps.
Mathematics 1A, B and 2	Mathematics is at the heart of all science and engineering subjects. The beginning modules act will 'level' all students' mathematical ability. Provided that the student has at least a good grade at GCSE maths, these modules bring students up to a level required to use maths as a tool in their other chosen pathways and modules.
Mining and Minerals Engineering	Designed as an introduction to Mining and Minerals Engineering. Towards the end of the module you will have the opportunity to deliver a five minute presentation to an audience of peers about a specific mining or minerals topic.
Surveying and CAD	Surveying is a multidisciplinary skill that is applied to any area of science and engineering that requires the accurate measurement of natural and manmade features on the Earth's surface. This highly practical module offers a hands-on opportunity to learn the fundamental surveying techniques, equipment and mathematics.
Thermodynamics and Fluid Mechanics	Thermodynamics is concerned with heat and its relationship with energy and work, such as in engines. Fluid mechanics, meanwhile, is the study of fluids and forces on them. Aimed at students of engineering subjects, this course covers these two areas in parallel.

YEAR 2

Electrical Energy Conversion and Transport	This module develops your basic knowledge of the topic by introducing you to electrical machines including DC, synchronous and induction motors, and to instrumentation and control techniques.
Fluid Mechanics	An applied module, which aims to develop your understanding of the continuity and energy equations used to solve fluid problems of relevance to both mining and renewable applications.
Geotechnics	Study the behaviour of rocks and soils used for the purposes of humans' utilisation. Build upon your geological and/or other technical knowledge gained in first year courses in a practical way, to enable you to learn about the design of structures constructed of, or within, rocks and soils.
Mathematics 2	Please see Year 1 Mathematics.
Mechanics of Materials	Designed to help you to comprehend failure mechanism, including fracture and fatigue, and understand complex stresses and strains arising in elastic and non-elastic systems.
Mining and Surveying	Following on from both the Surveying and CAD, and Mining and Minerals Engineering modules in the first year, this module is partly classroom based (the mining element) and partly practical (the surveying element).
Project Management and Accounting	Designed to give you a combination of theoretical project management and financial assessment tools based on an experience-based approach to practical project management.
Surface Mining and Mine Transport	In this module, you will learn about the surface mining industry, and examine both the machinery that practitioners use, along with its associated methodologies, which you will critically examine and discuss. The mine transport section of the module focuses predominately on the four principle methods of underground mine transport and relies heavily on numerical examples to show how the transport methods are both selected and optimised.

YEAR 3

Feasibility Study	The module aims to replicate the conditions and demands of a typical feasibility study. Working in small groups, and based on the project data supplied, you will design, cost and evaluate a mine and its financial viability. The module integrates numerous aspects of the undergraduate course and provides an opportunity for you to focus and apply the skills and knowledge they have acquired in an open-ended assessment.
Industrial Placement and Project	Undertake an industrial placement at a surface or underground mine, or within a mining-related role in the UK or overseas. Research, data analysis and technical report-writing skills are then tested in this module; which provides an opportunity for a student to report on their placement, and to develop and demonstrate a thorough understanding of a related topic currently seen as important/ significant to the mining industry.
Minerals Engineering	Cover the basic unit processes in mineral processing and hydrometallurgy. You will then bring these processes together to consider the treatment methods for a range of important metalliferous and industrial mineral deposits.
Mining Economics and Design	Surging demand for commodities and resulting high metal prices has driven a boom in the number of mining projects and expansions being developed globally, each of which requires a preliminary assessment or feasibility study to demonstrate its economic viability. This module examines the various components and inputs to the financial appraisal of mines, and discusses the key drivers behind metal prices, input costs and production trends.
Safety and Sustainable Development	Cover the key aspects of health, safety and environmental management that future managers and engineers will need to know and find useful in their future lives a careers.
Surface Excavation Design	Effective design is critical for the stability and creation of a safe working environment for surface excavations. This module commences with a critical review of input data required for design of surface excavations (building on previous knowledge obtained in the Year 2 module Geotechnics or equivalent).
Tunnelling and Excavation Design	Investigate factors influencing the design of underground excavations, including both discontinuity and stress-controlled instability.
Working Environment and Ventilation	This is an essential topic for all mining engineers and is the real-life application of engineering science subjects such as fluid mechanics, studied in Years 1 and 2. You will study subjective and theoretical elements (ventilation words and concepts, underground hazards and ventilation economics) and mathematical elements (airflow, ventilation thermodynamics and psychometry).

YEAR 4 (MEng ONLY)

Advanced Mine Design	Mining design computer software has really altered the ways in which we design a mining project. This module gives you the opportunity to use the latest industry mine design software and create appropriate designs, with appreciation of the critical development constraints.
Advanced Mine Ventilation and Modelling	Taking an extended look at mine ventilation and modelling, you will cover subjective and theoretical elements (ventilation words and concepts, underground hazards and ventilation economics) and mathematical elements (airflow, ventilation thermodynamics and psychometry).
Group Design Project	Working in a mining environment requires excellent team working skills. This module develops the attributes that you will need to become an effective and cooperative member of a group, making you a valued employee. This module aims to provide experience of working as part of a project team in a situation close to one that might be found in an industrial or commercial setting.
Individual Research Project	Showcase the skills you have developed in previous modules by carrying out an independent research project. You will collect, analyse (using previously acquired data and/or data collected as part of the project), interpret and discuss mining, geology or related environmental data, and come up with definitive conclusions.
Mine Automation	Mine Automation has begun to revolutionise the ways in which we operate a mining project. This module gives you the opportunity to investigate the various levels of mine automation currently utilised within the industry, along with its rationale. Furthermore, it will examine the current research position of those companies and institutions involved in developing mine automation with the ultimate goal of a 'personless' mine.
Mineral Process Design	Selection of equipment and design and optimisation of process circuits is covered in this module. The process involves the application of empirical models and of specialist software packages such as JKSimMet. The module will be assessed using a series of design exercises.

