

Genomic Medicine and Healthcare

Postgraduate Diploma and MSc Courses





Postgraduate Diploma

Delivered over 1 year, the online, part-time Postgraduate Diploma course is specially developed for busy health professionals. Formatted in 6 modules, each 6 weeks in duration; the course is designed to be practical and clinically focused.

MSc

The MSc runs over 2 calendar years, with the first year comprising of the Postgraduate Diploma. The second year starts with an initial 12 week online module to develop skills in critical appraisal and knowledge of research methodologies. Students then complete the professional project module.

Why study Genomic Medicine and Healthcare with us?

There has been an increase in public and professional interests in genetic and genome-level diagnostic and predictive testing for clinical management, disease risk evaluation, prevention of major complications and offering the prospect of improved prognosis. Which has led to an increase of interest around genomic medicine programmes.

The benefits of personalised or precision medicine include the option for reproductive choices and reducing lifetime medical or health risks by judicious use of new emerging preventive medicines and devices combined with lifestyle/behaviour modifications.

Our part-time Postgraduate Diploma in Genomic Medicine aims to equip graduates with critical knowledge and understanding of genomic medicine. Graduates will be able to apply knowledge for direct clinical benefit and future study. Our distance learning genetics course also caters to the educational needs of primary and secondary care health professionals, and is the only university-validated course of its kind that is completely accessible online.

Genomic Medicine and Healthcare

Postgraduate Diploma

Course Modules

Our online Postgraduate Diploma in Genomic Medicine and Healthcare allows you to study for just one calendar year and is a part-time, distance-learning course. The course is worth 120 credits and comprises six modules of 20 credits, each running over a period of six weeks.

Module 1 - Principles of Medical Genomics and Multiomics

Aim of the module:

- To develop a critical understanding and knowledge of core concepts in medical genomics and multiomics.

Synopsis of module content:

- Molecular and Cellular Genetics
- DNA and RNA Epigenetic Modifications
- Inheritance Types of Genetic Disorders
- NGS and PCR based Molecular Pathology or Molecular Diagnostics
- Multiomics Approaches to Communicable and Non Communicable Diseases
- Translation of Genomic Medicine into Clinical Practice

On completion of this module, students will be able to:

1. Demonstrate a systematic understanding of the core concepts of medical and health genomics and multiomics.
2. Demonstrate an ability to translate genomic data into clinical actionability.

Module 2 - Genetic and Genomic Counselling

Aim of the module:

- To develop a critical understanding of the principles, methods of delivery, and core practice issues in genetic and genomic counselling.

Synopsis of module content:

- Principles of Genetic and Genomic Counselling
- Interpretation of Family and Medical History
- Association of Clinical Phenotype to Disease Related Genotype
- Genetic and Genomic Risk Assessment
- Clinical Preparation and Genetic/Genomic Service Organisation and Delivery
- Consent, Confidentiality, Information Sharing and Ethics in Genomic Medicine

On completion of this module, students will be able to:

1. Critically apply the principles of genetic counselling to complex clinical situations.
2. Selectively apply relevant ethical, moral and legal issues to the diagnosis, testing and counselling of patients.

Module 3 - Genomic Medicine, Law, Bioethics, Bioeconomy and Society

Aim of the module:

- To develop a critical understanding and knowledge of core societal, legal, bioethical, bioeconomical, political and cultural perspectives on genomic information and technology.

Synopsis of module content:

- Legal Frameworks and Issues in Genomic Medicine
- Social and Cultural Aspects of Genomic Medicine
- Bioethical Implications in Genomic Medicine
- Public Policies and Politics in Genomic Medicine Service
- Bioeconomy Implications in Genomic Medicine
- Public Advocacy, Healthcare Professional Engagement and Education in Genomic Medicine

On completion of this module, students will be able to:

1. Demonstrate a critical understanding and knowledge of core societal, legal, bioethical, bioeconomical, political and cultural perspectives on genomic information and technology.
2. Demonstrate the ability to critically appraise a variety of broader considerations surrounding the use of genomic information and application of technologies.

Module 4 - Medical and Clinical Genomics

Aim of the module:

- To develop a critical understanding of the core principles and practice of medical and clinical genetics and genomics.

Synopsis of module content:

- Genetic/Genomic and Multiomic Multiethnic Epidemiology and Preventive-Healthcare (using GWAS, TWAS, PheWAS and GWES)
- Integrative Multiomics Analysis and Translation in Personalised/Precision Medicine
- Genetics/Genomics Clinic, Pharmacogenomics Clinic and Preventive Genomics Clinic including PRST
- Genetic, Genomic and Multiomic Profiling of Germline and Somatic Variants in Personalised Oncology
- Genomic-Medicine Multidisciplinary-Team (GM-MDT)
- Clinical Audit Cycle in Genomic Medicine

On completion of this module, students will be able to:

1. Demonstrate the ability to implement cutting edge knowledge of multiomics into healthcare practice ranging from individualised care to population health.
2. Demonstrate professional healthcare expertise in the application of emerging multiomics tools for the implementation of communicable and noncommunicable disease management using a multidisciplinary approach.

