UNIVERSITY OF LIVERPOOL

MSc

Data Science and Analytics for Society

Study mode	Duration
Full-time	12 months
Part-time	24 months

Apply by: **11 September 2026**
Starts on: **28 September 2026**

About this course

This course will enable you to develop a high level understanding of quantitative and computational geographical methods. This includes skills in GIS software and statistical programming languages, such as R or Python.

Introduction

Within an applied setting, you will develop skills in the visualisation, modelling and statistical analysis of conventional and novel sources of data, ranging from censuses and social surveys through to satellite imagery and social media using both web-based and traditional techniques.

More about Data Science and Analytics for Society

Human activity is increasingly associated with the generation of large volumes of data. For example, transactional data collated by retailers for marketing and store location purposes, administrative data assembled to help with the efficient running of public services, data shadows created through social media use, and an increased prevalence of smart-card linked transport systems record our travel behaviours.

Many grand human challenges concern problems of a geographical nature; be this how we can mitigate the human impact of climate change; ensure global food and water security; design energy systems that are resilient within the context of future population dynamics; or, how to design future cities where spatial inequities in health

and wellbeing might be eradicated. The growing volumes of big data about the form, function and dynamics of human activities are providing new opportunities to advance such debates within a framework of Geographic Data Science.

Please note: We constantly review and develop our postgraduate programmes. This MSc is also available with the alternative title Geographic Data Science MSc for entry September 2026, and gives students the option to graduate with either of these two MSc titles.

Who is this course for?

This course is for you if you want to understand and analyse the role of geography in everyday life through geographical and computational reasoning.

What you'll learn

- How the modern GIS toolkit can be integrated with Data Science tools to solve practical real-world problems
- You'll gain the practical ability to apply GIS in the handling and analysis of spatial data in a context of planning and social sciences
- Research methodology, philosophy, strategy and design, and to the ethical and practical considerations associated with conducting research
- How to analyse of social survey data, covering descriptive and inferential statistics, data visualisation, regression modelling and model diagnostics
- A range of analytical techniques and approaches suitable for the analysis of spatial data
- Some of the major debates of society, environment, space and place and the relationships between them.

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Course content

Discover what you'll learn, what you'll study, and how you'll be taught and assessed.

Semester one

Our compulsory modules in Geographic Data Science (GDS) will give you a comprehensive introduction to the field where GIS and Data Science intersect. You'll cover programming with Python, the industry-leading language for GIS packages like Arc/GIS and QGIS.

You'll also learn about the importance of GDS for social science applications through a combination of lectures, practical classes, and independent study. Another compulsory module delves into using GIS tools to create digital representations of the world, with a focus on avoiding potential problems. Our qualitative research module covers a range of methods and emphasizes the importance of careful research design.

We'll also introduce you to analysing social survey data through descriptive and inferential statistics, using the R programming language. As for optional modules, we offer a comprehensive overview of key algorithms and approaches for Big Data problems, as well as a focus on database systems and SQL.

Please see below for semester one modules. Select the next tab to view semester two modules.

If ENVS363 or ENVS357 have been taken as part of a first degree, then ENVS563 and ENVS357 cannot be taken and need to be replaced by an additional optional module, subject to the Programme Director's approval.

If an equivalent to ENVS609 has been taken as part of a first degree, then ENVS609 may be replaced by an additional optional module, subject to the Programme Director's approval.

No more than five modules can be taken in one semester.

Modules

Compulsory modules	Credits
SOCIAL SURVEY ANALYSIS (ENVS450)	15
GEOGRAPHIC DATA SCIENCE (ENVS563)	15
APPLIED GEOGRAPHIC INFORMATION SCIENCE (ENVS609)	15
APPLIED DATA MANAGEMENT AND WRANGLING (ENVS615)	15

Optional modules	Credits
DATABASE AND INFORMATION SYSTEMS (COMP518)	15
BIG DATA ANALYTICS (COMP529)	15

Programme details and modules listed are illustrative only and subject to change.

