Description

Postgraduate Courses in Health Data Sciences 25/26

Description

Student Handbook 2025/26
MSc/ PGDip/ PGCert
Health Data Science

Accredited CPD units in Health Data Science
Programme Director Matthew Sperrin
School of Health Sciences

The University of Manchester
Vaughan House

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General Information

Introduction to the MSc Health Data Science

On behalf of all the team at University of Manchester, a warm welcome to the Health Data Science programme! The delivery of healthcare is changing rapidly, and to support this we need to make the best use of health data. This requires individuals who understand the healthcare sector, medicine and biology; how data is collected and analysed, and how this can be communicated to influence various stakeholders â€“ Health Data Scientists. This is what you can become when you complete this programme.

You will work with academics and practitioners from complementary fields to learn the health data science skills required by the healthcare, academic and industrial sectors. You will learn the skills necessary to make best use of healthcare related data to improve health and the economic efficiency of healthcare delivery. You will also learn skills in statistics and AI that will be applicable in all fields.

The staff involved in delivering this programme are world-leading experts in their fields, and are actively researching statistics, data engineering and AI, and focused on making sure that their research has a real impact in healthcare. They are all passionate about passing on their skills to you, and this will come across when you meet them during the course.

The programme emphasises a self-directed approach, and encourage participation and discussion between students and tutors through on-line discussion boards, collaborative exercises and face-to-face workshops. Sharing that knowledge and experience with your tutors and other students will significantly enhance what you get from the course.
We hope this handbook will provide you with most of the information you will require to progress with your studies. Every effort has been made to provide you with the most up-to-date and accurate information; however, some minor details might change during the course of your studies.

All changes and additions will be brought to your attention. If you have any queries or comments, or would like to contact us for advice and guidance on any issues, please get in touch.

On behalf of The University of Manchester I wish you an enjoyable and successful time on the programme, and I look forward to meeting you!

Prof Matthew Sperrin

Programme Director, September 2025

School of Health Sciences Student Handbook 2025-26

Programme of Study

The current model of healthcare delivery worldwide is subject to unprecedented challenge. An ageing population, the impact of lifestyle factors and increasing cost mean that existing approaches are becoming unsustainable. This, coupled with a drive to personalised medicine, presents an opportunity for a step change in healthcare delivery. To do this we need to make best use of the health data we collect and to create a better understanding of the relationship between delivery, treatments, outcomes, patients and costs. This requires individuals who understand the healthcare sector, medicine and biology; how data is collected and analysed, and how this can be communicated to influence various stakeholders â€“ Health Data Scientists (HDS).

This programme will train the people required to meet the challenges to the healthcare systems in the UK and worldwide. You will learn the skills necessary to make best use of healthcare related data to improve health and healthcare delivery.

On completion of the programme, successful students will demonstrate key competencies and have the skills to operate in the field (see box below).

The students will have knowledge and skills in:

- a range of health information systems and technologies how to manage and analyse large scale data
- ethics and governance issues around health data
- statistical and machine-learning methods
- the healthcare context, processes and environment
- clinical and biological problems
- working in inter-disciplinary teams

The specific learning outcomes for the Postgraduate Programme are outlined below.

Aims

01 Provide students with the key background knowledge and understanding of the healthcare system from the treatment of individuals to the wider population

02 Train students to understand the governance structures and frameworks used when working with health data and in the healthcare sector

03 Introduce key technical skills and software to work with and manipulate health data

04 Emphasise the breadth and depth of the application methods and uses of health data to illustrate to students the potential use for health data.

05 Comprehend key concepts and distinctions of the disciplines that need to be synthesised for effective health data science

06 Provide an appreciation of the role of the health data scientist and how they fit in the wider healthcare landscape

07 Embed the importance of patient-focused delivery and outcomes

08 Equip students with in-depth knowledge, understanding and analytical skills to be able to work with health data effectively to improve healthcare delivery

09 Equip students with a systematic and critical understanding of relevant knowledge, theoretical frameworks and analytical skills to

10 Demonstrate a critical understanding of the challenges and issues arising from heterogeneous data

at volume and scale, and turning them into insight for healthcare delivery, research and innovation.

11 Develop a practical understanding of the skills, tools and techniques necessary to work with health data

12 Apply practical understanding and skills to problems in health domain.

13 Train students to be able to work in a multi-disciplinary community and communicate specialist knowledge of how to use health data to a diverse community.

14 Evaluate the effectiveness of techniques and methods in relation to health challenges and issues addressed

15 Enable students, through the systematic, in-depth, exploration of a specific area of practice and/or research to extend their knowledge, understanding and ability to contribute to the advancement of healthcare delivery knowledge, research or practice.

