The Open University

Course Choice

Studying Science at The Open University

2006/2007

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Student comments are shown throughout this publication in blue tinted boxes.

Welcome

Studying science at The Open University (OU) will enhance your understanding of the world, and contribute to your intellectual and personal development. You'll be one of over 15,000 students studying science with us each year whose lives and careers are enriched with new skills and knowledge.

World-class teaching and research

The OU is consistently rated 'excellent' in national Teaching Quality Assessments, and whether you choose one of our short, introductory courses or a postgraduate programme, you'll benefit from the highest quality teaching.

The Faculty of Science hosts several internationally-acclaimed research groups, some of which focus on the traditional areas of biological science, chemistry, Earth sciences, physics and astronomy. We have a specialist Planetary and Space Sciences Research Institute and also collaborate with researchers in other faculties. Our Walton Hall headquarters are equipped with state-of-the-art laboratories. Here, our academic staff and graduate students work at the cutting edge of modern scientific research in areas such as neuroscience, volcano dynamics, cancer treatment, and global warming.

We also promote public understanding of science through our outreach work and media contributions, such as the BBC's *Rough Science* and *Coast*.

How to use this booklet

This booklet will help you plan your studies if you:

- are new to OU science study
- have completed, or are currently studying, our *Discovering science* (S103) course
- are currently studying at Level 2, and are now contemplating your Level 3 options
- are studying for career reasons – whether starting out, progressing or changing your career.

It provides you with a taster of the OU's science courses, and some guidance on study routes. Please also read the relevant course and qualification descriptions on our website at **www.open.ac.uk/courses**

You'll see that the booklet focuses on our degree programmes in geosciences, life sciences, molecular science, natural sciences and physical science, but these are not the only qualifications we offer. Each of those programmes offers a 130-point undergraduate diploma in the same name, and there is also a 120-point Diploma in Health Sciences (see page 31). In addition, we offer three 60-point certificates: a Certificate in Natural Sciences on successful completion of *Discovering science* (S103) (see page 4); a Certificate in Astronomy and Planetary Science on successful completion of *Astronomy* (S282) (see page 27) and *Planetary science and the search for life* (S283) (see page 10); and a Certificate in Contemporary Science on successful completion of six of our short 10-point courses (see page 5).

Science courses also feature in diploma and degree programmes such as environmental studies and psychology.

Our website contains full details of all the above.

Undergraduate study

Gaining an undergraduate qualification in science

Our science courses provide an integrated approach to learning, with each level building on the knowledge and skills you acquire at the previous level. If you're new to study, or to the OU, we strongly recommend starting with a Level 1 course, progressing to Level 2 courses before completing your studies at Level 3.

Level 1

At this level, the 60-point course *Discovering science* (S103) gives you the maximum support possible to develop the study skills that you'll need and to acquire a basic understanding of the knowledge that underpins the sciences. Other Level 1 options are also available (see Science short courses on page 5).

Level 2

Subject-specific courses build on Level 1 study, and provide you with more specialist skills and knowledge in your chosen subject area.

Level 3

Focusing on a specific area of your chosen subject, Level 3 courses build on Level 2 skills and knowledge. They require greater critical thinking and independent study, including literature research.

Project courses at Level 3

An essential part of all OU science degree programmes (with the exception of Life sciences) is a project course, where you research a topic that particularly interests you.

Current project courses are:

- *Geohazards* (SXG390)
- *Frontiers in chemistry* (SXM390)
- *Science in society* (SXN390)
- *Radiation and matter* (SXP390)

As well as receiving written guidance on planning, researching and conducting your work, you'll be assigned a tutor specialising in project support. With your tutor's assistance you will:

- identify a suitable project topic
- locate and critically review information
- submit a 5000-word report via three 'developmental' tutor-marked assignments (TMAs).

'…the project course is completely different from any other OU course, as it's very much about researching a cutting-edge topic yourself, rather than being taught. You have a tutor, but there are no face-to-face tutorials; online support via FirstClass conferences is very helpful though. You're much more in control of what you study, because you choose what you want to research…

You get a lot of guidance in study skills, choosing a research topic, how to read academic articles, conduct literature searches etc, and each TMA (there are three) helps you to focus on what is required for the final project itself.'

Are you ready?

Try a diagnostic quiz at www.open.ac.uk/science/learn/ayrf.htm to help you decide whether you're ready to start studying.

Planning your science studies

In broad terms, our honours degrees in science subjects are structured as follows. You'll see that there are slight but important variations between the requirements for each one. For full details please visit the OU website at **www.open.ac.uk/courses** and look up your chosen degree.

Geosciences (B25)	Life sciences (B28)	Molecular science (B26)	Natural sciences (B16)	Physical science (B27)	Level	Points	
All honours degrees require a minimum of 360 points from the courses below							
S103 + SXR103	S103 + SXR103	S103 + SXR103	S103 + SXR103	Choice of science, maths, technology + 1 x SXR or TXR	1	Minimum 70 Maximum 120	
Level 2 options + 1 x SXR	Level 2 options + 1 x SXR	Level 2 options + 1 x SXR	Level 2 options + 1 x SXR	Level 2 options + 1 x SXR	2	Variable depending on Level 1 and Level 3 options	**Diplomas** **All subjects 130 points 120pts from Level 2 or Level 2+3 PLUS 1 x SXR** **(no SXR for health sciences. See page 31)**
Level 3 options + 1 x SXR	Level 3 options + 2 x SXR	Level 3 options + 1 x SXR	Level 3 options (no SXR)	Level 3 options + 1 x SXR	3	Minimum 120	
Project	(no project)	Project	Project	Project			
Free choice					Any level. Variable points but maximum 60		

Please note: SXR and TXR courses are residential school courses.

Level 1

Level 1 courses equip you for studying for a diploma or honours degree in one of our undergraduate science programmes. You'll find typical study routes for all our programmes on page 3.

Starting with *Discovering science* (S103) will give you a firm foundation for future studies. S103, and its associated residential-school course *Practising science* (SXR103) is essential for all our science honours degree programmes, apart from physical science (where you can select from a wider choice of Level 1 courses).

Alternatively, you may find one of our science short courses is just the thing to ease you into OU study (see page 5).

Discovering science (S103) (60 points)

This fascinating course, which may well change your outlook on the world, explores awesome questions like:

- What happened when the Universe began?
- Why are some countries plagued with earthquakes and volcanic eruptions, while others suffer none?
- How does the evolution of plants and animals occur?
- What is meant by radioactive decay?
- How do drugs work?
- Might there be life elsewhere in the Universe?

You'll acquire a better understanding of planet Earth, including its materials and life-forms; the wider spheres of the solar system and our Galaxy; and the physical laws that govern all matter in the Universe. In addition, you'll develop study and other essential science skills, such as writing clearly, improving your maths and using information and communications technology (ICT).

Visit our S103 website at
www.open.ac.uk/science/discover/

Residential school course

Practising science (SXR103) (10 points)

This one-week residential school, which includes evening tutorials and workshops:

- introduces laboratory and practical fieldwork, and how to record, report and interpret data
- develops your confidence in working with a variety of laboratory and field equipment and techniques
- introduces literature and web-based research
- develops your team-working, problem-solving and oral-communication skills.

Working in science laboratories and at a field site with students who have similar interests to your own, you'll learn practical techniques across a range of science disciplines – biology, chemistry, Earth sciences and physics.

Science short courses

We offer a number of 10-point courses (mainly at Level 1) which will give you a taster of different areas of science, and which will complement your other studies.

Recommended choices for those interested in science but new to OU study include:

Studying mammals (S182)

Understanding human nutrition (SK183)

Human genetics and health issues (SK195)

These three provide most advice on study skills, but the following could also be good starting points:

Life in the oceans: exploring our blue planet (S180)

Fossils and the history of life (S193)

Introducing astronomy (S194)

Planets: an introduction (S196)

If you've already studied an OU science course, there are other short courses that might interest you.

You'll find full details of all our science short courses at www.open.ac.uk/science/short

Choosing the right science programme for you

If you've taken *Discovering science* (S103) and completed your Level 1 studies, the following may help you decide which science subject to focus your future studies on.

- **Chemistry**

  Do you enjoy learning about chemical elements; drug design; the structure and shapes of molecules; and why reactions occur? In *The molecular world* (S205) (60 points), and its associated residential school course *Exploring the molecular world* (SXR205) (10 points), you'll learn about molecular shape; reaction mechanisms; thermodynamics and much more by studying organic, inorganic and physical chemistry. You'll also be able to practise what you learn in laboratory experiments.

  Recommended programme: molecular science

- **Geology**

  Are you interested in the Earth's structure, why volcanoes and earthquakes occur, how plate tectonics have shaped the Earth, or the structure and geological history of rocks and minerals? *Geology* (S260) (30 points), and its associated residential school course *The geological history of the British Isles* (SXR260) (10 points), enable you to find out more about these processes. You'll also carry out fieldwork to learn about geological mapping and structural geology through the examination of sedimentary, igneous and metamorphic rocks. *Earth's physical resources: origin, use and environmental impact* (S278) (30 points) or *Our dynamic planet* (S279) (30 points) may also appeal to you.

  Recommended programme: geosciences

- **Biology**

  If you enjoy studying ecology, evolution and genetics, you might consider:

  Biology: uniformity and diversity (S204) (60 points), and its associated residential school course *Investigative biology* (SXR270) (10 points), where you'll study microbes, plants and animals, through examining the processes that occur at the chemical, cellular and whole organism level. In *Human biology* (SK277) (30 points) you'll learn about anatomy, physiology and the biological basis for health. *Health and disease* (U205) (30 points) explores how medicine, biology, sociology, history, economics, politics and statistics all contribute to worldwide health issues. *Biological psychology: exploring the brain* (SD226) (30 points) will take you into the behavioural and psychological sciences.

  Recommended programme: life sciences, health sciences or psychology

- **Astronomy and planetary science**

  If you're fascinated by Earth's place in the Universe, planetary formation and the conditions for life you may wish to consider *Astronomy* (S282) or *Planetary science and the search for life* (S283) (30 points each), and their associated residential school course *Observing the Universe* (SXR208) (15 points). These focus on solar systems, planetary accretion, the origin and evolution of stars, galaxies and the Universe. Held at an observatory in Mallorca, SXR208 gives you the opportunity to carry out project work in astronomy and planetary science.

