

Nottingham Trent University Course Specification

Basic Course Information

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| 1. Awarding Institution: | Nottingham Trent University |
| 2. School/Campus: | Science and Technology/Clifton Campus |
| 3. Final Award, Course Title and Modes of Study: | BSc (Hons) Biological Sciences (Biochemistry and Microbiology) FT, SW, PT
BSc (Hons) Biological Sciences (Biomedical Sciences) FT, SW, PT
BSc (Hons) Biological Sciences (Environmental Biology) FT, SW, PT
BSc (Hons) Biological Sciences (Physiology and Pharmacology) FT, SW, PT |
| 4. Normal Duration: | 3 years Full Time (FT), 4 years Sandwich (SW), 3-5 years Part Time (PT) |
| 5. UCAS Code: | 350B/C110 |

6. Overview and general educational aims of the course

BSc (H) Biological Sciences is designed for students who have decided to study biology but not yet made up their mind about a specialist sub-discipline. For full-time and sandwich students, this course offers you the opportunity to study for a term before making module choices that determine the degree pathway you study from Term 2. During this first term, discipline-specific lectures and careers events, workshop activities, and discussion during tutorials will help you decide on the degree pathway that reflects your interests and post-graduate career goals. If you have decided to study on a part-time basis you will join a degree pathway on admission, which is normally at Level 5 (year 2).

Academic staff including your degree Course Leader and discipline-specific Pathway Leaders are happy to provide individual guidance during one-to-one meetings in person or by phone. Further adjustments to the degree studied might be possible at the end of Level 4 (year 1), depending on your module choices.

We aim:

- to provide courses that offer choice, flexibility and specialisation within major bioscience disciplines;
- to offer a range of courses in the biological sciences that focus on the applied nature of the constituent subjects, their relevance to employment and the needs of society;
- to offer courses in different modes of study particularly those providing sandwich training that meet the needs of both students and employers, including those of local industry and public-sector bodies;
- to widen participation by recruiting students from a variety of backgrounds, encouraging and helping them to achieve their potential, thus enhancing their employment and career opportunities;
- to use the teaching, consultancy and research experience of staff to enhance the quality of courses;
- to foster and develop an extensive knowledge and understanding of biology and its related disciplines, coupled with the intellectual agility required to use scientific methods to creatively approach, analyse and solve scientific problems;
- to graduate qualified scientists in a variety of fields and at different levels of specialism;
- to equip students with the knowledge, understanding, intellectual curiosity, skills, qualities and attributes for the world of work and for their everyday life.

This course is offered in full-time mode (3 years), sandwich mode (4 years) and part-time mode (3-5 years). In the sandwich mode, you will spend year 3 of the course conducting a work placement for example in an environmental consultancy or a hospital. If you decide to follow this route, the Employability Team will work with you to develop your *curriculum vitae* and will help you to target your applications so that you get a placement that is right for you. You will also be assigned a Placement Tutor who will monitor your progress and visit you at the company.

Students studying part time will have prior qualifications and/or experience equivalent to Level 4 of the course and are admitted with respect to the University's Recognition of Prior Learning policy. You will study modules from Levels 5 and 6 at a pace suited to your work and lifestyle, over a period of up to 5 years.

New and returning students all participate in a matriculation event during Welcome Week. This matriculation event is designed to facilitate getting to know your peers, reflect on your motivations for studying at university, support transition into higher education and promote course cohesion. Re/integration events for international students, mature students, placement students are part of the matriculation event. This creates the opportunity to build international relationships with peers, mentors and academics.

For 2016/17 graduates onwards all degree pathways of this course are accredited by the Royal Society of Biology, subject to successful completion of the Level 6 Research Project module. This 40-credit point module has to be passed and cannot be compensated. The *Environmental Biology* pathway (pre-2017/18 *Ecology and Environmental Management* pathway) is also accredited by the Chartered Institute of Ecology and Environmental Management (CIEEM).

7. **Course outcomes**

Course outcomes describe what you should know and be able to do by the end of your course if you take advantage of the opportunities for learning that we provide.