A. Knowledge & Understanding

Within the context of their chosen award students should:

A1 Identify the social, political, regulatory, ethical, and technological aspects when working with health data and in the healthcare sector.

A2: Demonstrate a critical understanding of the nature and value of different research approaches, designs and methods within the context of health data science research and practice.

A3: Have knowledge and understand the development of healthcare systems and the range of utilised technologies

A4: Appreciate and be able to discuss the range of uses of health and health-related data to address healthcare delivery problems.

A5: Awareness of the national and international framework, strategies and policies

A6: Understand the role of the health data scientist in different scenarios

A7: Acquire knowledge of the history and current status of real-world clinical and public health problems

A8 Identify and explain the use of appropriate data sources to address particular healthcare problems through having in depth knowledge of a range of health and health-related data sources and their characteristics

A9 Understand widely used statistical, machine learning, and AI methods to explore, describe and summarise health and health-related data.

A10 Know how to formulate a strategy to investigate a healthcare problem

A11 Understand the range of visualisation techniques to display health/health-related data and select which are appropriate for different audiences

A12 Have advanced knowledge of statistical, machine learning, and AI techniques to analyse health data

A13 Understand how a health data scientist fits in the organisational/development/research processes

A14 Systematically and critically examine hierarchies of research evidence that inform and underpin the use of health data to influence health service practice, design and development.

A15 Consolidate, synthesise and critically apply the in-depth knowledge and understanding of relevant policy, literature, methodologies and technologies acquired through the taught components of the programme to the formulation of an extended research project relevant to a specific aspect of the use of health data.

B. Intellectual Skills

Within the context of their chosen award and pathway, students should be able to:

B1 Appraise and synthesise information from a variety of sources in order to develop a coherent critical analysis of issues relating to application of health data.

B2 Recognise problems and devise appropriate solutions

B3 Translate knowledge and understanding obtained from other disciplines and make connections to healthcare problems

B4 Critically analyse and summarise others and your own work and consider how it could have been done differently

B5 Engage in a literature research strategy and be able to summarise key points

B6 Consider critically a variety of established techniques and methods of research and enquiry and how they relate to the advancement of health care delivery and research.

B7 Critically evaluate a range of possible options or solutions to address a sizable data application and present a soundly reasoned justification of a final recommendation

B8 Translate ideas, practices, knowledge and understanding between academic disciplines in order to provide innovative solutions to unfamiliar problems

B9 Demonstrate original independent thinking, and an ability to develop theoretical concepts

B10 Justify the methodologies, techniques and decisions used in oneâ€™s own work

B11 Engage in a systematic exploration of the literature, policy and research related to a specific area of health data science so as to demonstrate an in-depth understanding of the relationship between theory and practice.

B12 Understand relevant research methodologies and techniques and their appropriate application to research

C. Practical Skills

Within the context of their chosen award and pathway, students should be able to:

C1 Perform independent information acquisition and management

C2 Devise and write computer programmes to solve problems

C3 Draw on their knowledge and understanding of different approaches to research to

formulate appropriate questions and methods for research and/or evaluation into aspects of health data science

C4 Utilise diverse data sources and select/implement a range of data analytical methods to provide insights into health data

C5: Plan, execute and evaluate health data science research and projects

C6: Work with appropriate programming languages and software to retrieve, organise and present health data sets.

Additionally for the Masters

C7 Organise and pursue a scientific research project in a specific aspect surrounding health data science

D. Transferable Skills and Personal Qualities

D1. Prepare, present and effectively communicate and defend complex ideas in documents and oral presentations to a range of audiences

D2 Apply statistical, machine learning and AI skills

D3 Demonstrate research and enquiry skills by accessing and analysing literature in order to inform, research and develop strategies

D4 Work co-operatively and effectively with others as a member of a team.

D5 Reflect on their own academic performance and utilise strategies to improve these.

D6 Use logical and systematic approaches to problem-solving and decision-making.

D7 Work as an individual on a self-directed learning and research

D8 Transfer knowledge, understanding and skills to a range of health and health- related settings

D9 Manager resources and time effectively

D10 Identify and access appropriate bibliographical resources, archives and other sources of relevant information to investigate a topic

D11 Ability to make cross-disciplinary connections with other scientists and professionals

D12 Show flexibility, open-mindedness, self-awareness, self-discipline, motivation and thoroughness to sustain a piece of research

We offer one main award, the Master of Health Data Science (HDS), as well as a PG Diploma, a PG Certificates and stand-alone CPD units. The core requirements for these courses are different and are outlined below. However, students from all these courses choose their units from a common pool, use the virtual learning environment in the same way, and share the same online discussions.