  Recommended programme: geosciences or physical science

Are you ready?

Our diagnostic quizzes at www.open.ac.uk/science/learn/ayrf.htm can help you decide whether you're ready to start studying beyond Level 1.

- ### Environmental science

  Interested in global warming, water resources, pollution and conservation? *Environmental science* (S216) (60 points), and its associated residential-school course *Environmental science in the field* (SXR216) (10 points), cover topics such as habitats, flora, fauna, the chemical and physical weathering of rocks. S216 uses multimedia interactive virtual field trips to observe habitats and gather data. SXR216 involves practical work, such as testing water quality and soil types.

  Recommended programme: geosciences, natural sciences or environmental studies

- ### Physics

  If you'd like to learn more about energy, the behaviour of light, radioactive decay and Universal processes consider *The physical world* (S207) (60 points), and its associated residential school course *Physics by experiment* (SXR207) (10 points). S207 focuses on these and other universal topics such as classical mechanics, waves, electromagnetism, relativity and quantum physics, and SXR207 includes practical experiments in a physics laboratory.

  Recommended programme: physical science

- ### Natural sciences

  If you enjoyed all the science in our Level 1 course *Discovering science* (S103), or are unsure which science discipline you want to focus on, our new multidisciplinary and interdisciplinary course *Science in context* (S250) may interest you. Study this either as part of the natural sciences programme or to count towards any of the other science programmes. Course topics include: BSE/vCJD; near-Earth objects and the impact hazard; medicinal plants; climate change; genetic manipulation; and nanotechnology. These topics – and their associated themes of communication, risk, ethical issues and decision making – are particularly relevant to modern society.

  Recommended programme: natural sciences

Other programmes

Our science courses link well with, and can also be counted towards, some of our other degrees that might interest you, including:

BA/BSc (Hons) Environmental Studies

Our environmental studies programme enables you to develop a broad understanding of the relationship between human activity and environmental effects, and of the principles of sustainability. You'll recognise the effects of large-scale human activities (such as agriculture, resource extraction, energy supply, transport and urbanisation) on natural and modified ecosystems, and the options for managing them. You'll be able to bring together skills from science, technology and social science to investigate and analyse environmental issues that you meet in your life or work, and to advocate changes in management and policy.

Environmental studies graduates are found working in public, voluntary and private sector occupations, such as environmental management, environmental policy and information systems.

BA/BSc (Hons) Psychology

Our psychology degree programme will help you to develop the skills you need to understand ideas, theories, methods and debates in psychology; be able to analyse and evaluate psychological concepts and theories; and to assess different kinds of evidence including quantitative and qualitative data.

Psychology graduates have skills and knowledge relevant to careers in education, industry, the health professions, management and social services. This degree entitles you to recognition by the British Psychological Society for the Graduate Basis for Registration (GBR).

Boosting your maths skills

If you want to take a Level 2 course that involves working with numbers, it may be helpful to brush up your maths skills first with our 10-point course Maths for science (S151). All science students find this useful, but it's particularly helpful if you want to study physical science.

BEST TAKEN AFTER S103

Download the quiz from www.open.ac.uk/science/short to assess whether S151 is for you.

A look through our Level 2 and Level 3 courses

This section of the brochure focuses on courses and study routes for our honours degrees. Bear in mind, though, that in all programmes we also offer undergraduate diplomas and sometimes certificates. For details of these please see the OU website at **www.open.ac.uk/courses**

Geosciences

Our geosciences degree programme will develop your understanding of the processes that shape the Earth, its atmosphere and similar planetary bodies. You'll become familiar with scientific methodologies and techniques, and gain an appreciation of both the limits of scientific knowledge and its impact in society.

You can mix and match your courses to give you a broad overview of the geosciences, or you can specialise in particular areas as in the examples shown below.

We recommend that you only attend a residential school course if you're already studying, or have studied, its related 30-point course.

In all cases, you must study *Science project course: geohazards* (SXG390). However, we recommend that you leave this until the end of your degree, when you have completed at least 60 points of other Level 3 courses.

To focus on **Earth sciences** you should include:

Level 2

- S260 and SXR260
- any two of S278, S279, S267 (which was last presented 2005), S269 (last presented 2006)

We recommend starting Level 2 with either S260 or S278.

Level 3

- at least 90 points from S330, S339, S366 or S365 (which was last presented 2005), S369
- either SXR339 or SXR369
- SXG390

To focus on **environmental sciences** you should include:

Level 2

- S216 and SXR216
- any two of S260, S278, S279, ST240 (which was last presented 2005), S269 (last presented 2006)

We recommend starting Level 2 with either S216 or S278.

Level 3

- at least 90 points from S328 (last presented 2006), S369, S330, S366
- SXR369 (unless you have attended the residential school for S328)
- SXG390

To focus on **planetary sciences** you should include:

Level 2

- S283, SXR208, S279 or S267 (last presented 2005), S269 (last presented 2006), S281 (last presented 2002)

We also suggest S282 as a 'free choice' course.

Level 3

- S330 and S369
- SXR369
- SXG390

Level 2 Geosciences courses

Geology (S260) (30 points)

This is a practical introduction to a fascinating subject. Together with four high-quality course books and multimedia DVDs, you'll use a home kit containing minerals, rocks, fossils, a polarising microscope, rock samples and geological maps for your studies. You'll also have the opportunity to attend tutorials and at least one field trip.

- The first book teaches you how to read and interpret geological maps, and how an area's underlying geology influences its landscape.
- The second book introduces minerals and rocks. You'll discover how to identify and describe them, and interpret how they may have been formed.
- The third book focuses on volcanoes and other dynamic processes that affect the Earth's crust.
- The fourth book introduces modern-day sedimentary processes that affect the Earth's surface, and looks at how these and fossils may be used to study past environments.

'A very practical course that related well to the world around us. I became a bit of a rock bore when we took a holiday in a desert area last year. My photo album is full of pictures of rocks. A stepping stone to a lifelong interest I feel.'

'You will look at things differently. As you pass buildings, walls, rocks, mountains, pavements etc. you think, "I know how that was formed".'

Environmental science (S216) (60 points)

This course is for those with an active interest in the environment. Covering modern-day processes and interactions, it draws together biology, chemistry, Earth science and physics in a holistic approach. Two multimedia interactive virtual field trips on DVD-ROM enable you to explore an area visually, observe habitats, gather data, and analyse your observations in the comfort of your own home.

By the end of the course you'll be able to:

- 'lead' a group of students through a new virtual environment
- make critical analyses of landform, soils and water flows
- identify habitats of flora and fauna
- comment on human influences and their likely environmental consequences.

'S216 gave me a great overview of many environmental and wider scientific topics. It also gave me a very good start in using spreadsheets and statistics. The content on the DVD-ROM was terrific at bringing topics to life.'

Planetary science and the search for life (S283) (30 points)

This course tackles fundamental questions such as:

- How did the solar system form and how has it evolved?
- Why aren't all the planets like Earth?
- How and why did life arise on Earth?
- Has life arisen elsewhere in the solar system or beyond – could it be intelligent?

The course covers exploration of the solar system by spacecraft; planetary processes such as volcanism and impacts; the structure of planets and their atmospheres; and asteroids, comets and meteorites. Although it's intended for people with a general interest in the planets, you'll need a background in science. For practical experience in astronomy and planetary science, you might also like to consider our associated residential school course SXR208 (see page 27).

'I found this an excellent course and very topical. The books were well presented and topics carefully explained. One particular aspect that I enjoyed was the breadth – it covered Earth sciences, some physics, chemistry and biology. Even if you are not interested in one of these, the course makes them both interesting and understandable.'

Earth's physical resources: origin, use and environment (S278) (30 points)

Everyday life and the fabric of modern civilisation depend on the Earth's physical resources: water to drink; fuel to burn; rocks and minerals to build roads and houses; metals for machinery; electronics and communications. This course explores:

- the origins, occurrence, availability, exploitation and sustainability of these essential resources
- how to find and extract them
- the environmental consequences of exploitation, including lessons from the past and expectations for the future.

Our dynamic planet (S279) (30 points)

The first half of this course is based on the book, *Our Dynamic Planet* and investigates:

- the solid Earth, or geosphere
- its place in the Solar System
- the processes that have shaped it in the past, and continue to shape it today.

The second half of the course is based on the book, *Earth and Life* and examines:

- the interactions and feedbacks between the atmosphere, hydrosphere, geosphere and the biosphere
- how the Earth's surface environment is a complex interplay between these components, and the variable timescales on which these interactions take place
- the astronomical controls of climate change and how they are recorded in sedimentary rocks, and the interaction between mountain building, erosion and climate change.

Residential school courses

The geological history of the British Isles (SXR260) (10 points)

This residential school course involves field trips to a variety of sites of geological interest. Laboratory sessions provide the opportunity to put into practice the skills that you develop in S260 – identifying and interpreting rocks, fossils and geological structures.

An accompanying book briefly outlines the geological history of the British Isles, with special emphasis on the area you visit during the residential week. Wherever you live in the British Isles, you should find something of interest related to the geology of your local area.

'The best summer school ever! Finally all the information in the course books for S260 fell into place. Bring good walking boots and waterproof clothing and be prepared to see some geologically interesting sites.'

Environmental science in the field (SXR216) (10 points)

This course enables you to practise in real life the skills you acquire on S216. You can choose from a number of sites where you'll be able to study interactions and feedback in the environment, including landforms, soils, water and vegetation. During the days you'll undertake field exercises in observation, sampling, recording, measurement and mapping. In the evenings you'll analyse field samples in a laboratory, interpret your data and observations, and take part in group discussions.

'A superb course combining practical skills with theoretical elements of environmental science. The field work helped highlight many of the key elements I had studied in S216 and helped me understand later parts of the course too. The team project was challenging and interactive bringing the week to a great conclusion! A very beautiful setting – highly recommended.'

Observing the Universe (SXR208) (15 points)

See page 27.

Level 3 Geosciences courses

Oceanography (S330) (30 points)

Oceanography will help you answer questions such as: Is the sea level really rising? Why are there hot springs in the deep sea? Why did a patriotic Briton try to prove that Rockall was inhabitable?