Knowledge and understanding

By the end of the course you should be able to:

1. demonstrate knowledge and understanding of the essential facts, terminology, classification systems, major concepts, principles and theories of the relevant biological discipline;
2. critically evaluate concepts relevant to the biological discipline and apply them in problem solving scenarios;
3. identify current developments in your chosen area and the applications arising out of them;
4. understand methods used to acquire, interpret and analyse biological information from a variety of sources;
5. use and assess the values of a range of practical and presentation techniques, practices, technologies and methodologies, including data analysis and the use of statistics;
6. understand and appreciate complex ethical issues within the biosciences, and perceive how debate informs concerns about the quality and sustainability of life at local and international scales;
7. make appropriate, informed and enterprising career management choices and be knowledgeable about entrepreneurial issues concerning your chosen biological discipline.

Skills, qualities and attributes

By the end of the course you should be able to:

8. acquire, analyse, interpret, evaluate and apply data from a variety of sources;
9. develop critical skills in the interpretation of scientific knowledge and data;
10. apply scientific principles and methodologies in investigations;
11. use equipment and materials competently and demonstrate acquisition of technical skills relevant to the biological discipline;
12. communicate effectively in written, graphical and oral formats;
13. prepare and present scientific reports to professional standards;
14. apply numerical skills;
15. select, use and critically evaluate appropriate information using digital and traditional resources;
16. work independently and as part of a team, developing leadership capacity and the ability to work both autonomously and collaboratively;
17. demonstrate the skills required to plan, implement, draw conclusions, evaluate and report on a programme of research;
18. plan and prioritise effectively to manage work and time, and to reflect appropriately on your own performance.

8. **Teaching and Learning Methods**

In the majority of modules, your teaching and learning is conducted in classroom-based sessions including lectures and interactive seminars, and in practical, laboratory classes, field visits and/or field courses. Many theories introduced in lectures are consolidated through these practical sessions and through small group seminars. Lecture material is supported through e-resources. The University's Virtual Learning Environment is widely

used to share resources including lecture slides, articles, scientific research papers, and information about course and module organisation. Teaching is enhanced by external speakers ensuring that your learning is continuously enhanced through exposure to real-world perspectives in a rapidly developing scientific field.

On the Biochemistry and Microbiology degree pathway you will discuss global impacts of plant pathogens on food security and take part in ethical debates on the use of genetically modified organisms (GMOs) and the different international positions on this issue. You will consider the financial and environmental costs of scientific research versus potential improvements to human and animal health, as well as the economic benefits of a successful biotechnology industry. You will consider the development and potential impacts of genetically modified organisms, and discuss global health challenges such as tropical diseases and their differing impacts in different countries. Later you will examine microbes and climate change, bioremediation, and the microbial production of sustainable biofuels.

On the Biomedical Sciences degree pathway, you are encouraged to pursue co-curricular international and intercultural learning experiences, for example volunteering, charity work and shadowing medics in clinics. Regarding sustainability you will consider the possible impacts on health and wellbeing of disease-resistant GMO crops, vaccine production and the rapid identification of infectious and non-infectious diseases. Later you will examine in detail the sustainability of current antibiotic therapy and consider possible alternate methods for disease control. For example, your final year research project could investigate the sourcing of novel antimicrobials from plant materials. We will discuss global social responsibility throughout the course.

If you have chosen the Environmental Biology degree pathway you will consider international perspectives in habitat conservation and endangered species in your first and second years. Throughout the course you will learn about research-informed approaches to sustainability. In one Level 5 module you will take on different roles to debate whether a new hydropower scheme should go ahead. In other modules you will examine how ecotourism impacts on host countries and communities and discuss mitigation strategies, and you will manage a habitat to enhance biodiversity. Sustainability is underpinned by further studies on human population growth, pollution and power generation in relation to the global challenge of climate change.

On the Physiology and Pharmacology degree pathway a recurring theme is how an understanding of the subject is essential to tackling the major health challenges of the 21st century. You will begin by considering the financial and environmental costs of scientific research in the pharmaceutical industry in relation to potential benefits to health and wellbeing. You are encouraged to reflect on global variation in response to drugs, as well as international differences in the costs and regulation of the drug discovery process. Global health challenges, including infectious diseases and many of the leading causes of death worldwide are addressed in increasing depth throughout the course. Throughout your course you will discuss ethical practices in the pharmaceutical industry. This is an ongoing sustainability debate that will form part of the final year pharmacology modules.

For any of these degree pathways you can undertake home or overseas placements. These provide you with personal intercultural learning experiences, to be shared with colleagues on your return.

During your course, practical classes focus on hands-on acquisition of scientific skills in the application of key principles, concepts and methods of your choice of subject for study.