Semester two

You will learn about statistical techniques for handling spatial data and the latest debates in the discipline through seminars and essays. They will also gain knowledge of web-based map visualization and analysis, and an understanding of the importance of time and location in new forms of data.

Optional modules give you the chance to learn about biologically inspired optimization, population science theory, and digital trace data analysis. Another module explores social and spatial inequalities and their inter-relations through four themes, providing insight into government responses to these issues in the UK.

No more than five modules can be taken in one semester.

Modules

Compulsory modules	Credits
SPATIAL MODELLING FOR DATA SCIENTISTS (ENVS453)	15
ADVANCED GEOVISUALISATION (ENVS456)	15
COMPUTATIONAL SOCIAL SCIENCE (ENVS418)	15

Optional modules	Credits
COMPUTATIONAL INTELLIGENCE (COMP575)	15
SOCIAL AND SPATIAL INEQUALITIES (ENVS357)	15
THEORISING HUMAN GEOGRAPHY (ENVS416)	15

Programme details and modules listed are illustrative only and subject to change.

Final project

You'll attend an introductory seminar early on to give you a better understanding of what's expected in writing your dissertation and provide you with some guidance on forming your dissertation ideas and topic.

You'll also have several sessions to discuss your progress and help you focus your topic and define your areas of interest. Additionally, you'll have supervision sessions or pastoral tutorials with your dissertation supervisor to support you in developing and completing your dissertation.

No more than five modules can be taken in one semester.

Modules

Compulsory modules	Credits
DISSERTATION - GEOGRAPHIC DATA SCIENCE (ENVS492)	60

Programme details and modules listed are illustrative only and subject to change.

Teaching and assessment

How you'll learn

You'll learn across a variety of teaching methods, like lectures, seminars, and hands-on workshops in the computer lab. Each module usually starts with a brief lecture by the module leader, followed by some independent research or computer-based exercises.

You'll either work on these assignments on your own or in a group project. After that, you'll present your findings to the other students and the module leader, which will lead to a group discussion. This is a formative exercise, so you may even get feedback from your peers on your presentation.

How you're assessed

Assessments in this programme will provide you with the opportunity to pursue avenues of these fields that are relevant to your particular interests and career aspirations. The assessment is therefore designed flexibly to provide student centred, research-led learning.

Assessment takes the form of short (~3000 word) reports, computational essays, oral presentations, computer exercises, examinations and a 12,000 maximum word dissertation.

Liverpool Hallmarks

We have a distinctive approach to education, the Liverpool Curriculum Framework, which focuses on research-connected teaching, active learning, and authentic assessment to ensure our students graduate as digitally fluent and confident global citizens.

The Liverpool Curriculum framework sets out our distinctive approach to education. Our teaching staff support our students to develop academic knowledge, skills, and understanding alongside our **graduate attributes**:

- Digital fluency
- Confidence
- Global citizenship

Our curriculum is characterised by the three **Liverpool Hallmarks**:

- Research-connected teaching
- Active learning
- Authentic assessment

All this is underpinned by our core value of **inclusivity** and commitment to providing a curriculum that is accessible to all students.

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Careers and employability

This program will give you the high-level skills you need to kickstart your career in applied geographical information science, data science with a geographic focus, or research with expertise in spatial analysis, GIS, and data science.

Your career options after graduation are diverse and exciting. You might pursue a PhD or postdoctoral research, work as a GIS/Data Science consultant, be employed in the commercial or public sector, work in IT consulting, or teach in higher education. With the programming and web development skills you'll gain, you'll be in high demand in the job market for your newer spatial data handling skills, which are more in demand than traditional GIS skills.

Career support from day one to graduation and beyond

Career planning

From education to employment

Networking events

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Fees and funding

Your tuition fees, funding your studies, and other costs to consider.