Oceanography is a 'whole Earth' science, for the oceans continuously interact with the solid Earth and the atmosphere, and are the setting for much of the planet's biological production. This course integrates the Earth sciences, physics, chemistry and biology – their interrelationship in the marine environment being the essence of oceanography.

It will help you explore subjects such as underwater volcanoes, the greenhouse effect, eddy systems in the ocean, and the El Niño phenomenon, and understand the global view of ocean properties that satellite technology can provide.

'A really nice course. It's something to really get your teeth into, and I can understand why the four course volumes are published commercially they're really interesting, beautifully laid out, well-written, succinct, even witty at times! You can feel how much planning has gone into the course preparation and the result is a satisfying read of a fascinating topic. Lots of fun!'

Understanding the continents (S339) (30 points)

Here you'll examine crustal evolution in contrasting environments. The course covers:

- plate-tectonic processes, including the East African rift system and Iceland as examples of extensional regimes
- subduction zone processes and the Tibetan mountain range, the Himalayas and the Scottish Highlands as examples of collisional processes
- the tectonic and magmatic framework of Britain.

S339 is offered in alternate, even-numbered years, i.e. 2006, 2008, 2010.

We strongly encourage you to take the accompanying residential school course SXR339 (see page 13).

'This is a really excellent course for understanding how the continents are the way they are. The approach of explaining principles in a current setting and then relating it to the evolution of the British Isles is particularly interesting.'

Evolution (S366) (30 points)

This new course explains the key concepts of evolutionary science and investigates how these account for the characteristics of living organisms and the history of life on Earth. Using information from the living world and fossils, you'll learn how:

- natural selection and other evolutionary processes produce changes in genes and populations over different timescales
- new species originate
- large-scale evolutionary patterns are generated.

You'll also explore the reconstruction of evolutionary relationships, and the ways in which humans influence the evolution of other species.

The geological record of environmental change (S369) (30 points)

In this course you'll explore:

- the exciting concept of sequence stratigraphy
- the greenhouse world of the Cretaceous, examining tropical/subtropical marine environments; high latitude terrestrial environments and the extent and effect of large igneous provinces and meteorite impacts; and the mass extinction event at the end of the period
- the Ice Age and the possible causes of the natural climatic changes during the last 2.6 million years.

We also recommend you take the accompanying residential school course SXR369, where you can put into practice your knowledge and skills in the area of sequence stratigraphy.

S369 is offered in alternate, odd-numbered years, i.e. 2007, 2009, 2011.

'I enjoyed this course, and found it easy to read. I did struggle with some of the stratigraphical analysis questions in the TMAs at first, but if you can get onto the residential course connected with S369 (SXR369) in the same year as you take S369, the tutors there will explain the concepts clearly.'

Residential school courses

The geology of Scotland (SXR339) (10 points)

In this course you'll investigate the origins, growth and demise of the Scottish Highlands formed more than 400 million years ago. It's primarily a residential school course, based at a field-studies centre near Pitlochry, and includes trips to the deformed rocks of the Dalradian basin, the Caledonian granites, and the Highland Border Complex.

The course provides the practical fieldwork and laboratory experience you'll need for a geosciences degree. It will be particularly valuable if you're interested in the formation of igneous, metamorphic and structurally complex rocks.

SXR339 is offered in alternate, even-numbered years, i.e. 2006, 2008, 2010.

We recommend you only attend this course if you're studying, or have already studied, *Understanding the continents* (S339).

'This was a fantastic summer school and really helped bring everything together from the text - and Kindrogan is a great place as long as you like basic accommodation! I can thoroughly recommend this course.'

Environmental change: the record in the rocks (SXR369) (10 points)

This residential-school course provides the practical fieldwork and laboratory experience you'll need for a geosciences degree. It builds on knowledge and skills of sequence stratigraphy developed in *The geological record of environmental change* (S369). The programme focuses on field trips to localities in north-east England, including some spectacular coastal areas. You'll also have the chance to work in the laboratory, attend evening tutorials and work on group exercises.

We recommend you only attend this course if you are studying or have already passed S369.

SXR369 is offered in alternate, odd-numbered years, i.e. 2007, 2009, 2011.

'The locations on this course had some spectacular geology and were very interesting. Taking this course in the same year as S369 would be very beneficial as it makes a lot of the coursework much clearer when you can actually see how things work in the field. I was not looking forward to the group exercises, but this proved to be very rewarding and I felt I gained a lot from being part of a small group working together. I have been to six Summer Schools in the course of my degree, and this was one of the best.'

Don't forget the Project course!

Project course

Science project course: geohazards (SXG390) (30 points)

Conduct your own investigation into a contemporary topic in geohazards:

- atmospheric and hydrologic hazards
- earthquakes
- landslides
- meteoric impacts
- volcanoes
- tsunami

For more information on the structure of the project course, see page 2.

Related courses

Geosciences courses link well with and can count towards programmes which include astronomy (see S282 on page 27) and environment courses.

The environmental web (U316) (60 points)

This is an interdisciplinary Level 3 course that can be counted towards a range of programmes: geosciences, life sciences, natural sciences and environmental studies. It examines contemporary issues such as biodiversity and climate change, and equips you to take part in informed debate and action and environmental studies.

You'll learn how to navigate, analyse and evaluate environmental information published on the web and use this to implement policy, debate issues and promote views.

Some knowledge of the environment is assumed. Much of the course teaching and assessment is online and you need to complete certain online discussions and collaborative activities in particular weeks. Go to **www.open.ac.uk/courses** for full details and also to **www.open.ac.uk/science/env-web/** for a 'taster' of the course.

Life sciences

Our life sciences programme will help you to understand a range of complex and diverse life processes and mechanisms, from molecular to cellular and from organism to ecological levels of organisation. The programme's interdisciplinary approach will enhance your appreciation of how scientific knowledge develops, its limits, and its impact on society.

Recommended route through the life sciences courses

Level 1	S103 (60) (C)	SXR103 (10) (C)	SK120 (15)
Level 2	S204 (60)* SK277 (30)*	SXR270 (10) (C) U205 (60) (last presented 2007)	SD226 (30)*
Level 3	S320 (30)* SD329 (30)* SXR376 (15)	S366 (30)* SXR374 (15)	S377 (30)* SXR375 (15)

- Numbers in brackets e.g. (60) indicate the number of credit points.
- (C) indicates a compulsory course for the BSc (Hons) Life Sciences degree.
- * Indicates that you must choose at least 60 points from these Level 2 courses, plus at least 60 points from the Level 3 courses.
- At Level 3 you must take at least two of the three SXR courses (residential-school courses), giving a total of four SXR courses for the degree.
- SK120 is described under *Health sciences* on page 31.

Study routes to the BSc (Hons) Life Sciences

Beyond Level 1, you can choose the combination of courses that interest you most to make up your degree. However, you must include *Discovering science* (S103), *Practising science* (SXR103), *Investigative biology* (SXR270) and two residential schools at Level 3.

Some discontinued courses, such as *Biology: brain and behaviour* (SD206), *Human biology and health* (SK220), *Animal physiology* (S324), *Ecology* (S328) and *Evolution* (S365), may also count towards your life sciences degree.

Life sciences (molecular and physiological bias at Levels 1, 2 and 3)

Biology: uniformity and diversity (S204)

Animal physiology (S324) (last presented in 2005)

Molecular and cell biology (S377)

Fat – the physiology of adipose tissue (SXR374)

Molecular basis of human disease (SXR376)

Other related courses:

Infectious disease (S320)

Signals and perception: the science of the senses (SD329)

Human genetics and health issues (SK195)

Life sciences (ecology and evolution bias at Levels 1, 2 and 3)

Biology: uniformity and diversity (S204)

Ecology (S328) (last presented in 2006)

Evolution (S366) (first presentation is in February 2007)

Plants, pigments and light (SXR375)

Other related courses:

Maths for science (S151)

Life in the oceans: exploring our blue planet (S180)

Environmental science (S216)

Earth and life (S269) (last presented in 2006)

Explaining the emergence of humans (S292) (last presented in 2004)

Oceanography (S330)

The environmental web (U316)

Please note: U316 (60 points) contributes 30 points to life sciences.

Life sciences (health bias at Levels 1, 2 and 3)

Infectious disease (S320)

Biological psychology: exploring the brain (SD226)

Signals and perception: the science of the senses (SD329)

Human biology (SK277)

Fat – the physiology of adipose tissue (SXR374)

Molecular basis of human disease (SXR376)

Other related courses:

Animal physiology (S324) (last presented 2005)

Molecular and cell biology (S377)

Diabetes care (SK120)

Understanding human nutrition (SK183)

Human genetics and health issues (SK195)

Health and disease (U205) (last presented 2007)

Level 2 Life sciences courses

Biology: uniformity and diversity (S204) (60 points)

This is an excellent choice if you're interested in molecular or whole-organism biology. The course focuses on the astonishing diversity of forms that develop from just a few basic life processes, and reflects modern biology by exploring areas where research is developing rapidly.

You'll have opportunities to carry out experiments at home and learn from interactive multimedia DVDs. For example, you'll extract information for assignments from the *Guide to Living Organisms* and *Digital microscope* searchable libraries of data and images. Other program subjects include: cell energy metabolism; microbes as chemical 'factories'; and pollination mechanisms.

'Just enjoy it; it is a fantastic course. It did sometimes feel a bit overwhelming because there were so many subjects covered but I liked almost all of them. The exam does give you some scope to 'specialise' and of course it lets you find out which bit is 'your thing'. Fab course, sometimes wish I could do it again.'

Biological psychology: exploring the brain (SD226) (30 points)

This presents an integrated, interdisciplinary approach to the brain, behavioural and psychological sciences, and the relationships between them. It asks questions such as: What do biologists and psychologists mean by consciousness? How do we study the brain? What is schizophrenia?

The course covers:

- the role of observation and experimentation
- how to formulate hypotheses, plan and carry out investigations, and manipulate data
- how to carry out investigations of your own.

Please pay special attention to the entry advice for this course description at **www.open.ac.uk/courses** before registering.

Human biology (SK277) (30 points)

This course will appeal if you have a background in biology, are interested in health, or work in healthcare and social care. It deals with health and disease, drawing on the disciplines of anatomy, physiology, immunology, biochemistry and endocrinology. It differs from traditional human biology courses in that it presents facts and figures as a functional account.

