

Programme Specification

BSc (Hons) Biomedical Sciences: 2017-18

This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if s/he takes full advantage of the learning opportunities that are provided.

Awarding Institution	University of Southampton
Teaching Institution	University of Southampton
Mode of Study	Full-time
Duration in Years	3 years, following standard progression for a full-time student
Accreditation details	Not applicable
Final award	Bachelor of Science – Honours
Name of award	Biomedical Sciences
Interim Exit awards	Bachelor of Science (Ordinary) Diploma of Higher Education Certificate of Higher Education
FHEQ level of final award	6
UCAS code	B940
QAA Subject Benchmark or other external reference	QAA Subject Benchmark Statements for Biomedical Science (2007) QAA Framework for Higher Education Qualifications (FHEQ)
Programme Lead	Dr N Smyth
Date specification was written	01/06/2005
Date specification was validated	April 2013
Date specification was last updated	July 2017

Programme Overview

Brief outline of the programme

Biomedical Sciences covers all the scientific disciplines that underpin medicine. Our degree programme focuses on the biochemical, physiological and pathological aspects as applied to normal and disease states. Graduates in biomedical sciences are in demand in a variety of areas of employment. In Southampton you will undertake a balanced programme where you will gain the relevant skills and knowledge required for a career in this subject area.

Learning and teaching

You will be taught through a combination of lectures, tutorials, practical classes, coursework and projects. Throughout the programme you will undertake independent reading both to supplement and consolidate the taught material and to broaden your knowledge and understanding of Biomedical Sciences.

Assessment

You will be assessed by a combination of continuous assessment and written examinations at the end of each semester to test your knowledge and understanding of the lecture and tutorial material. Continuous assessment is based on performance in tutorials, practicals and projects.

Please note: As a research-led University, we undertake a continuous review of our programmes to ensure quality enhancement and to manage our resources. As a result, this programme may be revised during a student's period of registration, however, any revision will be balanced against the requirement that the student should receive the educational service expected. Please read our [Disclaimer](#) to see why, when and how changes may be made to a student's programme.

Programmes and major changes to programmes are approved through the University's programme validation process which is described in the University's Quality handbook.

Educational Aims of the Programme

The aims of this are to provide:

1. a stimulating, informed environment through a wide range of interesting and contemporary courses with flexibility and choice, but allowing you to focus increasingly as you progress from level to level;
2. a sound scientific knowledge base in Biochemistry and Physiology;
3. an ability to describe and comment on specific aspects of current research in biomedical sciences;
4. training in biochemical and physiological laboratory skills;
5. an opportunity to develop a range of transferable skills (information and communication technology, team working, written and oral communication, time management, planning, data collection and presentation);
6. opportunities to develop your skills of critical thinking and to show that you can pursue independent study;
7. an opportunity to undertake an independent project on a biomedical topic;
8. an education and training suitable for a wide variety of careers and that will prepare you for higher degrees and careers in biomedical research – or graduate entry to medicine;
9. the capability of life-long learning, study and enquiry.

Programme Learning Outcomes

Knowledge and Understanding

Having successfully completed this programme you will be able to demonstrate knowledge and understanding of:

Systems Physiology

1. the principal functions of the major organs in the body;
2. the respiratory, cardiovascular, gastrointestinal, reproductive and renal systems;
3. muscles and the control of muscle contraction;
4. the regulation of blood flow and the formation of new blood vessels;
5. the cellular interactions which underlie the immune response in normal and pathophysiology;
6. the nervous system;

Homeostasis and Cell Communication

7. the principles of homeostasis;
8. hormones and their importance in physiological processes;
9. cell-cell communication in the autocrine, paracrine, endocrine and nervous systems;
10. cell signalling pathways
11. immunology and use of antibodies;
12. cell signalling in normal and patho-physiology

Biochemistry and Molecular Biology

13. how the information stored in DNA is used to make proteins;
14. the basic principles of molecular cell biology;
15. the properties of enzymes;
16. the genome and its study in normal and patho-physiology;
17. the regulation of gene transcription
18. production of recombinant therapeutic proteins
19. the pathways involved in the metabolism of carbohydrates, fats and proteins and metabolic diseases;
20. how the various metabolic pathways are integrated in the body;
21. Molecular basis of disease

Essential Cell Biology

22. composition and spatial organisation of the cell;
23. the major organelle systems in cells;
24. mitosis, meiosis and cell division;
25. genetic inheritance and transmission;
26. cell determination and differentiation.