Tuition fees

UK fees (applies to Channel Islands, Isle of Man and Republic of Ireland)

Full-time place, per year - £14,000
Part-time place, per year - £7,000

International fees

Full-time place, per year - £30,000
Part-time place, per year - £15,000

Tuition fees are for the academic year 2026/27.

Tuition fees cover the cost of your teaching and assessment, operating facilities such as libraries, IT equipment, and access to academic and personal support.

- You can pay your tuition fees in instalments.
- All or part of your tuition fees can be funded by external sponsorship.
- International applicants who accept an offer of a place will need to pay a tuition fee deposit.

If you're a UK national, or have settled status in the UK, you may be eligible to apply for a Postgraduate Loan worth up to £12,167 to help with course fees and living costs. **Learn more about paying for your studies**.

Additional costs

We understand that budgeting for your time at university is important, and we want to make sure you understand any course-related costs that are not covered by your tuition fee. This could include buying a laptop, books, or stationery.

Find out more about the additional study costs that may apply to this course.

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Entry requirements

The qualifications and exam results you'll need to apply for this course.

Postgraduate entry requirements

We accept a 2:2 honours degree from a UK university, or an equivalent academic qualification from a similar non-UK institution. This degree should be in a relevant subject.

Non-graduates with very extensive professional experience and/or other prior qualifications may also be considered.

International qualifications

Select your country or region to view specific entry requirements.

Many countries have a different education system to that of the UK, meaning your qualifications may not meet our entry requirements. Completing your Foundation Certificate, such as that offered by the University of Liverpool International College, means you're guaranteed a place on your chosen course.

English language requirements

You'll need to demonstrate competence in the use of English language, unless you're from a majority English speaking country.

We accept a variety of international language tests and country-specific qualifications.

International applicants who do not meet the minimum required standard of English language can complete one of our Pre-Sessional English courses to achieve the required level.

IELTS

6.5 overall, with no component below 5.5

TOEFL iBT

88 overall, with minimum scores of listening 17, writing 17, reading 17, and speaking 19. TOEFL Home Edition not accepted.

Duolingo English Test

125 overall, with speaking, reading and writing not less than 105, and listening not below 100. For academic year 2025/26 only, we will also accept the production, literacy, comprehension and conversation score set: 120 overall, with no component below 95.

Pearson PTE Academic

61 overall, with no component below 59

LanguageCert Academic

70 overall, with no skill below 60

PSI Skills for English

B2 Pass with Merit overall and no band below B2 Pass

INDIA Standard XII

National Curriculum (CBSE/ISC) - 75% and above in English. Accepted State Boards - 80% and above in English.

WAEC

C6 or above

Pre-sessional English

Do you need to complete a Pre-sessional English course to meet the English language requirements for this course?

The length of Pre-sessional English course you'll need to take depends on your current level of English language ability.

Pre-sessional English in detail

If you don't meet our English language requirements, we can use your most recent IELTS score, or the equivalent score in selected other English language tests, to determine the length of Pre-sessional English course you require.

Use the table below to check the course length you're likely to require for your current English language ability and see whether the course is available on campus or online.

Your most recent IELTS score	Pre-sessional English course length	On campus or online
6.0 overall, with no component below 5.5	6 weeks	On campus
5.5 overall, with no component below 5.5	10 weeks	On campus and online options available
5.5 overall, with no more than one component below 5.5, and no component below 5.0	12 weeks	On campus and online options available
5.5 overall, with no component below 4.5	20 weeks	On campus
5.0 overall, with no component below 4.5	30 weeks	On campus
4.5 overall, with no more than one component below 4.5, and no component below 4.0	40 weeks	On campus

If you've completed an alternative English language test to IELTS, we may be able to use this to assess your English language ability and determine the Pre-sessional English course length you require.

Please see our guide to Pre-sessional English entry requirements for IELTS 6.5 overall, with no component below 5.5, for further details.

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