Multimedia course materials include a CD-ROM about body fluid balance; an audio sequence on stress; and a video about reproduction, entitled *Able-bodied semen*.

'I really loved it, very basic and easy to read material, a nice follow on from S103. I have to say though that without S103 I would have struggled; it does presume a bit of previous knowledge.'

If your main interest is human sciences then *Biological psychology: exploring the brain* (SD226) and *Human biology* (SK277) is a rewarding course combination.

Residential school course

Investigative biology (SXR270) (10 points)

This one-week residential school builds on *Practising science* (SXR103) and prepares you for life sciences study at Level 3. Complementing any of our Level 2 biology courses, it covers three themes:

- *Regulation and Control* investigates how respiratory and cardiac activity is controlled in humans, and how we maintain constant levels of blood sugar
- *Energy* looks at how substrates derived from food are converted to useable energy; adenosine triphosphate (ATP) production; and how ions are transported across the gut wall in the larvae of the tobacco hornworm moth
- *Plants and Carbon Dioxide* investigates how carbon dioxide is taken up and used by plants.

'I enjoyed it absolutely, the Regulation and Control theme most of all. If Level 3 summer schools are half as good as this one I will be very happy.'

Level 3 Life sciences courses

At Level 3 you can concentrate on the particular area of life sciences that interests you most. However, to qualify for your degree you need at least 60 points from the following Level 3 courses:

- *Infectious disease* (S320)
- *Evolution* (S366)
- *Molecular and cell biology* (S377)
- *Signals and perception: the science of the senses* (SD329)

Infectious disease (S320) (30 points)

A fascinating course exploring the relationship between the causes and control of diseases and biological information in a particular social context. You'll learn about:

- the biology of disease agents and how they interact with their human hosts
- the extraordinary responses of the human immune system
- the evolution of the interactions between humans and pathogens, and changes in the incidence of diseases
- various strategies for combating disease.

Case studies of globally important diseases illustrate the biological concepts.

'I really enjoyed this course. The books are great, as are CD-ROMs. Very informative and very up-to-date. One warning – be prepared for a lot of internet work. The workload was not too high and I found it very evenly spaced throughout the year. I had already completed S204 and I think that this was a big advantage as those without prior biology courses had a lot of background reading to do. I'd recommend it to anyone interested in this field.'

Evolution (S366) (30 points)

Dealing broadly with biological and palaeontological aspects of evolution, this course will be particularly rewarding if you're interested in whole organism biology or Earth sciences.

The course is based on the book *Evolution* by Douglas J. Futuyma (Sinauer, 2005) and a short OU book *Contemporary Evolution*. A companion text guides you through the course books and provides links to exercises and assignments. As well as videos and analytical software on DVDs, you'll also be provided with:

- an interactive package and tree-building software to learn how evolutionary relationships are reconstructed
- a multimedia case study on the evolution of plumage in dinosaurs and birds
- home kits and guides for practical investigations, e.g. an exercise based on a set of plaster replica fossil shells.

We recommend you complete *Biology: uniformity and diversity* (S204) before studying S366, as it will provide you with useful grounding in biodiversity, cell and molecular biology.

Molecular and cell biology (S377) (30 points)

Combining biological and life chemistry, this course explores the relationship between complex life processes and the underlying molecular biology. It includes some material on plants and micro-organisms, but concentrates primarily on animal cells. You'll develop knowledge and skills in relation to:

- molecular biology, cell function and ageing, and tumorigenesis
- reading and understanding scientific literature
- observation and virtual experimentation of complex cellular functions
- molecular modelling software for studying and manipulating proteins and nucleic acids.

We recommend studying *Biology: uniformity and diversity* (S204) or an equivalent course before embarking on S377. You may find the S204 Book 3 *The Core of Life Volumes I and II* useful background knowledge. A fundamental knowledge of chemical concepts, as covered in S103, is assumed.

'… it is very challenging. BUT it really feels like a final year university course. A lot of other courses I found more 'entertaining', but I still think this course is very interesting. One positive thing is if you get through this course you can be proud of yourself and will be equipped to work in this field and understand complex research papers.'

Signals and perception: the science of the senses (SD329) (30 points)

This course, which focuses on the latest thinking in this specialist area, will appeal if your main interests are human biology and health. It explores how advances in biochemistry, biophysics and molecular biology have transformed our understanding of how we experience the world through our senses: hearing and balance, vision, touch and pain, and smell and taste.

The material is divided into seven blocks and a reader comprising 29 specially commissioned chapters. After a one-week general introduction, the second block explores the sensory nervous system. Subsequent blocks expand on this and deal with the various senses in turn.

Our Level 2 courses *Biological psychology: exploring the brain* (SD226) and *Human biology* (SK277) provide an ideal preparation for SD329.

Residential school courses

For your life science degree, you must complete at least two of the following three residential school courses: SXR374, SXR375 or SXR376. You can count all three if you want. For each of these courses you'll need to do some preparatory studies including a virtual experiment introducing you to the principles of experimental design, some analysis and interpretation of results, and reading up on project theories.

Fat – the physiology of adipose tissue (SXR374) (15 points)

You'll investigate the physiology of both brown adipose tissue (BAT) – the basis for non-shivering thermogenesis (NST) – and white adipose tissue (WAT). NST is an adaptive response to cold exhibited by some mammals, especially rodents.

Experimental work will give you an understanding of the physiological and biochemical bases of BAT and WAT, and valuable experience of investigative techniques. You should also be able to draw conclusions about the effect of cold adaptations on rats, based on shared project results.

Every effort is made to restrict the number of animals used for experiments. However, students preferring not to use mammals for experiments are advised not to take this course.

'I had a wonderful time doing SXR374. Everyone is so friendly and hard working/keen, and all the teachers are helpful.'

Plants, pigments and light (SXR375) (15 points)

In this predominantly practical course you'll look at plant pigments and the response of photosynthesis to environmental stress using microalgae.

You'll learn some of the laboratory skills required for an experimental study of how plants adapt to their environment, and also design your own experiments to test a hypothesis.

'In a word - brilliant! I really enjoyed both the pre-reading and the experiments. (I realise this will get me the sad student of the year *award, but never mind!) The experiments seemed to be easy to understand but very well thought out. I loved the graphics; it certainly made it feel like you were doing a real experiment. The only complaint I have is that the CD-ROM was addictive and we ended up eating very late in the evenings whenever I went onto the computer. "I'll just do an hour on the plant CD" usually ended up turning into about three hours without me noticing!'*

Molecular basis of human disease (SXR376) (15 points)

In this new course (first presentation in May 2006) you'll investigate:

- how variation or mutation at the gene level affects protein function
- whether such alteration accounts for increased or decreased susceptibility to disease or infection.

You'll use a variety of molecular biology techniques (such as DNA isolation, polymerase chain reaction (PCR) and DNA gel electrophoresis) to study specific genetic variations found in human cells. You'll also investigate the consequences of any variation or mutation upon protein function, using sodium dodecyl sulphate polyacrylamide gel electrophoresis (SDS PAGE), western blotting and immunocytochemical techniques.

Through this combination of study at the genetic, protein and cellular level, you'll gain an understanding of how variation or mutation in genes can be identified.

Related courses

Life sciences link well with and can count towards some of our health sciences, environmental sciences and psychology degree programmes. For more information, visit **www.open.ac.uk/courses**

Molecular science

Our modern lifestyle would not be possible without an appreciation of what goes on at the molecular level. Atoms combine in millions of different ways to form molecules, ultimately creating the Universe we live in. Being able to design and prepare new classes of molecules is producing dramatic breakthroughs in areas such as materials science and medicine. Modern analysis methods are also used to solve problems in forensic science, the environment and food safety.

Our Molecular Science programme is aimed at developing your understanding of the science that takes place at the atomic and molecular scale. You can read more about our wide range of chemistry (or chemistry-based) courses at **www.openuniversity.co.uk/programme/molecular-science** where you'll also find useful information about related careers.

Recommended route through the molecular science courses

Level 1	S103 (60) (C)	SXR103 (10) (C)	
Level 2	S205 (60) (C)	SXR205 (10) (C)	
Level 3	S342 (30)* S377 (30)* SXR344 (10) (first presentation in May 2007)	S343 (30)* SXR342 (10) SXM390 (30) (C)	S344 (30)* SXR343 (10)

- Numbers in brackets e.g. (60) indicate the number of credit points
- (C) indicates a compulsory course for the BSc (Hons) Molecular Science degree
- * indicates that you must choose at least 60 points from these Level 3 courses
- at Level 3 you must take at least one of the SXR courses, giving a total of three SXR courses for the degree.

S343 and S344 run in 2007, while S342 and S344 run in 2008, and S342 and S343 run in 2009 and so on.

The corresponding SXR residential courses run in the same pattern e.g. SXR343 and SXR344 run in 2007.

Study routes to the BSc (Hons) Molecular Science

You can follow your particular areas of interest in molecular science. For example, if biological and life chemistry fascinates you, a good combination would be *Organic chemistry: a synthesis approach* (S344) and *Molecular and cell biology* (S377). If you prefer the physical and materials aspects of chemistry *Physical chemistry: principles of chemical change* (S342) and *Inorganic chemistry* (S343) would be suitable choices. For a more central view of the molecular sciences, consider S343 and S344. Studying all four courses would stand you in good stead to pursue molecular science at a higher level.

You should only study our Level 3 courses S342, S343 and S344 once you've studied our Level 2 course *The molecular world* (S205).

And don't forget, the project course SXM390 is an essential part of the molecular science degree.

Level 2 Molecular science courses

The molecular world (S205) (60 points)

Integrating the three main branches of chemistry – organic, inorganic and physical – this course offers a wide-ranging introduction to chemistry and its applications. You'll learn about:

- bonding and the shapes of molecules
- why reactions occur, and how fast they proceed
- the chemistry of the main group elements of the Periodic Table (s- and p-blocks)
- the structure of solids
- the preparation of organic compounds
- structure determination by spectroscopic methods.

To put the subject in context, nine case studies will introduce you to topics of current interest, including catalysis, drug design, liquid crystals and forensic science. You'll also find out how chemicals are manufactured for industry, and the social and economic implications of large-scale production.