Teaching and Learning Methods

You will be taught through a combination of lectures, tutorials, practical classes, coursework and projects. In Part 3 you will undertake a research project throughout the programme you will undertake independent reading both to supplement and consolidate the taught material and to broaden your knowledge and understanding of Biomedical Sciences.

Assessment Methods

You are assessed by a combination of continuous assessment and written examinations at the end of each semester to test your knowledge and understanding of the lecture and tutorial material. Continuous assessment is based on performance in tutorials, practicals and projects including dissertations, and oral and written (e.g. poster) presentations.

Subject Specific Intellectual and Research Skills

Having successfully completed this programme you will be able to:

1. formulate and test hypotheses by planning, conducting and reporting a programme of biomedical research;
2. use a range of biomedical laboratory equipment to generate data;
3. use computer software to record and analyse biomedical sciences data and determine their importance and validity;
4. analyse and solve complex biomedical sciences problems;
5. integrate your biomedical sciences knowledge base with other selected disciplines such as biochemistry, neuroscience and pharmacology;
6. integrate and evaluate biomedical sciences data from a variety of sources, including primary source material in biomedical sciences journals;
7. understand how the boundaries of biomedical sciences knowledge are advanced through research;
8. conduct risk assessments concerning the use of chemicals, animal material and laboratory procedures.

Teaching and Learning Methods

In addition to the methods described above, you will be supervised in practical classes and during your final year project(s). As part of your final year project(s) you will be guided in critically reviewing the relevant literature.

Assessment methods

Your subject specific skills will be assessed as described above. Experimental and research skills are assessed through an appropriate combination of laboratory or project reports and presentations.

Transferable and Generic Skills

Having successfully completed this programme you will be able to:

1. communicate/present effectively both verbally and in writing on a range of topics in biomedical sciences to both specialised and non-specialised audiences;
2. work as a member of a team;
3. use information technology and other resources to find, extract and synthesise information;
4. solve problems relating to qualitative and quantitative information;
5. learn independently in a spirit of critical enquiry;
6. demonstrate you have the ability to undertake appropriate further training;
7. manage resources and time.
8. demonstrate competency in using laboratory skills in a safe a responsible manner

Teaching and Learning Methods

You will be helped to acquire these skills through aspects of the formal teaching programme. In the early years this will mainly be through tutorial and coursework, whilst in Part 3 your project work will give you ample opportunity to further develop and practice many of the individual skills in one major activity.

Assessment methods

Your skills will be assessed primarily through continuous assessment and through your Part 3 project.

Graduate Attributes

Graduate Attributes are the personal qualities, skills and understanding you can develop during your studies. They include but extend beyond your knowledge of an academic discipline and its technical proficiencies. Graduate Attributes are important because they equip you for the challenge of contributing to your chosen profession and may enable you to take a leading role in shaping the society in which you live.

We offer you the opportunity to develop these attributes through your successful engagement with the learning and teaching of your programme and your active participation in University life. The skills, knowledge and personal qualities that underpin the Graduate Attributes are supported by your discipline. As such, each attribute is enriched, made distinct and expressed through the variety of learning experiences you will experience. Your development of Graduate Attributes presumes basic competencies on entry to the University.

Programme Structure

Typical course content

Our BSc Biomedical Sciences degree is a highly flexible programme, allowing you to combine interests in biochemistry, physiology, neuroscience, cell biology, genetics, developmental biology and pharmacology. The emphasis is on the science that underpins and advances clinical practice, rather than the technical basis of routine laboratory tests. Human disease is studied at all levels, from genetic mutations through organ degeneration, such as the brain in Alzheimer's disease, up to whole-body metabolic disorders like diabetes. The programme offers an ideal preparation for a graduate career in medicine, clinically related professions or a career in basic, clinical or medical research.

Our staff are involved in research in biochemistry, molecular basis of disease, cell biology, oncology, developmental biology, neurobiology, immunology and infectious disease and we have exceptionally good research facilities which you will be able to access during your third year project.

