Programme Specification

Genomic Medicine (2018-19)

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	Genomic Medicine
Interim Exit awards	Postgraduate Certificate in Higher Education
	Postgraduate Diploma in Higher Education
FHEQ level of final award	Level 7
UCAS code	
Programme code	6213
QAA Subject Benchmark or other external reference	
Programme Lead	Zoe Walters (zsw1e17)

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. In particular, graduates of the programme will be equipped to harness the unprecedented transformation of the 100,000 Genomes Project, bring benefit to their patients through improved diagnosis and personalised treatment, and disseminate knowledge to peers, patients and the public. This Master of Science (MSc) programme in Genomic Medicine was commissioned by NHS England / Health Education England to provide education and training in genomics for health professionals from different professional backgrounds (e.g. medicine, nursing, public health, science and technology), for whom knowledge of genomics will impact on their service delivery to patients and the public.

There are opportunities to tailor our course to best meet your needs and let you plan your specific programme route at the start of your studies with us. Optional modules are offered both from our own genomics modules,

and as a wider choice from across the University. Your contact hours will vary depending on your module/option choices and details are provided in individual module profiles. We offer the course to both full time and part time students, so providing flexibility to cater for the needs of a diverse range of students, enabling you to study alongside your other commitments.

We also accommodate students on our "step on, step off" programme allowing you to start the programme and complete a Postgraduate Certificate in Genomic Medicine, a Postgraduate Diploma, or the full MSc.

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:

- Enhance your educational and professional expertise in all core areas of genomics, giving you appropriate knowledge, understanding and professional skills to improve your practice.
- Evaluate the psychological impact of living with genetic disease so that through empathy, the diagnosis,

management and the lives of patients and their families can be improved.

- 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 to best optimise professional practice.
- Enable you to demonstrate leadership in clinical use of genomics, and disseminate knowledge and skill to your peers and colleagues, your patients and the public.
- Develop your ability to integrate research evidence into all aspects of decision making and to apply knowledge, analytical and critical thinking skills to make sound judgements about the application of genomic findings to the care of your patients.
- 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 variations in genetic material; role of genetics in disease and use of genomic information to elucidate disease mechanisms and biology

A2. The application of 'omics' technologies to cancer, inherited and infectious diseases, as the 100,000 Genomes Project.

A3. Clinical presentations of rare inherited and common diseases and the traditional and current strategies for identifying genes responsible

A4. Molecular mechanisms of cancer development; germline/tumour comparison in diagnosis and treatment.

A5. Pharmacogenomics: the effect of genetics on medication response

A6. The use of genomics in diagnosis, monitoring and control of infectious disease

A7. Bioinformatics in clinical genomics; data resources, software, in silico tools, databases and literature

A8. The design, execution and interpretation of an original piece of research

Teaching and Learning Methods

To help you develop your knowledge and understanding of genomics you will be exposed to a variety of methods of teaching and learning.

- The basic biology of the genome and its disruption in disease will be acquired through lectures, group work, peer teaching, guided e-learning, problem-solving approaches and coursework.
- Current and emerging approaches to genomic diagnosis in inherited, acquired and infectious disease, are learned through a combination of lectures, tutorials, workshops and coursework.
- Knowledge of personalised medicine, stratified medicine and pharmacogenomics acquired through a combination of lectures, group work and peer teaching.
- Handling of genomic data will be taught through lectures and intensive supported practical workshops tailored to the skills of individual students and underpinned by extensive e-learning resources.
- Innovative and relevant materials to aid self-directed learning on the application of acquired knowledge are also provided through guided e-learning materials. Additional support is provided by direct access to academic staff as required (either by e-mail or personal communication).
- Understanding research methods and translating them to patient care is threaded right through the course through interactive tutorials and group work, observation of research teams, critique of current research and discussion of established and emerging protocols during both on-site and distance forums. It is explicitly applied by the planning and execution of a research project, which may be either a dissertation project or an independent literature review.

Assessment Methods

Your knowledge and understanding will be tested through a combination of formative and summative assessments that may include essays and other written assignments, multiple choice questions, data handling, oral and poster presentations and virtual patient tasks.

