STUDYING BIOLOGY

Biology is at the forefront of scientific and technological progress. Monumental advances and achievements, such as genome sequencing, have revolutionised our knowledge and understanding of living systems, and will continue to have a tremendous impact on areas as diverse as medicine, biotechnology and ecology.

Biology has a vital part to play in shaping our future, and coping with many problems of our modern world, from human health and disease and feeding the world’s growing population, to global environmental problems.

There has never been a better time to study this important and fascinating subject. The demand for skilled biologists continues to rise and job prospects for biologists are excellent.

An outstanding research environment with specialist units ranging from cancer, immunology and tissue engineering, to novel agricultural products, environmental studies and bioarchaeology.

New spacious modern teaching building, which provide excellent facilities for practicals, project work, computing and workshops.

Teaching of the highest standard within an active and enquiring research environment. You will be taught by enthusiastic staff who are experts in their field, including a significant number with prestigious national and international awards.

An academic supervisor to oversee your academic progress and signpost you to support services in the University.

Excellent career prospects

Flexible, high quality programmes across the spectrum of contemporary biology, with the opportunity to spend a year in industry or abroad.

Regular small group tutorials. These are a distinctive and very popular feature of our programmes, ensuring close interactions between students and staff.

The opportunity to experience research at first hand during your final year research project.

A friendly, informal and welcoming atmosphere. There are plenty of opportunities to get involved, including a lively student-run Biosciences Society that organises lectures, sports and social events.

Our key features

An integrated four or five year Masters level programme (MBiol).
The University of York has an outstanding reputation for teaching and research. Being a student here is a special experience. The academic quality, supportive staff, campus community and beautiful city make it a popular choice with students.

The Department of Biology is one of the University’s largest departments, and is recognised as one of the leading biological sciences departments in the UK. It is ranked consistently amongst the top Biology departments for teaching, research and student satisfaction.

“Biology at York has an international reputation and outstanding facilities for teaching and research. Coming to York was the best decision I ever made.”

Rebecca, Genetics with a Year in Industry
We offer both BSc Honours and MBiol degrees in Biology and a range of specialist areas. All of these can be taken with either an extra year in industry or Europe. Since all our Biology degree programmes have a common Stage 1, the final choice of specialisation need not be made until the end of Stage 1 – ideal if you are not yet sure what area of the subject interests you most.

The MBiol adds an extra year to the BSc programmes and specifically focuses on the skills needed for a career as a research scientist. During this time you carry out further work with research scientists within one of the UK’s top bioscience departments to learn specialised research techniques and gain experience in a cutting edge research lab.
Biotechnology and Microbiology
Allows you to focus on two aspects of biology of particular relevance to the application of biological knowledge to economically important areas, such as health, food and the environment.

Genetics
Is the unifying theme of biology, determining cellular and organismal processes and acting as the link between generations. It ranges from molecular studies of genes and genetic engineering, through human genetics, to the genetics of populations and evolution.

Biology
Allows you to span the breadth of contemporary biology, which is useful if you are interested in maintaining an interdisciplinary approach to biology, or wish to keep open the opportunity for specialisation at a later stage.

Molecular Cell Biology
Aims to provide an understanding of biological processes at the molecular and cellular levels, from structure/function relationships of proteins and nucleic acids through to immunology, cell and tissue engineering and cancer.

Ecology
Covers fundamental ecology from evolution to population structure and shows how these ideas can be applied to environmental and societal issues such as food.
Degree Programmes with a Year in Industry

If you are successful in the competitive selection process, an extra year, following Stage 2, is spent gaining research experience in an industrial or research institute laboratory. An Industry Liaison Officer guides you through the process of finding a placement, and you receive support from the Department during your year away.

We have excellent relationships with a wide variety of organisations and we place students with employers to match their interests, ranging from pharmaceutical companies (such as AstraZeneca, GlaxoSmithKline, Novartis) and medical research institutes (The Genome Analysis Centre, Institute of Animal Health, Rothamsted Research, MRC Harwell) to botanic and zoological gardens (Flamingo Land Zoo, Chester Zoo, Kew Gardens, National Botanic Garden of Wales) and environmental organisations (Food & Environment Research Agency, Game & Wildlife Conservation Trust, Green Biologics, Whitley Wildlife Conservation Trust).

Taking a year out in industry has many benefits, including hands-on experience of working in a research environment, and more transferable skills, such as teamwork and time management – invaluable for your final year, and highly prized by prospective employers and PhD supervisors.
Degree Programmes with a Year in Europe

We also offer the opportunity to spend an extra year of your degree in a European partner country. The "Year in Europe" programme is overseen by academic co-ordinators with relevant expertise and experience, and may be eligible for financial support. As well as continuing to develop your scientific knowledge and skills, you would have the opportunity to experience a different culture, improve your language and communication skills and increase your self-confidence - all advantageous when you apply for jobs, as employers greatly value international experience.