RENEWABLE ENERGY

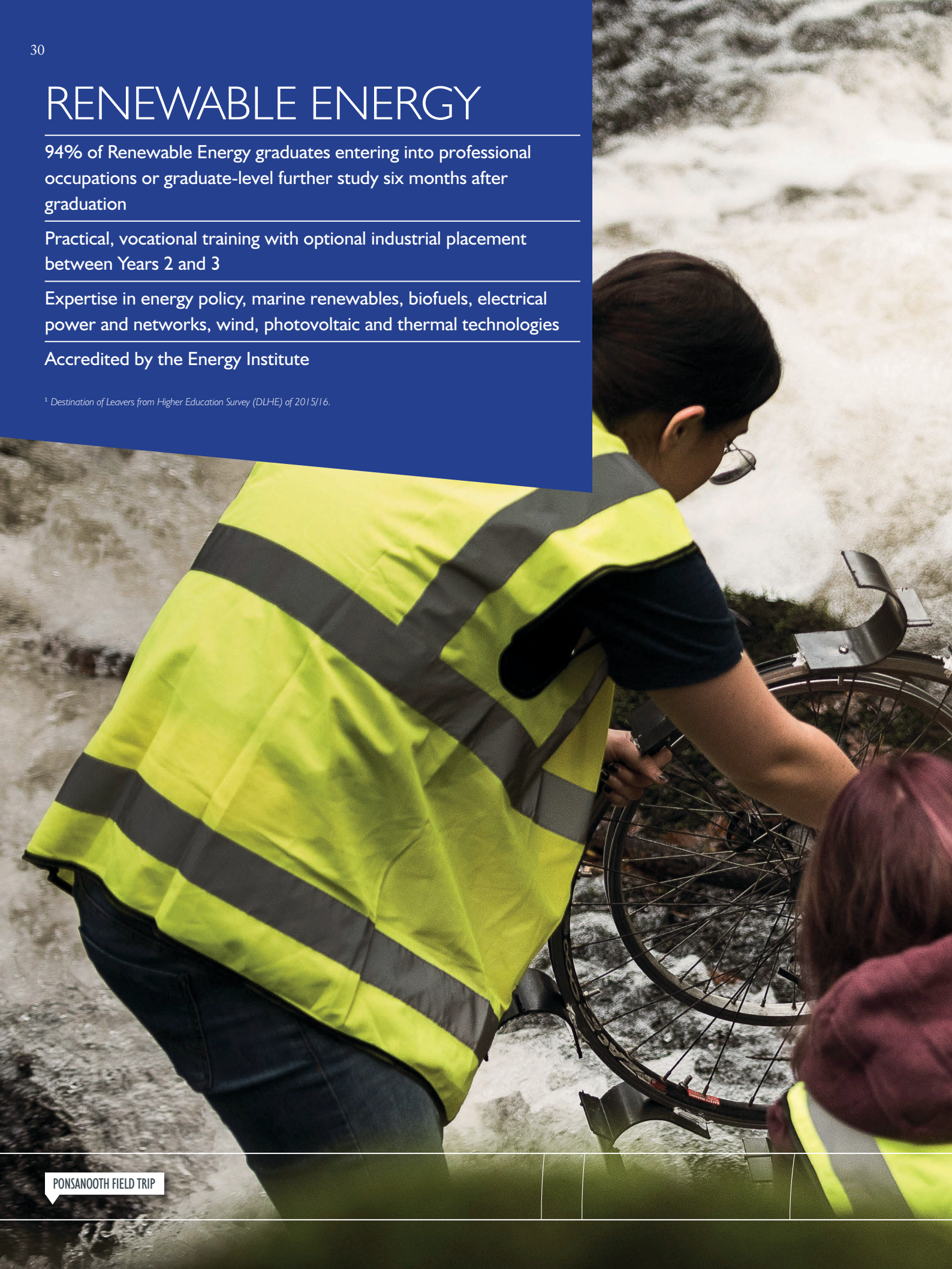
94% of Renewable Energy graduates entering into professional occupations or graduate-level further study six months after graduation

Practical, vocational training with optional industrial placement between Years 2 and 3

Expertise in energy policy, marine renewables, biofuels, electrical power and networks, wind, photovoltaic and thermal technologies

Accredited by the Energy Institute

[1] *Destination of Leavers from Higher Education Survey (DLHE) of 2015/16.*



PONSANOOTH FIELD TRIP

Renewable energy is no longer seen as a niche sector, but as the future, with major manufacturers announcing shifts in attitude, such as Volvo's pledge to replace combustion engines with electric units in their cars from 2019.

Taught at our Penryn Campus in Cornwall, where the UK's renewable energy revolution began, you will have access to on- and off-campus facilities such as: specialist renewable energy laboratories, local wind farms, solar photovoltaic systems and offshore test sites.

