MSc Data Science

Programme Overview

Almost every communication or interaction that takes place in the world today involves a digital interface, whether this is a computer, a laptop, a mobile phone, a smartcard, a camera or a sensor. These interactions are stored as data which can be mined to make better decisions, systems and research.

Recent advances in computational power, machine intelligence and the massive growth of sources of data has led to the development of a new area study: Data Science.

We are no longer looking machine parts or airlines, or stocks and shares data; we are looking at data about people and the world they inhabit. Jake Porway (Executive Director of DataKind) says: "A data scientist is a rare hybrid, a computer scientist with the programming abilities to build software to scrape, combine, and manage data from a variety of sources and a statistician who knows how to derive insights from the information within. S/he combines the skills to create new prototypes with the creativity and thoroughness to ask and answer the deepest questions about the data and what secrets it". This programme is designed for such people.

This course is built around the strong skill base of experts in the Mathematics and Computer Science department and to illustrate how new technologies, cutting edge research and novel scientific perspectives can be used together to influence future society in significant and fundamental ways.

Why Choose Liverpool Hope

- The School is consistently very highly rated in the National Student Survey. For example, in the most recent survey, 91% of our final year students were satisfied with their course.
- You will acquire key skills sought after by industry taught in well equipped, dedicated laboratories boasting the latest equipment.
- The School prides itself on excellent teaching quality recognised by a recent independent review, which specifically identified approachable staff providing close academic support.
- You will be part of a vibrant research community with the School hosting prestigious international events and 100% of research deemed internationally excellent or recognised.
- We have an impressive graduate employment record, with recent successful appointments at organisations such as Airbus, Barclays and Oracle, as well as links with key organizations such as Microsoft.

Key Information

Award: MSc Data Science

Study Mode: Full-time

Duration: 12 months

Intake: September and January

Entry Criteria: A minimum of a Second-Class Honours degree in a relevant discipline awarded by a UK university, or an equivalent higher education qualification.

For students whose first language is not English there is a language requirement of IELTS 6.0 overall (reading 5.5, writing 5.5). In addition to this, we also accept a wide range of International Qualifications.

Fees and Funding: For fees and funding information please visit **www.hope.ac.uk/postgraduate/ feesandfunding**

How to Apply: For details on the application process visit: **www.hope.ac.uk/postgraduate/ howtoapply**

School: Computer Science and the Environment.

Contact Details:

Student Recruitment, **courses@hope.ac.uk**

Disclaimer: Information is correct at time of print, however programme details can change.

LIVERPOOL HOPE UNIVERSITY

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Curriculum

Two 60 credit modules to allow both September and January entrants to complete the course. (January starters will register for a different run of the course but will be taught alongside September starters). Both entrants will embark on their dissertation/project after completion of 120 taught credits.

This course aims to equip postgraduate students with core skills in:

- Data Analytics
- Numerical Methods
- Theoretical Computer Science
- Programming
- Applied Computer Science

The students will then undertake a selection of courses such as:

- Big Data & Cloud Computing
- Artificial Intelligence
- Internet of Things
- Mobile Computing
- High Performance Computing

The ethos within the School is to foster enthusiasm for Computer Science and so assessment is largely through project work, giving you the opportunity to explore the subject area and focus on those specific topics that capture your interest. The project entails research and innovation as well as practical industrial applications of the ideas developed during the programme of study.

The dissertation gives you an opportunity to use the skills gained throughout the PG taught provision. Students are expected to specialise in a specific area of research in order to create something new, or to scientifically investigate research questions and independently solve problems in an innovative way. During this practice you should reflect the scientific process and be self-reflective, critical and clear in its explanation of its hypothesis and synthesis of ideas.

Each individual dissertation is worth 60 credits and this is expected to be a student led investigation into a relevant area of Computer Science. A "pool" of topics is available that reflects the research interests of the staff within the department, however, a student can propose their own topic which is then considered by the PG coordinator.

Ultimately the research topic needs to be agreed with and approved by the PG coordinator. Students are assigned to a specialist tutor that guides them through the research process. We strongly encourage our students to produce publishable research work, where possible, and thus provide an opportunity to jointly publish their research work with members of the team. Workload allocation is in accordance with the agreed Common Dissertation Policy for allocation and supervision.
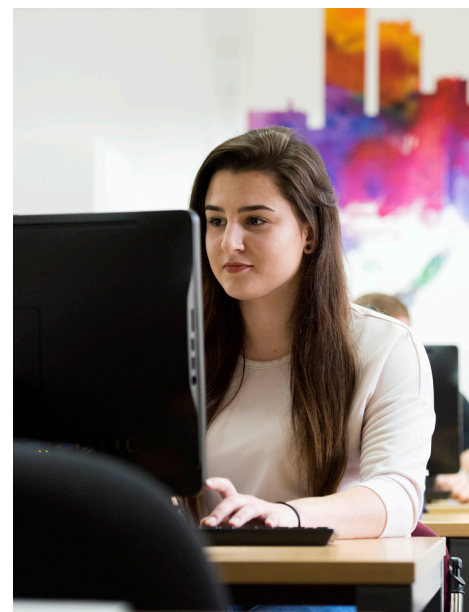
Teaching and Research

The course is delivered by a small, enthusiastic team which prides itself not only on high teaching quality, which has been independently recognised, but also a vibrant research community; in the most recent Research Excellent Framework Exercise, 100% of the School's research was deemed to be internationally excellent or recognised. Staff have expertise in many areas such as: Robotics, Bio-mimetic Systems, Bio-inspired Systems, Spiking and Deep Belief Neural Networks, Machine Intelligence, Virtual Reality, Cognitive Mobile Ad-Hoc Network Design and Network Traffic Packet Analysis. Cyber Security, Mathematical Modelling, Computational Mathematics, Nonlinear Dynamical Systems, Wave Propagation, Inverse Problems in Nonhomogeneous Media, Human-Robot Interaction, Computational Motor Control, Haptics, Petri Nets, Biomechanics, Artificial Intelligence, Biomedical Applications, Metaheuristics.

We have a purpose-built Robotics Laboratory, equipped with the latest cutting edge technologies including industry-standard software (e.g. Matlab/Simulink, Labview, Visual Studio, 3D Studio Max), Virtual Reality and Augmented Reality interfaces (e.g. Oculus Rift), exotic robots and 3D printing facilities. The laboratory includes robots (Kilobot swarm robots, Aldebaran Nao, i-Sobot, FlowCode Robotic Buggies, Moway Robotic Buggies, Robo Builder, National Instruments robotic platform), embedded systems and devices for physical computing (e.g. Arduino, Makey Makey, Xilinx Zynq, XMOS, Anadigm FPAA), communication modules, wearable and biomedical sensors, marker less motion capture systems, UAVs and drones.

Future Career Opportunities

This subject is in high demand: there is an a year on year 13% - 23% increase in demand for Data Scientists with 46% of industry currently having difficultly recruiting staff. It is such a new subject very few potential Data Scientists have the effective blend of requisite skills in programming, statistics and specific subject knowledge.

CONTACT

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