



MANCHESTER  
1824

The University of Manchester

# Earth and Environmental Sciences

**2020**  
Undergraduate brochure

# Earth and Environmental Sciences at Manchester

**//** Where better to study the Earth, planetary and environmental sciences than at one of the oldest and most established Earth Science departments in the world? Our new Earth and Planetary Science and Environmental Science degrees offer a modern approach to studying Earth System Science, with flexibility to allow you to specialise and tailor your studies to your interests. **//**

**Prof Kevin Taylor**  
Head of Department, Earth and Environmental Sciences

Extensive field and practical training, with UK or overseas field courses in every year of study. Costs of compulsory taught field courses are included in your fees.

One of the largest departments of Earth and Environmental Science, giving access to a wide range of specialisms.

A common natural science first year lets you find where your interests lie before specialising.

Excellent environment equipped with the latest facilities and teaching from leading scientists in their field.

Ranked within the top 10 in the UK (QS World University Rankings 2019).

Industry input into the development of our cutting-edge course content ensures real-world relevance.

# Facilities & resources

Field and laboratory work lies at the core of our research and teaching in the Earth, Planetary and Environmental Sciences.

Our teaching resources provide students with the very best opportunities:

- **Computer visualisation suite for studying seismic data sets from the oil and gas industry**
- **Innovative, research-led, eLearning tools to enhance your understanding, such as the Build Your Own Earth app ([www.buildyourownearth.com](http://www.buildyourownearth.com)) which was shortlisted for the Global Reimagine Education Awards 2018**
- **A well-equipped, dedicated undergraduate study area providing a place for relaxation and somewhere to work with your fellow students within the Department**
- **Close supervision and pastoral care by an academic staff member during the whole degree course.**

Students in their final year work alongside research groups and use our world-leading research facilities, such as:

- **Analytical geochemistry unit – for analysing water and solid geological matter**
- **Environmental Scanning Electron Microscope - for imaging a wide range of samples, from polished rock sections to bacteria to Egyptian mummies**
- **Cameca electron probe - used for the quantitative analysis of a wide variety of geological samples**
- **In-situ and remote sensing instrumentation for the study of clouds, aerosols, radiation and dynamics**
- **Advanced isotope geochemistry and cosmochemistry suite.**

## Field work

Field work is an essential part of all our courses and provides a unique learning experience:

- **Field work gives you the chance to apply knowledge learnt in lectures and practical classes to real settings, allowing you to develop the skills of a professional earth and environmental scientist, such as observing, collecting, recording and interpreting a range of data.**
- **Venues vary from classic areas of the British Isles to locations across the globe.**
- **Field courses are tailored to meet the needs of each pathway.**
- **Most field courses are residential and provide a great chance to form friendships with staff and your fellow students in an informal setting, and to travel and experience different cultures**



# Learning support

## Peer support scheme

Our peer support scheme is one of the largest in Europe. Peer mentors are higher-year students on the same degree programme as you, who will help you find your feet when you arrive here and adjust to student life. As they'll have already been a student at Manchester for at least a year, they should be able to help you with anything you might be worried or unsure about.

## PASS (*Peer Assisted Study Sessions*)

Led by volunteer students, PASS sessions will often be based around a specific area of study. You'll have the opportunity to consolidate and build on your existing knowledge through discussion with other students in an informal and supportive environment, where you can compare notes, analyse, ask questions and talk through ideas.

## Academic advisers

Study with us and you'll be assigned an academic adviser who is there to give advice about any academic issues throughout the duration of your course. Your adviser will be able to help you with the transition from school or college to university – and can help you get to grips with studying and learning more independently. They'll also be able to help you develop your skills in academic writing or research, making presentations, or any other skills that are specific to your degree programme.

## Disability support

If you have additional needs arising from a medical condition, physical or sensory disability, a specific learning disability such as dyslexia, or a mental health difficulty that affects your study, we can provide support. Contact or visit our Disability Advisory and Support Office before you apply, to discuss your needs and the support available.