Each of our programmes offers a slightly different qualification. Our BEng and MEng programmes draw upon multiple engineering disciplines to equip you with the broad skills required by industry, including mechanics, materials, electronic and electrical engineering. Our BSc is tailored to those wishing to start their own renewables business or work in management, consultancy or governance.

All programmes are highly relevant and feature backing from the sector in the form of guest lectures, site visits and work placements. In addition, you will be taught by a passionate body of staff with professional backgrounds in the renewables industry.

Our graduates are some of the most employable, with 94 per cent in graduate-level positions or further study within six months of graduating. Recent graduate positions[1] held by students from these programmes include: sustainability consultant, environmental engineer, offshore developer, carbon management consultant, design engineer, company director and energy analyst.

ACCREDITATION

The current programmes have been accredited by the Energy Institute for progression to Incorporated Engineer (BEng and BSc) or Chartered Engineer (MEng) status. Module choices made during the third year of BSc Renewable Energy will determine whether the criteria for progression towards Incorporated Engineer or Chartered Energy Manager has been met.

www.exeter.ac.uk/ug/energy

RENEWABLE ENERGY IN CORNWALL

HEART, PENRYN CAMPUS

SINGLE HONOURS

BEng/MEng Renewable Energy Engineering (CORNWALL)

BEng H803 3 yrs
AAB-BBB | IB: 34-30 | BTEC: DDD-DDM
MEng H804 4 yrs
with Industrial Experience H805 4 yrs
Required subjects: GCE AL Maths✚ grade B and another science❖ subject at grade B; IB Maths HL5 and another science subject HL5.

- ☐ Practical programme, drawing upon multiple engineering disciplines to equip you with the broad skills required by industry
- ☐ Study over three (BEng) or four (MEng) years
- ☐ Option to undertake Industrial Experience as a named part of your degree on the MEng
- ☐ Frequent and varied field trips, including a residential during your second year

Year 1 The initial focus is on engineering fundamentals including; mathematics, mechanical and electrical engineering, physics, thermodynamics and specific computer skills. You'll also gain a broad introduction to renewable energy systems and environmental management in preparation for more advanced modules, later in the programme.

Year 2 You'll further your knowledge of the key disciplines by developing essential computational skills and studying clean and renewable energy techniques and systems. Local field trips and practical experience will embed this knowledge, as well as developing your report writing and team working skills.

Year 3 Your dissertation will allow you to explore areas of particular interest and develop your research, analytical and writing skills. The third-year field trip and a design module will give you practical engineering skills. You will also have the opportunity to choose a minimum of four engineering modules relevant to your career development.

Year 4 (MEng only) The fourth year of study is focused on deepening your skills through a series of advanced modules and project work. We will help you to find an industrial placement or academic project. The placement will enable you to work within a company, or a structured research environment which is active

✚ and ❖ see *Entry Requirements box on page 41.*

in renewable or clean energy. The group design project will provide an opportunity to help you further develop team-working and research and development skills. Alongside these activities, optional modules will deepen your understanding of advanced renewable energy engineering.

INDUSTRIAL EXPERIENCE

The Renewable Energy with Industrial Experience programme includes an industrial placement prior to the start of your third year, followed by a research project based on your placement experience. Your placement will be spent working in an appropriate business or industry related to energy engineering, and you will benefit from our established connections with local, national and multinational organisations. You will gain valuable experience from working in industry, as well as increasing your first-hand knowledge. You will also improve personal and transferable skills, make new contacts and enhance your employability.

BSc Renewable Energy (CORNWALL)

F802 3 yrs

AAB-BBB | IB: 34-30 | BTEC: DDD-DDM

Required subjects: GCE AL science* subject at grade B; IB science HL5, GCSE Maths+ grade A or 7.