Philosophy of the programmes

All of the courses offered in this programme share the same philosophy.

Evidence: Developing skills in the collection, synthesis and implementation of evidence is central to this programme.

Skills: The programmes emphasize the acquisition of skills so that you can put into practice what you learn. Many Masters level courses teach attitudes and knowledge, while our emphasis will be more focused on the development of skills to use. These skills also translate into the ability to perform and appraise research projects as well as developing the skills necessary to work in health informatics in the healthcare and industrial sectors. Students will also be guided and encouraged to develop new and refine their existing communication skills. Clear, precise, well presented and referenced writing is essential for professional tools. Students will be required to present their assignments in styles which reflect models used in health data science and research. Students should access study skills materials for academic writing and presentation skills.

Self-directed study: The programmes encourage self-directed study around clearly rather than the provision of lectures or just web-based lecture notes.

Implications: The implications of emphasizing self-directed study and skills are that the course will largely involve active learning methods using case-scenarios, exercises, etc., in a problem-based approach. Hence, examples and exercises will use real-world examples from appropriate settings, for example from primary/secondary care, public health practice, etc.

The programmes include a visionary aspect, so course units will cover the latest developments in the field and horizon scan for new and emerging topics and policies.

Course Structure

The course runs on a modular basis and is a full-time course. In addition, the course units are also available for Continued Professional Development.

Method of Study and Course Units

The teaching will be delivered through face-to-face (in person) teaching and accompanied with e-learning material and problem-based learning.

There are 4 core units that are mandatory for all students to complete, which take place in semester 1. These units are â€˜Introduction to Health Data Scienceâ€™, â€˜Statistics for Health Data Scienceâ€™, â€˜Programming for Health Data Scienceâ€™ and â€˜Statistical Inference and Modelling in Healthâ€™.

In semester 2, students will be able to choose 4 units from a total of 11 options that they wish to study in that semester. The options available are:

- Mathematical Computing for Medical Imaging Digital Transformation Project
- Design and Analysis of Randomised Controlled Trials
- Tutorials in Advanced Statistics
- Principals of Digital Epidemiology
- Medical Image Analysis and Artificial Intelligence
- Computational Methods for Multi-Modal Data Analysis
- Machine Learning & Advanced Data Methods Decision Support Systems
- Introduction to Health Informatics
- Introduction to Clinical Bioinformatics

You will select your unit choices during semester 1 following a â€˜showcaseâ€™ event where further information on each unit will be provided. The dissertation unit is the final unit of the course, which takes place between May and early September. You will be conducting a Health Data Science research project supervised by an expert. You will be expected to attend regular meetings with your supervisors and feedback on your progress and dissertation write-up.

A list of available dissertation projects will be communicated to you to select your preference from, usually early in Semester 2. Or if you choose to propose your own project and have contacted a supervisor who is willing to supervise you, then please contact the unit leader to confirm this.

Full-time Students:

Year 1

Semester 1	***Semester 2***	***Semester 2/3***
Introduction to Health Data Science (15 credits)	Select 4 units (15 credits each) from a choice of 10 units. *	
Programming for Health Data Science (15 credits)		Research project (60 credits)
Statistics for Health Data Science (15 credits)		
Statistical Inference and Modelling in Health (15 credits)		

You will also be attached to some skills based units at no extra cost. For further details regarding these resources, see section on Introductory courses.

Award Levels:

Postgraduate Certificate in Health Data Science

Total: 4 course units = 60 credits

Postgraduate Diploma in Health Data Science

Total: 8 course units = 120 credits

Master of Health Data Science

Total: 8 course units + HDS dissertation = 180 credits

- All 8 course units (120 credits)
- Dissertation/project (60 credits)

Continuous/personal professional development (CPD)

We also welcome students who are taking single units for their own continuous professional development (CPD). They can choose from the same course units, except the dissertations, and they study in the same way as other students in the Canvas learning environment. You can take unlimited numbers of CPD units, but you are only able to use these credits towards a higher award under the AP(E)L (Accredited Prior Learning) regulations â€“ i.e. AP(E)L will be permitted up to a maximum of 15 credits towards a Certificate award, 45 credits towards a Postgraduate Diploma award and up to a maximum of 60 credits towards a Masters award (See section on AP(E)L for further details regarding AP(E)L regulations.

