Programme Specification

Genomics (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 Science (MSc)
Name of Award	Genomics General Informatics Medicine
Interim Exit awards	Postgraduate Certificate Postgraduate Diploma
FHEQ level of final award	Level 7
UCAS code	
Programme Code	
QAA Subject Benchmark or other external reference	
Programme Lead	Zoe Walters
Pathway Lead	

Programme Overview

Brief outline of the programme

The aim of the degree is to provide a multi-disciplinary and multi-professional perspective in genomics, applied to clinical practice and medical research, to enhance knowledge and skills in this rapidly evolving field.

This programme is principally delivered by the Faculty of Medicine and has 3 pathways for you to choose from: Genomics, Genomic Informatics and Genomic Medicine. Each pathway can be tailored to meet your career aspirations, and enables you to choose your module options and plan your programme route. You can choose to study full-time, part-time, or to undertake small numbers of, or even individual, modules, in order to fit your study pragmatically around your other commitments.

Each pathway comprises a number of taught core modules, a dissertation project, and a selection of optional modules. A broad range of optional modules is available to enable you to design your own learning experience to complement your career needs, and to complete the full programme.

If we have insufficient numbers of students registered on an optional module, this module may not be offered. If an optional module will not be run, we will advise you as soon as possible and help you choose an alternative module.

This is a modular postgraduate programme that may be taken on a full-time basis normally over 12 months or on a part-time basis up to a maximum of 60 months, leading to 90 ECTS (European Credit Transfer System; equivalent to 180 CATS) at HE7 level. Further information can be found under the General Academic Regulations: https://www.southampton.ac.uk/calendar/sectioniv/index.page.

This length of time for the part time course will allow students to study alongside their other commitments. A 24-month part-time programme is also available to allow eligibility for postgraduate student loans.

The award at the end of the programme of study will be the degree of Master of Science, which is classified (pass, merit, distinction). To obtain a full MSc you are required to complete 90 ECTS (180 CATS) at HE7 level. Further information can be found under the General Academic Regulations: https://www.southampton.ac.uk/calendar/sectioniv/index.page

Should you wish to exit early before completion of the full MSc, you can exit with either a Postgraduate Diploma in Genomics (classified), or a Postgraduate Certificate in Foundation of Genomics (unclassified).

To exit with a Postgraduate Certificate (PGCert), students are required to have taken the module Principles of Genetics and Genomics (MEDI6240) and have met Programme level Learning Outcomes A1, A2, A5, A7, B1, C4. To exit with a PGCert, students are required to earn 30 ECTS (60 CATS).

To exit with a Postgraduate Diploma (PGDip) students are required to have taken the modules Principles of Genetics and Genomics (MEDI6240), Genomic Technologies and Basic Bioinformatics (MEDI6237) and Interpretation of Genomics in Clinical Practice (MEDI6239) meeting Programme level Learning Outcomes A1, A2, A3, A4, A5, A6, A7, B1, B4, C1, C4. To exit with a PGDip, students are required to earn 60 ECTS (European Credit Transfer System) (120 CATS).

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
This is a modular, blended course and will use both on-site face-to-face teaching and periods of student independent study to deliver content. During the on-site teaching, a variety of learning and teaching methods will be adopted to promote a wide range of skills and meet the differing learning styles of the group, including seminars, group work, practical demonstrations and exercises surrounding interpretation of data and clinical scenarios.Specialist teaching from a range of academic and health care professional backgrounds will be used to ensure a breadth and depth of perspective is offered, giving a good balance between background theories and principles and practical advice.Independent study will be delivered through a virtual learning environment (VLE) operating effectively as an online campus, delivering a library of study materials including uploaded lectures, virtual patients and independent learning tasks and reference materials

Assessment
The progress of students will be assessed by a variety of tasks designed (i) to reflect the learning outcomes of different modules, (ii) to play to the varying strengths of the student cohort, and (iii) make their learning 'fit for purpose'.

Special Features of the programme

The modules will be taught by an international faculty, at the forefront of their respective academic disciplines and professions. Adult learning methods will be used throughout and an emphasis placed upon interactive learning, practical demonstration and the interpretation of clinical scenarios to reinforce learning. In addition, the dissertation module allows you to develop and undertake a research project with experts in the field.

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:

Develop your educational and professional expertise in all core areas of genomics, giving you appropriate knowledge, understanding and professional skills to enhance your career.

Develop your approach to solving problems, building on a logical and hierarchical approach that allows you to justify personal and professional decisions through critical evaluation and synthesis of relevant theories, empirical evidence and experience.

Enable you to demonstrate leadership in the application, analysis and interpretation of genomics data in the academic, industrial and/or clinical setting.

Develop your ability to integrate research evidence and to apply knowledge, analytical and critical thinking skills to real-world examples of genomics in medicine.