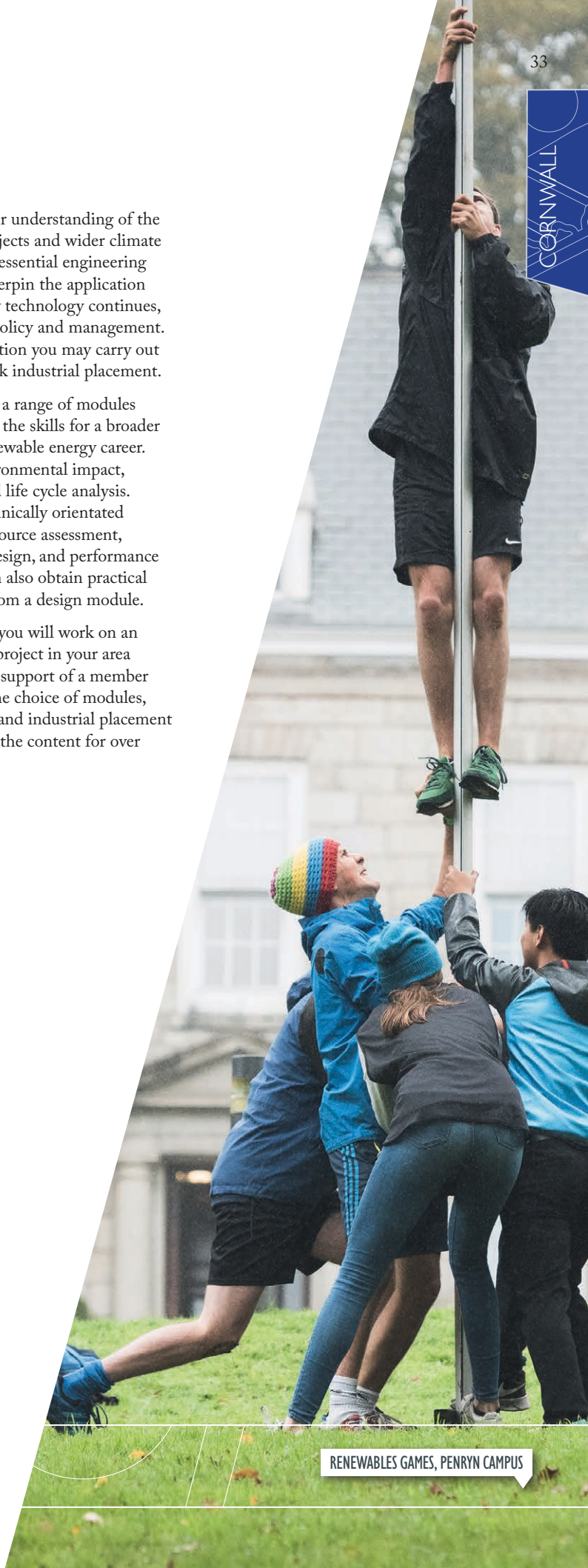
- ☐ Tailored to those interested in energy policy or the environmental and socio-economic impacts of clean and renewable technologies
- ☐ Two to three month work placement, provides a practical context that complements the taught programme
- ☐ Work on an extensive individual research project during your third year

Year 1 Early modules develop your core engineering and mathematical skills while introducing the diverse range of renewable energy sources. Later in the year, you will study the engineering sciences governing both natural processes and power conversion technology, as well as project management and accounting.

Year 2 Gain a greater understanding of the socio-economic subjects and wider climate issues. The study of essential engineering disciplines that underpin the application of renewable energy technology continues, along with energy policy and management. In the summer vacation you may carry out a minimum six-week industrial placement.

Year 3 Choose from a range of modules designed to develop the skills for a broader socio-economic renewable energy career. Topics include environmental impact, low carbon heat and life cycle analysis. Wider range of technically orientated modules include resource assessment, power conversion design, and performance monitoring. You can also obtain practical engineering skills from a design module.

Throughout Year 3, you will work on an individual research project in your area of interest, with the support of a member of academic staff. The choice of modules, dissertation project and industrial placement gives you control of the content for over half of Year 3.



RENEWABLES GAMES, PENRYN CAMPUS

LEARNING AND TEACHING IN CORNWALL

Formal teaching and learning methods vary between modules but typically include: lectures, small group laboratory classes, practical work, seminars, tutorials, computer based learning packages and residential or one day field-based activities. You will typically have 18-20 hours of formal contact time per week. You will be expected to spend roughly the same amount of time undertaking independent study.

PONSANOOTH FIELD TRIP

FIELDWORK, TOURS AND PLACEMENTS

Throughout the programmes you will experience a range of renewable energy technologies. This will include trips to renewable energy facilities such as Goonhilly wind farm, local solar PV farms, micro and large hydro, landfill gas production, large scale gas generation and other relevant installations. You may also attend events like public planning meetings or energy use assessments of public or private buildings, as opportunities become available. Our aim is to get you out to see real world technology or events whenever we can.

In the summer vacation between your second and third year, you may carry out a minimum six-week industrial placement. The onus is on you to select the area in which you wish to work and to find a placement, although we can help by providing contact details and suggesting companies which suit your interests. Companies with close ties to the department also provide placements for a number of students. In the third year, the residential field trip will entail a field-based, renewable energy technical resource assessment exercise. Working as a project team you will focus on assessing the technical and economic potential of appropriate renewable energy technologies. Student teams have carried out assessments in Jersey, Guernsey, Tenerife, Gran Canaria and other locations, and presented to expert teams of academics and civil servants, including an Energy Minister.

FACILITIES

The campus is equipped with the latest facilities for teaching and research. Our teaching laboratory contains technology for the study of biomass heating; water flows; hydroelectric turbines; photovoltaics; solar thermal; fuel cells; hydraulic systems; wind power and electronics; and electrical power systems.

The lab is also equipped with industry standard software for the analysis of flows of liquids, gases (Ansys), computer aided design (Solidworks and AutoCAD), Geographical Information Systems (Mapinfo and ArcGIS), wind energy resource assessment (Windfarmer, Wind Farm), wind turbine design (Bladed) and photovoltaic system modelling (PVsyst). As an undergraduate student, you will be taught to use all of these programmes and facilities.

A variety of devices producing renewable energy exist around the campus, including three solar powered buildings. As part of the continuing expansion of the campus, the University developed the Environment and Sustainability Institute (ESI), which employs both solar and wind energy technology as well as benefitting from state-of-the-art energy efficiency. The new Science and Engineering Research Support Facility (SERSF) is home to laboratories for offshore renewables, and will enable an expansion of the research led by the Marine Renewables team.

You will also have access to the brand new Renewable Energy Engineering Facility (REEF) building which contains a workshop with both traditional engineering equipment as well as 3D printers, CNC mills, laser cutters and more. The building itself and the renewable energy technologies that supply it will also be instrumented and accessible to you to support your learning.