Subject Specific Intellectual and Research Skills

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

B1. Apply analytical and synthetic skills to investigate and test new hypotheses;

B2. Integrate information from a variety of sources to construct a coherent thesis on a.scientific topic;

B3. Critically evaluate the published literature with respect to the patient and carer perspective of genomic medicine;

B4. Construct hypotheses pertinent to the experimental exploration of topical questions in the field of medical genomics;

B5. Evaluate the significance of experimental results in the context of previous work;

B6. Precis and disseminate information including test results in oral and written forms to colleagues, patients and the public

Teaching and Learning Methods

To help you develop your intellectual and research skills you will be exposed to a variety of methods of teaching and learning. Seminars, tutorials, discussions and problem-solving approaches will be used in addition to formal lectures. Each module involves discussion of key issues and; practice in applying concepts, both orally and in writing, including analysis and interpretation of material and feedback on work produced. All students will receive initial guidance on how to identify, locate and use the material available, including published articles in libraries and books, online repositories, and patient genomic data. Comprehensive bibliographies are provided for each topic at the outset and guidelines are provided for the production of written assignments. Group tuition is given in the application and interpretation performance of appropriate diagnostic tests in genomics, and their application to patient care.

Assessment Methods

The variety of assessment methods employed all emphasise the requirement for you to demonstrate your skills through the production of coherent written and oral responses either to problems or set tasks. In common with all students in the Faculty, you will during your studies you will produce several written assignments, carry out data handling work, undertake written examinations, give oral presentations and write up a research project dissertation, which will integrate your skills.

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. Show initiative and personal responsibility;

C3. Make decisions in complex and unpredictable situations;

C4. Learn independently as part of a commitment to continuing professional development;

C5. Engage and communicate effectively with lay, ethical and research communities

Teaching and Learning Methods

To help you develop your general skills you will be exposed to a range of teaching and learning methods that will develop your analytical and critical faculties, scientific judgement and interpretative independence, and enhance your written and oral communication presentation skills.

Assessment Methods

Your generic skills will be assessed throughout the programme.

Programme Structure

The programme structure table is below:

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

Part I

The programme can be tailored to meet the career aspirations of students, 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 smaller numbers of or even individual modules, in order to fit your study pragmatically around your other commitments.

We also accommodate students on our "step on, step off" programme allowing you to start the programme and complete a Postgraduate Certificate in Genomic Medicine, a Postgraduate Diploma, or the full MSc.

The MSc programme comprises eight core modules: seven taught modules, and either a dissertation project or independent literature review. A 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.

Core modules 1 and 2 are the background to all further studies, since they give a comprehensive scientific and clinical foundation to the normal structure of the genome, its alterations in disease, the current and emerging technologies in medical genomics and the NHS structures in which they are employed.

Information about pre and co-requisites is included in individual module profiles. Students are also able to take a module worth up to 20 CATS from around the University with the approval of the Programme Leader.

A range of course study materials for all of our modules are available to students via our virtual learning environment (VLE), Blackboard (www.blackboard.soton.ac.uk), operating effectively as an online campus, delivering a library of study materials including uploaded lectures, virtual patients and independent learning tasks and reference materials. This will allow you to continue your investigation in your own home and/or work environments when producing your course work. We encourage students to contact us whenever support or guidance is needed.

This course varies from the standard University semester and term dates published in the Calendar.

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) (180 CATS) at

HE7 level. This length of time for the part time course will allow students to study alongside their other commitments. The programme is arranged as 7 taught core modules, a dissertation project or literature review, and a selection of optional modules.

All modules once selected are core. Each taught module is equivalent to 15 CATS except where specified (or 150 hours of student learning and endeavour, including lectures, class presentations, class practical sessions, tutorials and independent study).

Normally each student will attend the University for two blocks of teaching totalling 4 days per 15 CATS module. The dissertation (60 CATS) equates to 600 hours of study and the independent literature review (30 CATS), (which for a Masters degree must be accompanied by the Workplace-based learning module), 300 hours. It is recommended that the dissertation or literature review should not begin before completion of at least taught modules 1 and 2.

The award at the end of the programme of study will be the degree of Master of Science, which is classified (pass, merit, distinction).

The structure of programmes are as per the University General Regulations found in Section IV of the University Calendar and the programme specifications.