Laboratory and field sessions involve problem solving, data collection and observation. Further time is allocated to the analysis, interpretation and evaluation of your results. Seminars are used to offer a small group teaching environment often led by students' needs to review, discuss and consider aspects of taught material from either lecture or laboratory classes.

Through these activities, you will develop the capacity to undertake self-directed study and to become autonomous, independent learners. You will also be expected to carry out supplementary reading and research, which will consolidate taught material, situate your own work within wider theory and allow you to contribute knowledge to your chosen discipline.

Opportunities will exist for you to enhance your communication skills by writing reports in various formats, producing posters and giving oral presentations to your colleagues.

As your course progresses, you will assemble a Skills Portfolio, which is a complementary and highly personalised aspect to your learning experience. It provides a vehicle for you to evaluate, collate and showcase your practical and transferable skills for personal development and future employment.

You will be given support and formative feedback in course tutorial sessions at all levels. As the course progresses you will collect information for your Skills Portfolio. To ensure timely progression and achievement, at Levels 4 and 5 you will submit some portfolio evidence for summative assessment and feedback. The Skills Portfolio culminates at Level 6 in a capstone summative assessment with reflection on your work, where it contributes to the Research Project module.

You will participate in many practical, workshop and interactive sessions throughout your course and build experience in a number of key scientific and transferable competencies. Each skill is covered in several modules across a course, giving you the opportunity to continually learn, refine, and perfect your professional skills.

You will also have access to sustainable video resources promoting an inclusive learning environment.

9. **Assessment Methods**

The course uses a variety of assessment methods to develop your individual strengths and to enable you to demonstrate achievement of the learning outcomes. Subject knowledge and understanding are mainly tested through tests and examinations, preparation of case studies, reports detailing practical work, oral presentations and poster defences.

Practical investigations are used to assess a range of intellectual and scientific skills. Your ability to test hypotheses, observe, collate, present, interpret and evaluate findings of an investigation is assessed through the preparation of formal scientific reports.

Your communication skills, in written and oral formats, are assessed at numerous points during the course. Scientific reports, poster presentations, essays and examinations provide opportunities to demonstrate your writing skills. Oral presentations and verbal defence of posters allow demonstration of your verbal and visual communication skills

As well as theoretical knowledge you will be required to demonstrate acquisition of practical skills. Essential practical skills will be assessed during laboratory sessions at Level 4. This assessment will contribute 25% to your Practical Techniques in Biology module, which will have to be passed to satisfy the Royal Society of Biology practical skills requirement for accreditation. If you have entered the course at Level 5 you will have a further opportunity to have your practical skills assessed if necessary.

As this named award is accredited by the RSB it is subject to successful completion of the level 6 Research Project module. This 40-credit point module has to be passed and cannot be compensated.

You will be given written feedback on all your assessed work to help you to develop your effectiveness as a learner and to achieve your goals.

10. **Course structure and curriculum**

Our BSc (H) Biological Sciences degree has pathways constituting either a 3-year full-time course, a 4-year full-time course with a sandwich placement year between Levels 5 and 6, or a 3-5 year part-time course comprising Level 5 and 6 modules only. Part-time students are normally admitted to Level 5 on the basis of having prior credit or experience equivalent to a pass at Level 4.

The academic year comprises 30 weeks divided into 3 terms. In the first year, two modules are taught in the first term, the remaining four pathway-specific modules in terms 2 and 3. All modules in years 2 and 3 of the degree are taught throughout the year. Teaching and learning takes place for a total of 26 weeks, with the other 4 weeks of each year being set aside for examinations.

Information on awards and degree calculations can be found at https://www4.ntu.ac.uk/adq/document_uploads/quality_handbook/138197.pdf. An Honours degree is awarded when you have successfully completed 360 credit points (cp) with 120 cp

at each level. The following interim awards can be achieved as outlined below.

Holders of a Certificate of Higher Education will have a sound knowledge of the basic concepts of a subject, and will have learned how to take different approaches to solving problems. They will be able to communicate accurately and will have the qualities needed for employment requiring the exercise of some personal responsibility. The suggested minimum Course Learning Outcomes (CLO) are 1, 4, 8, 10, 11, 12, 14 and 15 allowing students to achieve a minimum of 120 cp.