ASSESSMENT

Assessment methods vary between modules, but usually combine exams and coursework (which might include practical laboratory work, professional posters, group exercises, essays or verbal presentations). Your first year does not count towards your final degree classification, but you do have to pass it in order to progress. If you study a three-year programme, assessments in the final two years both count towards your classification, and if you study a four-year programme then the final three years all contribute.

ACADEMIC SUPPORT

The Penryn Campus offers a friendly, supportive community, where staff and students get to know each other well. All students have a personal tutor, who is a member of academic staff with whom you can discuss personal and academic issues. There are also a number of services on campus where you can get additional advice and information. You can find further information about all these services in the University's undergraduate prospectus or online at **www.exeter.ac.uk/undergraduate**

SCHOLARSHIPS

For the latest information about our undergraduate scholarships, please visit **www.exeter.ac.uk/emps/undergraduate/funding**

"The Renewables programme at Exeter is one of the best in Europe. It doesn't specialise straight away, leaving you a great opportunity to see what interests you before specialising yourself in the final year. The facilities and links that the University offers, vastly exceed similar programmes I looked into."

Joe, studying Renewable Energy

YOUR SUCCESSFUL CAREER – RENEWABLE ENERGY

RECENT GRADUATES ARE NOW WORKING FOR▲:

- EDF Energy
- Jaguar Land Rover
- Siemens
- Fugro

▲ *This information has been taken from the Destinations of Leavers from Higher Education (DLHE) Surveys 2014/15. Please note that, due to data protection, the job titles and organisations are listed independently and do not necessarily correspond.*

CAREERS SERVICES

We have a dedicated, award-winning Careers Service, with offices at our Exeter and Penryn campuses, ensuring you have access to careers advisors, mentors and the tools you need to succeed in finding employment in your chosen field on graduation. We offer the Exeter Award and the Exeter Leaders Award which include employability-related workshops, skills events, volunteering and employment which will contribute to your career decision-making skills and success in the employment market. Our graduates compete very successfully in the employment market, with many employers targeting the University when recruiting new graduates. For further information about our Careers Service please visit: **www.exeter.ac.uk/careers**

Engineering at Exeter will shape you into a multitalented individual, who is able to succeed in a wide variety of professional roles.

RECENT GRADUATES ARE NOW WORKING AS▲:

- Company Director
- Senior Project Manager
- Green Deal Operations Associate
- Electrical Engineer Designers
- Research Engineer
- Renewable Technology Designer

RENEWABLE ENERGY MODULES

Please note that availability of all modules is subject to timetabling constraints and that not all modules may be available every year. For up-to-date details of all our programmes and modules, please check the undergraduate section of our website at **www.exeter.ac.uk/ug/energy**

YEAR 1

Applied Computing for Energy Studies	Computing skills, including both computer programming and the application of specialist software for design and analysis, are an increasingly important requirement for renewable energy professionals and engineers. You will start developing these skills using software such as Geographic Information Systems (GIS) and Computer Aided Design (CAD).
Electrical and Electronic Principles	This hands-on module gives you the chance to explore basic electrical and electronic concepts, using a combination of a theoretical and practical approach to applications, and troubleshooting.
Energy Policy, Markets and Law	Study the key elements that shape which energy technologies are deployed, and how policy, economic and social factors can shape innovation and development for new energy technologies.
Engineering Mechanics	An entry-level introduction to the topic of Engineering Mechanics – no prior knowledge of the subject is required. This module is suitable for non-specialist students and is recommended for interdisciplinary pathways. As well as attending lectures, you will take part in two hands-on laboratory sessions.
Mathematics 1A, 1B	Mathematics is at the heart of all science and engineering subjects. Provided the student has at least a good grade at GCSE maths, this module takes students of all levels of experience or confidence in maths, and brings them up to a level required to use maths as a tool in their other chosen pathways and modules.
Mathematics for Energy Systems	Mathematics is at the heart of all Science and Engineering subjects. This module covers topics that are fundamental to engineers in their professional careers. In particular, there is a strong emphasis on the direct application of mathematics to engineering problems.
Renewable Energy Systems 1	An introductory module to provide you with a broad overview of the energy landscape, with a particular focus on renewable energy resource assessment and implementing technologies.
Science for Energy Engineering	General knowledge in the fundamental sciences is a prerequisite for studying energy technologies. In this module you will develop an understanding of chemistry and how it is related to your course; as well as key skills, methods and practice in studying, applying and reporting science.
Thermodynamics and Fluid Mechanics	Thermodynamics is concerned with heat and its relationship with energy and work, such as in engines. Fluid mechanics, meanwhile, is the study of fluids and forces on them. Aimed at students of engineering subjects, this course covers these two areas in parallel.