Go to www.open.ac.uk/courses/tasters/S205/ for a 'taster' of the course.

'S205 is a demanding but wonderful course. The books are clearly written, with many exercises for practice, and beautifully and profusely illustrated. The multimedia materials offer wonderful help, from virtual lab sessions and videos of experiments to interactive questions. I wouldn't have missed it for the world. It is an exciting, dynamic exploration of chemistry and provides a good stepping-stone to any of the Level 3 chemistry courses.'

Residential school course

Exploring the molecular world (SXR205) (10 points)

On this course you'll gain essential and first-hand experience of experimental laboratory techniques. In the four laboratory activities you will:

- investigate dichromate-chromate-hydrogen chromate equilibria using ultraviolet/visible spectroscopy
- measure the rate of a reaction using ultraviolet/visible spectroscopy
- learn about standard laboratory techniques such as solvent extraction, recrystallisation, thin-layer chromatography and infrared spectroscopy, which you'll employ in the preparation of an analgesic or an azo dye
- study the reactions of halogens, prepare a polyhalide and identify it by using volumetric and gravimetric techniques, and ultraviolet/visible spectroscopy.

You'll attend evening workshops, including sessions on maintaining your laboratory notebook that you submit for assessment at the end of the course. Prior to the course you'll be asked to draft a poster for a group discussion with fellow students and tutors, before submitting the final version at the end of the course. An SXR205 FirstClass online conference enables you to discuss the course with other students and tutors, both before and after the residential week.

The course complements and builds on the chemistry knowledge of our Level 2 S205 course, so you'll benefit if you can study S205 and SXR205 in the same year.

Level 3 Molecular science courses

Physical chemistry: principles of chemical change (S342) (30 points)

This links a number of aspects of chemistry under the general theme of 'chemical reactivity'. In the early part of the course you'll learn about thermodynamics, kinetics and catalysis, with a specific focus on enzymes. You'll then look in more detail at the chemistry of surfaces, including how modern physical methods provide us with information about how atoms and molecules stick to different surfaces, and their behaviour once they are attached.

The final two blocks cover electrochemistry, a vital component of numerous and diverse industries. You'll also study three unit-length topics; atmospheric chemistry; control of pollutants in car exhausts; and corrosion.

To take S342 you'll need basic mathematical skills, in particular algebraic manipulation. These skills are introduced at Level 1 and put into practice in S205.

S342 runs in 2008, 2009, 2011 and 2012.

'A Level 2 inorganic chemistry course is a must before attempting Level 3 Physical chemistry, especially in the thermodynamic aspects of chemical reactions.'

Inorganic chemistry (S343) (30 points)

This takes a close look at the elements of the d- and f- blocks. The early part of the course covers the chemistry and structure of transition metal complexes, and introduces you to bonding models.

You then focus on organometallic chemistry (including catalysis), solid-state chemistry (covering such topics as superconductors and magnetic materials), and bioinorganic chemistry (including oxygen transport in the body, iron transport and storage, and the biological role of zinc).

The course concludes with a look at the chemistry of the f-block (the lanthanides and actinindes) including nuclear-fuel reprocessing. You'll develop your knowledge of Nuclear Magnetic Resonance (NMR) spectroscopy and how it can be applied to a much wider range of nuclei than you would have studied in our S205 course.

S343 runs in 2007, 2009 and 2010.

'It is very challenging and it pays to be prepared. Bearing that in mind it is extremely rewarding and it is courses like this that give OU degrees their great reputation.'

Organic chemistry: a synthesis approach (S344) (30 points)

This course focuses on an activity that is central to a large part of the chemical industry – that of designing viable synthetic routes to target organic molecules, having properties that render them useful – for example, new drugs or pest-control agents. The importance of this topic is highlighted by headlines such as:

'Histamine discovery could help insomniacs'

'Malaria vaccine may be close'

'Sex lure keeps tabs on crop pests.'

The course begins by introducing you to a range of organic reactions. You then consider modern separation procedures and methods of structure determination. Four case studies show how the principles of synthesis can be employed to important groups of compounds (pheromones, prostaglandins and antibiotics). They also place organic chemistry in a wider biological, technological and social context.

S344 runs in 2007, 2008, 2010 and 2011.

'This course built very well onto what I learned in S205. Generally, the TMAs were tough but not unfairly so.'

Residential school courses

You must also complete at least one of the following residential-school courses. Both the preparatory work and the residential-school components will be assessed.

You'll need to have previous chemical laboratory experience, and/or be studying molecular science at third-year degree level, either with the OU or elsewhere.

Physical chemistry: measurement of chemical change (SXR342) (10 points)

This covers quantitative investigations of chemical reactions in solution and at surfaces. You'll learn about the practical techniques involved in electrochemical, kinetic and surface-science investigation. You'll also have the opportunity to design your own experiments linked to contemporary topics such as fuel cells, micellar catalysis and surface catalysis.

To prepare for the course you'll study a virtual experiment on DVD-ROM (simulating what you'll later carry out in practice), along with material covering data analysis and laboratory safety.

Transition metal chemistry: synthesis and structure (SXR343) (10 points)

This looks at the synthesis and manipulation of the coordination geometry of nickel complexes by adjusting the type of ligand bonded to the metal centre. You'll test the theories that you develop early in the course as you design your own ligands, and investigate the structure and properties of complexes formed from them. You'll learn how to handle air-sensitive substances and carry out spectroscopic and magnetic measurements.

Preparatory material will involve you studying the background to the structure and bonding in d-block complexes, and a multimedia introduction to practical work.

Organic synthesis: strategy and techniques (SXR344) (10 points)

This course focuses on the different approaches to the synthesis of a variety of target organic molecules. An example is 'queen substance' (*trans*-9-oxodec-2enoic acid): a pheromone produced by the mandibular glands of queen bees. You'll use infrared (IR) and NMR spectroscopy to characterise the substances you prepare.

Preparatory materials, supported by multimedia activities, will include background study on how to construct a synthetic scheme, and on using spectroscopic techniques to identify the products of a reaction.

Molecular and cell biology (S377) (30 points)

(see page 18)

Don't forget the Project course!

Project course

Science project course: frontiers in chemistry (SXM390) (30 points)

Conduct your own investigation into a topic in contemporary molecular science:

- combinational chemistry
- fuel cells
- nanotechnology
- biopolymers

For more information on the structure of the project course, see page 2.

Related courses

The following related courses link well with and can count towards your molecular science degree:

- Environmental science:

  Environmental science (S216)

  Earth and life (S269) (last presented 2006)

  Earth's physical resources: origin, use and environmental impact (S278)

  Ecology (S328) (last presented 2006)

  Environmental science in the field (SXR216)

- Astronomy and planetary science:

  Astronomy (S282)

  Planetary science and the search for life (S283)

- Biology and medicine:

  Molecular and cell biology (S377)

  Signals and perception: the science of the senses (SD329)

  Molecules in medicine (S807) (a postgraduate course – see the MSc in Science website at **www.open.ac.uk/science/msc**)

Natural sciences

Our natural sciences programme combines an emphasis on interdisciplinary science with more general concerns about the interaction of science with society. The programme has only four compulsory courses:

Discovering science (S103) and *Practising science* (SXR103) introduce science as a way of thinking about and investigating the wider world (including beyond the Earth), as well as individual science disciplines such as astronomy, biology, chemistry, earth sciences and physics. See page 4 for information on these Level 1 courses.

Science in context (S250) examines the science behind topics of current concern, e.g. climate change, genetic manipulation and nanotechnology. It analyses these from the perspectives of communication, risk, ethical issues and decision-making.

Science project course: science in society project (SXN390) gives you the opportunity to carry out a literature-based investigation of almost any area in which science impinges on modern society. Communication, risk, ethical issues and decision making must be relevant to your chosen issue.

The programme's interdisciplinary aspect comes from the study of at least two of the Faculty's most interdisciplinary courses at Level 3 (in addition to SXN390). You would also need to study the Level 2 courses that underpin your chosen Level 3 courses.

As well as SXR103, you have to take at least one Level 2 residential-school course – ideally one that is most relevant to your other post-Level 1 studies.

Recommended route through the natural sciences courses

Level 1	S103 (60) (C)	SXR103 (10) (C)	
Level 2	S250 (30) (C)	another SXR course (10 or 15) (C)	courses needed to support your Level 3 study
Level 3	SXN390 (30) (C)	(C) at least 2 courses from the following list: S320 (30), S330 (30), S366 (30), S369 (30), S377 (30), SD329 (30), U316 (30 of 60)	

- Numbers in brackets e.g. (60) indicate the number of credit points.
- (C) indicates a compulsory course for the BSc (Hons) Natural Sciences degree.

First decide which Level 3 courses (in addition to SXN390) you would most like to study for your natural sciences degree. Then use the table on the right to check the Level 2 course(s) that you would need to take in order to prepare for Level 3 study. Note that:

- some Level 2 courses provide excellent preparation for several Level 3 courses
- although most Level 3 courses are supported by several alternative Level 2 courses, some specify more than one Level 2 course.

Proposed Level 3 course	Necessary preparatory study at Level 2
S320	S204 *or* SK277
S330	S216 *or* any *two* of S204, S205, S207 and S260
S366	S204 *or* S260
S369	S260 *and* S269/S279
S377	S204 *or* S205
SD329	S204, S205, S207, SD226 *or* U205*
U316	S204, S216, S250, S269 *or* U216*

* For more information on these courses, please visit our website.

Level 2 Natural sciences course

Science in context (S250) (30 points)

This course builds on the wide-ranging science covered in S103 and SXR103, setting it in a broader context of society. Topics are covered in the following order, with the final three covered in much greater depth than the others:

- BSE/vCJD
- near-Earth objects and the impact hazard
- water and wellbeing: arsenic in Bangladesh
- medicinal plants
- climate change
- genetic manipulation
- nanotechnology.

The start of the course provides a brief introduction to each topic and explains the four themes that are developed throughout the course – communication, risk, ethical issues and decision-making. Initially, you'll be helped to understand the relevance of these themes in the context of particular scientific topics. Later, you'll study more independently in preparation for the end-of-course assessment.