[www.manchester.ac.uk/dass](http://www.manchester.ac.uk/dass)

Find out more about the personal and academic support available to you throughout your studies:

[www.manchester.ac.uk/study/experience/student-life/university/student-support](http://www.manchester.ac.uk/study/experience/student-life/university/student-support)

“ Manchester is the ideal city for students and studying at the University of Manchester gives you the chance to truly delve into your preferred course of study as well as develop you as a well-rounded individual. ”

**Wiam Machmachi**  
BSc Environmental Science

# Apply

## How to apply

[www.manchester.ac.uk/study/undergraduate/applications](http://www.manchester.ac.uk/study/undergraduate/applications)

Please note that the course units listed in this brochure only represent a sample of the full breadth of available units for each course. Units are reviewed on an annual basis and as such may vary slightly to those advertised.

For up-to-date course information, including unit detail and entry requirements in full, visit our course finder:

[www.manchester.ac.uk/undergraduate](http://www.manchester.ac.uk/undergraduate)



# Typical offer

## BSc

**A-level:** ABB which should include at least one science subject.

**IB:** 34 points overall with 6,5,5 at Higher Level including one science subject.

## MEarthSci MEnvSci

**A-level:** AAA

**IB:** 36 points overall with 6,6,6 at Higher Level including one science subject.

For full details of our entry requirements:

[www.manchester.ac.uk/ugcourses](http://www.manchester.ac.uk/ugcourses)

# Our courses

Earth and Planetary Sciences	BSc	3 years
	MEarthSci	4 years
Earth and Planetary Sciences with International Study	MEarthSci	4 years
Earth and Planetary Sciences with Industrial Experience	MEarthSci	4 years
Environmental Science	BSc	3 years
	MEnvSci	4 years
Environmental Science with International Study	MEnvSci	4 years
Environmental Science with Industrial Experience	MEnvSci	4 years



# Which course?

## Choosing your course

The Earth is a dynamic, natural system that has evolved as a result of physical and chemical processes which have influenced the growth and demise of ecosystems for over 4.5 billion years. It continues to evolve both naturally and as a result of the impact of humans.

We're a department of geologists, chemists, mathematicians, biologists, physicists, environmental scientists and computer scientists, who work together to study the Earth and planets. Our courses cover the full breadth of the Earth, planetary and environmental sciences, reflecting the main research themes that are fundamental to the work we do.

The close alignment between our teaching and research ensures that units are delivered by scholars who are at the forefront of their disciplines.

## Flexible options

We offer a choice of two degree courses, one in Earth and Planetary Sciences, and the other in Environmental Science. Within each, there are several different pathways through the subject. Both degrees may be extended to four years to give you significant extra research or vocational experience that will make you more attractive to future employers in both academia and industry.

In the first year both degrees take the same course units. These span the breadth of the natural sciences and allow you to change between our two degrees courses up until the end of your first year.

After the first year you'll select one from nine possible pathways through the subject (six in the Earth and Planetary Sciences and three in the Environmental Sciences). You may also switch (grades permitting) to the four-year variants of your course (MEarthSci and MEnvSci) at any time through to the end of the third year.

You'll graduate with a degree either in Earth and Planetary Science or in Environmental Science, with your chosen pathway named in brackets after this title.

## Study abroad

Students have the opportunity of studying for the third year of their course at one of several universities abroad. The University has exchange partners across the world and students build up valuable experience spending time at these universities.

There is a wide range of partner universities in many different countries, with Canada, USA, Australia and Singapore being popular destinations.

There is no need to specify where you want to study on your UCAS application form as these choices are made once you are here. Availability of places is competitive, and decisions are normally made during the second year of study.

A year studying abroad is available on the following courses and pathways:

### **MEarthSci Earth and Planetary Science:**

- Geochemistry
- Energy and Resources
- Geology with Physical Geography
- Planetary Science
- Palaeobiology

### **MEnvSci Environmental Science:**

- Pollution and Environmental Processes
- Ecology, Evolution and Conservation Biology
- Atmospheric Science

### **Read more about Study Abroad:**

[www.ees.manchester.ac.uk/study/undergraduate/study-abroad](http://www.ees.manchester.ac.uk/study/undergraduate/study-abroad)

## Industrial experience

Competition in the graduate job market has risen dramatically over the last ten years, and students are increasingly looking for ways to differentiate themselves.

An excellent way to do this is by choosing an industrial placement as part of your degree course. This involves spending a year working in industry during your third year of study. As well as the salary that you earn during your placement, you also gain practical experience that can be invaluable, both in your final-year project and when competing for graduate jobs.

