

**Programme Specification**



 **Integrated PhD in Biomedical Science (2022-23)**

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.

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| Awarding Institution | University of Southampton |
| Teaching Institution | University of Southampton |
| Mode of StudyDuration | Full-time 4.5 Years |
| Accreditation details | None |
| Final award | Doctor of Philosophy (PhD) |
| Name of Award |  Integrated PhD in Biomedical Science |
| Interim Exit awards | Master of Philosophy (MPhil)Master of Research (MRes) |
| FHEQ level of final award | Level 8 |
| UCAS codeProgramme Code | 9978 |
| QAA Subject Benchmark or other external reference |  |
| Programme Lead | Sandrine Willaime-Morawek |

 Pathway Lead

**Programme Overview**



**Brief outline of the programme**

The programme offers an opportunity to develop the advanced research and associated quantitative and bioinformatics skills required to become an independent researcher in biomedical sciences. The programme leads to a Doctor of Philosophy (PhD) award. An interim award of Master of Research (MRes) will be awarded to those students who are considered by the Board of Examiners to have successfully completed Year 1 of the programme.In the first year of the programme, students will undertake taught modules in research skills, in biomedical sciences, quantitative cell biology and thematic optional modules. Students will also undertake three research projects to develop a broad range of laboratory skills and experience working in different research environments. In this first year, students will develop core research skills including critical appraisal, scientific writing, written and oral presentation, statistical analysis and a range of key techniques used in biomedical research. In years 2-4 students will complete a focused piece of research leading to a PhD.

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**

The full programme for the Integrated PhD in Biomedical Science covers 54 months (4.5 years) full-time or up to 96 months (8 years) for the flexible route. Year1:The first year is modular in structure and leads to the qualification of Master of Research (MRes). Modules are up to 20 ECTS credits at FHEQ Level 7. Each module has its own aims, learning outcomes and assessment criteria. A total of 90 ECTS credits must be successfully completed during this year, which will consist of the three Research project modules, the modules in Quantitative Cell Biology and Research Skills for Biomedical Science 1 and 2, which makes 80 ECTS for the core modules, alongside a minimum of 10 ECTS on the thematic optional modules. Each of the three Research Project modules (A, B and C) will typically be performed with a different supervisor in a different research laboratory. The Research Skills for Biomedical Science-1 (RSBS-1) module uses a combination of taught and practical sessions to introduce students to the core concepts underlying statistical analysis and study design supporting students in handling their own data and critically appraising data. In RSBS-2, students will build on their learning in RSBS-1 and develop a research proposal for their substantive PhD project in years 2-4.In the Quantitative Cell Biology module students are introduced to a range of techniques and core concepts through a series of facilitator-led workshops focusing on key technologies including genomics and genetic disease, bioinformatics analysis of “omics” datasets (RNAseq, microarray), high throughput and high content screening strategies and deriving clusters, networks, pathways and models from large datasets. Integral to these workshops will be a mix of facilitator and peer to peer learning sessions. This module will also be attended by students from Queen Mary University London (QMUL), who will be taught and assessed by the University of Southampton as part of the Medical Research Council Doctoral Training Partnership (MRC DTP) that exists between the two institutions.In the thematic optional modules students will deepens their thematic and specialist knowledge and develop the skills required to understand and critically interpret research findings.In the three research projects, students will be introduced to a range of laboratory skills gaining valuable practical experience of research methodology, experimental design, data interpretation and scientific writing. Students will also present work from one of their projects at a programme away day jointly held with our MRC DTP partner QMUL.Years 2-4:On completion of the MRes and successful completion of the PhD competence reviews, students will enter Year 2. During years 2-4 students will conduct their PhD research project under the supervision of a supervisory team. The programme will then follow the Regulations for Research Degrees and Higher Doctorates and the Code of Practice for Research Degree Candidature and Supervision as set out in the University Calendar.Years 2-4 consists of independent supervised research into a subject of their choice with the purpose of making a unique and significant contribution to knowledge and understanding, including being encouraged to produce articles and papers for publication. Students will be expected to complete a 75,000-word thesis based on a three-year research project normally with one of the supervisors from the three short research projects undertaken in Year 1.