Holders of a Diploma of Higher Education will have a wider knowledge of the essential concepts of a subject, and will have learned how to take different critical approaches to solving problems. They will be able to communicate accurately in a variety of professional formats and will have the qualities needed for employment requiring the exercise of personal responsibility and decision-making. The suggested minimum CLO are 1 to 6, 8 to 15 allowing students to achieve a minimum of 240 cp.

Holders of an Ordinary Degree of Higher Education will have a wider knowledge of the essential concepts of a subject, and will have learned how to take different critical approaches and decision-making to solving problems. They will be able to communicate accurately in a variety of professional formats and will have the qualities needed for employment requiring the exercise of personal responsibility and some decision-making in complex and unpredictable contexts. The suggested minimum CLO are 1 to 6, 8 to 15, and 18 allowing students to achieve a minimum of 240 cp.

In addition to gaining one of the awards above, students can qualify for a Diploma in Professional Practice at pass, commendation or distinction level on successful completion of a one-year placement. Students can also be awarded a Certificate in Professional Practice on completion of a minimum of 6 weeks on placement (for example if a part-time or summer position is completed).

The BSc (H) Biological Sciences FT/SW degree is a modular course allowing you to choose a specialised subject area at the end of the first term. Your pathway modules are 20 cp unless otherwise stated and are classified either as core or optional. At Level 4, in terms 2 and 3 you have a choice of 4 out of 6 modules, with the choice indicating the pathway and final degree title.

At Levels 5 and 6, most modules are core, but there may be a choice of optional modules depending on your pathway. Optional modules provide flexibility within the curriculum and allow you to specialise or maintain a broad basis of subject area. The structure of the curriculum is outlined below with an indication of module status.

The BSc (H) Biological Sciences PT degree is also modular. In each year you choose any combination of pathway-specific Level 5 and 6 modules. In each of your first two years you can take up to 100 cp (five modules). In the third year you choose pathway-specific modules to complete the 240 credit points required for an Honours degree. Your final year modules will include the 40 cp Research Project. You can choose to do fewer than 100 cps in any one year, which will necessitate further year(s) on the course, but the degree must be completed within five years of study.

Level 4 (year 1) Full-time and sandwich students only

The modules selected on the degree are designed to meet the course learning outcomes. Modules are 20 cp unless otherwise stated and are classified either as core (C) or optional (O).

Term 1

Living Systems (C)

Practical Techniques for Biology (C)

Terms 2 and 3

Four modules from:

1. Genetics and Immunology
2. Human Physiology
3. Introduction to Biochemistry

4. Introduction to Microbiology
5. Introduction to Pharmacology
6. Life on Earth
7. Natural Ecosystems
8. People and the Environment

The above module choices will largely determine your Biological Sciences degree pathway

Level 4 modules	Degree pathway
1, 2, 3, 4	BSc (H) Biological Sciences (Biochemistry and Microbiology) OR BSc (H) Biological Sciences (Biomedical Sciences)
4, 6, 7, 8	BSc (H) Biological Sciences (Environmental Biology) (accredited by the Chartered Institute of Ecology and Environmental Management)
1, 2, 3, 5	BSc (H) Biological Sciences (Physiology and Pharmacology)

Sometimes it is possible for you to transfer to a related degree at the end of Level 4. Such transfer is subject to you having passed all appropriate Level 4 modules and reached a certain level of academic achievement. It is subject to approval by the Course Leaders.

Levels 5 (year 2) and 6 (final year) Full-time, sandwich and part-time students

Biochemistry and Microbiology pathway

Level 5

Applied Microbiology (C)
Introduction to Microbial Metabolism & Genetics (C)
Molecular Biology and Protein Structure (C)
Biochemical Techniques (C)
Molecular Genetics of Human Diseases (C)

One from:

Antibody and DNA Technology (O)
Professional Skills in Microbiology (O)

Level 6

Research Project 40 cp (C)
Cell Signalling and Cancer (C)
Molecular Microbiology (C)
Bioinformatics (C)

One from:

Immunology and Virology (O)
Forensic Microbiology (O)

Biomedical Sciences pathway

Level 5

Metabolism and its Control (C)
Molecular Biology and Protein Structure (C)
Pathopharmacology (C)

One from:

Antibody and DNA Technology (O)
Biomedical Science in Practice (O)

AND one from

Clinical and Public Health Microbiology (O)
Pathophysiology (O)