A year with industrial experience is available on the following courses and pathways:

### **MEarthSci Earth and Planetary Science:**

- Geochemistry
- Energy and Resources
- Geology with Physical Geography

### **MEnvSci Environmental Science:**

- Pollution and Environmental Processes
- Ecology, Evolution and Conservation Biology
- Atmospheric Science

### **Read more about Industrial Experience:**

[www.ees.manchester.ac.uk/study/undergraduate/industrial-experience](http://www.ees.manchester.ac.uk/study/undergraduate/industrial-experience)

# Earth and Planetary Science

Our degree in the Earth and Planetary Sciences is focused on a holistic understanding of Earth systems in order to learn from the past, understand the present and influence the future. As Earth Science is at the crossroads of the natural sciences, it provides an enriching alternative to a single honours degree in maths, physics, chemistry, geography or biology, and can open the door to an exciting range of career options.

Our course will equip you with an armoury of skills to take into the world of work, including the ability to analyse problems, to work collaboratively as part of a team, and to develop field, laboratory, numeracy and communication skills.

At the end of year 1 you'll choose the pathway you wish to study based on your experience of the first year. Each pathway is defined to ensure that you develop core knowledge alongside a choice of optional units.

## Course overview

- **Develop knowledge and practical skills that you can apply to interpreting and predicting the Earth's structure and resources**
- **Flexible course allowing you to specialise and tailor your studies to your interests, following one of six pathways.**
- **Option to spend a year studying abroad or in industry.**
- **A large, diverse Department with an excellent staff to student ratio of 1:6.**

UCAS code	BSc	3y	F701
	MEarthSci	4y	F702
With International Study	MEarthSci	4y	F703
With Industrial Experience	MEarthSci	4y	F704

## Year Sample course units

- 1** > Understanding the Earth  
> Natural Scientist's Toolkit  
> Practical and Professional Skills

- 2** In your second year, you'll begin to specialise in your chosen area. Each pathway has a foundation in the fundamentals of Earth Science, with a combination of required and optional units specific to that pathway.

- 3** During the third year of your degree you'll undertake a research project that is tailored to your degree pathway. You'll collect data in the field and/or laboratory to answer a scientific question of your choice.

This year may include study abroad, or experience working in a research institute or industry, depending on your choice of degree.

- 4** (MEarthSci only)  
You'll carry out an extended individual research project working alongside world-leading scientists using state-of-the-art research facilities.

- > Independent research project  
> Student-led field course  
> Communicating Earth and Environmental Sciences  
> Topics in Applied Earth Science

## Earth and Planetary Science pathways

### Geology

In the Geology pathway you'll learn how to read the rock record and develop an understanding of the physical processes that have shaped the evolution of the Earth over geological time. For geologists, our primary laboratory is the great outdoors and so this pathway has a strong fieldwork emphasis. You'll also develop skills in laboratory-based analyses to add a richer level of detail to your field interpretations. The Geology Pathway is our traditional Geology degree.

You'll apply your integrated knowledge of geological processes and the Earth system to developing practical and transferrable skills relevant to the geotechnical and environmental sectors. Your independent research project will provide you with a taste for how you might play a role in advancing our understanding of geological processes further, if you are interested in geological research after your undergraduate studies.

### Planetary Science

It's an exciting time to study planetary science, as missions to the other planetary bodies in our solar system and our newfound ability to study planets orbiting other stars are allowing us to consider whether planets like the Earth are widespread or rare in the Universe. The aim of the Planetary Science pathway is to develop a wider understanding by considering the formation of the Solar System, and the processes that have shaped the range of rocky and icy planetary bodies it contains. In this pathway you'll develop an understanding of how the Earth and other planets have been shaped by the prehistory, formation and evolution of our solar system. You'll also have the opportunity to study aspects of astronomy and astrophysics to complement your understanding of Earth system science.

### Geochemistry

Geochemistry spans the entire range of Earth, Planetary and Environmental Sciences. Understanding the chemistry of the Earth is fundamental to challenges such as managing resources like precious minerals and oil, understanding climate change at the molecular level, and the control of pollution. In the Geochemistry pathway you'll also study the composition and chemical evolution of the planets, melting and mineral reactions in Earth's interior, and Earth's (bio)geochemical cycles. You'll acquire the laboratory and practical skills of a professional geochemist whilst having frequent opportunities to practice and apply what you learn on field trips and by undertaking a laboratory-based independent research project.