**Assessment**

Year 1:Each module during the MRes phase of the programme will be assessed as outlined in the individual module descriptions. Assessments include written assignments, oral presentations, group presentations, continual assessment, online project work including group focused problem solving and progress reviews. (https://www.southampton.ac.uk/calendar/sectionvi/fmed.page).All the assessments have a pre-defined marking scheme, known to students, with structured feedback and marks provided by teaching staff and given to students in a planned timeframe. The feedback and marking are moderated by Module Leaders. Students are encouraged to contact teaching staff by email for additional feedback and help with academic issues.The overall pass mark for each module is 50. All modules must be passed to be eligible for the interim award of Master of Research (MRes). Candidates who fail to achieve the pass mark in any of the core modules at the first attempt will be permitted one referral attempt in those modules that have been failed. Candidates who achieve the minimum required pass mark of 50 at referral will be considered to have passed that module. No repeat is permitted. In accordance with the Regulations Governing Progression, Determination and Classification of Results: Postgraduate Master’s Programmes, a Pass by Compensation may be given in a non-Core Module.In accordance with the Regulations Governing Progression, Determination and Classification of Results:Postgraduate Master’s Programmes, the Master of Research (MRes) degree will be classified as follows:50-59 - Pass60-69 - Merit70 and above - DistinctionIn addition to the interim award of MRes, candidates will have to demonstrate satisfactory performance in the PhD competence reviews to progress to year 2. PhD competence reviews will be held after each of the three research projects and will be conducted by the Programme Lead (or nominee) and one other member of academic staff. Students will need to demonstrate satisfactory engagement and understanding of the academic and practical aspects of their research project, as well as demonstrate they can function independently in the lab. The first two PhD competence reviews are formative and the third one is summative. The pass mark is 2/3 for each of the 4 areas assessed. Feedback will be provided after each review. Candidates who fail to achieve the pass marks in each of the 4 areas assessed at the first attempt will be permitted one referral attempt. Candidates who achieve the minimum required pass marks at referral will be deemed competent to progress to year 2. No repeat is permitted. Students who have successfully completed the MRes in year 1 may exit the programme with their MRes award at any point after this award has been confirmed. Students who complete the MRes in Year 1 but do not pass the third PhD competence review at first or second attempt, will not be permitted to progress but instead will exit the programme at the end of year 1 with an MRes award.Years 2-4Students progressing into year 2 of the programme will begin a period of focused research leading to the submission of their PhD thesis for examination. Every student will be required to undertake Progression Reviews at fixed points during years 2-4. The Second Progression Review is known as Confirmation of Doctoral Candidature. Two attempts at each Progression Review are permitted and failure may result in withdrawal from the degree and termination of candidature. Further information about the progression monitoring and review process is set out in the Code of Practice for Research Degree Candidature and Supervision. By the end of year 4, students will submit a thesis of up to 75,000 words and will be required to attend a viva voce examination. Candidates who are unsuccessful at Confirmation of Doctoral Candidature or in their PhD examination may be eligible to submit for the degree of Master of Philosophy (MPhil). The criteria required for MPhil award is set out in the Code of Practice for Research Degree Candidature and Supervision.

**Special Features of the programme**



N/A

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](http://www.calendar.soton.ac.uk/index.html) 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](http://www.southampton.ac.uk/quality/programmes_and_modules/index.page) which is described in the University's [Quality handbook](http://www.southampton.ac.uk/quality/index.page).

Educational Aims of the Programme

The aims of the programme are to:•Enable competency in a broad range of state-of-the-art quantitative biomedical techniques in order to assimilate rapidly into the main project and to bring a mature perspective based on broad experimental experience.•Provide advanced courses with which to develop knowledge and analytical skills in specific areas of Biomedical Sciences that are relevant to disease-oriented research, and to use this knowledge to inform research projects\*•Make a unique and significant contribution to the knowledge and understanding of a chosen field.•Undertake critical evaluation of current research, propose new hypotheses and evaluate methodologies.•Encourage scrutiny and debate of issues related to research design, instrument selection and the evidence base for currently held ideas.•Undertake research utilising current and novel methodological principles, which are appropriate to the advancement of scientific understanding and the promotion of new approaches to the treatment of disease and illness.•Apply knowledge, analytical and critical thinking skills to develop sound judgements about data and to integrate research evidence into all aspects of model making and hypothesis building.•Enable justification of scientific and professional decisions through critical evaluation and synthesis of relevant theories, empirical evidence and personal research experience.•Present one’s own research findings, as well as those of others in a lucid and scholarly manner.\*NB. Students will be given as much choice for their final 3-year PhD project as possible whilst keeping within the limits of sponsors’ terms and conditions.