Special Features of the programme

A major feature of the programme is the possibility of a research based project through your third year. This will give you access to cutting edge science and hands on experience of working in world-class facilities.

Programme details

Details of the Programme Structure may be found on the Academic Unit web site

http://www.southampton.ac.uk/biosci/undergraduate/courses/b940_bsc_biomedical_sciences.page#modules (Where an indicative list of options can be found. We cannot guarantee to offer every option each year); in the Year Handbooks, <http://www.southampton.ac.uk/studentservices/academic-life/faculty-handbooks.page> and are briefly summarised below.

As for all students studying for degrees in Biomedical Sciences, Biochemistry and Pharmacology, you will take a common Part 1. This gives you the flexibility to change your programme of study at any time before the start of Part 2.

This is an indicative list of options. We cannot guarantee to offer every option each year.

Part 1 (FHEQ Level 4)

You will take the following FOUR core modules (30 ECTS, 7.5 each):
(i.e. a minimum pass mark of 40% is required)

BIOL1007 Macromolecules of Life
BIOL1008 Metabolism and Metabolic Disorders
BIOL1011 Systems Physiology
BIOL1013 Integrative Mammalian Physiology

In addition you will take the following FOUR compulsory modules (30 ECTS, 7.5 each):
(i.e. a minimum pass mark of 25% is required)

BIOL1006 Cell Biology and Genetics
BIOL1020 Core Skills in Life Sciences
BIOL1021 Behaviour of Biomolecules
CHEM1039 Chemistry for Biological Sciences

Without A level chemistry - CHEM 1012 introduction to chemistry will be taken in place of CHEM 1039
Without A level chemistry - BIOL1023 Cell and Tissue Histology will be taken in place of BIOL 1021

Part 2 (FHEQ Level 5)

You will take the following FOUR modules. (must pass at least one of 2010/2011 and one of 2014/2022 i.e. overall x2 core, x2 compulsory)

BIOL2010 Flow of Genetic Information
BIOL2011 Molecular and Cellular Biochemistry
BIOL2014 Neuroscience
BIOL2022 Immunology, Infection and Inflammation

In addition you will take a further FOUR optional Centre for Biological Sciences (BIOL) modules (30 ECTS)

A maximum of TWO elective modules can be selected from a range of suitable courses from Academic Units other than CfBS, but no more than one UOSM should be taken. We strongly encourage you to discuss electives with your tutor before pursuing such options.

Part 3 (FHEQ Level 6)

You must take either

BIOL3034 In-depth Research Project (15 ECTS)

or

BIOL3058 Bioscience Business (15 ECTS)

or

BIOL3059 Bioscience Education (15 ECTS)

or

BIOL3069 In-silico Research Project (15 ECTS)

or

two of: BIOL3032 Literature-based Research Project (sem2), BIOL3060 Bioscience Communication (each 7.5 ECTS)

In addition you will take Six optional CfBS (BIOL) modules (30 ECTS)

A single elective module (7.5 ECTS), instead of one of the above CfBS lecture modules, can be selected from a range of suitable courses from other Academic Units or UOSM. We strongly encourage you to discuss electives with your tutor before pursuing such options.

Progression Requirements

The University regulations governing progression, determination and classification of results in general can be found in the University Calendar (Section IV – General Regulations)

<http://www.calendar.soton.ac.uk/sectionIV/progression-regs.html>.

Those specific to the Faculty and your programme are in Section IX – Faculty of Natural and Environmental Sciences <http://www.calendar.soton.ac.uk/sectionIX/sectIX-index.html>.

Intermediate exit points

You will be eligible for an interim exit award if you complete part of the programme but not all of it, as follows:

Qualification	FHEQ level	Minimum overall credit in ECTS credits	Minimum ECTS credits required at level of award
Ordinary degree	6	at least 150	30
Diploma of Higher Education	5	at least 120	45
Certificate of Higher Education	4	at least 60	45

Learning outcomes specific to each intermediate exit point correspond to a sub-set of those for the programme as a whole and may be determined by consulting the module map at the end of this document.

Support for student learning

There are facilities and services to support your learning some of which are accessible to students across the University and some of which will be geared more particularly to students in your particular Faculty or discipline area.