There are two departmental schemes to choose from:

Study or laboratory placements. Our study placements offer you the opportunity to spend your year away studying at one of our partner universities, currently in France, Germany, Spain and Denmark. During your year abroad, you take a range of courses and carry out a project to complement your studies at York. Language prerequisites may apply for this study route and the requirements for each of our partners can be found online at york.ac.uk/erasmuspartners. Language tuition is available through Languages for All (LFA) in your first two years at York. In addition to LFA, the Centre for Global Programmes offers language and intercultural courses called Languages for International Mobility (LFIM) which can help you prepare for your year abroad. Further language courses may also be provided by the host University during your studies abroad.

Laboratory placements. As an alternative to a study placement, you can elect for a full-time laboratory placement during your third year, working on a research project that will complement your studies at York in an internationally renowned European laboratory, either in a university or a research organisation. Since English is the accepted working language in these laboratories, familiarity with the language of the host country is not a prerequisite, although some working knowledge will be useful for everyday life. Studying outside of Europe.

Worldwide exchange programme

The Centre for Global Programmes offers a structured credit-replacing worldwide exchange programme where you can apply to study for an academic year at a partner university overseas. The University of York has links with top institutions in North and Latin America, Asia and Australia. Studying abroad through the worldwide exchange programme gives you the opportunity to experience different academic and social cultures without extending the length of your degree. Worldwide exchanges are open to undergraduates across other University departments and are determined during the internal application process. You would make an application during your first year at York, and if successful you would spend Stage 2 at your host university.

At York we aim to provide every student with an opportunity to gain an international experience, either on campus or by travelling abroad. This can range from a study placement for a full academic year to a two-week academic and cultural programme at one of our partners universities abroad.

For further information go to york.ac.uk/globalyork

I particularly enjoy the tutorial system within biology, in which we work with an academic in small groups on a topic related to their research. It’s an excellent opportunity to interact with the lecturers while developing your presenting and writing abilities, both essential skills for a scientist.

Bhavik, Second Year Student
Flexible Course Structure

For students with a broad interest in Biology the flexibility of our degree programmes is ideal. Our programmes have a common Stage 1 so there is considerable flexibility to change between the Biology programme degrees, or to add a year in industry or Europe. Students registered for the integrated Masters are also able to switch to an equivalent BSc programme.

All programmes at York are modular, giving you the choice to build a programme that matches your particular interests, and it is possible to include modules taught in other departments.

Biology Degree Programme

Stage 1 is based around our core modules, which provide an introduction to the main areas of modern biology, and lay the foundations for more specialised modules. An additional module each term, which includes regular tutorials, develops more general scientific and transferable skills.

In Stage 2 you begin to focus on areas of interest, extending your knowledge and deepening your understanding through your choice of modules (see Stage 2 modules) and tutorials.

Stage 3 and Stage 4 modules allow you to concentrate on your interests. An individual research project is your opportunity to interact with one of our many research groups, to gain hands-on research experience, and to produce an original scientific report.

Specialist Degree Programmes

Specialist degree programmes follow the format of the Biology degree, as described above. However in Stage 2 and subsequent years, your selection of modules will contain a core set in the specialist area and the topic for your research project will usually also lie within that area.

WHAT YOU STUDY

Stage 1 Modules

At Stage 1, the modules described (right) are compulsory for all students. They run concurrently, and provide a foundation in all the main strands of the subject.

WHAT YOU STUDY

Molecular Biology and Biochemistry

Explores the relationship between structure and function at the molecular and cellular levels. It examines how chemical reactions provide energy and building blocks, and how enzymes provide catalysis and control.
Genetics
Considers how DNA is organised into chromosomes and genomes in a variety of organisms, from bacteriophage to humans, and examines gene expression through the processes of transcription and translation. Gene mutations and chromosome aberrations are considered in the context of human genetics and disease, and in terms of their significance in evolution.

Genetics and Evolution
Considers the dynamic nature of the genes and includes topics on natural selection, phylogeny, the origin of human diversity and history of life on Earth.

Cell and Developmental Biology
Introduces the cell biology of eukaryotic organisms, their evolution and diversity. The module looks at the behaviour of cells within the context of multicellular organisms. The roles of the extracellular environment, cell signalling and differential gene expression in the regulation cell fate, differentiation and the patterning of structures within animals and plants.

Microbiology
Examines the cell biology of microorganisms. It introduces the diverse world of microorganisms, including bacteria, viruses, algae, fungi and protozoa, with particular reference to the relationships between structure and functions.