**Programme Learning Outcomes**



**Knowledge and Understanding**



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

A1. The practical issues involved in carrying out quantitative research

A2. The value, nature, uses and limitations of a range of research methods

A3. Research governance, ethics and data protection principles in scientific research

A4. The identification and justification of the value of different sources of data in drawing conclusions from published literature

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| **Teaching and Learning Methods** |
| Interactive lectures, practical workshops, student and tutor led seminars, journal club presentations, peer review, e-learning material, independent research, individual research supervision. |

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| **Assessment Methods** |
| Literature reviews, research proposal, journal club presentations, critical discourses, online project work including group focused problem solving, short research project reports, competence reviews, progress reviews, PhD thesis and viva voce. |

**Subject Specific Intellectual and Research Skills**



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

B1. Gather, quantify, analyse, synthesise, critically evaluate and interpret complex information

B2. Apply scientific and clinical concepts to the development of new ideas and the synthesis of hypotheses

B3. Analyse problems objectively using key theoretical perspectives and empirical research

B4. Devise valid and reliable methods and instruments for data and information collection in relation to one’s own research

B5. Demonstrate and exercise independence of mind and thought

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| **Teaching and Learning Methods** |
| Interactive lectures, practical workshops, student and tutor led seminars, journal club presentations, peer review, e-learning material, independent research, individual research supervision. |

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| **Assessment Methods** |
| Literature reviews, research proposal, journal club presentations- critical discourses, short research project reports, competence reviews, progress reviews, PhD thesis and viva voce. |

**Transferable and Generic Skills**



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

C1. Work effectively, independently and with others in groups to achieve identified tasks

C2. Identify personal learning needs effectively and develop personal development plans appropriate to career aspirations

C3. Use information technology e.g. web/internet, databases, spreadsheets, statistical packages and word processing effectively

C4. Present, discuss and defend ideas, concepts and views effectively through written and spoken language

C5. Manage a research project with due attention to time and resource management

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| **Teaching and Learning Methods** |
| Interactive lectures, practical workshops, student and tutor led seminars, journal club presentations, peer review, e-learning material, independent research, individual research supervision. |

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| **Assessment Methods** |
| Literature reviews, research proposal, journal club presentations- critical discourses, online project work including group focussed problem solving, short research project reports, progress reviews, PhD thesis and viva voce. |

**Subject Specific Practical Skills**



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

D1. Analyse and reflect critically on one’s professional role in one’s area of research

D2. Apply investigative skills/methods of enquiry to researching problems and issues in one’s area of research

**Programme Structure**



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| The programme structure table is below:Information about pre and co-requisites is included in individual module profiles. **Pathway** |
| Part IThe first year is modular in structure and leads to the qualification of Master of Research (MRes). Modules are up to 20 ECTS credits at FHEQ Level 7. Each module has its own aims, learning outcomes and assessment criteria. A total of 90 ECTS credits must be successfully completed during this year, which will consist of the three Research project modules, the modules in Quantitative Cell Biology and Research Skills for Biomedical Science 1 and 2, which makes 80 ECTS for the core modules, alongside a minimum of 10 ECTS on the thematic optional modules. Each of the three Research Project modules (A, B and C) will typically be performed with a different supervisor in a different research laboratory. The Research Skills for Biomedical Science-1 (RSBS-1) module uses a combination of taught and practical sessions to introduce students to the core concepts underlying statistical analysis and study design supporting students in handling their own data and critically appraising data. In RSBS-2, students will build on their learning in RSBS-1 and develop a research proposal for their substantive PhD project in years 2-4.In the Quantitative Cell Biology module students are introduced to a range of techniques and core concepts through a series of facilitator-led workshops focusing on key technologies including genomics and genetic disease, bioinformatics analysis of “omics” datasets (RNAseq, microarray), high throughput and high content screening strategies and deriving clusters, networks, pathways and models from large datasets. Integral to these workshops will be a mix of facilitator and peer to peer learning sessions. This module will also be attended by students from Queen Mary University London (QMUL), who will be taught and assessed by the University of Southampton as part of the Medical Research Council Doctoral Training Partnership (MRC DTP) that exists between the two institutions.In the thematic optional modules students will deepens their thematic and specialist knowledge and develop the skills required to understand and critically interpret research findings.In the three research projects, students will be introduced to a range of laboratory skills gaining valuable practical experience of research methodology, experimental design, data interpretation and scientific writing. Students will also present work from one of their projects at a programme away day jointly held with our MRC DTP partner QMUL. |
| **Code** | **Module Title** | **ECTS** | **Type** |
| MEDI6227 | Quantitative Cell Biology 2022-23 | 10 | Core |
| MEDI6232 | Research Skills for Biomedical Science 1 (RSBS 1) 2022-23 | 5 | Core |
| MEDI6231 | Research Skills for Biomedical Science 2 2022-23 | 5 | Core |
| MEDI6033 | Short Research Project A 2022-23 | 20 | Core |
| MEDI6032 | Short Research Project B 2022-23 | 20 | Core |
| MEDI6036 | Short Research Project C 2022-23 | 20 | Core |
| BIOL6047 | Biofilms and Microbial Communities 2022-23 | 7.5 | Optional |
| BIOL6076 | Biomedical Parasitology 2022-23 | 7.5 | Optional |
| MEDI6035 | Cancer Immunology 2022-23 | 10 | Optional |
| MEDI6068 | Communicable Disease Control 2022-23 | 5 | Optional |
| MEDI6038 | Immunity & Infection 2022-23 | 10 | Optional |
| GLHE6002 | Methods and Analysis of Global Health Trends and Differentials 2022-23 | 5 | Optional |
| BIOL6045 | Neurodegenerative Disease 2022-23 | 7.5 | Optional |
| DEMO6026 | Population and Reproductive Health 2022-23 | 5 | Optional |
| BIOL6034 | Systems Neuroscience 2022-23 | 7.5 | Optional |