Course Unit Delivery

The majority of the programme is delivered in a blended learning format (i.e. a combination of eLearning and face-to-face workshops).

Assignment submission

Please be aware of individual course unit assignment deadlines. Details of submission deadlines are available on the course unit eLearning space and by the unit leader.

Submission of assessed work

All assignments for Canvas course units must be submitted electronically via Canvas on the date and time specified above. Please see instructions in your course unit assessment pages. Assignments e-mailed to tutors or administration will not be accepted.

The last time for all submissions is **Monday 1st September 2026 2pm LOCAL UK TIME** (this varies throughout the year as GMT or BST; see WorldClock).

Introductory Courses and PGT Online Skills Training Resource Online Skills Training Resource

The Faculty has developed a skills training resource to support you through your postgraduate taught programme. This online material should supplement the assessed learning material and activities undertaken in your taught programme.

Accessing the online skills resource

You can access Canvas through the My Manchester portal (http://my.manchester.ac.uk). The skills training resource is available in an academic community space available to all registered PGT students in the Faculty through Canvas. If you cannot see these units in Canvas, please contact your Programme & Curriculum Administrator.

Content Full details of all these resources can be found in the introduction to each unit. These resources have been designed to give you formative feedback on your progress through them. If you experience any problems and would like to talk to someone, please contact your Programme Director. If you have questions about referencing and how it applies to your own work, please contact your Programme Director or dissertation supervisor/unit lead.

Research Methods*	This course is spilt into 2 units that cover introductions to study de and dissertation skills. It has a number of online quizzes where yo test your knowledge.
Introduction to Statistics*	The course provides a valuable foundation for understanding and interpreting biostatistics. It aims to provide you with the fundamer quantitative analysis.
Presentation Skills	This short interactive unit is designed to help you enhance your presentation skills. Regardless of whether you are presenting in p preparing for conferences, an oral examination or more informal s this unit will give you the tops tips to improve your delivery. The c also includes a unit on influencing effectively, alongside the prese and poster information.
Qualitative Research Methods*	This unit has been designed to give you an introduction to Qualita Research.

NOTE: the material in this online resource is for reference and formative learning purposes only. In some of your taught programme you may be required to undertake assessed course units for Research Methods, Qualitative Research or Statistics. If your programme involves taught units then you should refer to the Canvas material relating to that course unit. Please contact your Programme Administrator if you are unsure which material relates to your assessed work. You will still be able to refer to the

online skills resource in later years.

Non-credit bearing Introductory Course Units SHS60001

All students are automatically enrolled onto the SHS60001 unit that provides information on health and safety, academic malpractice and academic literacy. Completion instructions for each of these sections are clearly defined within the course. **Completion of the academic malpractice and health and safety sections is mandatory for all students**. All assessments must be completed as soon as possible after the programme begins, with the academic malpractice assessment completed before the first piece of coursework is submitted. Completion of these assessments is monitored by the School. All students are also strongly advised to complete the academic literacy section.

The University Centre for Academic English

The University Centre for Academic English offers free workshops and resources to support you with your academic writing, speaking and grammar. For more information and to register for a course, please visit *https://www.ucae.manchester.ac.uk/study/academic-success-programme/*.

Personal Development Plans

A personal development plan (PDP) is a collection of documents that record your progress throughout the course. It encourages you to focus on your skills as a learner and to take responsibility for your own skill development. The PDP is your own property. It is primarily about assessing your skills, setting personal goals for improvement, recording your achievements, and reflecting on your experiences on this course.

The PDP for the course will be made available by the programme director/personal tutor. For some students, this may be the first time that you have come across a PDP. Others will have used them for some years within their work environment, for example the NHS in the UK. In this case we encourage you to use whichever system is of most benefit to you. If kept up to date, your PDP will provide a valuable profile of your progress and achievement throughout your course, as well as helping you document your skill development. This will be a great asset when you come to revising your CV. For more general information please see: http://www.tlso.manchester.ac.uk/personaldevelopmentplanning/

Accreditation of (Experiential) Prior Learning (AP(E)L)

A student may be permitted to receive an award of credits on the basis of demonstrated learning that has occurred at some point in the past. The award of credits can be based upon learning for which certification has been awarded by an educational institution or another education/training provider, or un-certificated learning gained from experience. For full criteria please contact the programme administrator once you complete registration.

All requests from the student for consideration of AP(E)L can be made to the programme director. You will be asked to complete a form (which you can request from your programme administrator), which will require you to indicate which course units are equivalent to your prior learning. You will also be required to provide evidence of the prior learning. This will then be assessed by the programme team

and approved at School level to ensure equivalency of learning outcomes has been met.

