Programme Specification

Advanced Biological Sciences (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 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	1
Accreditation details	None
Final award	Master of Research (MRes)
Name of award	Advanced Biological Sciences
Interim Exit awards	Postgraduate Certificate in Higher Education
	Postgraduate Diploma in Higher Education
FHEQ level of final award	Level 7
UCAS code	
Programme code	6139
QAA Subject Benchmark or other external reference	Biosciences 2015
Programme Lead	Lorraine Williams

Programme Overview

Brief outline of the programme

Southampton Biological Sciences has a leading international reputation for its research across a broad range of biological disciplines. The MRes in Advanced Biological Sciences is designed for graduates of biological sciences and other relevant disciplines and it offers you the opportunity to build on the background of your undergraduate degree while specialising further in an area that will enhance your future career path. The 12 month programme offers a high quality postgraduate education in research in one of these specialised subject areas:

- Biodiversity, Ecology and Ecosystem services
- Biotechnology
- Developmental Biology
- Microbiology
- Neuroscience
- Molecular and Cellular Biosciences

- Plant Biology
- Zoology

The programme comprises two main components: a taught component and an intensive research experience. The larger research component consists of a novel, independent (supported) research project which will be carried out in the state-of-the-art research facilities of Biological Sciences. The smaller taught component is composed of four modules that will broaden your skills in appropriate areas related to the research project. The exact portfolio of modules is selected with the advice of the academic supervisor of the research project. This programme will provide you with an education and training suitable for a wide variety of careers and also will prepare you for higher degrees.

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

To develop your knowledge and understanding of Biological Sciences a wide range of teaching methods will be used. You will be taught through a combination of lectures, tutorials and coursework to help develop your core knowledge and understanding. You will undertake an extended research project in one of the specialisation areas and will be supervised throughout by a tutor with leading research experience in that area. Four taught modules will be chosen with the help of your supervisor to provide a solid foundation of knowledge. Throughout the programme you will undertake independent reading both to supplement and consolidate taught material and to broaden your knowledge and understanding.

Assessment

The taught component will be assessed by a combination of coursework (e.g. essays, poster presentations, oral presentations) and examinations at the end of each semester. Some modules are not exam-based. The research component will be assessed on the practical outcomes of the project work and the ability to communicate these and background understanding in a scientific dissertation and oral presentation. This will be assessed independently by an internal examiner in addition to the supervisor.

Special Features of the programme

This flexible Masters degree in Biological Sciences can be tailored to your particular interests, allowing you to specialise in an area of your choice. You will carry out a cutting-edge research project in an exciting area of biological sciences and back this up with a portfolio of taught modules that will provide you with a sound foundation for your future career. Four taught modules at postgraduate level will enable you to broaden your scientific knowledge in your chosen area and enhance your hands-on skills in research, presentations and scientific communication. You will become part of Southampton's biological sciences community, which has a leading international reputation for its research across a broad range of biological disciplines.

By the end of your MRes degree you will have extended your subject-specific and employability skills beyond the level of your undergraduate degree. A Master of Research programme differs from a conventional MSc programme in the balance between teaching and research. As an MRes student you will spend more time on the research project guided by your academic supervisor and correspondingly less time will be devoted to formal teaching.

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: The MRes in Advanced Biological Sciences is designed for graduates of biological sciences or closely related disciplines. The programme is research-focussed but there will also be modules taught by academic staff at the Centre for Biological Sciences. By the end of your MRes programme you will have extended your subject-specific and employability skills beyond the level of your undergraduate degree. A Master of Research programme differs from a conventional MSc programme in the balance between teaching and research. As an MRes student you will spend more time on the research project and correspondingly less time will be devoted to formal teaching.

The aims of the programme are to:

- Provide the means to carry out an extensive laboratory-based project on a specific topic related to the specialist area;
- Provide advanced knowledge in a particular area within the field of biological sciences research;
- Provide an opportunity to work in a research environment in state-of- the art laboratories;
- Provide training in biological laboratory skills;
- Provide a stimulating, informed environment through a range of modules
- Provide an opportunity to develop a range of transferable skills (written and oral communication, time management, project management, team working, information and communication technology, data collection and analysis);
- Provide awareness of good laboratory practice and safety issues in a modern research laboratory.
- Provide a sound and suitable qualification that would enable you to proceed to a more specialist higher degree at the PhD level or a career in biological sciences

Programme Learning Outcomes

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

Knowledge and Understanding

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

A1. Knowledge and understanding of the scientific and technological principles underlying the chosen research specialisation;

A2. An understanding of how to design and test scientific hypotheses;

A3. An ability to address and develop strategies to resolve a research problem in the chosen specialist area;

A4. Skills in critical evaluation of primary and review scientific literature and the ability to develop this knowledge and understanding in relation to the chosen area of research;

A5. Experience in presenting scientific information;

A6. An ability to collect, record and critically evaluate laboratory data;

A7. Knowledge of general IT methodology relating to the area to find relevant information.

