

# Programme Specification

---

## Master of Biochemistry (4 years): 2019-20

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	4 years, following standard progression for a full-time student
Accreditation details	Not applicable
Final award	Integrated Masters (MSci)
Name of award	Biochemistry
Interim Exit awards	Bachelor of Science (Honours) Bachelor of Science (Ordinary) Diploma of Higher Education Certificate of Higher Education
FHEQ level of final award	7
UCAS code	C701
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 Mark Coldwell
Date specification was written	December 2016
Date specification was validated	
Date specification was last updated	

## Programme Overview

---

### Brief outline of the programme

Biochemistry is the study of all aspects of the structure and function of cells and organisms at the molecular level. Graduates with a Masters degree in Biochemistry are in considerable demand in a variety of areas of employment. Building on our Bachelors Biochemistry Programme, the Masters degree in Biochemistry provides a balanced programme where you will gain further relevant skills and knowledge to pursue a career in Biochemistry.

Students will be taught through a combination of lectures, tutorials, workshop and practical classes in Parts 1 and 2, with the opportunity to pursue an independent research project in Part 3. In Part 4 students will undertake two further taught modules, another extended research-based project, prepare a series of critiques on research seminars attended, and undertake either a library-based dissertation, science communication module or modules to develop hands-on research skills. This will allow you to develop your critical understanding of the field. Throughout the programme, students will be expected to undertake independent reading both to supplement and consolidate the taught material and to broaden their knowledge and understanding of biochemistry.

Your contact hours will vary depending on your module/option choices. Full information about contact hours is provided in individual module profiles.

### Special Features of the programme

The Masters in Biochemistry provides a flexible programme with which to pursue your interest in Biochemistry to the frontiers of our knowledge in this discipline. The first two years provide you with a solid foundation in biochemistry and experience of key laboratory skills. In the third year you will have the opportunity to develop your own interests in particular fields of research supported by a range of advanced Part 3 courses. These courses are taught by researchers at the forefront of their disciplines from within Biological Sciences, including the opportunity to conduct an original research project in areas such as Molecular and Cellular Biology, Neuroscience, Structural Biology and Plant Biochemistry.

The analytical skills acquired will be further honed in Part 4 where you have the opportunity to undertake an extended research projects in our own research laboratories and attend modules which are research led, drawing extensively on research seminars given throughout the University. The analytical and practical skills acquired during this programme provide a strong foundation for a broad range of careers extending beyond those required by researchers in biochemistry.

Alongside core modules, we offer a broad range of modules in biochemistry and the wider area of biomedical sciences, which will give you the flexibility to follow your particular interests as you progress through your degree. Furthermore, there are also modules available in other faculties including modern languages and broader interdisciplinary modules, which will give you the choice to maintain a broader portfolio of skills and experience, should you so wish.

In the second semester of the second year, our highest achieving students are invited to consider going overseas on a “study abroad” module, giving them the opportunity to study at partner universities in Australia. Students are also encouraged to apply for a year out in industry between the second and third year of their studies. Those that gain this industrial experience find that it gives them a large boost in terms of employability as they return to complete their degrees.

Our research projects enable students to participate in cutting-edge research. In third year, this will give students the ability to perform independent experiments as part of a wider research programme, and in fourth year the extended project allows students to gain individual experience with a research group that will set them up for a longer-term research career, or multiple other opportunities.

### **Learning and teaching**

Eight modular units are taken each academic year, four in semester one and four in semester two. A unit normally consists of two lectures a week plus a three-hour practical on alternate weeks. Practicals and other components of in-course assessment contribute up to 25% of your final mark in Parts 1 to 3. We also provide workshops and pastoral tutorials in which you can get specific help on the content of your lectures. Each week students therefore attend eight 45-minute lectures, an average of two 2 to 3 hour practical classes and may also attend a small group tutorial, which should take up to two hours to prepare.

In year 3 you will undertake an independent research-based project, which will take the place of most continuous assessment and practical classes, although some modules retain pieces of continuous assessment. During your final year you will take an extended research project and two further lecture based modules. In addition you will take one module allowing you to critically assess current research and write an overview of one aspect of the field. Also in year 4 you will have the opportunity to study skills based modules which will strengthen your experience of cutting edge of research methods.

### **Assessment**

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 and practicals.

Examinations are held in the two weeks after each semester, in January and June. Part I work shall be excluded from the final degree classification. A weighting of 0:1:2:2 shall be applied to the four parts used to calculate the grade for the final MBiochemistry programme.

**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 the programme are to provide you with:

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 through each part of your degree;
2. a sound scientific knowledge base in biochemistry;
3. the ability to describe and comment on specific aspects of current research in biochemistry;
4. an appreciation of the limits of our current understanding of biochemistry and how these may be advanced by further relevant research;
5. an opportunity to develop a range of transferable skills (information and communication technology,
6. skills in team working, written and oral communication, time management, planning, data collection and presentation;
7. opportunities to develop your skills of critical thinking and to show that you can pursue independent study;
8. an opportunity to undertake independent projects on a biochemical topic, including one within an academic research laboratory;
9. an education and training suitable for a wide variety of careers and that will prepare you for higher degrees and careers in biochemical research or graduate entry to medicine;
10. the capability of life-long learning, study and enquiry.

## **Programme Learning Outcomes**

---

By the end of this programme you will be able to:

- Show knowledge and understanding of a range of topics relevant to Biochemistry, as detailed in the learning outcomes for the core and compulsory modules for this programme
- Use a range of practical skills and techniques relevant to Biochemistry, as detailed in the learning outcomes for the core and compulsory modules for this programme
- Collect and analyse experimental data
- Interpret and write up the results of experiments
- Create and deliver a presentation on a topic relevant to biochemistry
- Conduct research into an area of science relevant to biochemistry
- Produce a dissertation, based on scientific research
- Have an appreciation of the ethical and societal aspects of research in the biosciences
- Conduct an in-depth piece of scientific research, evidenced by a substantial dissertation

As well as these programme level learning outcomes, which must be read in conjunction with those of the core and compulsory modules in the programme, you will have been assessed in other learning outcomes. These allow you to demonstrate Knowledge and Understanding, Subject Specific Intellectual and Research Skills, and Transferable and Generic Skills.

### **Knowledge and Understanding**

Having successfully completed this programme you will be able to demonstrate critical awareness of current issues in biochemistry, and comprehensive knowledge and systematic understanding of:

1. the structure and function of biologically important molecules, and how these interact;
2. how genetic information is stored, accessed and used in a cellular context;
3. the role of metabolic pathways in the production of energy and other components essential for cell life and growth;
4. the techniques used to study biological macromolecules;
5. how biotechnology is used in research and medicine;
6. the composition and spatial organisation of the cell, including cell division;
7. how cells communicate with each other;
8. the basis of homeostasis and other key physiological processes;
9. how cells become specialised, form tissues and functions within the major organs;

### **Teaching and Learning Methods**

You will be taught through a combination of lectures, tutorials, practical classes, coursework and projects. These activities will enable you to develop a critical understanding of Biochemistry and become familiar with the techniques that are employed in modern Biochemical research. In Part 3 you

will undertake an independent research project. In Part 4 you will undertake an extended research-based project, and prepare a series of critiques on research seminars attended. You will also complete either a further project based on literature research or science communication, or undertake further skills-based training modules. In addition, you will study two further taught modules in depth, allowing you to critically assess research papers and communicate an overview of one aspect of the field. Throughout the programme you will undertake independent reading both to supplement and consolidate the taught material and to broaden your knowledge and understanding of biochemistry.

### **Assessment methods**

You will be assessed by a combination of continuous assessment and written/computer based exams at the end of each semester. Continuous assessment will be assessed by tutorials, practical and project work, providing an opportunity for you to demonstrate your understanding of the subject area and your practical competencies.

### **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 biochemical research in the form of a project, either directly (from your own lab work or data mining), or indirectly through analysis of the work of others;
2. use a range of biochemical laboratory equipment to conduct experiments;
3. use computer software to record and/or analyse biochemical data and determine their importance and validity;
4. analyse critically and solve complex biochemical problems;
5. integrate your biochemical knowledge base with other selected disciplines such as physiology, biology, pharmacology or chemistry;
6. independently integrate and critically evaluate biochemical data from a wide range of sources, including primary source material in biochemical journals and experimentation;
7. demonstrate a systematic understanding of how the boundaries of biochemical knowledge are advanced through research;
8. assess how your work can have consequences for yourself, others around you, and the general public. For laboratory work, this would mean conducting risk assessments concerning the use of chemicals, animal material and laboratory procedures; for in silico work, understanding and executing data analysis responsibly, using university guidelines on working with public or private datasets, and the secure storage and sharing of data; for work communicating to the public, appreciating the complexities of giving clear and accurate information when discussing scientific subjects.
9. demonstrate broad expertise in defined areas of biochemistry at the level of current research in the field;
10. critically evaluate the data and methodology of current published research in biochemistry and present your conclusions.

### **Teaching and Learning Methods**

In addition to the methods described in the section above you will be supervised in practical classes and during your research projects. As part of your final year programme you will be guided in critically reviewing topics using primary source literature.

### **Assessment methods**

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

### **Transferable and Generic Skills**

The transferable skills you will develop during your degree are those that will improve your employability and will be of use to you in your future career.

Having successfully completed this programme you will be able to:

1. communicate/present effectively both verbally and in writing on a range of biochemical topics to both specialised and non-specialised audiences;
2. work with, and within, a group towards defined outcomes;
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 through 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 and 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 parts 3 and 4 your project work will give you ample opportunity to further develop and practise many of the individual skills.

### **Assessment methods**

Your skills will be assessed as described in the section above, primarily through continuous assessment and through your year 3 and year 4 projects

## **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**

In Part 1, there are a number of core and compulsory modules, which lay a solid foundation in the basic discipline of this programme. Part 1 is common with both the Biomedical, Neuroscience and Pharmacology programmes and thus offers the flexibility to change degree programme at the end of Part I. A compulsory module is one that you must take (but need not pass) whilst a core module is one that you must take and pass to progress to the next level of study. More specialised training and options that enable diversification commence in Part 2. There is also an opportunity in Part 2 to take modules from the University's Curriculum Innovation Programme (CIP).

In Parts 3 and 4 the students are exposed to the forefronts of the discipline's knowledge, with the opportunity to conduct supervised original research.

The four-year programme is intended to develop research skills in a more inter-disciplinary context than is possible in a three-year degree structure. You will also be exposed to cutting edge research, participating in seminar presentations in wide-ranging and specialist topics.

### **Programme details**

The MBiochem programme is offered as a full-time course and normally lasts for four years.

Study is divided into four parts for the MBiochem each part corresponding to one year of full-time study. The programme is delivered in a semester pattern, each semester having 12 weeks for teaching and learning and 2-3 weeks for examinations.

The programme is divided into individual study modules. Each study module is accredited as being worth a certain number of credit points to you on successful completion. Modules are normally worth 7.5 ECTS which is equivalent to 150 hours of study. Modules are generally assessed at the end of each semester, but some are assessed entirely by coursework throughout the duration of the module.

## Part 1(FHEQ Level 4)

The following modules are **core** (i.e. a minimum pass mark of 40% is required) and must be taken:

Module (FHEQ Level 4)	ECTS
BIOL1007 Macromolecules of Life	7.5
BIOL1008 Metabolism & Metabolic Disorders	7.5
BIOL1011 Systems Physiology	7.5
BIOL1013 Integrative Mammalian Physiology	7.5

The following modules are **compulsory** (i.e. a minimum pass mark of 25% is required) and must be taken:

Module (FHEQ Level 4)	ECTS
BIOL1006 Cell Biology & Genetics	7.5
BIOL1020 Core Skills in the Life Sciences	7.5
CHEM1039 Chemistry for Biological Scientists	7.5
BIOL1021 Behaviour of Biomolecules	7.5
NB: CHEM1039/BIOL1021 can be replaced with other modules from the Chemistry department: EITHER CHEM1041 and CHEM1042 (Fundamentals of Organic Chemistry I and II) AND CHEM1043 and CHEM1044 (Fundamentals of Physical Chemistry I and II) OR CHEM1041 and CHEM1042 AND CHEM1045 and CHEM1046 (Fundamentals of Inorganic Chemistry I and II)	3.75 each, giving a total of 15

## Part 2 (FHEQ Level 5)

Modules worth 60 ECTS must be taken

**You will take the following TWO core modules (15 ECTS):**

BIOL2010 Flow of Genetic Information

BIOL2011 Molecular and Cellular Biochemistry\*

\*Students undertaking the semester study abroad must identify an equivalent module at their host university, and this has to be approved by the programme lead. The equivalent module then must be passed.

**In addition you will take the following THREE compulsory modules (22.5 ECTS):**

BIOL2012 Exploring proteins: Structure and Function

BIOL2013 Bioinformatics & DNA technology\*\*

BIOL20xx Quantitative Methods in Biomedical Sciences\*\*

\*\*Students on the Study Abroad scheme must select modules with comparable topics to the BIOL modules, and approval of these choices must come from the programme lead.

Three further modules (22.5 ECTS) are chosen from the following options:

Module (FHEQ Level 5)	ECTS
BIOL2016 Pharmacology A	7.5
BIOL2017 Pharmacology B	7.5
BIOL2014 Neuroscience	7.5
BIOL2018 Adaptive Physiology	7.5
BIOL2022 Immunology, Infection and Inflammation	7.5
BIOL2002 Cell Biology	7.5
Any other appropriate FHEQ level 5 module (subject to availability) including:	
BIOL2039 Animal Behaviour	7.5
BIOL2001 Evolution	7.5
BIOL2003 Animal Reproduction and Development	7.5
BIOL2007 Plant Development and Function	7.5
BIOL2038 Microbiology – from the natural environment to disease	7.5
BIOL2040 Neural Basis of Behaviour	7.5
BIOL2043 Biotechnology and the living cell	7.5
BIOL2044 Medical microbiology	7.5

A maximum of TWO elective modules can be selected from a range of suitable courses from Academic Units other than Biological Sciences, but no more than one UOSM should be taken. We strongly encourage you to discuss electives with your tutor before pursuing such options.	
LANGXX15 Language Module	7.5
PHIL1006 Introduction to Political Philosophy	7.5
SOCI2002 Education and Society	7.5
SOES1009 The Living Earth	7.5
UOSM2001 Business Skills for Employability	7.5
UOSM2002 Design Skills for Presentations and Maps	7.5
UOSM2009 Ethics in a Complex World	7.5
UOSM2010 Global Challenges	7.5
UOSM2026 Ethics in Science, Engineering and Technology: Jekyll and Hyde	7.5

It is also possible to “audit” a single second year module. This means that students attend the lectures to learn the content and have access to the module Blackboard site, but they do not have to take any of the assessments. One example would be if a student chose to audit the first semester module BIOL2014: Neuroscience as they had chosen BIOL2016: Pharmacology A as their optional module in semester 1. Having BIOL2014 as an audited module then means that further options are open to that student during the third year, and this audited module will also appear on your final degree transcript.

At the end of Part 2 it is possible to spend a year in industry. Students normally apply for this during semester one of Part 2. This provides an opportunity for you to experience working in a professional environment that provides you with numerous transferable skills and may develop your practical skills. If you follow this option you will enrol in the Universities Year in Employment programme and your degree title will include ‘with a Year in Employment’. You will find that this experience will assist your understanding of the more academic parts of your degree programme, will significantly enhance your professional skills, and will increase your employability

To continue to Part 3 of the MBiochem degree, students must have achieved a mark of >60% in Part 2

### Part 3 (FHEQ Level 6)

Modules worth 60 ECTS must be taken. A compulsory 15 ECTS of independent study is required. On the Masters degree you have to take one of the following modules:

Module (FHEQ Level 6)	ECTS
BIOL3034 Laboratory research project	15
BIOL3069 In silico research project	15

The following modules are *compulsory* (i.e. a minimum pass mark of 25%) and must be taken:

Module (FHEQ Level 6)	ECTS
BIOL3013 Molecular Recognition	7.5
BIOL3014 Molecular Cell Biology	7.5
BIOL3017 Molecular and Structural Basis of Disease	7.5

Three further modules (22.5 ECTS) are chosen from the following, with at least one of them being chosen from those marked with a \*:

[NB When choosing your options please note table below regarding overlapping modules]

Module (FHEQ Level 6)	ECTS
BIOL3012 Cell Membranes*	7.5
BIOL3015 Regulation of Gene Expression*	7.5
BIOL3018 Molecular Pharmacology*	7.5
BIOL3020 Systems Neuroscience	7.5
BIOL3021 Cellular and Molecular Neuroscience*	7.5
BIOL3022 Cellular Signalling in Health and Disease*	7.5
BIOL3025 Neuropharmacology of CNS disorders	7.5

BIOL3026 The Pathophysiology of the Lung	7.5
BIOL3027 Selective Toxicity*	7.5
BIOL3037 Immunology	7.5
BIOL3043 Cellular and Molecular Pathology	7.5
BIOL3044 Maternal, Fetal and Neonatal Physiology	7.5
BIOL3048 Neurobiology of Neurodegenerative Diseases	7.5
BIOL3052 Biomedical Technology*	7.5
BIOL3054 Nutrition in Health and Disease: Part 1	7.5
BIOL3055 Nutrition in Health and Disease: Part 2	7.5
BIOL3057 Biofilms and Microbial Communities	7.5
BIOL3063 Bioinformatics and Systems Biology*	7.5
BIOL3064 Cancer and Chromosome Biology*	7.5
BIOL3065 Biomedical Parasitology	7.5
Any other appropriate BIOL3XXX module (subject to availability)	7.5
In addition you can take a single elective module (7.5 ECTS), from a range of suitable modules below, other Academic Units or a UOSM. A complete list of BIOL modules can be found at <a href="http://www.southampton.ac.uk/biosci/undergraduate/modules.page">http://www.southampton.ac.uk/biosci/undergraduate/modules.page</a> . We strongly encourage you to discuss your module choice with your tutor before pursuing such options.	
SOCI2002 Education and Society	7.5
UOSM2001 Business Skills for Employability	7.5
UOSM2002 Design Skills for Presentations and Maps	7.5
UOSM2009 Ethics in a Complex World	7.5
UOSM2010 Global Challenges	7.5
UOSM2026 Ethics in Science, Engineering and Technology: Jekyll and Hyde	7.5
UOSM2027 Health Policy and Politics	7.5

#### Part 4 (FHEQ Level 7)

The following modules (total 45 ECTS) are *compulsory* (i.e. a minimum pass mark of 25%) and must be taken:

Module (FHEQ Level 7)	ECTS
BIOL6053 Current Research	7.5
BIOL6013 Advanced Research Project	30

The following modules are further project or skills-based modules, and a total of 7.5 ECTS must be taken:

Module (FHEQ Level 7)	ECTS
BIOL6011 Advanced Library Project	7.5
BIOL6072 Advanced Science Communication	7.5
BIOL6055 Computational Methods for Biological Data Analysis	3.75
BIOL6073 Critical Thinking in Biological Research	3.75
BIOL6075 Biological Optical Imaging	3.75
BIOL6077 Skills in Molecular Bioscience	3.75
BIOL60xx Skills in Biomolecular NMR	3.75
BIOL60xx Skills in Optical Spectroscopy	3.75

Two further modules (15 ECTS) are chosen from the following with at least one being from those marked with a \*:

[NB When choosing your options please note table below regarding overlapping modules]

Module (FHEQ Level 7)	ECTS
BIOL6021 Current Topics in Cell Biology	7.5
BIOL6022 Molecular Pharmacology*	7.5
BIOL6023 Cellular Signalling in Health and Disease*	7.5
BIOL6024 Selective Toxicity*	7.5
BIOL6025 Cellular & Genetic Aspects of Animal Development	7.5

BIOL6027 Regulation of Gene Expression*	7.5
BIOL6031 Cell Membranes*	7.5
BIOL6034 Systems Neuroscience	7.5
BIOL6035 Cellular and Molecular Neuroscience*	7.5
BIOL6036 Neuropharmacology of CNS Disorders	7.5
BIOL6037 Pathophysiology of the lung	7.5
BIOL6038 Immunology	7.5
BIOL6039 Cellular and Molecular Pathology	7.5
BIOL6040 Maternal, Fetal and Neonatal Physiology	7.5
BIOL6041 Biomedical Technology*	7.5
BIOL6042 Nutrition in Health and Disease: Part 1	7.5
BIOL6043 Nutrition in Health and Disease: Part 2	7.5
BIOL6045 Neurodegenerative Disease	7.5
BIOL6047 Biofilms and Microbial Communities	7.5
BIOL6071 Cancer Chromosome Biology*	7.5
BIOL6074 Bioinformatics and Systems Biology*	7.5
BIOL6075 Biomedical Parasitology	7.5
Any other appropriate BIOL6XXX module (subject to availability)	7.5

The following table lists the modules that have third and fourth year versions. You cannot take the fourth year equivalent of a module that you have already taken in your third year.

FHEQ level 7 Modules		FHEQ level 6 modules		sem
BIOL6021	Current Topics in Cell Biology	BIOL3001	Current Topics in Cell Biology	1
BIOL6022	Molecular Pharmacology	BIOL3018	Molecular Pharmacology	2
BIOL6023	Cellular Signalling in Health and Disease	BIOL3022	Cellular Signalling in Health and Disease	2
BIOL6024	Selective Toxicity	BIOL3027	Selective Toxicity	1
BIOL6025	Cell & Gen Aspects of Animal Development	BIOL3006	Cell & Gen Aspects of Animal Development	2
BIOL6027	Regulation of Gene Expression	BIOL3015	Regulation of Gene Expression	1
BIOL6030	Molecular Cell Biology	BIOL3014	Molecular Cell Biology	1
BIOL6031	Cell Membranes	BIOL3012	Cell Membranes	1
BIOL6032	Molecular Recognition	BIOL3013	Molecular Recognition	2
BIOL6033	Molecular Basis of Disease	BIOL3017	The Molecular and Structural Basis of Disease	2
BIOL6034	Systems Neuroscience	BIOL3020	Systems Neuroscience	2
BIOL6035	Cellular and Molecular neuroscience	BIOL3021	Cellular and Molecular neuroscience	1
BIOL6036	Neuropharmacology of CNS Disorders	BIOL3025	Neuropharmacology of CNS Disorders	2
BIOL6037	Pathophysiology of the lung	BIOL3026	Pathophysiology of the lung	1
BIOL6038	Immunology	BIOL3037	Immunology	1
BIOL6039	Cellular and Molecular Pathology	BIOL3043	Cellular and Molecular Pathology	1
BIOL6040	Maternal, Fetal and Neonatal Physiology	BIOL3044	Maternal, Fetal and Neonatal Physiology	2
BIOL6041	Biotechnology and Therapeutics	BIOL3052	Biotechnology and Therapeutics	2
BIOL6042	Nutrition in Health and Disease: Part 1	BIOL3054	Nutrition in Health and Disease: Part 1	1
BIOL6043	Nutrition in Health and Disease: Part 2	BIOL3055	Nutrition in Health and Disease: Part 2	2
BIOL6045	Neurodegenerative Disease	BIOL3048	Neurodegenerative Disease	2
BIOL6047	Biofilms and Microbial Communities	BIOL3057	Biofilms and Microbial Communities	2
BIOL6071	Cancer Chromosome Biology	BIOL3064	Cancer Chromosome Biology	1

BIOL6074	Bioinformatics and Systems Biology	BIOL3063	Bioinformatics and Systems Biology	1
BIOL6075	Biomedical Parasitology	BIOL3065	Biomedical Parasitology	2

## 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>.

## 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
Honours degree	6	at least 180	45
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.

## 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. Costs that students registered for this programme typically also have to pay for are included in Appendix 2.

## 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 Biological Sciences, 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 feed back 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 student 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](http://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 2016.

#### 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). *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 Human Biology Physics Mathematics Environmental Science Geology Geography Psychology
------------------------	---

**Applicants only offering A-level 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](http://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.

## Career Opportunities

---

With an MBiochem degree you could be expected to find work in the following areas:

- Biotechnology and pharmaceutical industry
- Postgraduate research training
- Scientific officer in medical laboratories
- Teaching
- Forensic science
- Legal profession
- Business management

## 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 (give URL).

## Appendix 1: Learning outcomes and Assessment Mapping

Module Code	Module Title	Knowledge and Understanding									Subject Specific Intellectual and Research Skills										Transferable and Generic Skills							
		1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8
BIOL1007	Macromolecules of Life	x	x	x	x	x						x									x	x	x	x				x
BIOL1008	Metabolism & Metabolic Disorders			x	x			x	x			x									x	x	x	x				x
BIOL1011	Systems Physiology			x	x			x	x	x		x			x						x	x	x	x				x
BIOL1013	Integrative Mammalian Physiology				x			x	x	x					x							x	x	x				x
BIOL1020	Core Skills in the Life Sciences				x	x	x										x				x		x	x			x	
BIOL1006	Cell Biology & Genetics				x	x	x								x								x	x				
CHEM1039	Chemistry for Biological Scientists				x										x						x	x		x	x	x	x	
BIOL1021	Behaviour of Biomolecules				x										x						x	x		x	x	x	x	
BIOL2010	Flow of Genetic Information	x	x	x	x	x		x				x									x	x	x	x			x	x
BIOL2011	Molecular Cell Biology	x	x	x	x	x	x	x				x									x	x	x	x			x	x
BIOL2012	Exploring Proteins	x			x								x		x	x	x				x		x	x	x		x	
BIOL2013	Bioinformatics & DNA Technology	x	x		x																x		x	x	x		x	
BIOL20xx	Numeracy				x																		x	x	x			
BIOL3034	Laboratory research project				x	x					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
BIOL3069	In silico research project				x	x					x		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
BIOL3013	Molecular Recognition	x			x	x									x	x	x						x		x			
BIOL3014	Molecular Cell Biology	x	x	x	x	x	x	x							x	x	x						x		x			
BIOL3017	Molecular Basis of Disease	x			x	x									x	x	x						x		x			
BIOL6013	Advanced Research Project				x	x					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
BIOL6053	Current Research				x	x					x		x	x	x	x	x		x	x	x		x		x	x	x	
BIOL6011	Library project				x	x					x		x	x	x	x	x		x	x			x		x	x	x	
BIOL6072	Advanced science communication				x	x					x		x	x	x	x	x	x	x	x	x		x		x	x	x	
BIOL60xx	2x skills-based modules				x	x					x		x	x	x	x	x		x	x			x	x	x	x	x	

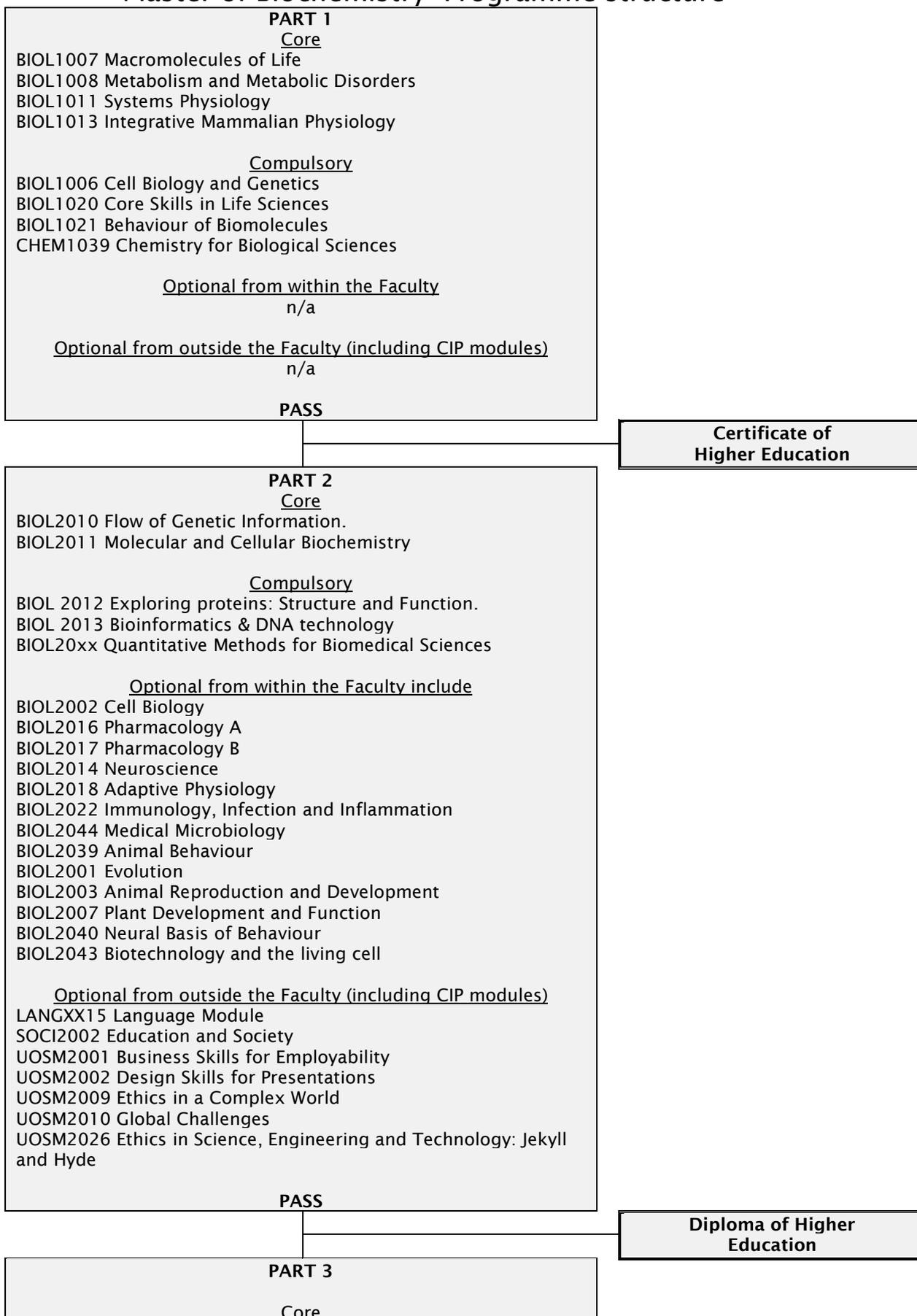
Appendix 1 continued: Core and Compulsory Modules Assessment Breakdown

Module Code	Module Title	Coursework 1	Coursework 2	Exam
BIOL1007	Macromolecules of Life	Practical 25%		2 hour exam Part 1 - MCQs Part 2 - multiple answer, matching pair questions etc (75%)
BIOL1008	Metabolism & Metabolic Disorders	Practical 25%		2 hour exam Part 1 - MCQs Part 2 - Computer-based drag-and-drop/calculation/ other style questions (75%)
BIOL1011	Systems Physiology	Practical 30%		2-hour computer-based test of a) EMIs. b) data analysis questions, c) annotated diagram questions (70%)
BIOL1013	Integrative Mammalian Physiology	Practical 25%		A 2-hour paper EMQ/multiple choice/ short answer paper with 50-60 sub-questions (75%)
BIOL1006	Cell Biology & Genetics	Continual assessment based on short answers (30%)		Examination: A two hour paper, compulsory multiple choices and series of short questions (70%)
BIOL1020	Core Skills in the Life Sciences	Project 1 20% Project 2 10%	Test 1 Lecture Material 35% Test 2 Mathematical Modelling 5% Test 3 Peer-assessed essay 5% Test 4 Written Essay 5% Test 5 Knowledge database search 5% Test 6 Referencing (S2) 5% Test 7 Typed Essay (S2) 5% Test 8 Statistics Exercise (S2) 5%	

BIOL1021	Behaviour of Molecules	Coursework 10%	Computer Based EMI 40%	120 mins 60 mins multiple choice computer based test + 60 mins of problem solving exercises 50%
CHEM1039	Chemistry for Biological Sciences	Coursework tests (25%)		2 hour exam a) 60 mins multiple choice computer based test b) 60 mins of problem solving exercises
BIOL2010	Flow of genetic information	Practical 25%		120mins Set of MCQ/EMI questions, 1 data analysis or similar question and 1 further essay question 75%
BIOL2011	Molecular and Cellular Biochemistry	Practical 15%		120mins Set of MCQ/EMI questions, 1 data analysis or similar question and 1 further essay question 85%
BIOL2012	Exploring proteins: Structure and Function	Library project 25%	Computer Test 5%	120mins Set of MCQ/EMI questions, 1 data analysis or similar question and 1 further essay question 70%
BIOL2013	Bioinformatics & DNA Technology	Assignment 25%		120mins Set of MCQ/EMI questions, 1 data analysis or similar question and 1 further essay question 75%
BIOL2XXX	Quantitative Methods in Biomedical Sciences	Continual Assessment (computer based problems 50%)		Examination (50%)
BIOL3013	Molecular recognition			120 mins 2 essay questions from 3 100%
BIOL3014	Molecular cell biology			120 mins 2 essay questions from 3 100%
BIOL3017	Molecular basis of disease			120 mins 2 essay questions from 3 100%

BIOL3034	Laboratory research project	Progress report 15% Dissertation 70% Oral Presentation 15%		
BIOL3069	In silico research project	Progress report 15% Dissertation 70% Oral Presentation 15%		
BIOL6053	Current Research	4 written reports on aspects of research seminars (100%)		
BIOL6013	Advanced Research Project	100% project Preliminary Summary 5% Practical 15% Dissertation 65% Oral Presentation 15%		
BIOL6011	Library project	100% project Preliminary Summary 5% Practical 10% Dissertation 75% Oral Presentation 10%		
BIOL6072	Advanced science communication	Blog 15 % Newspaper article 10 % Science report 15 % Video presentation 30 % Podcast 30 %		
BIOL60xx	2x skills-based modules	Various continuous assessments (100%)		

## Master of Biochemistry Programme structure



n/a

Compulsory

BIOL 3034 Laboratory research project

**or**

BIOL3069 In silico research project

**Plus**

BIOL3013 Molecular Recognition

BIOL3014 Molecular Cell Biology

BIOL3017 Molecular Basis of Disease

Optional from within the Faculty include

BIOL3012 Cell Membranes

BIOL3015 Regulation of Gene Expression

BIOL3021 Cellular and Molecular Neuroscience

BIOL3027 Selective Toxicity

BIOL3022 Cell Signalling in Health and Disease

BIOL3018 Molecular Pharmacology

BIOL3052 Biomedical Technology

BIOL3012 Cell Membranes

BIOL3013 Molecular Recognition

BIOL3015 Regulation of Gene Expression

BIOL3017 Molecular & Structural Basis of Disease

BIOL3018 Molecular Pharmacology

BIOL3020 Systems Neuroscience

BIOL3022 Cellular Signalling in Health Disease

BIOL3025 Neuropharmacology of CNS Disorders

BIOL3026 The Pathophysiology of the Lung

BIOL3027 Selective Toxicity

BIOL3037 Immunology

BIOL3043 Cellular and Molecular Pathology

BIOL3044 Maternal, Fetal and Neonatal Physiology

BIOL3048 Neurobiology of Neurodegenerative Diseases

BIOL3052 Biomedical Technology

BIOL3054 Nutrition in Health & Disease: Part 1

BIOL3055 Nutrition in Health & Disease: Part 2

BIOL3057 Biofilms and Microbial Communities

Any other appropriate BIOL3XXX module (subject to availability)

Optional from outside the Faculty (including CIP modules) - this list is not exhaustive

SOCI2002 Education and Society

UOSM2001 Business Skills for Employability

UOSM2002 Design Skills for Presentations and Maps

UOSM2009 Ethics in a Complex World

UOSM2010 Global Challenges

UOSM2026 Ethics in Science, Engineering and Technology: Jekyll and Hyde

UOSM 2027 Health Policy and Economics

**PASS**

**Bachelor of Science (Ord)  
Bachelor of Science (Hons)**

**PART 4**

Core

N/A

Compulsory

BIOL6053 Current Research

BIOL6013 Advanced Research Project

**Plus either:**

BIOL6011 Advanced Library Project

**or**

BIOL6072 Advanced Science Communication

---

**or**

BIOL60xx Skills modules (x2)

Optional from within the Faculty

BIOL6021 Current Topics in Cell Biology  
BIOL6022 Molecular Pharmacology  
BIOL6023 Cellular Signalling in Health and Disease  
BIOL6024 Selective Toxicity  
BIOL6025 Cellular & Genetic Aspects of Animal Development  
BIOL6027 Regulation of Gene Expression  
BIOL6031 Cell Membranes  
BIOL6034 Systems Neuroscience  
BIOL6035 Cellular and Molecular Neuroscience  
BIOL6036 Neuropharmacology of CNS Disorders  
BIOL6037 Pathophysiology of the lung  
BIOL6038 Immunology  
BIOL6039 Cellular and Molecular Pathology  
BIOL6040 Maternal, Fetal and Neonatal Physiology  
BIOL6041 Biomedical Technology  
BIOL6042 Nutrition in Health and Disease: Part 1  
BIOL6043 Nutrition in health and disease: Part 2  
BIOL6045 Neurodegenerative Disease  
BIOL6047 Biofilms and Microbial Communities  
Any other appropriate BIOL6XXX module (subject to availability)

**PASS**

**Conferment of Award/Graduation**

Revision History

1. Updated for 2014/15 academic year
2. Updated for 2015/16 academic year and to take account of new Programme Specification Template - Sept 2015
3. Updated for 2016/17 academic year
4. Updated for 2017/18 academic year

## Appendix 2: 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		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.  Some modules suggest reading texts as <b>optional</b> 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.
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.
	Field course clothing	You will need to wear suitable clothing when attending field courses, e.g. waterproofs, walking boots. You can purchase these from any source.
Printing and Photocopying Costs		Coursework such as essays; projects; dissertations may be submitted on line. In the majority of cases, though, students will be asked

Main Item	Sub-section	PROGRAMME SPECIFIC COSTS
		<p>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.</p> <p>You can pay for your printing by using the money loaders or by using print copy payment service by going to <a href="http://www.printcopypayments.soton.ac.uk">www.printcopypayments.soton.ac.uk</a>  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 in 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 <a href="#">University Print Centre</a> also offers a printing and copying service as well as a dissertation/binding service. Current printing and copying costs can be found <a href="#">here</a>. They also provide a large format printing service, e.g. Academic posters. Details of current costs can be found <a href="#">here</a>.</p>
<b>Placements (including Industrial Year out)</b>		<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>
<b>Parking Costs</b>		<p>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.</p>