### Energy and Resources

Earth's energy and resources have shaped human development and societies for millennia. In the Energy and Resources pathway you'll study units that are focused on resource formation, ranging from metal and hydrocarbon resources, to nuclear energy and groundwater resources. You'll also study sustainable and efficient extraction of resources, while acquiring the skills suitable for a thriving energy and resources job market.

## Geology with Physical Geography

Geology and physical geography have always been closely related. In this pathway you'll study the processes that have shaped the Earth's surface and its landforms, and how humans and societies have learned to exploit and protect themselves from these phenomena. Focusing on the geologically recent past (2.6 million years of the Quaternary), and predictions of, and future planning for, environmental change, you'll be able to choose from units taught by Geographers from the School of Environment, Education and Development, as well as units taught by geologists in the Department of Earth and Environmental Sciences.

## Palaeobiology

Palaeobiology addresses major questions relating to the Earth's living systems, their interplay over geological time, and the genesis and evolution of today's living world. This pathway takes an interdisciplinary approach, combining the study of the biodiversity and ecology of modern and ancient life, with training in the geological processes that shape the history and future of Earth. You'll gain a broad range of essential geological and biological skills, while studying cutting-edge techniques and the latest research in palaeobiology and evolution, from the origins of life, and the age of dinosaurs, to the rise of modern humans.



“ The two most valuable outcomes of my year in industry have been self-confidence and an accredited internal auditor qualification with a year of hands-on auditing experience. I am now much more comfortable in a professional setting, working with people I've never met and taking on tasks that I have never done before. ”

**Katrina Cullen**

BSc (Hons) Environmental Science with a Year in Industry  
Industrial Placement: Manchester Airport



“ I loved being able to pick from a broad range of courses spanning traditional field-based geological disciplines, as well as more lab-based, analytical activities. This allowed me to become a more well-rounded geologist who was interested in and able to work on multidisciplinary projects. ”

**Prof Chris Jackson**

Graduate from BSc (Hons) Geology in 1998  
Now a Professor of Basin Analysis at Imperial College London

# Environmental Science

Environmental science is the study of how physical, chemical and biological processes maintain and interact with life, and includes the study of how humans affect nature. Our degree in Environmental Science applies a broad interdisciplinary perspective to understanding how the world works. This approach enables us to tackle pressing problems, such as ensuring that human needs are met in a sustainable way, so that everyone has access to clean water and air, and the resources required for agriculture and industrial activity.

Our course will equip you with an armoury of skills to take into the world of work, including the ability to analyse problems, to work collaboratively as part of a team, and to develop field, laboratory, numeracy and communication skills.

At the end of year 1 you'll choose the pathway you wish to study based on your experience of the first year. Each pathway is defined to ensure that you develop core knowledge alongside a choice of optional units.

## Course overview

- Develop knowledge and practical skills to address matters of significance to the economic and environmental wellbeing of society
- Flexible course allowing you to specialise and tailor your studies to your interests, following one of three pathways
- Option to spend a year studying abroad or in industry
- A large diverse Department with an excellent staff to student ratio of 1:6

UCAS code	BSc	3y	F900
	MEnvSci	4y	F902
With International Study	MEnvSci	4y	F903
With Industrial Experience	MEnvSci	4y	F904

## Year Sample course units

- 1** > Understanding the Earth  
> Natural Scientist's Toolkit  
> Practical and Professional Skills

- 2** In your second year, you'll begin to specialise in your chosen area. Each pathway has a foundation in the fundamentals of Environmental Science, with a combination of required and optional units specific to that pathway.

- 3** During the third year of your degree you'll undertake a research project that is tailored to your degree pathway. You'll collect data in the field and/or laboratory to answer a scientific question of your choice.

This year may include study abroad, or experience working in a research institute or industry, depending on your choice of degree.

- 4 (MEnvSci only)**  
You'll carry out an extended individual research project working alongside world-leading scientists using state-of-the-art research facilities.