Apply an evidence-based approach to critically evaluate the current literature, and develop the skills needed to successfully complete a dissertation project.

Programme Learning Outcomes

Knowledge and Understanding

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

A1. The structure and function of the human genome, as well as the role of variation in healthy populations
A2. The role of genetics in disease and the use of genomic information to elucidate disease mechanisms and biology, and aid clinical diagnosis and management. This includes ciritcal awareness of current problems and advnaces in the field of medical genomics
A3. 'Omics techniques as applied to medicine
A4. Bioinformatics approaches to genomic data analysis of cancer and inherited diseases
A5. The concept of pathogenicity as applied to interpreting genomic variants
A6. *(For Informatics only)* The process of generating analytical pipelines for the processing of genomic data
A7. *(For Medicine only)* The process of appropriate stratification of patients for personalised treatments according to their genomic information

Subject Specific Intellectual and Research Skills

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

B1. Critically evaluate the current clinical practise and research, including published literature in the field of medical genomics, integrating information from a variety of sources
B2. Construct hypotheses pertinent to the exploration of topical questions in the field of genomics
B3. Apply analytical and synthetic skills to investigate and test hypotheses
B4. Evaluate the significance of experimental results in the context of previous work

Transferable and Generic Skills

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

C1. Critically appraise and analyse appropriate information sources, and judge and interpret findings
C2. Engage and communicate effectively with varied audiences
C3. Show initiative and personal responsibility in planning and implementing tasks at a professional level
C4. Learn independently as part of a commitment to continuing professional development
C5. Develop and manage an independent project
C6. Demonstrate self-direction and originality in tackling and solving problems, and act autonomously

Programme Structure

The programme structure table is below:

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

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.

General Pathway

Part I

Code	Module Title	ECTS	Type
MEDI6237	Genomic Technologies and Basic Informatics 2020-21	10	Core
MEDI6238	Genomics Dissertation 2020-21	30	Core
MEDI6239	Interpretation of Genomics in Clinical Practice 2020-21	10	Core
MEDI6240	Principles of Genetics & Genomics 2020-21	10	Core
MEDI6235	Advanced Genomic Informatics 2020-21	7.5	Optional
BIOL6074	Bioinformatics and Systems Biology 2020-21	7.5	Optional
BIOL6071	Cancer Chromosome Biology 2020-21	7.5	Optional
MEDI6082	Clinical Research Skills 2020-21	10	Optional
MEDI6236	Counselling skills in genomics for health care professionals 2020-21	7.5	Optional
MEDI6234	Genomics Guided Treatment 2020-21	7.5	Optional
ECON6038	Health Policy and Economics 2020-21	5	Optional
COMP6246	Machine Learning Technologies (MSc) 2020-21	7.5	Optional
MEDI6218	Teaching the Teachers to Teach 2020-21	10	Optional
MEDI6219	Translational Medicine 2020-21	7.5	Optional

The programme structure table is below:

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

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.

Informatics Pathway

Part I

Code	Module Title	ECTS	Type
MEDI6235	Advanced Genomic Informatics 2020-21	7.5	Core
MEDI6237	Genomic Technologies and Basic Informatics 2020-21	10	Core
MEDI6238	Genomics Dissertation 2020-21	30	Core
MEDI6239	Interpretation of Genomics in Clinical Practice 2020-21	10	Core
MEDI6240	Principles of Genetics & Genomics 2020-21	10	Core
BIOL6071	Cancer Chromosome Biology 2020-21	7.5	Optional
MEDI6082	Clinical Research Skills 2020-21	10	Optional
MEDI6236	Counselling skills in genomics for health care professionals 2020-21	7.5	Optional
MEDI6234	Genomics Guided Treatment 2020-21	7.5	Optional
MEDI6218	Teaching the Teachers to Teach 2020-21	10	Optional
MEDI6219	Translational Medicine 2020-21	7.5	Optional

Part I Complementary modules:
Students are encouraged to take 12.5 ECTS from the following optional modules:

Code	Module Title	ECTS	Type
BIOL6074	Bioinformatics and Systems Biology 2020-21	7.5	Optional
BIOL6055	Computational methods for biological data analysis 2020-21	3.75	Optional
MATH6005	Introduction to Python 2020-21	3.75	Optional
COMP6246	Machine Learning Technologies (MSc) 2020-21	7.5	Optional
STAT6103	Statistical Programming 2020-21	5	Optional

The programme structure table is below:

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

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.