Please note that Parts 1-5 are identical and modules can be completed in any order.

Please note that Part 4 is your last opportunity to complete taught modules.

Please check the PG Cert programme specification to see which modules qualify for this award.

Part I Core

As part of your programme, please note that you can take either:
MEDI6216 Dissertation
Or
MEDI6217 Independent Literature Review and MEDI6120 Workplace Based Learning

Code	Module Title	ECTS	Type
MEDI6127	Applications of Genomics in Infectious Disease 2018-19	7.5	Core
MEDI6215	Bioinformatics, Interpretation and Data Quality Assurance in Genome Analysis 2018-19	7.5	Core
MEDI6216	Genomic Medicine Dissertation 2018-19	30	Core
MEDI6217	Genomic Medicine Independent Literature Review 2018-19	15	Core
MEDI6125	Genomics of Common and Rare Inherited Diseases 2018-19	7.5	Core
MEDI6119	Introduction to Human Genetics and Genomics 2018-19	7.5	Core
MEDI6129	Molecular Pathology of Cancer and Application in Cancer Diagnosis, Screening and Treatment 2018-19	7.5	Core

MEDI6131	Omics techniques and their application to Genomic Medicine 2018-19	7.5	Core
MEDI6128	Pharmacogenomics and Stratified Healthcare 2018-19	7.5	Core

Part I Optional

Code	Module Title	ECTS	Type
MEDI6230	Advanced Bioinformatics 2018-19	7.5	Optional
MEDI6082	Clinical Research Skills 2018-19	10	Optional
MEDI6123	Counselling Skills for Genomics 2018-19	7.5	Optional
MEDI6214	Ethical, Legal and Social Issues in Applied Genomics 2018-19	7.5	Optional
MEDI6218	Teaching the Teachers to Teach 2018-19	10	Optional
MEDI6120	Workplace- Based Learning 2018-19	7.5	Optional

Progression Requirements

The programme will follow the University's regulations for ***Progression, Determination and Classification of Results: Undergraduate and Integrated Masters Programmes*** or the University's regulations for ***Progression, Determination and Classification of Results: Standalone Masters Programmes*** as set out in the General Academic Regulations in the University Calendar: http://www.calendar.soton.ac.uk/sectionIV/sectIV-index.html

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:
- A welcome session for orientation and programme overview.
- Student module guides and timetables.
- An introduction to the library and Information Technology (IT).
- Extensive library and other learning resources and facilities within the Faculty and University.
- The Programme Leader.
- The Module Leaders who are academic members of staff, who will be responsible for overseeing your progress throughout the module.
- The Faculty PGT Senior Tutor for all pastoral matters.
- The International Officer.
- In consultation with the Module Leader you will identify or will be allocated with a local supervisor and / or a University supervisor for your dissertation projects. Research projects always have both a local supervisor and University supervisor, but Professional Projects may only have a University supervisor.
- Academic staff and administrative staff.
- A personal academic tutor (PAT).
- A student representative.

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. Programme Board, Staff Student Liaison Committees, PGT 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

The ways in which the quality of your programme is checked, both inside and outside the University, are:
- Regular module and programme reports which are monitored by the Faculty
- Programme validation, normally every five years.
- External examiners, who produce an annual report
- The national Teaching Excellence Framework
- The national Research Excellence Framework (our research activity contributes directly to the quality of your learning experience)
- Institutional Review by the Quality Assurance Agency
- MSc Genomic Medicine Programme Board meetings
- Peer observation of teaching

- Ongoing review of subject/professional benchmarking standards
- Ongoing review of the development of Genomic Medicine services
- Faculty Programme Committee

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

Career Opportunities

This postgraduate programme is designed to help you offer better care to treat your patients and the public; we provide healthcare professionals with effective education and training to use medical genomics in the diagnosis, treatment and management of inherited, acquired and infectious disease, so that the lives of patients and their families can be improved.

Through the knowledge and understanding you will gain with us, you will develop and improve your health care provision, through your own continuing professional development and your ability to cascade education to your colleagues, adult and paediatric patients and their families, and the public.

External Examiner(s) for the programme

Name: Professor Eamonn Sheridan - University of Leeds

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 s/he takes 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). · Typing Costs · 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 at hospitals) · 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.