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Doing a course, all online is a lot more convenient for me around my clinical role so that's why I chose to study with Lerna...

I really like how flexible the course was, I liked the freedom I got with the professional project and I was well supported throughout the whole 2 years!

- Lisa Jayne Edwards, Medical Education MSc graduate

Module 5 - Genome-based Reproductive Medicine

Aim of the module:

- To develop a critical understanding and knowledge of genome-based reproductive medicine.

Synopsis of module content:

- Reproductive Genetics and Genomics
- Genetic and Genomic Implications of Infertility
- Prenatal Screening, Risk Assessment, Molecular Diagnostics and Genomic Counselling
- Specialised Prenatal Diagnosis and Personalised Healthcare
- Personalised Multidisciplinary Treatment and Management
- Legal, Cultural, Social and Ethical Issues in Fetal Medicine

On completion of this module, students will be able to:

1. Critically appraise the implementation of reproductive medicine based on multiomic evidence in the multidisciplinary management of pregnancy.
2. Critically appraise the evidence in implementing risk assessment for pregnancy and counselling using personalised approaches in high risk pregnancy and fetal medicine, taking into account legal, cultural and socio-ethical issues.

Module 6 - Genomic and Personalised Medicine

Aim of the module:

- To develop a critical understanding and knowledge of how genomic medicine can be utilised to provide personalised medicine in healthcare.

Synopsis of module content:

- Applied Translational Research in Genomic Medicine
- Pharmacogenomics, Pharmacoepigonomics and Pharmacometabolomics
- Systems Medicine and 5 Ps Medicine
- Personalised Genomic Medicine Healthcare Services
- Integration of Genomic Medicine in Healthcare and Economic Implications
- Novel Therapeutic Advances of Genomic Medicine

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"When I enrolled into the course I had no idea about the opportunities it would provide me with. Having my first paper published through this course helped me overcome my apprehensions of academic writing and made me more confident to pursue it further. "

- Rutu Dave



On completion of this module, students will be able to:

1. Creatively translate the healthcare possibilities of genomic medicine from bench to practice.
2. Critically appraise the place of multiomic evidence in translational research for improving personalised/precision genomic medicine, taking into account the associated health economics.

Teaching Methods

Our courses are conducted entirely online through self-directed distance learning. However, you will receive guidance throughout with tutor-stimulated academic discussions, which are based on clinically-rich case scenarios. These usually occur within groups of 10-15 students, allowing you to clearly communicate with both your tutor and fellow students.

You will participate in a combination of group and individual activities, which are recorded in a reflective journal. This innovative teaching method enables you to envisage the translation of your studies into your every day work and practice.

Our dedicated Student Support Team are also available to help with any problems you may face. From navigating our online platform to advising you on deadlines, our team can assist with any questions or challenges you may have along the way.

Study Skills week

Once you have secured your place on the course, you will be required to attend our Study Skills week. This will give you the opportunity to participate in workshops on Harvard referencing, scientific and reflective writings, and levels of evidence in preparation for your studies. It is compulsory for you to attend this induction, as it'll provide you with a sturdy introduction to the course.

Genomic Medicine and Healthcare

Postgraduate Diploma

Entry Requirements

Documents required:

- A copy of your updated CV including your address and date of birth.
- A copy of your undergraduate degree certificate.
- The name and email address of someone who is able to provide a reference, this can be a work colleague, employer or former tutor.
- A detailed personal statement explaining why you would like to undertake the course.

Health professionals working within a clinical setting, both UK and overseas, with a related Healthcare Science degree (including international qualifications) are eligible to apply for the Postgraduate Diploma in Genomic Medicine and Healthcare

Applicants without the above academic criteria but relevant/suitable experience can apply. Applications will be judged on the individual specifics of background and qualifications including ability to work at Postgraduate level (applicants may be asked to submit a piece of work for assessment to confirm that they are able to work comfortably at postgraduate level and demonstrate requisite clinical/professional knowledge).

Applicants should submit copies of the following with their application:

Proficiency in the English language is essential to completing our courses. If English is NOT your first language, we ask for proof of competency during the application process. We are able to accept an IELTS overall score of 6.0 (with a minimum of 5.5 for each band) or an equivalent qualification.



Genomic Medicine and Healthcare MSc

Course Modules

Note: The first year of the MSc comprises of the 6 modules within the PGDip.