Medicine Pathway

Part I

Code	Module Title	ECTS	Type
MEDI6237	Genomic Technologies and Basic Informatics 2020-21	10	Core
MEDI6238	Genomics Dissertation 2020-21	30	Core
MEDI6234	Genomics Guided Treatment 2020-21	7.5	Core
MEDI6239	Interpretation of Genomics in Clinical Practice 2020-21	10	Core
MEDI6240	Principles of Genetics & Genomics 2020-21	10	Core

MEDI6235	Advanced Genomic Informatics 2020-21	7.5	Optional
BIOL6071	Cancer Chromosome Biology 2020-21	7.5	Optional
MEDI6082	Clinical Research Skills 2020-21	10	Optional
MEDI6236	Counselling skills in genomics for health care professionals 2020-21	7.5	Optional
ECON6038	Health Policy and Economics 2020-21	5	Optional
MEDI6218	Teaching the Teachers to Teach 2020-21	10	Optional
MEDI6219	Translational Medicine 2020-21	7.5	Optional

Progression Requirements

The programme follows the University's regulations for ***Progression, Determination and Classification of Results : Undergraduate and Integrated Masters Programmes*** or ***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.

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***.

Criteria for admission

The University's Admissions Policy applies equally to all programmes of study. The following are the typical entry criteria to be used for selecting candidates for admission. The University's approved equivalencies for the requirements listed below will also be acceptable.

The normal requirement for entry to all programmes is a good first degree (first or second class), or equivalent, in a relevant subject of an approved University or institution of higher education.

As part of the application process, candidates are asked to write a personal statement to explain their motivation for wishing to take the course and to indicate their future career plans. Academic references will also be taken up.

Postgraduate programmes

Qualification	Grade/GPA	Subjects requirements	Specific requirements
Bachelors Degree	2ii or equivalent	Life Sciences, Computer Science, Medicine/Nursing and any similar subject broadly relevant.	Demonstrable understanding of basic principles of genetics.

Mature applicants

If you do not have a second class honours degree you may be admitted to the programme on the condition that you are able to provide evidence that you are able to study at MSc level and satisfy the Programme Lead that you are competent to pursue the course of study proposed. Evidence of the ability to study at this level will normally be in the form of (i) a relevant professional qualification at a suitable level, (ii) several years relevant post-qualifying professional experience, at least some of which must be at a responsible level, or (iii) completion of at least three years of an undergraduate medical degree.

Recognition of Prior Learning (RPL)

The University has a Recognition of Prior Learning Policy

English Language Proficiency

The table below sets out the English proficiency requirements for this programme in terms of the IELTS test. For full details of the recognised tests and the equivalent requirements in those tests please see www.southampton.ac.uk/admissions-language.

Overall	Reading	Writing	Speaking	Listening
7.0	6.0	6.0	6.0	6.0

Career Opportunities

As a HEE funded course, historically, most of our graduates have already been working in professional practice and have utilised our programmes to update their working knowledge to influence their field of work. Other of our graduates have entered into a range of careers: some have gone on to do PhDs, others have gone into the highly competitive NHS scientist training program (STP), others have gone on to work for government agencies and others for pharmaceutical companies.
Specific examples: we have 2 previous students who have gone on to do PhDs at Southampton with their dissertation supervisors. We also have students who have gone pursued PhDs at other institutions. Another of our students has gone on to become a Medical Science Liaison Office at a pharmaceutical company. Another of our students has gone on to become a Genetic Scientist for the NHS. Another student has gone on to the NHS STP for cancer genomics.

External Examiner(s) for the programme

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
Other	· Computer: It is advisable that students provide their own laptop or personal computer, although shared facilities are available across the University campus. · Books and Stationery Equipment (such as Recording Equipment, Webcams, Approved Calculators) · Printing and Photocopying Costs (such as Printing coursework for submission, Printing and binding dissertations or theses, Academic Poster (A1) printing). · Travel Costs for teaching and to and from the University and campus locations (including travel insurance). · Obtaining Disclosure and Barring Certificates or Clearance Subsistence Costs · Conference expenses · Parking costs (including athospitals) · Replacing lost student ID cards · Costs of attending a graduation ceremony (e.g. hiring a gown for graduation)

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***.

Appendix 2:

Learning outcomes and Assessment Mapping Document template

Module MEDI code	Module Title	Knowledge and Understanding							Subject Specific Intellectual Skills				Transferable/Key Skills					
		A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	C1	C2	C3	C4	C5	C6
MEDI6240	Principles of Genetics & Genomics	▯	▯			▯		▯	▯							▯		
MEDI6237	Genomic Technologies and Basic Informatics	▯	▯	▯	▯	▯	▯						▯			▯		
MEDI6239	Interpretation of Genomics in Clinical Practice	▯	▯			▯		▯	▯			▯	▯			▯		
MEDI6238	Genomics Dissertation	▯	▯	▯		▯	▯	▯	▯	▯	▯	▯	▯	▯	▯	▯	▯	▯
MEDI6235	Advanced Genomic Informatics	▯	▯			▯	▯						▯			▯		
MEDI6234	Genomics Guided Treatment	▯	▯	▯		▯		▯	▯				▯			▯		
MEDI6236	Counselling Skills in Genomics for Healthcare Professionals	▯	▯			▯		▯						▯		▯		