Teaching and Learning Methods

Teaching and Learning methods will include:

- independent (supported) project work on a research problem that could lead to results publishable in the peer reviewed literature;
- Regular meetings about research work with the supervisory team, with the lead academic as the key provider of guidance;
- Staff-led lectures, tutorials, seminars and demonstrations;
- Directed reading of the primary scientific literature;
- Student-led seminars and presentations (verbal and poster) and contributions to regular research group meetings;
- Carrying out written assignments and other activities associated with the coursework component of the modular component of study.

For the research-based component you will carry out an extensive laboratory-based project on a topic related to the specialised area. You will plan the project with the support of your academic research supervisor. Initially you will carry out a preliminary review of the literature in the area of research to help you plan the overall objectives and build on the current level of knowledge in the area of research. This will give you the opportunity of producing results that would be of a standard to publish in peer reviewed journals. You will present an overview containing these elements at an early stage to your project supervisor and then have regular contact throughout the remainder of the project. This will include providing a regular summary of research finding to the supervisor. A detailed plan of the final dissertation will be presented to the supervisor three quarters of the way through the project and feedback will be provided by the supervisor in how to structure the final dissertation.

Assessment Methods

Taught component

The taught component will be assessed by a mixture of coursework (e.g. essays, poster presentations, oral presentations) and examination. Some modules are not exam-based. All biological sciences and skills-centred learning is taken at FHEQ Level 7 . The exams and coursework are designed to ensure that the learning outcomes have been achieved. The proportion of coursework and exam is that which is judged to most suit student engagement with the content of the programme as well as judging the level of understanding.

Past examination papers are available through the library website www.library.soton.ac.uk/sash/exam under 'Revision Techniques' and also on the Staff Student Liaison Blackboard site under the appropriate heading.

Research component

The research component will be assessed on the basis of the practical outcomes of the project work, ability to communicate these and also the understanding of background literature, all of which is judged through the production of a scientific dissertation. This will be assessed independently by an internal academic examiner within the University of Southampton in addition to the supervisor.

Subject Specific Intellectual and Research Skills

On successful completion of this programme you will be able to:

B1. Develop research strategies for solving problems in the chosen research area;

B2. Formulate and test hypotheses by planning, conducting and reporting a significant programme of

biological sciences research;

B3. Find, read, understand and explain scientific publications related to the chosen area of research;

B4. Use computer software to record and analyse data and determine their importance and validity;

B5. Undertake scientific investigations in a responsible and safe manner, paying due attention to risk assessment and relevant health and safety regulations;

Teaching and Learning Methods

Teaching and Learning methods will include:

- Staff-led lectures, tutorials, seminars and demonstrations;
- Directed reading of the primary scientific literature;
- Student-led seminars and presentations (verbal and poster) and attendance at regular research group meetings;
- Independent (supported) project work in the research environment on a research problem that could realistically lead to results publishable in the peer reviewed literature;
- Regular meetings about research work with the supervisory team, with the lead academic as the key provider of guidance;
- Engagement with written assignments and other activities associated with the coursework component of the taught modules;
- Regular meetings about research work with the supervisory team, with the lead academic as the key provider of guidance.

Assessment Methods

The taught component will be assessed by a combination of coursework and examinations at the end of each semester.

The research component will be assessed on the practical outcomes of the project work and the ability to communicate these and background understanding in a scientific dissertation. See above for more detail on these.

Transferable and Generic Skills

On successful completion of this programme you will be able to:

C1. Numerical competency, proficient in English and good communication skills with some experience in giving scientific presentations;

C2. General proficiency with Information Technology; the effective use of websites and databases to locate, extract and synthesise relevant information;

C3. The compilation of knowledge and understanding through critical reading of material: learn independently through critical reading;

C4. The application of such knowledge and understanding to problems in biological research;

C5. Communication of specialist technical information in written form;

C6. To work with, and within, a group towards defined outcomes: the ability to balance the need for

independent research with the importance of making effective contributions to the work of the scientific team;

C7. The ability to develop and apply technical skills in the independent resolution of theoretical problems;

C8. Identify and work towards targets for personal, academic and career development;

C9. Manage resources and time;

C10. Awareness of good laboratory practice and safety issues in a modern research laboratory.