You'll use printed texts and also multimedia DVDs that include computer models, timelines, audio and video programmes. Importantly, you'll exchange views and ideas with other students via the OU's FirstClass online-conferencing system.

Don't forget the Project course!

Level 3 Natural sciences courses

Project course

Science project course: science in society (SXN390) (30 points)

This core Level 3 course is different from our other project courses, as your options are not restricted to particular areas of a single discipline. You may carry out a literature-based investigation into one of an enormously wide range of contemporary issues. Your chosen topic must have a firm basis in science (as opposed to technology or one of the social sciences) and you must be able to analyse it from the perspectives of all or most of S250's course themes – communication, risk, ethical issues and decision-making. For more information on the structure of the project course, see page 2.

Related courses

In your natural sciences degree you will have great flexibility of choice. Around one half of the 300 natural sciences points requirement must be selected from a specified group of core courses (see the diagram on page 24), but the rest can be made up from the huge range of science courses across the Faculty, according to your interests and strengths.

Physical science

Physical science is generally recognised as the most fundamental of sciences, and the key to understanding the world around us.

Our physical science programme looks at the processes that govern the workings of the Universe. You can learn about interactions such as gravity and electromagnetism, theories such as quantum mechanics or relativity, and the processes that go on in stars and galaxies, black holes and supernovae.

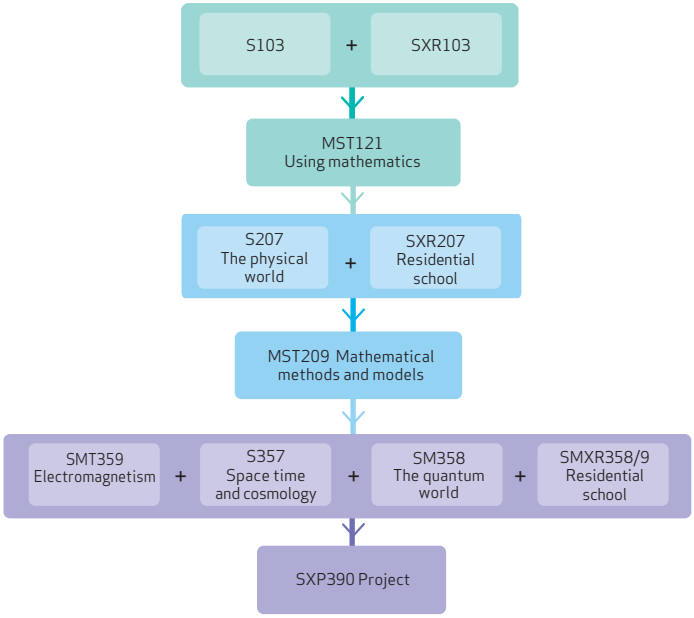
Choosing a route through physical science is a little more complicated than in some of the other science programmes. You will have a fair amount of flexibility about the courses that you choose to study and the order in which you study them. Your choices will depend on topics that interest you; on previous educational experience; on areas that you need to study for vocational reasons; and so on. Whatever your choices, however, the first thing that you should consider is how well prepared you are mathematically for this programme of study. It may seem a long way ahead, but to gain a physical science degree, you will need to take Level 3 courses that are mathematically demanding. To prepare for this you will almost certainly need to take *Mathematical methods and models* (MST209) prior to your Level 3 studies. The Level 1 maths course *Using mathematics* (MST121) provides most of the preparation for MST209, and there is some bridging material available to allow students to move on to MST209 without having to take *Exploring mathematics* (MS221) as well. (Details of MST121 and MS221 can be found on the website at **www.open.ac.uk/courses**) MST121 should be taken before you embark on any Level 2 physical science courses unless you are absolutely sure that your previous mathematical training is sufficient for you to proceed without it. If you have had recent training in mathematics (say A level) or have studied S103 and coped comfortably with the maths in that, the short course *Maths for science* (S151) may be adequate for you to proceed to Level 2.

You should also consider whether you want a degree with a physics or astronomy bias. Particular course combinations lead to a Physical Science BSc that is similar to a BSc degree in either physics or astronomy awarded by other universities. For example, at Level 2 you would choose *The physical world* (S207) for a physics focus, or, for an astronomy focus, you'd choose the combination of *Astronomy* (S282) and *Planetary science and the search for life* (S283).

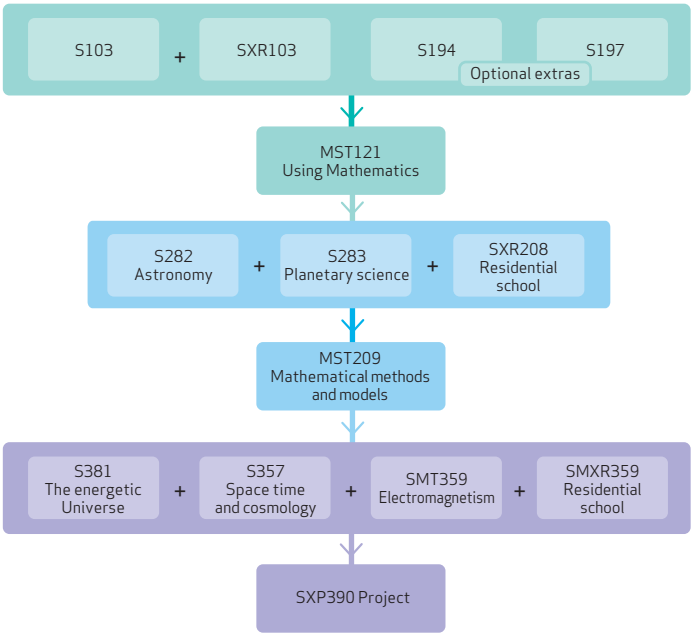
At Level 1 your choices may depend on your mathematical preparation, but you'll find *Discovering science* (S103) is a very good introduction into the physical science degree programme.

The typical study route diagrams below may help you to decide whether you want to focus on physics or astronomy within your physical science degree. However, you have the flexibility to mix and match the physics and astronomy courses, or combine these with certain maths and computing and technology courses.

Typical route for physical focus



Typical route for astronomy focus



Level 2 Physical science courses

The physical world (S207) (60 points)

Natural curiosity leads all of us to ask how the world works. Physics provides the deepest and most reliable scientific answers. If you intend to take only one physics course, it should be this one as it will give you an essential view of the whole subject.

Classical mechanics, thermal physics and fluids, fields, waves and electromagnetism, relativity and quantum physics (including solids, atoms, nuclei and particles) are set in their historical context so that you can appreciate their evolution. You'll learn about many interesting topics, such as the motion of satellites and planets; gyroscopes; the magnetic processes that give rise to the aurora borealis, how a refrigerator works; Schrödinger's cat, and nuclear fusion.

The text is presented in eight illustrated books, each with associated video footage and multimedia activities on DVD. You'll have the chance to:

- conduct a simulated electron diffraction experiment
- let test charges 'go' in the electric field created by other charges and watch how they move
- gain a visual insight into the wave functions of particles in quantum mechanics.

If you aim to specialise in physics at Level 3, this is the most appropriate course to take, after you have completed Level 1 courses in science and maths. S103 and either MST121 or S151 provide the necessary background for studying S207.

You can view a sample of course content at www.open.ac.uk/courses/tasters/s207

'S207 is the best intro to physics in the world – poetic and insightful – and any insight into reality can only empower, enrich and enlarge the mind!'

Astronomy (S282) (30 points)

In this fascinating course you'll learn about the structure, origin and evolution of stars, galaxies and the Universe as a whole. With the emphasis on the physical processes behind astronomical phenomena, you'll explore topics such as:

- the Sun
- stellar astronomy
- stellar evolution
- the Galaxy
- extragalactic astronomy
- cosmology.

You'll need a good understanding of Level 1 physical science, and the mathematical skills to deal confidently with algebraic manipulation and the graphical interpretation of data.

A typical project would involve you in retrieving and analysing astronomical data from web sources, and then using computer spreadsheets to investigate some of the theoretical ideas that are presented in the course. You'll also use the web as a resource for up-to-date information about astronomical observatories, space missions and experiments

'This is a very enjoyable course to study. The books are excellently written, with great use of diagrams and illustrations. There's great use of multimedia in the course and I found it a great help that much of the material was supplied in PDF format allowing me to study it on the move using computers and my PDA.'

Residential school courses

Physics by experiment (SXR207) (10 points)

As well as attending tutorials, lectures and workshops on various physics topics, you'll have the opportunity to conduct a broad range of exciting laboratory experiments including:

- measuring the scattering of gamma rays from electrons (for which Compton won a Nobel prize)
- observing the photoelectric effect (for which Einstein was awarded a Nobel prize)
- measuring the inter-atomic spacing in crystals
- measuring the velocity of an air gun-pellet
- measuring the effect of magnetic fields on a beam of electrons.

As SXR207 supports S207 you'll get most benefit from your studies if you can take both courses in the same year.

Observing the Universe (SXR208) (15 points)

You'll get first-hand experience in the techniques and tools used in modern professional optical astronomy and planetary science, allowing you to observe the fascinating wonders in the Universe beyond Earth.

You will spend five observing nights at the Observatori Astronòmic de Mallorca (OAM), in the rural heart of the Mediterranean island. In a group of four to six students, you'll work on a total of four projects, choosing from five telescope-based and two laboratory-based projects. Observatory facilities include: seven teaching domes with fully-networked 12-inch telescopes; a teaching laboratory; computers with data-analysis software; and a state-of-the-art planetarium.

Studying the course book *Observing the Universe* prior to the residential week will prepare you for the practical work. After the school you will complete your experience of being an observational astronomer or planetary scientist by compiling a project report in a similar format to a scientific paper.

SXR208 is a stand-alone course but it also complements S282, S283 (see Geosciences) and S381. You are best prepared for SXR208 if you have already studied S103. Visit **http://courses.open.ac.uk/sxr208** for more details of the course and **www.oam.es** for information on the observatory.

'Wow! What a course! Hard work (to the point of exhaustion, sleep when you get back home) but immensely rewarding for the wannabe astronomer – access to professional-level astronomy equipment, helpful tutors, powerful analytical software, all you need is clear skies and your dreams are answered.'