The University provides:

- [library resources](#), including e-books, on-line journals and databases, which are comprehensive and up-to-date together with assistance from Library staff to enable you to make the best use of these resources
- high speed access to online electronic learning resources on the Internet from dedicated PC Workstations onsite and from your own devices laptops, smartphones and tablet PCs via the Eduroam wireless network. There is a wide range of application software available from the Student Public Workstations.
- computer accounts which will connect you to a number of learning technologies for example, the Blackboard virtual learning environment (which facilitates online learning and access to specific learning resources)
- standard ICT tools such as Email, secure filestore and calendars.
- access to key information through the [MySouthampton Student Mobile Portal](#) which delivers timetables, Module information, Locations, Tutor details, Library account, bus timetables etc. while you are on the move.
- IT support through a comprehensive website, telephone and online ticketed support and a dedicated helpdesk in the Hartley Library.
- [Enabling Services](#) offering support services and resources via a triage model to access crisis management, mental health support and counselling.
- assessment and support (including specialist IT support) facilities if you have a disability, long term health problem or Specific Learning Difficulty (e.g. dyslexia);
- the [Student Services Centre](#) (SSC) to assist you with a range of general enquiries including financial matters, accommodation, exams, graduation, student visas, ID cards
- [Career Destinations](#), advising on job search, applications, interviews, paid work, volunteering and internship opportunities and getting the most out of your extra-curricular activities alongside your degree programme when writing your CV
- Other support that includes health services (GPs), chaplaincy (for all faiths) and 'out of hours' support for students in Halls (18.00-08.00); a Centre for Language Study, providing assistance in the development of English language and study skills for non-native speakers.

[The Students' Union](#) provides

- an academic student representation system, consisting of Course Representatives, Academic Presidents, Faculty Officers and the Vice-President Education SUSU provides training and support for all these representatives, whose role is to represent students' views to the University.
- opportunities for extracurricular activities and volunteering
- an Advice Centre offering free and confidential advice including support if you need to make an academic appeal
- Support for student peer-to-peer groups, such as Nightline.

Associated with your programme you will be able to access:

- An induction programme at the start of the course, which will provide orientation, information on modules, courses, library and computer facilities.
- Handbooks, module handbooks and material on the web.
- Library and academic skill packages.
- Well-equipped laboratories.
- Academic and pastoral support from members of staff, including your personal tutor which will include scheduled meetings at appropriate occasions during the academic year.
- Access to all administrative and academic material on the CBS, Programme and individual module web sites and/or Blackboard (<http://www.blackboard.soton.ac.uk>).
- Access to all academic staff through an appointment system and e-mail.
- Access to administrative staff in the Faculty Student Offices during the normal working day.
- Feedback on assessment.

Methods for evaluating the quality of teaching and learning

You will have the opportunity to have your say on the quality of the programme in the following ways:

- Completing student evaluation questionnaires for each module of the programme
- Acting as a student representative on various committees, e.g. Staff: Student Liaison Committees, Faculty Programmes Committee OR providing comments to your student representative to feedback on your behalf.
- Serving as a student representative on Faculty Scrutiny Groups for programme validation
- Taking part in programme validation meetings by joining a panel of students to meet with the Faculty Scrutiny Group

The ways in which the quality of your programme is checked, both inside and outside the University, are:

- Regular module and programme reports which are monitored by the Faculty
- Programme validation, normally every five years.
- External examiners, who produce an annual report
- A national Research Assessment Exercise (our research activity contributes directly to the quality of your learning experience)
- Institutional Review by the Quality Assurance Agency

The Academic Unit of Biological Sciences has an Education Executive that monitors and evaluates all aspects of learning and teaching at undergraduate level. It considers the results of student feedback and takes appropriate action to remedy any shortcomings. The Director of Education acts on the results of peer observation of teaching and reports from our External Examiners who are selected from comparator universities.

Criteria for admission

The University's Admissions Policy (see www.southampton.ac.uk/admissions-policy) applies equally to all programmes of study. The following are the typical entry criteria we use for selecting candidates for admission to our programmes.

Entry Requirements

These requirements are reviewed annually by our Admissions team. Those stated below were correct as of July 2015.

GCSEs:

We require Grades A-C in English, Mathematics and Science. If you lack these formal qualifications, your aptitude for the course will be assessed at interview. International students, whose first language is not English, must have already attained the necessary standard in English – see English Language Proficiency section below.