Module 7 - Research Methodologies and Critical Appraisal

Aim of the module:

- To prepare students for an independent research-based project by developing skills in selecting, appraising, discriminating, using evidence and appropriate research/investigative methods to address relevant topics for investigation.

Synopsis of module content:

- Quantitative Studies
- Statistical Analysis Interpretation
- Interpreting the Evidence
- Meta-analysis and Systematic Reviews
- Qualitative Studies
- Evidence Appraisal: Interpreting, Weighing and Synthesizing the Evidence
- Audit, Governance and Quality Improvement, Health Economics
- Preparing a Research Proposal: Research Committees, Consent, Ethics, Probity and Literature Review

On completion of this module, students will be able to:

1. Critically analyse and interpret research to assess its application to delivery/ service development.
2. Select and apply different methodological approaches and tools to answer research questions in your field of practice.

Module 8 - Professional Project

Aim of the module:

- To formulate the research question that you seek to answer
- To develop an ability to critically evaluate areas of professional practice
- To critically appraise specific areas of clinical, research and organisational practice.
- To develop skills in independent research and study
- To develop skills relevant to scientific publications

Synopsis of the module:

The module will depend on formulating the question and the creation of a piece of work based upon a specific public health related project relevant to the person's practice.

This project may comprise:

- Systematic literature review and appraisal of the evidence
- Audit of non-patient data/organisational audit Review and implementation of evidence-based practice
- Literature review and qualitative or quantitative research proposal
- Case(s)-based and quality of service review with critical appraisal
- Case report, review of literature and organisational assessment
- Secondary data analysis

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On completion of this module, students will be able to:

1. Design and undertake a research and development project related to genomic medicine and healthcare in order to produce an extensive piece of literature which may be suitable for peer-reviewed publication.
2. Critically evaluate practice and suggest improvements or change in a genomic medicine setting.
3. Incorporate knowledge of the research process in developing genomic medicine and healthcare services appropriately.

Teaching Methods

Module 7 - Research Methodologies and Critical Appraisal

MSc teaching methods for this module are similar to the Postgraduate Diploma course modules, however it is run over 12 weeks.

Module 8 - Professional Project

To produce the professional project, students continue to use the online course; however, much of the work is self-directed.

Students are expected in the first 8 weeks to interact with their tutor on a weekly basis.

Students select a specific project and submit a project summary/proposal (approximately 1,200 words).

Once the proposal has been approved, the professional project (10,800 words) itself is then completed through online guidance and supervision offered by the tutor. The student and tutor will interact regularly (weekly) on the dedicated students/ tutor discussion area or through any other means of communication deemed appropriate by both parties (telephone/ SKYPE/ email). Note of any verbal communication with the tutor is recorded in the student's journal by the student.

Entry Requirements

Health professionals working within a clinical setting, both UK and overseas, with a related Healthcare Science degree (including international qualifications) are eligible to apply for the Master's in Genomic Medicine and Healthcare.

Applicants without the above academic criteria but relevant/suitable experience can apply. Applications will be judged on the individual specifics of background and qualifications including ability to work at MSc level (applicants may be asked to submit a piece of work for assessment to confirm that they are able to work comfortably at MSc level and demonstrate requisite clinical/professional knowledge).

Entry requirements for the two-year course are as for the Postgraduate Diploma.

Applicants should be working in a clinical setting, either in the UK or overseas, and have a science degree in a relevant subject.

You will also need to submit copies of the following with your application:

- Qualification certificates
- A maximum of two professional and/or academic references
- IELTS score of 6.0 with a minimum of 5.5 for each band (or an equivalent qualification)

Graduates of this course will receive a Master of Science award.

The Genomic Medicine and Healthcare Postgraduate Diploma course provides a progression route for the MSc course in Genomic Medicine and Healthcare.



What do our students think?

Since 2010, over 1000 students have progressed their medical career by enrolling in one of our qualifications. We ourselves have learned a lot during this time and continually seek to improve the student learning experience. Here is what some of our previous students have said:

"I found the online learning very interesting. It enabled me to save money and time."

Dr Imad Eddin Rahamtalla, Doctor

"I strongly recommend Diploma MSc to all those busy physicians who are working in remote areas and wish to upgrade their knowledge."

Dr Junaid Zaffar, Diabetologist

"The learning was fun and enjoyable. The course was awesome and it increased my confidence."

Dr Sankar Nath Jha, Assistant Professor





"I found learning with Diploma MSc interesting, it helped to update my academic knowledge."

Dr Prasanth Kinattupurayil, Doctor

"I love that it was flexible and that I could log in at my convenience. I found this course to be very in-depth, informative, challenging and stimulating."

Kerri-Ann Best PGDip, RD



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