Level 3 Physical science courses

The energetic Universe (S381) (30 points)

Offering insight into the physical mechanisms and principles that govern astrophysical objects in our Milky Way and beyond, this course covers three key areas at the very forefront of astrophysical research:

- the formation and evolution of stars; the end points of their lives; and how they create other elements from hydrogen and helium
- binary stars containing white dwarfs; neutron stars and black holes; and the physics of how material is transferred from one star to the other
- the physical processes occurring in active galaxies, that is, those that contain super-massive black holes.

Each area has its own study guide directing you to a number of activities. You'll use a wide range of learning resources, including textbooks, journal articles, astronomical data from the internet, images, animations and interactive multimedia tutorials on CD, and spreadsheet exercises. The textbooks *The Physics of Stars, Accretion Power in Astrophysics* and *Active Galactic Nuclei* are included.

An introductory study guide helps you revise and consolidate essential concepts from Level 2 physics, mathematics and astronomy courses. Our S207, S282 and MST209 courses provide an excellent foundation for S381.

S381 is offered in alternate, even-years
i.e. 2006, 2008, 2010.

'If you've ever wanted to know how stars, accretion discs and active galaxies work, this course will go a long way to showing you the fundamental details and principles. It is an interesting, stimulating and well-presented course with beautiful image materials and CD-ROM tutorials.'

Space, time and cosmology (S357) (30 points)

This provides a wide-ranging introduction to the ideas of Einsteinian relativity, including their applications to space, time and cosmology (the scientific study of the Universe as a whole).

The course starts by examining common beliefs about space and time that are a familiar part of Newtonian physics, but it quickly goes on to show that these beliefs actually provide an inadequate basis for understanding the world around us. It follows the path that led Einstein to formulate the theories of special relativity in 1905, and general relativity in 1915 (best regarded as his theory of gravity). You'll learn how gravitational effects can be regarded as consequences of space-time curvature rather than the result of gravitational 'forces', and relate Einstein's geometric view of gravity to black holes and the fate of the Universe.

In the final block of the course, you are brought fully up-to-date with the most important developments in cosmology, from the big bang to the discovery that the enigmatically-named dark energy is causing the observed expansion of the Universe to proceed at an accelerating rate.

Although you don't need knowledge of advanced mathematics, you should be familiar with basic calculus (integral and differential), and be able to use vectors in performing calculations.

S357 is offered in alternate, odd years
i.e. 2007, 2009, 2011.

'This was an absolutely fascinating course and brilliantly presented. This course is good at amazing the inquisitive human mind.

Conceptually, the course is demanding; hard work and a lot of lucid thought is the route to a good pass in the TMAs and exam. I would also add that whilst the maths is not difficult, the physics is.'

The quantum world (SM358) (30 points)

New for 2007, this course explores the theory and applications of quantum mechanics, a crucial part of our understanding of the physical world.

Famous for challenging our intuitions about the way nature works, quantum mechanics both frustrates and replaces classical physics with a precise formalism that allows exact calculations to be made. Quantum mechanics provides the concepts and quantitative predictions that applied physicists, chemists and technologists need to interpret and control sub-atomic particles, atoms, molecules, nanostructures and the solid state.

The course will give you an understanding of the physical principles and mathematical techniques of quantum mechanics. It provides a detailed discussion of the Schrödinger equation; the uncertainty principle; the exclusion principle; fermions and bosons; measurement probabilities; perturbation theory; and transition rates. Applications include atoms, molecules, solids, scanning tunnelling microscopy, alpha decay and quantum cryptography. The course also discusses recent experiments on measurement and entanglement which dramatically undermine classical notions of the nature of reality, but fully support the quantum mechanical world-view.

Materials include DVDs containing computer-based activities, videos and three course books:

- the first explores wave mechanics using the mathematics of differential equations
- the second deals with measurement and the general formalism of quantum mechanics in vector spaces
- the third shows how quantum mechanical methods are used to explain the behaviour of matter, from the scale of nuclei and atoms, to molecules and solids, including interactions with light.

The predictions, interpretation and meaning of quantum mechanics only become clear using the language and techniques of mathematics. The course presents these techniques, including the solution of differential equations, and the action of linear operators in complex vector spaces. The mathematics and physics fit naturally together. Seeing how mathematical ideas are used to formulate precise physical concepts, and to solve practical physical problems, is another fascinating aspect of the subject.

SM358/SMXR358 and SMT359/SMXR359 are offered in alternate years i.e. SM358/SMXR358 in 2007, 2009, 2011; SMT359/SMXR359 in 2006, 2008, 2010

Electromagnetism (SMT359) (30 points)

This will develop your understanding of the concepts of electromagnetism, and equip you with the skills to apply them.

Four equations, known as Maxwell's equations, underpin the whole theory of electromagnetism. The course introduces you to these equations one by one, their significance and application. You'll go on to develop a deeper understanding by applying the equations to a diverse range of phenomena, such as electromagnetic waves.

An important aim of the course is to exploit the synergy between the physics and the mathematics of electromagnetism to enhance your understanding of them both.

The course will also give you an appreciation of how electromagnetism impacts many areas of science and technology, by presenting a range of examples from particle accelerators to electronic devices, from auroras to medical imaging, and from astrophysics to optical fibres.

Residential school courses

Quantum mechanics: experiments, applications and simulations (SMXR358) (10 points)

Quantum mechanics is at the heart of modern physics and has revolutionised our understanding of the world. Its applications, such as lasers and semiconductor electronics, are all around us. This course provides important hands-on laboratory experience of experiments illuminating some of the most revolutionary quantum mechanical principles.

The Zeeman effect experiment exploits sensitive optical instruments to study the way atomic spectra respond to magnetic fields. Another major experiment exploits so-called 'optical pumping' (important for lasers) to measure the angular momentum of atomic nuclei. Other laboratory experiments explore the properties of radioactivity; study the deep-lying structure of atoms from the properties of X-rays; and measure the spacing between the carbon atoms in graphite using the fact that electrons sometimes behave like waves. You will also carry out the experiment by which Frank and Hertz confirmed Bohr's assumption about atoms having energy levels.

Experiments are your chance to engage with nature. Completion of some preparatory work in advance of the course will help you to understand the physics behind the experiments you carry out, so that you don't simply 'follow a recipe'.

SMXR358 has other important learning outcomes that also support your study of the companion course SM358. Through tutor-led computer simulation sessions you'll learn how to use numerical integration programs and to visualise the spatial properties of wave-functions in atoms.

Before you apply to take SM358 and SMXR358 we recommend you complete our S207 and SXR207 courses, together with MST209 (or its predecessor MST207).

Electromagnetism: experiments, applications and simulations (SMXR359) (10 points)

This course centres on experiments that illustrate and exploit the fundamentals of electromagnetism, which is key to our understanding of nature.

In these experiments you will:

- investigate the 'Hall effect'
- explore the properties of so-called high temperature superconductors
- investigate the effects of temperature on resonant circuits
- measure the speed of light using microwaves
- explore the polarisation of light.

Microwaves are a key element of a substantial experiment using electron spin resonance (ESR) to measure how powerful a magnet an electron is when located within certain chemical substances. The technique involved is similar to that used in magnetic resonance imaging (MRI) scanners. Before attending this residential school, you'll need to read the course book explaining ESR, MRI and the physics behind the experiments.

SMXR359 has other important learning outcomes that also support your study of the companion course SMT359. Through tutor-led computer simulation sessions you'll learn how to apply numerical techniques for solving Laplace's equation, and how to visualise electromagnetic fields and their action on charged particles.

Before you apply to take SMT359 and SMXR359, we recommend you complete our S207 and SXR207 courses, together with MST209 (or its predecessor MST207).

Don't forget the Project course!

Project course

Science project course: radiation and matter (SXP390) (30 points)

Conduct your own investigation into a topic in contemporary physical science:

- quantum entanglement
- bioelectromagnetism
- gravitational lensing
- astrophysical jets

For information on the structure of the project course, see page 2.

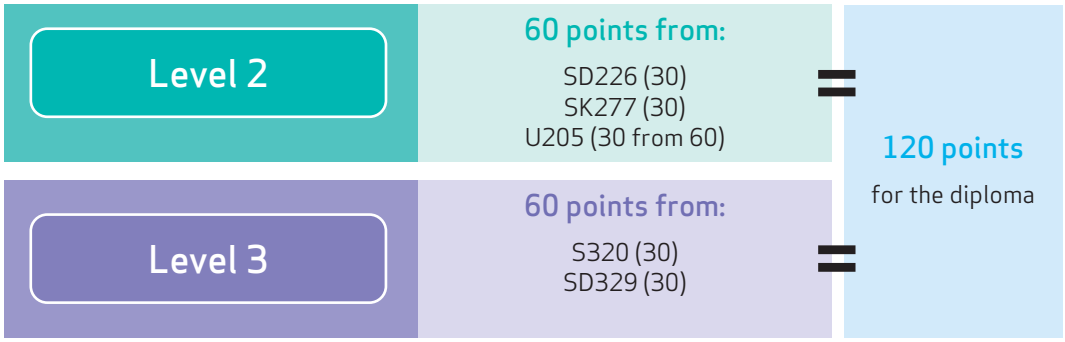
Related courses

Selected geosciences and molecular science courses can count towards your physical science degree, particularly at Level 2, as can some mathematics and technology courses.

Health sciences

We are building a health sciences programme with a number of new courses available by the end of 2007. You may also want to consider several of the life sciences courses (see page 15) which are relevant to health sciences.

We currently offer a 120-point undergraduate Diploma in Health Sciences. This is made up of the Level 2 and Level 3 life sciences courses *Human biology* (SK277) and *Biological psychology: exploring the brain* (SD226) (or U205 *Health and disease*), together with *Infectious disease* (S320) and *Signals and perception: the science of the senses* (SD329).



The normal preparation for the Diploma would be our Level 1 course *Discovering science* (S103).

In addition to S103, you may also wish to study our 15-point Level 1 course *Diabetes care* (SK120), which presents the underlying biology of diabetes and explores the differences and similarities of Type 1 and Type 2. The course looks at:

- how people with diabetes can make informed choices in relation to treatment and lifestyle
- recommended treatment paths such as annual reviews and check-ups
- types of medication, diet and exercise and managing hypos and hypers
- psychosocial aspects of having the condition – coping with diagnosis, family and professional life, education, communication, driving and the law.