**Progression Requirements**

The programme follows the University's regulations for [***Progression, Determination and Classification of Results : Undergraduate and Integrated Masters Programmes***](http://www.southampton.ac.uk/assets/sharepoint/intranet/calendar/publicdocuments/Progression%2C%20Determination%20and%20Classification%20of%20Results%20-%20Undergraduate%20and%20Integrated%20Masters%20Programmes.pdf)or [***Progression, Determination and Classification of Results: Postgraduate Master's Programmes***](http://www.southampton.ac.uk/assets/sharepoint/intranet/calendar/publicdocuments/Progression%2C%20Determination%20and%20Classification%20of%20Results%20-%20Postgraduate%20Master%27s%20Programmes.pdf)*.* 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.

**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***](http://www.southampton.ac.uk/quality/index.page)*.*

**Career Opportunities**



completed via programmme revalidation documentation

**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**

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| **Type** | **Details** |
| Conference expenses | AccommodationStudents may have the opportunity to attend an academic conference during their studies. They would not normally be expected to pay for the costs of any accommodation directly associated with the conference. They would be expected to pay for incidental expenses e.g. meals.TravelStudents may have the opportunity to attend an academic conference during their studies. They would not normally be expected to pay for the costs of any travel directly associated with the conference. |
| Fieldwork: logistical costs | Depending on the nature of the research project, students may complete fieldwork/data collection at locations other than Southampton.AccommodationThey would not normally be expected to pay for the costs of any accommodation associated with the fieldwork/data collection. They would be expected to pay for incidental expenses e.g. meals.InsuranceThey would not normally be expected to pay for the costs of any insurance. Students should check their own vehicle insurance to ensure they are appropriately covered for undertaking fieldwork/data collection.Travel costsThey would not normally be expected to pay for the costs of any travel associated with the fieldwork/data collection.Immunisation/ vaccination costsThey would normally be expected to pay for any immunisation/vaccination costs associated with overseas travel if they are located outside of the UK. |
| Hardware | Across all campuses and most halls of residence approximately 1700 computer workstations are available. Currently all students are provided with a desktop or laptop computer to support their studies. |
| Occupational Health, DBS checks or vaccinations | Some research projects may require students to undertake a Disclosure and Barring Service (DBS) check. |
| Placements (including Study Abroad Programmes) | Depending on the nature of the research project, students may attend a placement with an industry partner or collaborative institution. AccommodationThey would not normally be expected to pay for the costs of any accommodation associated with the placement. They would be expected to pay for incidental expenses e.g. meals.InsuranceThey would not normally be expected to pay the costs of any insurance. Students should check their own vehicle insurance to ensure they are appropriately covered for travel to placements.Medical insuranceThey would not normally be expected to pay the costs of any medical insurance unless you are located in the USA.Travel costsThey would not normally be expected to pay for the costs of any travel associated with the placement.Immunisation/ vaccination costsThey would normally be expected to pay for any immunisation/vaccination costs associated with overseas travel if they are located outside of the UK. |
| Printing and Photocopying Costs | In the majority of cases, coursework such as essays; projects; dissertations is likely to be submitted on line. However, there are some items where it is not possible to submit on line and students will be asked to provide a printed copy. University printing costs, follow link http://www.southampton.ac.uk/isolutions/students/printing-for-students.page? |
| Software Licenses | No costs will be incurred when using University computer facilities. |
| Stationery | Students will be expected to provide their 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. |

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***](http://www.calendar.soton.ac.uk).