A Levels:

AAB (excluding general studies). **Either Biology or Chemistry** must be offered at A-level (minimum Grade B) along with at least one other A-level science subject

A-level Science subjects considered include:

Other science A-levels	Biology Chemistry Human Biology Physics Mathematics Environmental Science Geology Geography
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Applicants only offering A-level Biology or Chemistry will be considered on a case by case basis.

Alternative qualifications

Our admissions requirement is normally defined on the basis of A/AS levels, but equivalent qualifications are accepted.

We do offer entry through a one year Science Foundation programme designed to enable you to qualify for entry to Honours degree programmes in Biological Sciences if you have not studied the appropriate Science subjects at GCE A level or equivalent standard. It is particularly appropriate if you are a mature student or if you have obtained good grades in non-science A levels.

We will also accept applications from candidates offering other equivalent qualifications including Scottish and Irish Highers, European and International Baccalaureate, Access and Foundation courses and overseas qualifications.

More information on the entry requirements for Biology can be found on the Biology webpage here - <http://www.southampton.ac.uk/undergraduate/courses/biology.shtml>

English Language Proficiency

All programmes at the University of Southampton are taught and assessed in the medium of English (other than those in modern foreign languages). Therefore, all applicants must demonstrate they possess at least a minimum standard of English language proficiency. Our minimum standard entry requirements are an IELTS Band C, i.e.

Overall	Reading	Writing	Speaking	Listening
6.5	5.5	5.5	5.5	5.5

Information on all acceptable English Language Tests can be found on the University website: www.southampton.ac.uk/admissions-language

Recognition of Prior Learning (RPL)

The University has a Recognition of Prior Learning Policy. It may be possible to recognise formal credit for learning you have acquired in the past through formal study and/or through work and other life experiences. Your application will be considered on individual merit and you may be asked to attend an interview.

Mature applicants:

Studying for a degree later in life can be extremely rewarding and mature students are often among our most successful.

If you are over 21 and feel you would benefit from degree-level studies, we can be more flexible about our entry requirements. For full-time courses, selectors will expect you to demonstrate your commitment by means of some recent serious study, for example, one or two A-level passes, successful completion of an Open University foundation course or an appropriate Access course. Your application will be considered on individual merit and you may be asked to attend an interview.

Another popular option is to follow a certificate or diploma programme. These are available on a part time basis and most can be taken in the evenings, enabling you to continue to earn an income while you are studying. You do

For further information, please contact our Admissions Team ugafnes@soton.ac.uk

Career Opportunities

With a BSc Biomedical Sciences degree you could be expected to find work in the following areas:

- Laboratory scientist in forensic, pathology, veterinary, toxicology or haematology laboratory
- Research in academic, pharmaceutical and biotechnology sectors
- Business, legal or management roles in health care and health and safety
- Clinical research organisations running clinical trials and surveys
- Graduate entry to medical, dental or veterinary school
- Graduate assistant role to physicians or other health professionals
- Laboratory science in NGOs and voluntary services overseas
- Science writer or journalist in biological and biomedical topics
- Teaching science nationally and internationally

External Examiners(s) for the programme

Name Dr Pauline Phelan
Institution. University of Kent

Name Dr Stuart Knight
Institution King's College London

Students must not contact External Examiner(s) directly, and external examiners have been advised to refer any such communications back to the University. Students should raise any general queries about the assessment and examination process for the programme with their Course Representative, for consideration through Staff: Student Liaison Committee in the first instance, and Student representatives on Staff: Student Liaison Committees will have the opportunity to consider external examiners' reports as part of the University's quality assurance process.

External examiners do not have a direct role in determining results for individual students, and students wishing to discuss their own performance in assessment should contact their personal tutor in the first instance.

Please note: This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if s/he takes full advantage of the learning opportunities that are provided. More detailed information can be found in the programme handbook (or other appropriate guide) or online at <http://www.southampton.ac.uk/undergraduate/courses/biology.shtml>

Additional Costs

Students are responsible for meeting the cost of essential textbooks, and of producing such essays, assignments, laboratory reports and dissertations as are required to fulfil the academic requirements for each programme of study. In addition to this, students registered for this programme typically also have to pay for the items listed in the table below

In some cases you'll be able to choose modules (which may have different costs associated with that module) which will change the overall cost of a programme to you. Details of such costs will be listed in the Module Profile. Please also ensure you read the section on additional costs in the University's Fees, Charges and Expenses Regulations in the University Calendar available at <http://www.calendar.soton.ac.uk/>.