Animal and Plant Biology
Explores how the diversity of both animal and plant species, and their anatomical and physiological adaptations, have been shaped by evolutionary processes.
Stage 2 Modules

You select modules from the list below. Students registered for specialist degree programmes must take some core modules in the relevant area (see table below). In addition, a scientific and transferable skills module runs throughout Stage 2. This includes laboratory based group projects and other sessions aimed at developing experimental design, research skills and graduate level skills in management and communication. There is a focus on modern techniques appropriate to your interests, applying experimental approaches to biological problems, and learning quantitative and computational approaches to analyse data. You also continue to take small group tutorials.

<table>
<thead>
<tr>
<th>Modules</th>
<th>Biology</th>
<th>Ecology</th>
<th>Molecular Cell Biology</th>
<th>Biotechnology and Microbiology</th>
<th>Genetics</th>
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<tr>
<td>Big Data Biology</td>
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<td>Cell Biology</td>
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<tr>
<td>Ecology of Animals, Plants and Microbes</td>
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<td>Food &amp; Fuel</td>
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<td>Genes, Genomes, Evolution &amp; Populations</td>
<td>20c</td>
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<td>Immunology &amp; Infection</td>
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<td>Laboratory &amp; Professional Skills for Bioscientists</td>
<td>20c</td>
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<td>Marine and Coastal Field Course</td>
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<tr>
<td>Molecular Biology, Biotech &amp; Bioinformatics</td>
<td>20c</td>
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<tr>
<td>Molecular Genetics &amp; Development</td>
<td>20c</td>
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<td>Neuroscience</td>
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<td>Organisms in their Environment</td>
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<td>Tutorials</td>
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Key:
- Taken by all students on the programme
- Students choose from these modules to develop their own unique programme
- Each student must take 120c per year
Stage 3 Modules

These modules cover areas of current scientific importance. Biology students have a free choice. Specialist degree students have choice but must take modules in their area of specialisation. BSc students take four modules and an individual research project. Masters students take five modules and a group research project.

### Modules

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<thead>
<tr>
<th>Programmes</th>
<th>Biology</th>
<th>Ecology</th>
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<th>Biotechnology and Microbiology</th>
<th>Genetics</th>
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<tbody>
<tr>
<td>Advanced Topics in Biotechnology</td>
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<td>Advanced Topics in Cell Biology</td>
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<td>Advanced Topics in Ecology</td>
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<td>Advanced Topics in Evolution and Genetics</td>
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<td>Advanced Topics in Neuroscience</td>
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<td>Advanced Topics in Molecular Biology</td>
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<td>Advanced Topics in Microbiology</td>
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<td>Cancer Cell and Molecular Biology</td>
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<td>Conservation, Climate Change and Biodiversity</td>
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<td>Ecology Stage 3 Field Course</td>
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<td>Genes and Development</td>
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<td>Human / Medical Genetics</td>
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<td>Immunology and Infectious Disease</td>
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<td>Molecular Recognition</td>
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Key:
- **Taken by all students on the programme**
- **Biology students select 4 or 5 modules from a list of 14; all other programmes select 2 or 3 modules from a list of 4**
- **Students choose from these modules to develop their own unique programme**
Stage 4 Modules - Integrated Masters

Students taking the MBiol conduct a substantial (four days per week) research project and two extended research skills modules.

### Programmes

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<tr>
<th>Modules</th>
<th>Biology</th>
<th>Ecology</th>
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<th>Genetics</th>
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<tr>
<td>Stage 4 Research Project</td>
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<td>Critical Analysis</td>
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<td>Data Analysis</td>
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**Key**

- **Green** Taken by all students on the programme

All modules listed in this brochure are indicative and subject to change, as we regularly update and refine them to keep our teaching as up-to-date as possible.

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The academic staff in the Department are very approachable and use effective ways of explaining difficult concepts. I particularly love that students get to work a lot in the labs from the very first week, which has given me hands-on experience with tons of different techniques. Also, I was amazed by the support the Department gave me with obtaining my year-away placement.

Andra, Biology with a Year in Industry
HOW YOU STUDY

Tutorials
These are one of the most popular and distinctive aspects of our programmes. They are an opportunity for a group of usually just five students to hold informal scientific discussions on a weekly basis with a member of staff. Tutorials help you to develop skills in conceptual thinking and analysis, as well as oral and written communication. You regularly give presentations, and there is plenty of opportunity to debate topical issues. Your academic supervisor takes your first term tutorials, and you select a different tutor each term in the first and second years.

Lectures
Much of the taught material is delivered through lectures. We aim to deliver lectures that are not just lists of facts, but which offer a stimulating and challenging perspective on a subject and encourage you to study further.