- > Independent research project
- > Student-led field course
- > Communicating Earth and Environmental Sciences
- > Topics in Applied Earth Science

## Environmental Science Pathways

### Pollution and Environmental Processes

The study of pollution and environmental processes is essential as growing populations and higher standards of living place increasing pressure on our engineered and natural environment. On this pathway you'll study climate change, biodiversity and environmental management, pollution and control, population dynamics, ecosystems, and urbanisation, in order to tackle some of the global grand and pressing problems which will ensure that human needs are met in a sustainable way. If you enjoy biology, chemistry and geology and have a keen interest in the environment, you can integrate your interests in these subjects within the pollution and environmental processes pathway.

### Ecology, Evolution and Conservation Biology

The Earth is the only known planet supporting life. The history of the Earth is intertwined with the history of life, and the world is both shaped by, and shapes, the organisms alive today. This pathway focuses on understanding those relationships. You'll study evolution and examine how the diverse range of organisms alive today came to exist; ecology, which looks at the interactions of organisms and their environment; and conservation which involves studying how humans impact on nature and how we can change our behaviour to reduce that impact. On this pathway you'll take units shared with biological sciences to gain a truly interdisciplinary understanding of life on Earth.

### Atmospheric Science

Understanding the atmosphere allows us to address a wide range of societal and environmental issues including weather forecasting, urban air quality, pollutant transport and climate change. On this pathway you will focus on the atmosphere and its relationship to the Earth system, as well as to society. From theoretical concepts to modern technological applications, you'll explore the driving forces at work in our atmosphere and the feedback interactions between the atmosphere, oceans, solid earth and biosphere, over a range of temporal and spatial scales, from weather forecasting and urban air quality to climate change.

# Career opportunities

Earth and Environmental Sciences graduates from The University of Manchester :

**52%**

Employed

**33%**

Further study

## Further study options

**MSc – 56%**  
**MA – 22%**

Most popular qualifications

**MSc  
Environmental  
Science**

Most popular course title

**MANCHESTER**  
1824

The University of Manchester

Most popular institution

## What our graduates do:

Research Geochemist

Environmental scientist

Exploration and Resource Geologist

Air Quality consultant

Researcher

Ecologist

Mining Geologist

## Where our graduates work:

Met Office

Environment Agency

RSK Group

Schlumberger

General Electric

BP

Source: HESA, Destinations of Leavers from Higher Education (DLHE)



## Opportunities beyond your classes

Studying a degree with us will provide you with opportunities to pursue your passion for the subject beyond taught classes.

### The Manchester Museum

The Department of Earth and Environmental Sciences has close links with the Manchester Museum and its extensive geological collections. Join our Dino club and get involved in the ground-breaking work that takes place in the Manchester Museum. Current opportunities include 'Assembling April': a project involving students who are working alongside Museum professionals to curate and conserve the bones of *Tenontosaurus tilleti*, an ornithomimid dinosaur that resides in the Department.

### Summer internships

With our support, Manchester undergraduates successfully apply each year for highly competitive summer internships across the globe. Prestigious destinations include summer internships with the Lunar and Planetary Institute, USA, working one-on-one with NASA scientists, participating in peer-reviewed research.

"I value my time at the University of Manchester because studying at a world-leading academic institution which also has strong ties to industry is a great way to start your career."



**Rosanne Mckernan**

Graduated from MEarthSci in 2012

Now working as an Exploration Geoscientist at Shell

"The theory I learned at Manchester gave me a fundamental base to apply in the field, as well as the very useful practical lessons and field trips that expose you to the real life of working as a geologist."

**Matthew Rovardi**

Graduated from BSc (Hons) Geology in 2001

Now working as an Exploration Manager in Ghana



# Women in science



## Professor Ann Webb

Ann Webb is a Professor of Atmospheric Radiation. As 'Professor Sunshine', she studies the interaction of solar radiation and the atmosphere. This has included a decade as the pilot of a small research aircraft, exploring, for example, the scattering of radiation by clouds, and mapping the surface temperatures of Manchester's urban heat island. Ozone and the ultraviolet part of the sun's spectrum are a particular interest and Professor Webb has held leading roles at the World Meteorological Organisation and the International Commission on Illumination (CIE) for this work. The impacts of solar radiation at the Earth's surface are explored through interdisciplinary research into the effects of UV radiation on humans: in particular the beneficial effect of vitamin D synthesis. Professor Webb brings her wealth of experiences into her teaching and has taught and supervised students from a wide range of disciplines.

The Department of Earth and Environmental Science actively works towards generating an inclusive environment for all of our students and has been awarded an Athena SWAN Bronze award for its commitment to the advancement and promotion of the careers of women in STEM in higher education and research.