Teaching and Learning Methods

You will be helped to acquire these skills through aspects of the formal teaching programme and while carrying out your research project and includes the following

- Staff-led lectures, tutorials, seminars and demonstrations;
- Directed reading of the primary scientific literature, technical reports, websites;
- Student-led seminars and presentations (verbal and poster) and attendance at regular research group meetings;
- Regular meetings with supervisory team and appropriate technical team.

Assessment Methods

This will be assessed by:

- The production of a dissertation at the end of the study and an oral presentation during the course of the project;
- The completion of coursework tasks as part of the taught module;
- The ability to produce appropriate risk assessments for all aspects of the practical work and completion of the appropriate safety inductions.

Programme Structure

The programme structure table is below:

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

Part I

Typical course content
The MRes in Biological Science is 12 months in duration. The research component features throughout this period while the taught part of the programme is confined to two teaching semesters per academic year (Oct to Jan followed by Feb to June). Each semester includes twelve weeks of study followed by an examinations period (2 weeks). The exam for the end of module assessments will take place during this period. Some modules have other forms of assessment that are not exam based.

The MRes in Biological Science qualification requires an accumulation of 90 ECTS* this is composed of a research project leading to a dissertation (60ECTS) and a taught component (30 ECTS).
* ECTS = European Credit Transfer System.

The taught module on this programme is worth 7.5 ECTS credits which equates to 150 hours of study. For example a 7.5 ECTS credits module would normally comprise up to 25 hours contact teaching (lectures, tutorials, etc.) with the remainder of the time for your own independent study. Four of these modules will be taken in total.

The taught component will be confined to the two teaching semesters mentioned above. The modules chosen by the student (with guidance from academic supervisor) will be relevant to a masters qualification in Advanced Biological Sciences and of the required academic level but there will be a strong recommendation to keep an equal balance of modules between Semester 1 and 2 where possible.

The practical phase of the research project will be completed from October until July/August of the following year. During this period there will be preparation of the dissertation with the majority of August and September involving a concentrated period of dissertation preparation.
You will also be encouraged to attend research seminars, which at in the School of Biological Sciences are run at a variety of different levels. In particular, you will be encouraged to attend key seminars from leading visiting scientists. You will also be able to be part of the School of Biological Sciences' weekly journal clubs, which includes presentations from PhD students and academic staff, and discussions on new or seminal research.

Programme details:

Taught Component: 30 ECTS Points at FHEQ Level 7
Research Component: 60 ECTS Points at FHEQ Level 7

The programme is research-focussed with the addition of taught modules by academic staff in the School of Biological Sciences.

Details of the modules (i.e. module specifications) can be downloaded from the School website (http://www.southampton.ac.uk/biosci/undergraduate/modules.page)
The option modules shown below constitute an indicative list; there will always be choice but the options might vary. A full list of modules and rules will be available to you via the Student Record Self-Service system once you enrol at the University. Please note in some instances modules have limited spaces available.

We will take a flexible and inclusive approach to enable those students with additional requirements to access the curriculum and achieve the intended learning outcomes of their programme. We will do this by working with you and the University's Enabling Services to assess your individual requirements.

Part I Optional

Select 4 modules totalling 30 ECTS

You are advised to select 30 credits2 modules (15 ECTS) from each semester.

Code	Module Title	ECTS	Type
BIOL6011	Advanced Library Project 1 2020-21	7.5	Optional
BIOL6010	Applied Ecology 2020-21	7.5	Optional
BIOL6046	Applied Plant Biology 2020-21	7.5	Optional
BIOL6066	Biodiversity and Conservation 2020-21	7.5	Optional
BIOL6047	Biofilms and Microbial Communities 2020-21	7.5	Optional

BIOL6074	Bioinformatics and Systems Biology 2020-21	7.5	Optional
BIOL6076	Biomedical Parasitology 2020-21	7.5	Optional
BIOL6041	Biomedical Technology 2020-21	7.5	Optional
BIOL6071	Cancer Chromosome Biology 2020-21	7.5	Optional
BIOL6035	Cellular and Molecular Neuroscience 2020-21	7.5	Optional
BIOL6039	Cellular and Molecular Pathology 2020-21	7.5	Optional
BIOL6023	Cellular Signalling in Health and Disease 2020-21	7.5	Optional
BIOL6055	Computational methods for biological data analysis 2020-21	3.75	Optional
BIOL6073	Critical Thinking in Biological Research 2020-21	3.75	Optional
BIOL6053	Current Research 2020-21	7.5	Optional
BIOL6021	Current Topics in Cell and Developmental Biology 2020-21	7.5	Optional
BIOL6052	Data Management and Generalised Linear Modelling for Biologists 2020-21	7.5	Optional
BIOL6040	Development Origins of Health and Disease 2020-21	7.5	Optional
BIOL6029	Evolution and Genetics 2020-21	7.5	Optional
BIOL6028	Global Change Biology 2020-21	7.5	Optional
BIOL6038	Immunology 2020-21	7.5	Optional
BIOL6022	Molecular Pharmacology 2020-21	7.5	Optional
BIOL6032	Molecular Recognition 2020-21	7.5	Optional
BIOL6045	Neurodegenerative Disease 2020-21	7.5	Optional