Practicals
Practicals are designed to complement your lectures and other studies. They help you to develop laboratory skills and to become familiar with a wide range of practical techniques, training you how to use methods precisely and encouraging you to assess objectively the reliability of your results. These laboratory skills, together with skills in planning experiments and solving problems, will culminate in your research project in the final year of the programme.
Skills and Group Work
Each term during the first two years, students take modules designed to develop more generic scientific and transferable skills. Some modules focus on specific scientific techniques, while others develop skills in problem solving, experimental design and data analysis.

We encourage you to develop important communication skills, including working in groups to plan and carry out experiments that investigate a scientific problem, and presenting your work as an oral presentation or poster. The confidence and wide-ranging skills of our students are often commented on by employers.

Fieldwork
There are local field expeditions during term and longer field courses in the vacations. The course at the Millport Marine Station on the west coast of Scotland at the end of the first year is very popular. Other field courses during the programme can include Tanzania, Portugal or the North Yorkshire Moors. In all the field courses, you will have the opportunity to become familiar with the local ecosystems, and to observe the local wildlife, from lizards to giraffes.

You carry out your own project, usually in a small group, and of course there are also plenty of social activities.

Research Projects
Research projects are an essential part of your degree, and you will spend a considerable amount of time working on this. For many students this is the aspect of the course that they find particularly rewarding. It is your chance to experience research at first hand. You have the support and advice of an academic member of staff, but you work independently and plan and carry out your own experiments. Projects span the whole range of contemporary biology, from cancer to conservation, and most students carry out their project work alongside research students and postdoctoral staff within the research laboratory of the project director. BSc students take a two days per week research project in their final year and MBiol students undertake an extensive four days per week project in a specific research lab.

"Spending a year in Europe has been great for improving my language skills, and has been a really valuable experience. I thoroughly enjoyed the social side too!"

Lisa, Biology with a Year in Europe
Assessment

Modules are examined using a mixture of continuous assessment and closed examination, which helps you to judge how well you are progressing. Although you must perform to a satisfactory level, Stage 1 assessments do not count towards the final degree, which for BSc students is determined by work in Stage 2 (40%) and Stage 3 (60%). For MBiol students the split is 25% in Stage 2 and 37.5% in Stages 3 and 4.

Year 1 Timetable

In a typical week in the first year, you will have around 25 contact hours, typically six or seven lectures, two or three practicals, a skills workshop and a tutorial. You will spend time on independent study, consolidating information from lectures and practicals, and preparing work for tutorials.

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<tr>
<th>Day</th>
<th>Time</th>
<th>Activity</th>
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<tr>
<td>Monday</td>
<td>09.00 - 10.00</td>
<td>Lecture</td>
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<td>10.00 - 13.00</td>
<td>Practical</td>
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<td>14.00 - 15.00</td>
<td>Lecture</td>
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<tr>
<td>Tuesday</td>
<td>09.00 - 10.00</td>
<td>Lecture</td>
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<td>11.00 - 13.00</td>
<td>Tutorial</td>
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<td></td>
<td>14.00 - 17.00</td>
<td>Practical</td>
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<td>Wednesday</td>
<td>09.00 - 10.00</td>
<td>Lecture</td>
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<td>Thursday</td>
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<td>Skills lecture</td>
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<td>10.00 - 12.00</td>
<td>Skills workshop</td>
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<td>Friday</td>
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<td></td>
<td>10.00 - 13.00</td>
<td>Practical</td>
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</table>
International students form an important part of the community at York, and the Department welcomes students from all over the world.

We offer you an International Student Co-ordinator within the Department, and a personal supervisor to oversee your academic progress and welfare.

We offer one scholarship to a Biology overseas student. If you are paying overseas fees then you are eligible to apply. Application forms are available to download from You@York (applicant’s portal).

The Biology teaching facilities are exceptional, especially with the state of the art teaching block which opened in 2016, further advancing the teaching experience. Together with the historic city, beautiful campus and huge variety of extra-curricular activities, there really couldn’t be a better university package than the University of York.

Matt, Biology with a Year in Industry
The Biology Department has an in-house employability team who provide one-to-one sessions with students covering careers advice, preparation of job applications and mock (scientific) interviews. The team also run regular careers events, including a two day employability fair each summer, inviting departmental alumni and employers into the Department. The Department has a proactive approach to employability, embedding it into teaching throughout the degree programmes.

Our graduates go on to a wide variety of careers both within and outside of Biology. Examples of roles that our recent graduates are currently undertaking include:

- Research Executive, Healthcare Research Worldwide
- Sustainable Food and Farming Consultant, ADAS
- Associate, PwC UK
- Scientist, AstraZeneca
- Head of Operations, Science Media Centre
- Assistant Ecologist, First Ecology
- Environmental Consultant, Arup
- Medical Lab Technician, Derby NHS Trust

Any questions? Please email biol-admissions@york.ac.uk.