Using science courses within an Open degree

We're one of the world leaders in providing degrees that can be tailored to your own requirements. A BA or BSc Open degree (code BD) offers the opportunity to study across the widest range of subjects. You can pursue specific career needs or follow your personal interests, which may develop and change as your studies continue. For example, you might want to develop both your technical and language skills, or combine science with management.

The other great advantage of an Open degree is that you don't need to specify a particular pathway at the beginning of your studies. Successful completion of an Open degree means you'll be awarded a general BA or BSc, with or without honours, rather than a degree in a named subject. You'll be entitled to use the letters BA (Open), BSc (Open), BA (Hons) (Open) or BSc (Hons) (Open) after your name, depending on the courses you complete.

The skills and knowledge you acquire within our core science courses are relevant to any combination of undergraduate courses. Your studies will help you to develop numerical and IT skills, to analyse and solve problems, to critically evaluate texts and to communicate complex ideas.

What you need to do to qualify

To qualify for a BA or BSc Open degree awarded without honours you need 300 points of which at least 180 must be above Level 1 and, of these, at least 60 must be at Level 3. For a classified honours degree you need 360 points of which at least 240 must be above Level 1 and, of these, at least 120 must be at Level 3. The degree you get (BA or BSc) will depend upon the balance of courses you've chosen. If at least 180 of the points you need for a 360-point degree come from courses that the OU judges suitable for a BA, that is the degree you'll be awarded. If at least 180 points come from courses the OU judges suitable for a BSc, you'll be awarded a BSc.

Career relevance

Around 70 per cent of graduate-level vacancies published by *Graduate Prospects* do not specify which degree subject you need to have studied. Employers are often more interested in the skills you've developed during the course of your degree.

Postgraduate study

MSc in Science

Our MSc in Science is a taught masters degree for anyone who wants to explore broad scientific topics at postgraduate level. It offers an opportunity to pursue some of contemporary science's most pressing issues, using innovative teaching methods pioneered by the OU, and to develop a wide range of skills associated with masters-level study.

There are two complementary strands:

- *Science studies*
- *Frontiers in medical science.*

You can choose courses from both if you wish. Most courses are taught, but there is also a project course if you would like to undertake a substantial piece of independent research.

For more details ask for the *MSc in Science* prospectus by emailing general-enquiries@open.ac.uk or telephoning +44 (0)870 333 4340.

Research degrees

The OU's Science Faculty has a strong tradition of research and enjoys well-equipped laboratories on the Walton Hall site.

There are opportunities for research in both traditional and multidisciplinary areas. Many science graduates conduct research in a specific area with the aim of obtaining a PhD. Completing a doctorate involves carrying out a specialised research project under the supervision of OU academic staff. More often than not, supervisors define projects, although students can usually shape the nature and direction of their research.

If you're unable to study full-time for your research degree, you can opt for part-time external study, using research facilities in your home area, and supported by regular meetings with your supervisor(s).

For more general advice on full or part-time research visit our website at **www.open.ac.uk/research-school/prospectus**

'I guess you could call me an OU addict. I started my BSc (Hons) with the OU in 1996 and finished in 2000. I began a PhD in cancer research, working full time at Walton Hall, which was completed in 2004. I plan to carry on in research or possibly go into teaching. For me, the most important aspect of the OU is that it gives you choices.'

For information on issues to consider when thinking about further study and on opportunities at other institutions, visit the OU Careers Advisory Service website at **www.open.ac.uk/careers** and look in the 'A-Z' for 'Further Study'.

Student societies

Membership of student societies linked to the Science Faculty provides a way to keep in touch with fellow scientists, through events, activities and newsletters. For further details visit:

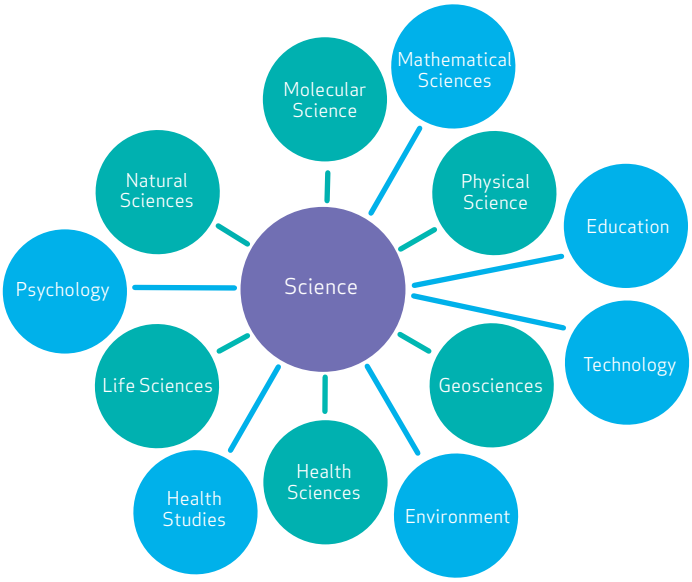
The Open University Chemistry Society (OUCS)
www.oucs.org

The Open University Geological Society (OUGS)
www.ougs.org

Fusion – The Open University Physics Society
www.oufusion.org.uk

Careers with science

You'll gain important skills as you progress through your studies in science. Industrial, financial, business and public sector employers are always interested in such skills, so science graduates – particularly those who have good communication and interpersonal skills – are in demand by employers.
Other areas of work for science graduates include publishing and the media, and a substantial number of graduates in science move into teaching.



Scientific careers

With a degree in science, you'll find that there are a wide range of options open to you. These include careers where you are using the knowledge gained from your studies in your daily work life. Scientists work in the private sector and government plus research and educational institutions. Work focuses on research and development, scientific analysis and investigation, product and process development, education and the media (e.g. scientific journals, newspapers or trade journals) plus administration. According to the *Destinations of Leavers Survey* which questions all graduates six months after graduation, science graduates are more likely to enter further study or training than the average graduate; for example 38 per cent of chemistry graduates in 2004 entered further study. This is to be expected as most scientific careers require further study or training.

Other career areas

Alternatively you may be considering one of many careers which does not look for a specific subject of study but focuses instead on the skills developed during study. For science graduates these skills will include analytical, reasoning, problem-solving and communication skills, and you'll also become proficient in using computer technology. More than 70 per cent of graduate job vacancies in 2003 did not need a specific degree subject (from *What Do Graduates Do 2005? Graduate Prospects*). Possibilities would include human resources, marketing, management, IT, finance or the legal profession. Science is currently a shortage subject at secondary school level and extra funding is potentially available for those wishing to teach this subject. For example five per cent of those graduating in biology nationally in 2003 progressed onto a teacher-training course.

Further research

It is crucial that you research the range of options open to you.

- Look for the 'Broad Career Area' on 'Science and the Environment' in the Careers Advisory Service website for some ideas and a range of links to further careers information.
- The national HE careers site called Prospects offers extensive information on career opportunities with a degree. The section 'Options with your subject' at **www.prospects.ac.uk/links/options** provide a useful overview of options with subjects such as biology, chemistry and physics.

Professional recognition

Certain routes through the science degree programmes and maybe relevant postgraduate experience may qualify you for membership of the professional body appropriate to your chosen discipline including, *The Institute of Biology, The Royal Society of Chemistry, The Geological Society of London* and *The Institute of Physics*.

More detailed information may be found at:
www.open.ac.uk/recognition

It is strongly advisable to investigate the help available from organisations such as the UK research councils and relevant professional bodies for your area of interest. Most will offer reduced rates for student membership which often includes careers advice, opportunities to network, job vacancy services and news bulletins.

Support from the Careers Advisory Service

We can help you to:

- choose courses to match your career ideas
- discuss your career plans. All students are entitled to a careers guidance interview at any stage of planning your career.
- complete application forms or CVs
- prepare for interviews
- look for employment nationally or locally
- consider further study or professional training.

You can find out more by visiting our website at **www.open.ac.uk/careers** or by contacting your regional centre.

Careers Advisory FirstClass conference

All students have access to the Careers Advisory conference on FirstClass. We use this conference to post notices about events, vacancies and any other careers information that may be relevant to students. We also run topic- or subject-based conferences where students can ask questions and receive replies from a careers adviser.

A conference on careers with science will be running in June 2006. This will be open to all OU students. For more information, visit **www.open.ac.uk/careers/conferences**

Career Links

This is an OU networking scheme where an OU student who is looking to enter a specific career can register as Career Seeker. They're then matched with a suitable Career Helper who is already working in that career and who can share their personal experiences. For more information and to register for Career Links visit **www.open.ac.uk/careers/links**

Contact points for advice and registration

In the UK, the Channel Islands, the Isle of Man, British Forces Post Office (BFPO) addresses outside the UK and all other countries, except the UK and Switzerland

- Use our website at **www.open.ac.uk/courses**
- Phone our Student Registration & Enquiry Service on +44 (0)870 333 4340

Calls to this line from the UK are charged at the national rate. We receive no income from 0870 numbers.

In the Republic of Ireland

- Use our website at **www.open.ac.uk/courses**
- Phone The Open University in Ireland on +44 (0)28 9032 3722 or our Enquiry and Advice Centre in Dublin on (01) 6785399
- Email Ireland@open.ac.uk

In other EU countries and Switzerland

- Use our website at **www.open.ac.uk/courses**
- Phone +44 (0)191 213 1380 (The Open University in the North)
- Email Europe@open.ac.uk

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- for research and to help us plan and improve our services. We may contact you ourselves or ask outside research agencies to do it for us.

When you register, we'll send you more details about how we process and use your personal information.

Meanwhile, if you do not want to receive any further information from us, or take part in any research, please let us know by:

- phoning our Student Registration & Enquiry Service on +44 (0)870 333 4340
- emailing general-enquiries@open.ac.uk, or
- writing to:
  Student Registration & Enquiry Service
  The Open University
  PO Box 197
  Milton Keynes
  MK7 6BJ
  UK.

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Information about the University can be found in our publication scheme at **www.open.ac.uk/foi**

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Milton Keynes
MK7 6AT
UK

or email Freedom-of-Information@open.ac.uk for more details.

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Designed by d4b design for business, Harrow.
Printed by Belmont Press, Northampton.

Picture on front cover courtesy of Getty Images.
All other pictures courtesy of Richard Learoyd.

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