YEAR 2

Applied Thermodynamics	The concepts covered will be for the main part on the thermodynamic cycles characteristic of many existing machinery (or thermal systems), where heat and work transfer (ie, energy transfer) take place. You will develop the valuable skill of working out the efficiency of a given cycle from first principles.
Data, Signals and Systems	You will study classical mathematical techniques of Fourier and Laplace transforms, applied in a modern context of a data-rich world. You will use real data from Cornwall-based applications in marine ecology, renewable wave energy and environment and human health.
Electrical Energy Conversion and Transport	Develop your basic knowledge of the topic, by introducing you to electrical machines, including DC, synchronous and induction, and to instrumentation and control techniques.
Engineering for Energy Professionals	Gain a fundamental and applied understanding of energy engineering applications. It is a unique module that allows you to focus on some of the key energy engineering principles and machines.
Energy Management	With energy prices soaring and governments striving to meet global emissions targets, energy management is becoming increasingly important. Linked to these factors are great opportunities to embed generation, take advantage of renewable energy policies and adopt new technologies.
Fluid Mechanics	An applied module, which aims to develop your understanding of the continuity and energy equations used to solve fluid problems of relevance to both mining and renewable applications.
Mechanics of Materials	Designed to help you to comprehend failure mechanism, including fracture and fatigue, and understand complex stresses and strains arising in elastic and non-elastic systems.
Project Management and Accounting	Designed to give you a combination of theoretical project management and financial assessment tools based on an experience based approach to practical project management.
Renewable Energy Systems 2	Building on your knowledge gained during the first year's introductory module, Renewable Energy Systems 1. It will also act as a 'bridge' to the third year's technology specific modules.
Sustainable Enterprise Economy	Investigate sustainability as a theme that crosses subject boundaries. The module is intended to form and frame a learning path for developing knowledge and understanding of the challenge of transitioning to more socially responsible, environmentally sustainable business models.

The Politics of Climate Change	During this module you will learn about the key concepts in climate science and policy, climate change science (and the debate over its reliability), and climate policy and action at national and international levels. We will also cover the role of different energy options in mitigating climate change, the strengths and weaknesses of UK energy policy and the possible ways forward for UK energy systems.

YEAR 3

Dissertation	Increase your depth of study into a particular area of renewable energy in line with your specific interests. It offers you the chance to develop an idea, design or test a device, review the literature, work with a local company or carry out another reasonable renewable energy-related piece of research. The dissertation might be in a specialist area where you want to develop your career, a plan for a piece of kit or just something that you would like to dig a bit deeper into.
Field Course (Group Project)	A highly pragmatic module, that will ensure you use the full curriculum of your knowledge, skill and ability to work together as a valuable and versatile professional team member. A set of renewable energy problems will be examined and analysed, and solutions suggested for a real client and real stakeholders.
Life Cycle Analysis	Study and examine the concept, methodologies and available tools and databases of life cycle analysis (LCA) and their applications in the energy industry, covering different energy generation and consumption technologies.
Low Carbon Heat	Gain an all-round understanding of a complex and expanding area of sustainable energy development including knowledge of commercial operations and project development in this field.
Marine Renewable Energy	Gain the knowledge and skills to perform resource assessment studies for these industries and to analyse and interpret data acquired for such studies. It includes a practical tutorial on the industry-standard wave modelling software, SWAN. It will also give you an understanding of the wider industries, including technical developments, operational aspects and environmental impacts and the policy context.
Networking Engineering, Modelling and Management	Develop your knowledge of power electronics and power systems, data acquisition and automation. The future grid will see more integration of renewable energy sources (RES) and, thus, it is vital to understand power electronics, which is the enabling technology for integrating RES to the grid.
Solar Energy	This is an extensive course covering all aspects of solar energy conversion including: solar resource estimation, solar photovoltaic technologies, solar thermal conversion technologies, equipment design and selection, system design and deployment.
Sustainable Architecture	Explore sustainability in the built environment. How can land, building materials, resources and energy be employed to a community's advantage but with low levels of long term, irreversible and environmental impact?

YEAR 4 (MEng ONLY)

Advanced Wind Energy	Develop a more detailed understanding of all aspects of the wind energy industry but particularly wind farm and wind turbine design, as development of their previous wind energy studies.
Group Design Project	Gain experience of working as part of a project team of between four and six in a situation close to that which might be found in an industrial or commercial setting. You will apply the knowledge and skills, at the forefront of the renewable energy discipline that you have obtained from taught modules and independent learning to a real engineering situation at a professional level and as part of a team effort.
Industry Placement Project	You and the company will together identify a real research and/or development programme of benefit to the company, which will be completed as an individual three month project during the first term of year four. You will receive guidance in time and project management, and will be expected to submit your completed project reports and other assessed work during term two.
Professional Ethics, Competence and Commercial Awareness	Develop an understanding of business from several key perspectives. Health and Safety is addressed through a study of the mechanisms by which major failures usually occur. You will be given a basic grasp of accounting, particularly with respect to using accounts as a tool for measuring and improving the financial health of a business. The investor's perspective is also addressed through a study of key investment ratios and discussion on the nature and workings of the stock market. The principles of UK contract law are introduced, with practical guidance on legal issues likely to affect construction contracts in the renewable energy industry.
Themes in Climate Change	This module places contemporary climate change into its historic context, examines the latest thinking in detection and attribution of recent warming, and describes the nature of climate modelling and model uncertainty. It ends with a series of lectures on climate impacts and the relationship between climate change and conflict.