Main Item	Sub-section	PROGRAMME SPECIFIC COSTS
Approved Calculators		Candidates may use calculators in the examination room only as specified by the University and as permitted by the rubric of individual examination papers. The University approved models are Casio FX-570 and Casio FX-85GT Plus. These may be purchased from any source and no longer need to carry the University logo.
Stationery		You will be expected to provide your own day-to-day stationary items, e.g. pens, pencils, notebooks, etc. Any specialist stationery items will be specified under the Additional Costs tab of the relevant module profile.
Textbooks		<p>Where a module specifies core texts these should generally be available on the reserve list in the library. However due to demand, students may prefer to buy their own copies. These can be purchased from any source.</p> <p>Some modules suggest reading texts as optional background reading. The library may hold copies of such texts, or alternatively you may wish to purchase your own copies. Although not essential reading, you may benefit from the additional reading materials for the module.</p>

Main Item	Sub-section	PROGRAMME SPECIFIC COSTS
Equipment and Materials	Laboratory Equipment and Materials:	All materials required for laboratory work are provided. Where necessary, suitable specialist safety equipment will be provided.
IT	Computer Discs or USB drives	Students are expected to provide their own portable data storage device.
	Software Licenses	All software is provided
	Hardware	It is advisable that students provide their own laptop or personal computer, although shared facilities are available across the University campus.
Clothing	Lab Coats and safety spectacles	One laboratory coat and a pair of safety spectacles are provided at the start of the programme to each student. If these are lost the student must replace them at their own expense. The Students Union Shop stock these items.
Printing and Photocopying Costs		<p>Coursework such as essays; projects; dissertations may be submitted on line. In the majority of cases, though, students will be asked to provide a printed copy. The University printing costs are currently:</p> <p>A4 - 5p per side (black and white) or 25p per side (colour) A3 - 10p per side (black and white) or 50p per side (colour)</p> <p>Please Note: Paper sizes not recognised by the printing devices will prompt you to select the size and then charge a minimum of 50p per black and white copy and a maximum of £1 per colour copy. You can pay for your printing by using the money loaders or by using print copy payment service by going to www.printcoppayments.soton.ac.uk Please remember that we are unable to refund any credit that has not been used by the end of your course, so please consider this when topping up your printing/copy account</p> <p>Students entering year 1 2015/16 will be given a printing allowance of £3 per 7.5 ECTS BIOL towards the costs of printing lecture handouts. Practical handouts and module guides will be provided by the university.</p> <p>The University Print Centre also offers a printing and copying service as well as a dissertation/binding service. Current printing and copying costs can be found here. They also provide a large format printing service, e.g. Academic posters. Details of current costs can be found here.</p>
Placements (including Industrial Year out)		<p>Students who choose to go on an industrial placement at the end of Part 2 can expect to cover costs for health and travel insurance, accommodation and living expenses; travel costs; visa costs.</p> <p>This will vary depending on which country you are travelling to.</p>
Parking Costs		There may be a requirement to undertake work at Southampton General Hospital (SGH), for example during a final year research project. Students may need to cover costs for transport to travel to SGH or for car parking.

Revision History

1. Minor revisions (including title) 10 July 2007 (SCK)
2. New Brand added July 2008
3. Updated to reflect University restructuring June 2011 AB.
4. Revisions approved by Senate 19 June 2013 as part of new programme validation process
5. Minor changes made to form guidance on completion of Intended Learning Outcomes, and Learning outcomes and Assessment Mapping document template, for clarity; and changes to wording of support for student learning section, altering to second person throughout – agreed with the Chair and to be reported to UPC October 2013
6. Version for 2013/14 Academic Year CQA
7. Academic Year 2014/15 version Amendments JC & CQA September 2014
8. Academic Year 2015/16 version Amendments NRS
9. Updated to take account of new Programme Specification template, September 2015
10. Minor revisions July 2017