BIOL6036	Neuropharmacology of CNS Disorders 2020-21	7.5	Optional
BIOL6042	Nutrition in Health and Disease: Part 1 2020-21	7.5	Optional
BIOL6043	Nutrition in Health and Disease: Part 2 2020-21	7.5	Optional
BIOL6044	Plant Cell Biology 2020-21	7.5	Optional
BIOL6027	Regulation of Gene Expression 2020-21	7.5	Optional
BIOL6024	Selective Toxicity 2020-21	7.5	Optional
BIOL6034	Systems Neuroscience 2020-21	7.5	Optional
BIOL6033	The Molecular and Structural Basis of Disease 2020-21	7.5	Optional

Part II

Code	Module Title	ECTS	Type
BIOL6068	MRes Advanced Biological Sciences Research Project 2021-22	60	Core

Progression Requirements

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

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. 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
- Career 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 support within Southampton Biological Sciences. You will:

- Receive a dedicated computer for use during the MRes programme;
- receive an induction that will introduce you to all our teaching and learning resources you will interface with during your degree as well as ensuring you understand the regulations which govern your study;
- have a personal research supervisor who will advise on choice of taught modules and can provide pastoral support (this is the primary source of support for your research);
- have an allocated academic advisor who can provide an alternative and independent view on your progress. This member of staff will also be your internal examiner at the end of the research programme;
- receive individually tailored guidance from academic staff delivering the taught components of your programme. Each module has an academic coordinator who would be the first point of contact in the event of needing academic support;
- be able to obtain additional support from the senior staff involved in the MRes Advanced Biological Sciences Programme; have a base in a research laboratory proximate to the other team members of your research group – an invaluable source of peer to peer support;
- have a personal e-mail account, web access, and IT support from the University i-Solutions team;
- have access to writing space for writing up your MRes research project;
- attend group meetings in the selected research grouping and research seminars given by visiting speakers;

There are systems for the support of student learning in Biological Sciences as well as available from central University facilities. Throughout the degree, students with special learning requirements are supported and their ability to complete the degree in full is managed by making appropriate reasonable adjustments to our infrastructure and methods of delivery and 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 feedback on your behalf.
- Serving as a student representative on Faculty Scrutiny Groups for programme validation.
- Taking part in programme validation meetings by joining a panel of students to meet with the Faculty Scrutiny Group.

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

Career Opportunities

A range of career opportunities are open to you having completed your MRES:

- Biotechnology, pharmaceutical, agricultural industry- depending on specialisation
- Postgraduate research training
- Scientific officer in research laboratories
- Teaching
- Forensic science
- Legal profession
- Business management

The University has a Careers and Employability Service that offers a range of support.

External Examiner(s) for the programme

Name: Professor Ulrike Mayer - 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 take full advantage of the learning opportunities that are provided. More detailed information can be found in the programme handbook.

Appendix 1:

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:

Additional Costs

Type	Details
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.
Computer discs or USB drives	Students are expected to provide their own portable data storage device.
Equipment and Materials	All materials required for laboratory or field work are provided. Where necessary, suitable specialist safety equipment will be provided.
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.
Hardware	MRes students have a dedicated computer, although shared facilities are available across the University campus.
Lab Coats	One laboratory coat and a pair of safety spectacles are provided at the start of the programme to each student. If these are lost the student must replace them at their own expense. The Students Union Shop stock these items.
Printing and Photocopying Costs	Coursework such as essays; projects; dissertations may be submitted on line. In the majority of cases, though, students will be asked to provide a printed copy. The University printing costs are currently: A4 - 5p per side (black and white) or 25p per side (colour) A3 - 10p per side (black and white) or 50p per side (colour)
Software Licenses	All software is provided
Stationery	You will be expected to provide your own day-today 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 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.

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 www.calendar.soton.ac.uk.