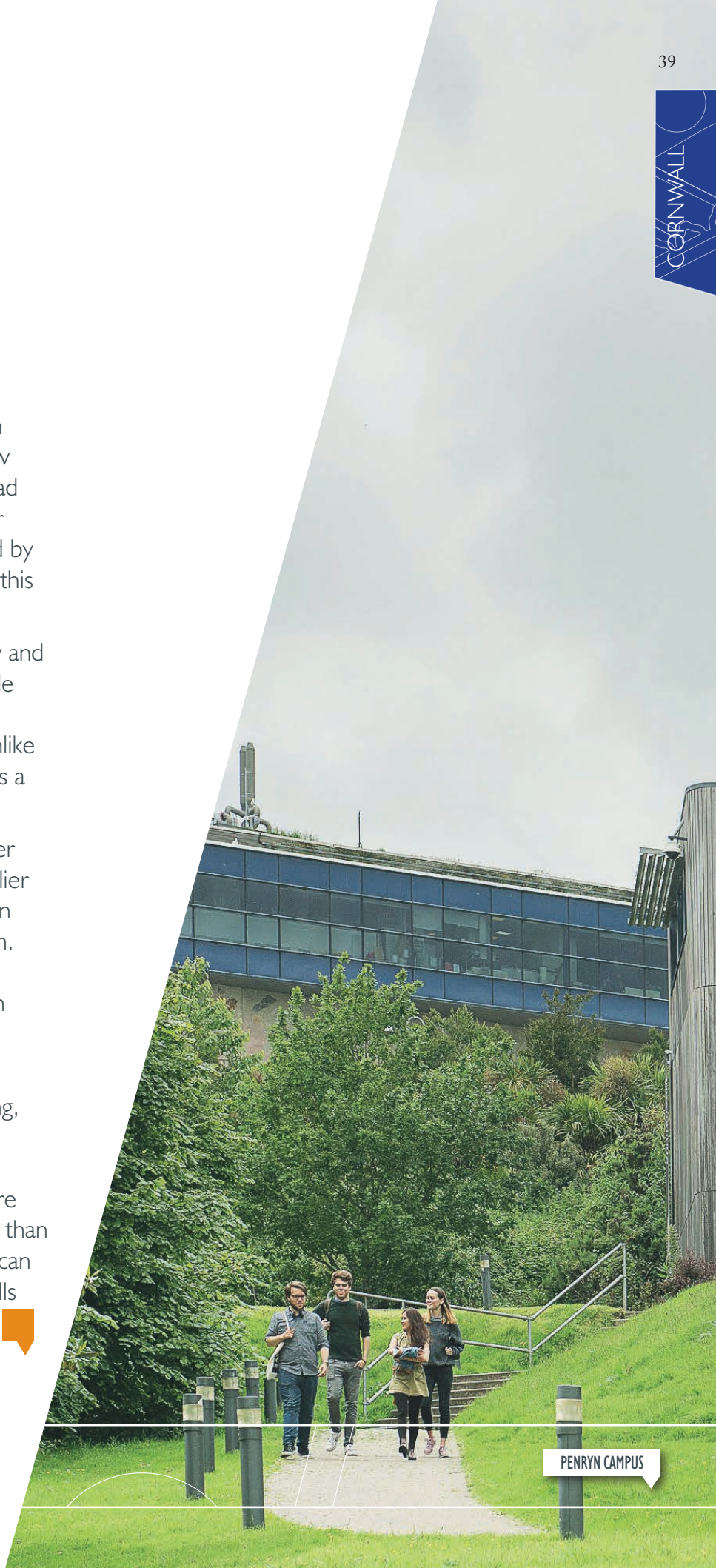
I was always very interested in engineering but did not want to follow the traditional engineering routes. I had a site visit to a small city called Masdar (UAE) that is almost entirely powered by renewable energy and my interest in this subject was sparked from there.

Cornwall is an amazing place to study and I have enjoyed it so much. The people you get to meet are awesome, the opportunities available to learn are unlike other universities and the place itself is a beautiful part of the country to be in.

I will be starting my professional career with a 100% renewable energy supplier called Bulb. They are based in London and I am very excited to join the team. I am also currently working alongside two classmates in starting a clean-tech business called ChargedUp.

For any future students studying Renewable Energy/Energy Engineering, my biggest piece of advice would be to make the most of the support that is available. I believe there is way more support from lecturers at this campus than most others in the country, and they can be very helpful in developing your skills over the course of your degree.

Chris, studying Renewable Energy



KEY INFORMATION AT A GLANCE

STREATHAM CAMPUS, EXETER	UCAS CODE	TYPICAL OFFER
MEng Single Honours		
Civil Engineering	H202	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Civil Engineering with Industrial Experience	H209	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Civil Engineering with International Study	H207	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Civil and Environmental Engineering	H290	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Civil and Environmental Engineering with Industrial Experience	H293	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Civil and Environmental Engineering with International Study	H292	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Electronic Engineering	H601	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Electronic Engineering with Industrial Experience	HPD1	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Electronic Engineering with International Study	H1C0	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Electronic Engineering and Computer Science	HG64	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Electronic Engineering and Computer Science with Industrial Experience	IH62	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Electronic Engineering and Computer Science with International Study	IH16	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Engineering and Management	H704	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Engineering and Management with Industrial Experience	NH13	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Engineering and Management with International Study	HN1F	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Materials Engineering	H191	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Materials Engineering with Industrial Experience	H194	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Materials Engineering with International Study	H198	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Mechanical Engineering	H302	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Mechanical Engineering with Industrial Experience	H307	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Mechanical Engineering with International Study	H309	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Engineering	H104	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
BEng Single Honours		
Civil Engineering	H200	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Civil Engineering with Industrial Experience	H208	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Electronic Engineering	H610	AAA-ABB; IB: 36-32; BTEC: DDD-DDM