Please follow the link below for the universityâ€™s policy on AP(E)L:
http://documents.manchester.ac.uk/display.aspx?DocID=13148

If an AP(E)L application is successful, the University charges Â£30 for every 15 credits of AP(E)L. The overall tuition fee is adjusted and the administrative charge is applied.

Students who have completed units on the accredited CPD stand-alone Masters level programme can also re-apply to the PG Cert, PG Diploma or Masters. Any CPD credit achieved would be automatically accredited to their new programme (with no administrative fee), providing they were completed within 5 years of registration on one of the award bearing programmes (and up to the maximum number of credits specified within the APL guidelines).

Programme changes

Students may request to change their programme from full time to part time. They may also request to change from a Master level to a Diploma or Certificate. On the basis of performance students may be recommended or required to change their programme for example from a Masters to a Diploma.

Progressing from PG Certificate or Diploma to a Masters

Well performing PG Cert/PG Dip students can progress on to a Masters level programme if they meet or better the required academic performance for a Master award. Anyone wishing to consider this route should contact the programme administrator as soon as possible to discuss this.

Progressing from CPD units to PG Cert, PG Dip or Masters in Health Data Science

If you have completed course units on the CPD stand-alone unit scheme and would like to progress to the PG Certificate, PG Diploma or MSc programme, you must complete the online application form providing all supporting documents before the beginning of August. If you need any further information about this process, please contact the admissions co-ordinator (pgtaught.cbm@manchester.ac.uk).

Withdrawal from studies

If for any reason you would like to withdraw from your studies, please contact the Wellbeing Team at shs.wellbeing@manchester.ac.uk, for further guidance. We will ask you to give notification of your withdrawal in writing, and you may be invited to speak to the Programme Director before your withdrawal is processed. Please note that you may be liable for part or whole of the tuition fees due and/or an administrative charge if you decide to withdraw once teaching has started.

Progression to dissertation (Health Data Science)

In order to progress to the dissertation, HDS students must have completed 120 taught credits (or 8 taught units). Of these at least 90 credits (or 6 units) must be passed at Masters level. The other 30 credits (or 2 units) must have marks that fall within the compensation zone for a Masters degree (40 â€“

49%) or higher. For full details about this please see section5.5.

Appendices

Appendix 1: Academic staff and course unit leaders

Name and Course Units

Dr Lijing Lin and Sian Bladon

Introduction to Health Data Science IIDS67681

Email: lijing.lin@manchester.ac.uk, sian.bladon@manchester.ac.uk

Dr Ali Sarrami Foroushani

Programming for Health Data Science IIDS69061

E-mail: a.sarrami@manchester.ac.uk

Dr Hui Guo

Statistics for Health Data Science IIDS67631

E-mail: hui.guo@manchester.ac.uk

Dr Glen Martin

Statistical Modelling and Inference for Health IIDS67641

E-mail: glen.martin@manchester.ac.uk

Prof Georgina Moulton

Digital Transformation Project IIDS71502

E-mail: georgina.moulton@manchester.ac.uk

Dr Helen Hulme

Health Informatics IIDS60542

E-mail: helen.hulme@manchester.ac.uk

Dr Jamie Sergeant

Tutorials in Advanced Statistics IIDS67612

E-mail: jamie.sergeant@manchester.ac.uk

Prof Magnus Rattray

Machine learning and Advanced Data Methods IIDS67682

Email: Magnus.Rattray@manchester.ac.uk

Prof Tim Cootes

Mathematical Computing for Medical Imaging IIDS67462

E-mail: timothy.f.cootes@manchester.ac.uk

Dr Victoria Palin

Principles in Digital Epidemiology

E-mail: victoria.palin@manchester.ac.uk

Dr Jack Wilkinson

Design and Analysis of Randomised Controlled Trials IIDS68812

E-mail: jack.wilkinson@manchester.ac.uk

Dr Arezoo Zakeri

Medical Image Analysis and Artificial Intelligence IIDS67482

Email: arezoo.zakeri@manchester.ac.uk

Dr Sokratia Georgaka

Computational Methods for Multi-modal data analysis IIDS67692

Email**:** sokratia.georgaka@manchester.ac.uk

Jon Parkinson and Tjeerd Van Staa

Decision Support Systems IIDS 61402

E-mail: jon.parkinson@manchester.ac.uk; tjeerd.vanstaa@manchester.ac.uk

Dr David Jenkins

Dissertation IIDS67650

Email: david.jenkins-5@manchester.ac.uk