MSc Advanced Computer Science

Programme Overview

Computer Scientists are in more demand today than ever before due to the increasing reliance on Computer Systems and Software, this is further compounded with the continual introduction of cutting edge and new technologies.

Therefore, an advanced master degree in Computer Science will make you highly employable, having developed practical skills in computing systems and software development. You will be ideally placed to gain employment in a wide range of high-demand jobs including software engineering, systems development and other related fields. This course aims to equip postgraduate students with core skills in: Data Analytics, Numerical Methods, Theoretical Computer Science, Programming and Applied Computer Science. In addition, students will also undertake a selection of courses such as: Data Communications, Cyber Security, Artificial Intelligence, Internet of Things, High Performance Computing, Advances in Computer Science, Visualisation, Virtual Reality and Augmented Reality.

Key Information

Award: MSc Advanced Computer Science

Study Mode: Full-time

Duration: 12 months

Intake: October and February

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.

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

School: Mathematics, Computer Science and Engineering.

Contact Details:

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

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

Why Choose Liverpool Hope

- The Department 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 Department 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 Department 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.

LIVERPOOL HOPE UNIVERSITY

CONTACT

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Curriculum

Two courses will be 60 credits and run year long. This will allow for both a October and February entry (February starters will register for a different run of the course but will be taught alongside October starters). Both February and October entrants will embark on their dissertation/Project after competition of 120 taught credits only Advanced Computer Science covers a wide range of specific topics such as:

- Data Analytics
- Theoretical Computer Science
- Numerical Methods
- Applied Computer Science
- Programming
- Data Communications
- Cyber Security
- Visualisation, Virtual Reality and Augmented Reality
- High Performance Computing
- Advances in Computer Science
- Artificial Intelligence
- The Internet of Things.

Assessment is through a mixture of coursework and examination. The ethos within the Department 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 the student an opportunity to use the skills gained throughout the PG taught provision. The students are expected to specialise in a specific area of research in order to create something new, or to scientifically investigate research questions. They are expected to independently solve problems in innovative ways. The dissertation constructed during this practice should reflect the scientific process and be self-reflective, critical and clear in its explanation of its hypothesis and in its 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.

The dissertation will normally involve the investigation of related research work, relevant innovative and emerging technologies and concepts. This involves the use of case study scenarios and the critique of the research findings in the form of a dissertation. 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 opportunities

Students work in modern, well-equipped laboratories, with access to computers running industry-standard and up-to-date specialist software (e.g. Matlab, Visual Studio, 3D Studio Max) as well as more cutting edge technologies, from Virtual Reality to Augmented Reality (e.g. Oculus Rift), Robotics and 3D printing. Thanks to these facilities, students are able, for example, to develop their own mobile app, to control a robot developing embedded Artificial Intelligence and to prototype a new device with physical computing platforms like Arduino and Raspberry PI or to print 3D objects that have been designed with 3D software.

The Department has a set of Computer Science Laboratories, a modern HPC (High Performance Computer), a Vision and Immersion Laboratory, an Electronic Laboratory and a Robotic Laboratory where students can experience full immersion tasks and experiment with exciting, current robots such as Aldebaran Nao, mobile-wheeled vehicles and drones.

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 Department'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.

Future Career Opportunities

A course in Advanced Computer Science will make you highly employable, having developed a range of specific universally applicable skill-set that prepares them to confront problem solving abilities and the riddle of Machine-Intelligence i.e. a way that humans, not computers, think. At a time when computer science is rapidly developing, opening up new opportunities for people with these skills.

The course develops skills relevant to industry and further study such as PhD. The Department has good employability record with its graduates well placed in large organisations such as IBM, Barclays Bank, UNILEVER, in SMEs and in Academia (undertaking PhD studies).

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