STREATHAM CAMPUS, EXETER	UCAS CODE	TYPICAL OFFER
Electronic Engineering with Industrial Experience	H611	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Electronic Engineering and Computer Science	HG6K	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Electronic Engineering and Computer Science with Industrial Experience	HG65	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Engineering and Management	HN12	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Engineering and Management with Industrial Experience	HN13	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Materials Engineering	H190	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Materials Engineering with Industrial Experience	H193	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Mechanical Engineering	H300	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Mechanical Engineering with Industrial Experience	H304	AAA-ABB; IB: 36-32; BTEC: DDD-DDM
Engineering	H101	AAA-ABB; IB: 36-32; BTEC: DDD-DDM

STREATHAM CAMPUS, EXETER

Website: **www.exeter.ac.uk/ug/engineering**
www.exeter.ac.uk/enquiry

Phone: +44 (0)1392 724061

The full and most up-to-date information about Engineering is on the undergraduate website at **www.exeter.ac.uk/ug/engineering**

We make every effort to ensure that the entry requirements are as up-to-date as possible in our printed literature. However, since this is printed well in advance of the start of the admissions cycle, in some cases our entry requirements and offers will change. For further details on all our entry requirements, please see **www.exeter.ac.uk/ug/engineering**

We strongly advise that you check the full entry requirements before attending an Open Day or making your application. Some programmes require prior study of specific subjects and may also have minimum grade requirements at GCSE or equivalent, particularly in English Language and Mathematics.

International students

If you are an international student you should consult our general and subject-specific entry requirements information for A levels and the International Baccalaureate, but the University also recognises a wide range of international qualifications. You can find further information about academic and English language entry requirements at **www.exeter.ac.uk/ug/international**

For information on the application, decision, offer and confirmation process, please visit **www.exeter.ac.uk/ug/applications**

PENRYN CAMPUS, CORNWALL	UCAS CODE	TYPICAL OFFER
MEng Single Honours		
Renewable Energy Engineering	H804	AAB-BBB; IB: 34-30; BTEC: DDD-DDM
Renewable Energy Engineering with Industrial Experience	H805	AAB-BBB; IB: 34-30; BTEC: DDD-DDM
Mining Engineering	J113	AAB-ABB; IB: 34-32; BTEC: DDD-DDM
Mining Engineering with Industrial Experience	J114	AAB-ABB; IB: 34-32; BTEC: DDD-DDM
BEng Single Honours		
Renewable Energy Engineering	H803	AAB-BBB; IB: 34-30; BTEC: DDD-DDM
Mining Engineering	J110	AAB-BBB; IB: 34-30; BTEC: DDD-DDM
BSc Single Honours		
Renewable Energy	F802	AAB-BBB; IB: 34-30; BTEC: DDD-DDM

PENRYN CAMPUS, CORNWALL

Website: **www.exeter.ac.uk/ug/mining**
www.exeter.ac.uk/ug/energy
www.exeter.ac.uk/enquiry
Phone: +44 (0)1326 371801

The full and most up-to-date information about Renewable Energy is on the undergraduate website at **www.exeter.ac.uk/ug/energy**

The full and most up-to-date information about Mining Engineering is on the undergraduate website at **www.exeter.ac.uk/ug/mining**

ENTRY REQUIREMENTS: MORE INFO

❖GCE AL/AS science includes: Biology/Human Biology▲; Chemistry; Computing; Design and Technology; Electronics; Environmental Studies; Geography; Geology; Maths/Pure Maths/Further Maths▲; Physical Education; Physics; Psychology; Science (applied); Statistics.

▲ *If more than one of these is taken they would only count as one 'science' but could count as two A levels towards our general requirements.*

✚**Programme requirement** Candidates may offer GCE AL Maths, Pure Maths or Further Maths.

A level
GCE AL Maths✚ grade B and another science subject at grade B.

IB
IB Maths HL5 and another science subject HL5. Applicants achieving IB Maths SL7 plus IB HL5 in Physics will also be considered.

BTEC Extended Diploma (2010)
Applicants studying one of the following BTEC Extended Diplomas will be considered without the GCE AL science subjects: Applied Science, Building Services Engineering, Construction and the Built Environment, Electrical Electronic Engineering, Environmental Sustainability, Manufacturing Engineering, Mechanical Engineering, Operations Maintenance Engineering, Pharmaceutical Science, Sport, Sport and Exercise Science.

BTEC Extended Diploma (2016)
Applicants studying one of the following new BTEC Extended Diplomas will be considered without a GCE AL science subject or GCE AL Maths providing they have taken the mandatory unit 'Calculus to solve Engineering problems' AND the optional unit 'Further Engineering Mathematics': Engineering, Electrical/Electronic Engineering, Mechanical Engineering, Computer Engineering, Manufacturing Engineering, Aeronautical Engineering.

THE UNIVERSITY OF EXETER

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Teaching Excellence Framework assessment 2017

QS STARS RATED FOR EXCELLENCE 2018

5 star rated from QS

22,000 students from 178 countries

98%

98% of our research rated of international quality [1]

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For further information please visit
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www.exeter.ac.uk/ug/mining
www.exeter.ac.uk/ug/energy

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[1] 98% of our research was rated as 2*,3* or 4* in the Research Assessment Exercise 2014.
[2] Between 2006/07 – 2015/16, the University of Exeter saw the greatest rise in research income, compared to all other Russell Group universities.

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