AND one from

Clinical Biochemistry (O)
Host-Pathogen Interactions (O)

Level 6

Research Project 40 cp (C)
Immunology and Virology (C)
Cell Signalling and Cancer (C)

One from

Infectious Diseases and their Control (O)
Cellular Pathology (O)

One from

Bioinformatics (O)
Haematology and Transfusion Practice (O)

Environmental Biology pathwayLevel 5

Evolutionary Ecology and Behaviour (C)
 Ecotourism (C)
 Ecological Investigations (Field Course 1) (C)
 Freshwater Ecosystems (C)
 Molecular Ecology (C)
 Practical Conservation (C)

Level 6

Research Project 40 cp (C)
 Atmospheric Pollution (C)
 Environmental Forensic Assessment (C)
 Environmental Management (Field Course 2) (C)
 Regulating Environmental Impacts (C)

Physiology and Pharmacology pathwayLevel 5

Host-Pathogen Interactions (C)
 Neuroscience (C)
 Pathopharmacology (C)
 Pathophysiology (C)
 Physiology (C)
 Professional Skills in Pharmacology (C)

Level 6

Research Project 40 cp (C)
 Clinical Pharmacology (C)
 Current Topics in Pharmacology (C)
 Current Topics in Physiology (C)

One from:

Current Topics in Neuroscience (O)
 Toxicology (O)

The optional one-year placement is supported by placement tutors and the employability team.

Information on the content of other BSc courses and MBIol courses is available on request from Course Leaders.

11. Admission to the course**Entry requirements**

For current information regarding all entry requirements for this course, please see the 'Applying' tab on the NTU course information web page.

The full UCAS entry profile for this course can be found at: <http://www.ucas.com/>

If you are interested in part-time studies read our BSc (Hons) Biological Sciences part time (day & evening) web pages and follow the application instructions.

12. Support for Learning

As a Nottingham Trent University student, you will have the full support of the Academic Team in support for learning and have full access to Student Support Services. https://www4.ntu.ac.uk/current_students/services/index.html

In addition, School-based pastoral support networks are in place to offer you guidance and advice on academic and personal issues.

At the start of your year we will welcome you with a series of events designed to introduce (or reintroduce) you to the University and its services, fellow students and your academic team.

University Accommodation Officers will provide you with information, guidance and continuing support for example with places in halls of residence, private rented accommodation and the Landlord Approval Scheme.

From Welcome Week onwards we support progression and achievement of students from a diverse range of backgrounds. Course Tutor groups often comprise students from many places

and cultures, ideal for exchanging ideas and understanding topics from multiple viewpoints. You will find that home, international and Erasmus students work together in practical classes and seminars.

Later in the course we encourage sandwich route students to take a placement year, which may be abroad or in the UK. You will be supported by the Employability team and a named academic staff supervisor.

Whilst on placement you may have collected information which could complement your final year Research Project and be discussed with respect to existing international literature. If you are doing a UK-based placement you would be expected to interpret your results within a wider, international context.

13. **Graduate destinations / employability**

There is a wide range of career opportunities open to Biological Sciences graduates including postgraduate studies, which you can enter on completion of your course.

Career opportunities arising from your degree include employment in research laboratories, technical, sales and management positions, work in environmental consultancy and in education.

14. **Course standards and quality**

We strongly value your input and ideas about your course. Its management and development is supported by a Course Committee, with staff and student course representatives. It operates to discuss matters arising, consider External Examiners' comments and review annual course reports. The Committee responds to your feedback since your voice plays a crucial role in the content and structure of your course and the way in which it is run.

Overarching responsibility for quality control lies with the School Academic Standards and Quality Committee whose remit is to provide guidance and support to academic courses.

External Examiners offer further quality control through monitoring academic standards and moderation of assessment tasks and processes.

15. **Assessment regulations**

This course is subject to the University's Common Assessment Regulations (located in its Academic Standards and Quality Handbook). Any course-specific assessment features are described below.

Supplement to Common Assessment Regulations to be included post DAG

16. **Additional Information**

Collaborative partner(s):	None
Assurance Agency for Higher Education (QAA)	Biosciences
Benchmark Statements:	
Course recognised by:	The <i>Environmental Biology</i> pathway is accredited by the Chartered Institute of Ecology and Environmental Management
	All degree pathways are accredited by the Royal Society of Biology
Date this course specification approved:	September 2018

Any additional information: