Programme Specification

MSci Neuroscience (2020-21)

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 they take 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
Accreditation details	None
Final award	Integrated Master's degree in Science
Name of award	Neuroscience
Interim Exit awards	Bachelor of Science with Honours (BSc (Hons)) Bachelor of Science (Ordinary) Certificate of Higher Education (CertHE) Diploma of Higher Education (DipHE)
FHEQ level of final award	Level 7
UCAS code	B140
Programme code	8578
QAA Subject Benchmark or other external reference	QAA Subject Benchmark Statements Biomedical Sciences 2019, Biosciences 2019, Characteristics Statement Master's Degree 2015
Programme Lead	Dr Katrin Deinhardt
Date specification was written	February 2020

Programme Overview

Brief outline of the programme

Understanding the human nervous system is one of science's greatest challenges, whilst the prevention of neurodegenerative conditions, such as Alzheimer's disease, and of Mental Illnesses is a massive challenge for society. To address these challenges we need highly motivated, well trained and talented neuroscientists.

Our four-year Integrated MSci Neuroscience degree programme covers all levels from molecular to behavioural neuroscience. You will also study wider aspects of physiology, pharmacology and the immune system to gain a solid understanding of nervous system function within the context of the body. In Parts 3 and 4 you will undertake independent research projects. The programme is intended to provide a stepping stone to further study at PhD level in academic or clinical groups, and to important research career opportunities in the pharmaceutical and medical-device industries. Complementary to research career pathways, the programme also provides a strong foundation for roles in education and management.

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

Learning and teaching

Eight modules are taken each academic year, four in semester one and four in semester two. You will be taught using a combination of lectures, tutorials, practical classes, course work and projects. These activities will enable you to develop a critical understanding of neuroscience and

become familiar with the techniques that are employed in modern neuroscience research. These skills will be consolidated in Part 3, where they will be employed as part of an extended research project. In Part 4 the advanced project makes up 50% of the overall mark, and there are continuous assessment elements in each of the other modules. Embedded within these modules are opportunities to develop your transferable and generic skills.

Assessment

Your knowledge and understanding will be assessed by a combination of continuous assessment and written/ computer-based exams. Continuous assessment is based on your performance in tutorials, workshops, practicals and projects, and includes formative and summative components. While marks for Part 1 do not count towards the final degree classification, you do have to gain an overall pass in your first Part. To continue on the Master's programme you must achieve an average mark of at least 60% in Part 2. Part 2 counts one fifth towards the final degree classification whilst Parts 3 and 4 count two fifths each. If your average mark in Part 2 is below 60% you will get transferred onto the three year BSc (Honours) programme.

Special Features of the programme

The Masters in Neuroscience provides a flexible programme with which to pursue your interest in Neuroscience to the frontiers of our knowledge in this discipline. Parts 1 and 2 provide you with a solid foundation in Neuroscience and important related disciplines needed to put the specific information in context. You will also develop a solid foundation in laboratory skills. In Part 3 you will have the opportunity to develop your own interests in particular fields of neuroscience research supported by a range of advanced Part 3 modules. These modules are taught by researchers at the forefront of their disciplines from within the School of Biological Sciences and from the wider university, including the Faculty of Medicine, and the Institute of Life Sciences. There is also the opportunity to conduct an original research project. The analytical skills acquired will be further honed in Part 4 where you have the opportunity to undertake an extended research project in the School of Biological Sciences 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.

In the second semester of Part 2, 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, New Zealand, Europe and Asia. Whilst abroad, you must undertake modules that give you an equivalent learning experience and related disciplines to those you would have studied at Southampton. Therefore the university selected by the student will be considered on a case-by-case basis, in consultation with the programme lead. Students are also encouraged to apply for a year out in industry between Parts 2 and 3 of their studies. Those who gain this industrial experience find that it gives them a large boost in terms of employability as they return to complete their degrees.

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

1. Neuroscience is the study of all aspects of the nervous system, from the molecular to behavioural level, and is addressed in the context of the physiology and pathology of the whole organism. Graduates in Neuroscience are needed to help address key challenges for

society such as neurological and psychological conditions, as well as to improve fundamental understanding of brain function. Graduates are also well qualified to go on to 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.

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 Neuroscience;
3. the ability to describe and comment on specific aspects of current research in Neuroscience;
4. an appreciation of the limits of our current understanding of Neuroscience and how these may be advanced by further relevant research;
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 independent projects on a Neuroscience topic, including the possibility of two in an academic research laboratory
8. an education and training suitable for a wide variety of careers and that will prepare you for higher degrees and careers in Neuroscience research;
9. the capability of life-long learning, study and enquiry.

Programme Learning Outcomes

Knowledge and Understanding

On successful completion of this programme you will have knowledge and understanding of:

A1. the principles of neurophysiology
A2. the principles of synaptic transmission
A3. nervous system development
A4. neuroanatomy and cellular morphology
A5. the autonomic nervous system
A6. spinal reflexes, motor control and movement disorders
A7. sensory systems
A8. principal neurotransmitter systems
A9. pharmacological manipulation of neurotransmitter pathways
A10. structure and function of neurotransmitter receptors
A11. learning and memory
A12. neuronal network signalling and behaviour
A13. neurological disease mechanisms, including neurodegeneration
A14. the role of glia in the nervous system
A15. the principal function of major organs in the body
A16. the cellular interactions which underlie the immune response in normal and pathophysiology
A17. muscles and the control of muscle contraction
A18. the principles of homeostasis and key physiological mechanisms
A19. the composition and spatial organisation of a cell
A20. the intracellular signalling pathways
A21. how genetic information is stored, accessed and used in a cellular context

A22. genetic inheritance and transmission
A23. how the various metabolic processes are integrated within the body
A24. the structure and function of biologically important molecules
A25. cell determination and differentiation
A26. the transport of molecules across biological membranes.

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 either independently or as part of a group. In Part 4 you will undertake an individual extended research-based project and a library-based dissertation. A key component will be the "Advanced Neuroscience" module in which you will be guided through the underpinnings of neuroscience research projects currently being undertaken. Throughout the programme you will undertake independent reading both to supplement and consolidate the taught material and to broaden your knowledge and understanding of Neuroscience.

Assessment methods

You are assessed by a combination of continuous assessment and written/ computer-based 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 presentations.

Subject Specific Intellectual and Research Skills

Having successfully completed this programme you will be able to:

B1. formulate and test hypotheses by planning, conducting and reporting a significant body of neuroscience research
B2. use a range of neuroscience laboratory equipment to conduct experiments
B3. use computer software to record and analyse neuroscience data and determine their importance and validity
B4. analyse critically and solve complex neuroscience problems
B5. integrate your neuroscience knowledge base with other selected disciplines such as physiology, biology, pharmacology or biochemistry
B6. independently integrate and critically evaluate neuroscience data from a wide range of sources, including primary source material in neuroscience journals and from experimentation
B7. demonstrate a systematic understanding of how the boundaries of neuroscience knowledge are advanced through research
B8. conduct risk assessments concerning the use of chemicals, animal material and laboratory procedures
B9. demonstrate broad expertise in defined areas of neuroscience at the level of current research in the field
B10. critically evaluate the data and methodology of current published research in neuroscience 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 both your Part 3 and Part 4 projects. In the final Part of your 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

Having successfully completed this programme you will be able to:

C1. communicate/present effectively both verbally and in writing on a range of Neuroscience topics to both specialised and non-specialised audiences
C2. work with, and within, a group towards defined outcomes
C3. use information technology and other resources to find, extract and synthesise information
C4. solve problems relating to qualitative and quantitative information
C5. learn independently through critical enquiry
C6. demonstrate you have the ability to undertake appropriate further training
C7. manage resources and time
C8. 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 Parts 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 Part 3 and Part 4 projects.

Programme Structure

The programme structure table is below:

Information about pre and co-requisites is included in individual module profiles.

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 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.

Where optional modules have been specified, the following is an indicative list of available optional modules, which are subject to change each academic year. Please note in some instances modules have limited spaces available.

It is also possible to “audit” a single Part 2 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. An audited module then means that further options are open to that student during Part 3, and this audited module will also appear on your final degree transcript.

MSci Neuroscience

Part I

Module code	Title	ECTS	Semester
Compulsory			
BIOL1024	**Fundamentals of Biochemistry**	**15**	**Compulsory**
BIOL1025	**Fundamental of Cell Biology and Physiology**	**15**	**Compulsory**
BIOL1026	**Chemistry of Life**	**15**	**Compulsory**
BIOL1027	**The Human Genome and Disease**	**7.5**	**Compulsory**
BIOL1030	**How to Think Like a Scientist**	**7.5**	**Compulsory**

Part II

Core			
BIOL2052	**Neuroscience**	**15**	**Core**
Compulsory			
BIOL2010	**Flow of Genetic Information**	**7.5**	**Compulsory**
BIOL2022	**Immunology, Infection and Inflammation**	**7.5**	**Compulsory**

You **must** choose **one of the two** options below. BIOL2049 is highly recommended. Should a student who selected BIOL2049 choose not to not pursue this module in S2, then they will be awarded the mark obtained at the end of S1 for the equivalent 7.5 ECTS module BIOL2048, and be expected to choose another 7.5ECTS module by the end of the 2nd week of S2 following standard module change procedures.

BIOL2049	**Pharmacology**	**15**	**Optional**
or			
BIOL2048	**Principles of Pharmacology**	**7.5**	**Optional**

You **must choose** a further **15 ECTS** (if **BIOL2049** was taken) or a further **22.5 ECTS** (if **BIOL2048** was taken) from the available options below.

Optional			
BIOL2013	**Bioinformatics/ Omics**	**7.5**	**Optional**
BIOL2056	**Cell Biology**	**7.5**	**Optional**
BIOL2012	**Exploring Proteins**	**7.5**	**Optional**
BIOL2044	**Medical Microbiology**	**7.5**	**Optional**
BIOL2045	**Vertebrate Development**	**7.5**	**Optional**
UOSM2001	**Business Skills for Employability**	**7.5**	**Optional**

UOSM2026	**Ethics in Science, Engineering and Technology: Jekyll and Hyde**	**7.5**	**Optional**

Part III

Core

BIOL3034	**Research Project**	**15**	**Core**

Compulsory

BIOL3021	**Cellular and Molecular Neuroscience**	**7.5**	**Compulsory**
BIOL3025	**Neuropharmacology of CNS Disorders**	**7.5**	**Compulsory**

You **must** choose at least **two** of the three options below.

BIOL3018	**Molecular Pharmacology**	**7.5**	**Optional**
BIOL3048	**Neurodegenerative Diseases**	**7.5**	**Optional**
BIOL3020	**Systems Neuroscience**	**7.5**	**Optional**

You **must** choose a further one (if chosen all three options above) or two (if chosen two out of three above) modules from the following:

If you wish to select a module not listed here, please contact your tutor to discuss.

Optional

BIOL3014	**Molecular Cell Biology**	**7.5**	**Optional**
BIOL3063	**Bioinformatics and Systems Biology**	**7.5**	**Optional**
BIOL3043	**Cellular and Molecular Pathology**	**7.5**	**Optional**
BIOL3015	**Regulation of Gene Expression**	**7.5**	**Optional**
BIOL3027	**Selective Toxicity**	**7.5**	**Optional**
BIOL3037	**Immunology**	**7.5**	**Optional**
BIOL3054	**Nutrition in Health and Disease**	**7.5**	**Optional**
BIOL3022	**Cell Signalling in Health and Disease**	**7.5**	**Optional**
BIOL3017	**Molecular and Structural Basis of Disease**	**7.5**	**Optional**
BIOL3052	**Biomedical Technology**	**7.5**	**Optional**

Part IV

Core			
BIOL6013	**Advanced Research Project**	**30**	**Core**
Compulsory			
BIOL6084	**Advanced Neuroscience**	**15**	**Compulsory**
BIOL6053	**Current Research**	**7.5**	**Compulsory**

One further module should be taken from the list below.

Note: In selecting modules for Parts 3 and 4 you may not take modules at FHEQ Level 7 if the FHEQ Level 6 version of the module has already been taken.

Optional			
BIOL6078	**Structure and Function of the Nervous System**	**7.5**	**Optional**
BIOL6097	**Skills in Biological Optical Imaging**	**7.5**	**Optional**
BIOL6095	**Skills in Molecular Bioscience**	**7.5**	**Optional**
BIOL6093	**Skills in Structural Biology**	**7.5**	**Optional**
BIOL6074	**Bioinformatics and Systems Biology**	**7.5**	**Optional**
BIOL6022	**Molecular Pharmacology**	**7.5**	**Optional**
BIOL6045	**Neurodegenerative Diseases**	**7.5**	**Optional**
BIOL6034	**Systems Neuroscience**	**7.5**	**Optional**

Typical course content
In Part 1, there are a number of compulsory modules, which lay a solid foundation in the basic discipline of this programme. Part 1 is common with both the Biomedical, Biochemistry and Pharmacology programmes and thus offers the flexibility to change degree programme at the end of Part I. More specialised training and options that enable specialisation commence in Part 2. There is also an opportunity in Parts 2 and 3 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.

Progression Requirements

The programme follows the University's regulations for ***Progression, Determination and Classification of Results : Undergraduate and Integrated Masters Programmes.*** Any exemptions or variations to the University regulations, approved by AQSC are located in section VI of the University Calendar.

Intermediate exit points (where available)
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.

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 School 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. Support includes daily Drop In at Highfield campus at 13.00 – 15.00 (Monday, Wednesday and Friday out of term-time) or via on-line chat on weekdays from 14.00 – 16.00. Arrangements can also be made for meetings via Skype.
- 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
- Careers and Employability services, 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 and in the local community (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, School 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 students to meet with the Faculty Scrutiny Group.

Further details on the University's quality assurance processes are given in the *Quality Handbook.*

Career Opportunities

The MSci Neuroscience prepares you for a range of different career opportunities, such as PhD level studies, research careers in pharmaceutical industries or as scientific officer in medical laboratories. In addition to research career pathways, the programme also provides a strong foundation for roles within teaching, management and legal professions.

External Examiner(s) for the programme

Name: Prof Gavin Woodhall
Institution: Aston University

Name: Dr Ulrike Mayer
Institution: University of East Anglia

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 Academic 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 they takes full advantage of the learning opportunities that are provided. More detailed information can be found in the programme handbook.

Appendix 1:

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 also have to pay for:

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 stationery 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 **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.
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.
	Fieldcourse clothing:	You will need to wear suitable clothing when attending fieldcourses, 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 online. In the majority of cases, though, students will be asked to provide a printed copy. The University printing costs are currently: A4 - 5p per side (black and white) or 25p per side (colour) A3 - 10p per side (black and white) or 50p per side (colour) Please Note: Paper sizes not recognised by the printing devices will prompt you to select the size and then

Main Item	Sub-section	PROGRAMME SPECIFIC COSTS
		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.printcopypayments.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. Students 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. 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.
Placements (including Study Abroad Programmes)		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. This will vary depending on which country you are travelling to.
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.

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 Section IV of the University Calendar.

MSci Neuroscience Programme structure

PART 1

Compulsory
BIOL1024 Fundamentals of Biochemistry
BIOL1025 Fundamentals of Cell Biology and Physiology
BIOL1026 Chemistry of Life
BIOL1027 The Human Genome and Disease
BIOL1030 How to think like a Scientist

PASS

Certificate of Higher Education

PART 2

Core
BIOL2052 Neuroscience

Compulsory
BIOL2010 Flow of Genetic Information
BIOL2022 Immunology, Infection and Inflammation
Plus
BIOL2048 Principles of Pharmacology
Or
BIOL2049 Pharmacology

Optional from within the Faculty include
BIOL2056 Cell Biology
BIOL2012 Exploring Proteins: Structure and Function
BIOL2013 Bioinformatics/ Omics
BIOL2044 Medical Microbiology
BIOL2045 Vertebrate Development

Optional from outside the Faculty (including CIP modules)
UOSM2001 Business Skills for Employability
UOSM2026 Ethics in Science, Engineering and Technology: Jekyll and Hyde

PASS

Diploma of Higher Education

PART 3

Compulsory
BIOL3021 Cellular and Molecular Neuroscience
BIOL3025 Neuropharmacology of CNS disorders
BIOL3034 Research Project
Plus at least two of:
BIOL3018 Molecular Pharmacology
BIOL3020 Systems Neuroscience
BIOL3048 Neurodegenerative Disease

Optional from within the Faculty
BIOL3014 Molecular Cell Biology
BIOL3022 Cell Signalling in Health and Disease
BIOL3017 Molecular and Structural Basis of Disease
BIOL3063 Bioinformatics and Systems Biology
BIOL3043 Cellular and Molecular Pathology
BIOL3037 Immunology
BIOL3054 Nutrition in Health and Disease
BIOL3015 Regulation of Gene Expression

BIOL3027 Selective Toxicity
BIOL3052 Biomedical Technology

PASS

Bachelor of Science or Bachelor of Science (Hons)

PART 4

Core
BIOL6013 Advanced Research Project
Compulsory
BIOL6084 Advanced Neuroscience
BIOL6053 Current Research

Optional from within the Faculty
BIOL6078 Structure and Function of the Nervous System
BIOL6022 Molecular Pharmacology
BIOL6045 Neurodegenerative Disease
BIOL6034 Systems Neuroscience
BIOL6097 Skills in Biological Optical Imaging
BIOL6095 Skills in Molecular Bioscience
BIOL6093 Skills in Structural Biology
BIOL6074 Bioinformatics and Systems Biology

Conferment of Award/Graduation

UNIVERSITY OF Southampton

MSci Neuroscience

Programme Specification Learning Outcomes	BIOL1024 Fundamentals of	BIOL1025 Fundamentals of	BIOL1026 Chemistry of Life	BIOL1027 The Human Genome	BIOL1030 How to Think Like a		BIOL2052 Neuroscience	BIOL2010 Flow of Genetic	BIOL2022 Immunology,	BIOL2049 Pharmacology	BIOL2048 Principles of		BIOL3034 Research Project	BIOL3021 Cellular and Molecular	BIOL3025 Neuropharmacolog	BIOl3018 Molecular Pharmacology	BIOL3048 Neurodegenerative	BIOl3020 Systems Neuroscience		BIOL6013 Advanced Research	BIOL6084 Advanced	BIOL6053 Current Research
Knowledge and Understanding	Part 1 – all						Part 2 – all			Part 2 – 1of2			Part 3 – all			Part 3 –2of3				Part 4 - all		
A1. the principles of neurophysiology		X					X							X				X				
A2. the principles of synaptic transmission							X							X				X			X	
A3. nervous system development							X							X				X				
A4. neuroanatomy and cellular morphology							X								X		X	X			X	
A5. the autonomic nervous system		X					X			X	X											
A6. spinal reflexes, motor control and movement disorders							X										X	X				
A7. sensory systems							X								X		X					
A8. principal neurotransmitter systems		X					X								X			X				
A9. pharmacological manipulation of neurotransmitter pathways										X	X			X	X	X						
A10. structure and function of voltage gated channels and neurotransmitter receptors							X			X	X			X		X						
A11. learning and memory							X										X	X			X	
A12. neuronal network signalling and behaviour							X							X	X			X			X	
A13. neurological disease mechanisms, including neurodegeneration							X								X		X				X	

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A14. the role of glia in the nervous system							X										X	X			X	
A15. the principal function of major organs in the body		X					X		X													
A16. the cellular interactions which underlie the immune response in normal and pathophysiology		X							X													
A17. muscles and the control of muscle contraction		X					X			X	X											
A18. the principles of homeostasis and key physiological mechanisms		X					X		X	X				X	X		X					
A19. the composition and spatial organisation of a cell	X	X																			X	
A20. intracellular signalling pathways	X								X	X	X			X	X						X	
A21. how genetic information is stored, accessed and used in a cellular context	X			X				X							X						X	
A22. genetic inheritance and transmission	X			X				X							X		X					
A23. how the various metabolic processes are integrated within the body	X	X								X	X											
A24. the structure and function of biologically important molecules	X	X	X						X	X	X			X	X	X					X	
A25. cell determination and differentiation				X			X		X					X								
A26. the transport of		X					X			X	X			X		X						

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molecules across biological membranes																						
Subject Specific Intellectual and Research Skills																						
B1. formulate and test hypotheses by planning, conducting and reporting a significant programme of neuroscience research													*X*							*X*		
B2. use a range of neuroscience laboratory equipment to conduct experiments							*X*	*X*					*X*							*X*		
B3. use computer software to record and analyse neuroscience data and determine their importance and validity							*X*						*X*							*X*	*X*	
B4. analyse critically and solve complex neuroscience problems													*X*							*X*	*X*	
B5. integrate your neuroscience knowledge base with other selected disciplines such as physiology, biology, pharmacology or biochemistry													*X*							*X*	*X*	
B6. independently integrate and critically evaluate neuroscience data from a wide range of sources, including primary source material in neuroscience journals and													*X*							*X*	*X*	*X*

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experimentation																						
B7. demonstrate a systematic understanding of how the boundaries of neuroscience knowledge are advanced through research													*X*							*X*	*X*	
B8. conduct risk assessments concerning the use of chemicals, animal material and laboratory procedures					*X*								*X*							*X*		
B9. demonstrate broad expertise in defined areas of neuroscience at the level of current research in the field													*X*							*X*		
B10. critically evaluate the data and methodology of current published research in neuroscience and present your conclusions													*X*							*X*	*X*	
Transferable and Generic Skills																						
C1. communicate/present effectively both verbally and in writing on a range of Neuroscience topics to both specialised and non-specialised audiences					*X*								*X*							*X*	*X*	*X*
C2. work with, and within, a group towards defined outcomes		*X*			*X*		*X*						*X*							*X*		
C3. use information technology and other resources to find, extract and					*X*		*X*						*X*							*X*	*X*	*X*

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synthesise information																						
C4. solve problems relating to qualitative and quantitative information							*X*						*X*							*X*	*X*	
C5. learn independently through critical enquiry					*X*								*X*							*X*	*X*	
C6. demonstrate you have the ability to undertake appropriate further training													*X*							*X*		*X*
C7. manage resources and time	*X*	*X*	*X*		*X*		*X*	*X*		*X*	*X*		*X*							*X*	*X*	*X*
C8. demonstrate competency in using laboratory skills in a safe and responsible manner		*X*					*X*						*X*							*X*		