Read about our Women of Wonder:

[www.se.manchester.ac.uk/people/women-of-wonder](http://www.se.manchester.ac.uk/people/women-of-wonder)

Watch the stories of some of the women in our Faculty:

[www.mub.eps.manchester.ac.uk/science-engineering/2017/03/06/women-of-wonder](http://www.mub.eps.manchester.ac.uk/science-engineering/2017/03/06/women-of-wonder)



## Dr Katherine Joy

Dr Katherine Joy is a Royal Society University Research Fellow and Reader in Isotope Geochemistry and Cosmochemistry. She joined the University of Manchester in 2012. Katherine's work is at the front line of current planetary science research, and is focused on studying the geological history of the Moon by analysing the chemistry, mineralogy and age of lunar samples that were returned by the Apollo astronauts, as well as lunar meteorites found on Earth.

Katherine is involved in a science team for an upcoming robotic mission to the Moon. She is also a leader in a scientific expedition to Antarctica to collect meteorite samples. Undergraduates supervised by Dr Joy study samples of the Moon, Mars and asteroids in the lab, using a range of analytical techniques. Dr Joy also leads an undergraduate field trip to Germany, where planetary science students apply their taught knowledge of comparative planetary scale processes to a field example of an impact crater.



## Dr Vicky Coker

Dr Vicky Coker is a Lecturer in Environmental Mineralogy in the Molecular Environmental Science Group. Vicky joined the lecturing staff in 2013 and has strong links to our national synchrotron radiation facility – the Diamond Light Source – for her research. Vicky has previously held the L'Oréal For Women in Science Fellowship for her work investigating arsenic and uranium mobilisation in the subsurface by bacteria using X-ray microscopy.

Vicky's current focus is the security of supply of cobalt and how naturally occurring bacteria can affect potential metal deposits. An active member of the teaching staff, Vicky uses her research to guide her teaching of undergraduate students in Earth's resources and more specifically metal resources.

# Make your mark with Stellify

// I wanted to try something completely new. Transforming unused and overgrown land into areas where fruit and vegetables can be grown gave my volunteering an environmental focus.

Volunteering is a different experience from study. For me, as a chemical engineering student, it's enabled me to think outside my discipline, which by its nature is very technical.

Here at Manchester, volunteering is embedded in the very heart of the University's culture – there are so many opportunities to try something new, which in turn can have such a positive impact on our communities.

//  
**Alessia Xu**  
MEng Chemical Engineering  
with Industrial Experience

Read Alessia's story at:  
[www.manchester.ac.uk/make-your-mark](http://www.manchester.ac.uk/make-your-mark)

At Manchester you'll find a whole host of transformational academic and extracurricular activities to help you stand out and make your mark on the world. You could even prove your abilities to potential employers by gaining a prestigious award.

We call this process **Stellify**: to change, or be changed, into a star.

**Stellify** offers you opportunities to develop and grow at a university leading the way in social responsibility. Here's how.



## Learn without boundaries

Enjoy interdisciplinary, international and entrepreneurial study options outside your course.



## Understand the issues that matter

Become ethically, socially and politically informed on some of humanity's most pressing global issues.



## Make a difference

Contribute to and learn from local and global communities through volunteering.



## Step up and lead

Gain confidence and experience by assisting and inspiring your peers.



## Create your future

Explore countless opportunities for professional career development.

STELLIFY

[www.manchester.ac.uk/stellify](http://www.manchester.ac.uk/stellify)

# The University of Manchester

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This brochure was printed in 2019 for the purposes of the 2020 intake. It has therefore been printed in advance of course starting dates and for this reason, course information may be amended prior to you applying for a place. There are a number of reasons why changes to course information and/or published term dates may need to be made prior to you applying for a place – more details can be found on our website. Prospective students are therefore reminded that they are responsible for ensuring, prior to applying to study, that they review up-to-date course information by searching for the relevant course at:

**[www.manchester.ac.uk/undergraduate/courses](http://www.manchester.ac.uk/undergraduate/courses)**

Further information describing the teaching, examination, assessment and other educational services offered by The University of Manchester is available at:

**[www.manchester.ac.uk/undergraduate](http://www.manchester.ac.uk/undergraduate)**

**Royal Charter Number RC000797**