COMPUTER SYSTEMS MANAGEMENT
MSc / PG Diploma

Full-Time / Part-Time

Distinctly Ambitious
www.hw.ac.uk
Programme Structure

The first two semesters (September-May) are spent studying taught courses in computer systems management. At the same time research skills are developed to prepare for the MSc project. Exams take place at the end of each semester.

In the third semester (May-August) students undertake a specialist project which is written up as a dissertation. It consolidates skills introduced in the taught courses, applying them to a challenging practical problem.

The table shows essential and optional courses in the first 2 semesters. Full time students study 4 courses each semester.

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Aim of Programme

The aim of this MSc programme is to impart the understanding and skills required to manage complex computer systems as part of the support services of an organisation. This includes selection, installation, maintenance and support of a wide range of computing technologies and an understanding of currently recommended forms.

Duration of Programme

The full-time MSc programme starts in mid September and lasts 1 year. The Postgraduate Diploma starts at the same time but only lasts 8 months. Students completing the PG Diploma at MSc level may transfer to the MSc.

Part-time study for the MSc over 2 years is also possible by special arrangement with the programme director.

Heriot-Watt University offers a first-rate environment for postgraduate study and research. We are one of the UK's leading universities, recognized internationally for excellent teaching and innovative technology in our specialist areas of science, engineering, business management, languages and textile design.

Heriot-Watt became a university in 1966 and its origins go back to the foundation of the School of Arts in Edinburgh in 1821. We are Scotland’s most international university. Over 30% of our students come from outside the UK.

We introduced the first Computer Science degree in Scotland in 1966, have taught MSc degrees in this subject from 1970 and are part of the world class SICSA research cluster that aims to sustain and expand Scotland’s research excellence in Informatics.

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SEMESTER 1 COURSES

F21CN Computer Network Security
- To impart critical understanding of key concepts, issues, theories and principles of computer network security.
- To develop detailed theoretical and practical knowledge of foundational issues in computer network security.
- To provide detailed understanding and practical experience with key services and tools used for computer network security purposes.
- To give practical experience of analysing requirements, designing, implementing and testing security solutions for computer network applications.

F21DF Database and Information Systems
- To explore the methodologies for analysing, specifying and designing databases and information systems.
- To explore the relationships among organisations, human activities and information systems, and between the latter and software development life cycles, and use them in systems design.
- To give practical experience in designing, building, deploying and using databases and information systems via programming.

F21DC Data Communications and Networking
- To provide core knowledge in data communications and computer networking.
- To understand the principles of the structure of the Internet.
- To study communications, protocols and services at various layers for computer networks.

F21SC Industrial Programming
- To develop proficiency in modern industrial programming languages such as C#, C++11, Python, PHP.
- To enable the elaboration and combination of system components in different languages.
- To enable an agile and flexible response to changes in industrial practices and let industrial practitioners participate to provide context and applicability.

F21IF Information Systems Methodologies
- To explore a range of issues concerning advanced contemporary methodological approaches to information systems development.
- To enable students to develop critical faculties and techniques in relation to the selection and application of these methodological approaches.

F21SF Software Engineering Foundations
- To impart understanding of object oriented design and its usage.
- To carry out object oriented design from specification, document the design and implement it in Java.
- To impart skills in window-based systems and their development.

SEMESTER 2 COURSES

F21AD Advanced Network Security
- To develop critical analysis skills in computer network security further and allow the identification of network security threats in a systematic way.
- To provide in-depth understanding of penetration testing concepts and methods.
- To give practical experience of exploiting vulnerabilities in computer system types.
- To impart a deep understanding of common techniques for implementing countermeasures.

F21AS Advanced Software Engineering
- To consolidate skills in imperative and concurrent software development.
- To develop further object oriented programming and design methods.
- To instil understanding of the concepts and benefits of advanced software engineering methods.
- To give practical experience of a sizable software engineering team project.
- To develop skills in using patterns and UML in software engineering.

F21BD Big Data Management
- To review principal abstractions, methods and techniques for the management of large and complex data sets (“Big Data”).
- To develop an understanding of the foundations and tools of Semantic Web.
- To impart the ability to appreciate critically a range of data integration solutions.

F21NA Network Applications
- To impart knowledge and understanding of the theories, principles and protocols underlying network applications on Internet.
- To develop skills in a range of network technologies, enable a grasp of the design and practical issues faced in their application, and apply apt techniques for given network application problems.
- To give experience of creatively developing in teams a network application involving web and application server technologies.

C11PA Project Management
- To develop an appreciation of the knowledge and skills of a professional project manager.
- To develop competence in using a generic set of quantitative and qualitative project planning and control tools and techniques.
- To enable recognition of the limitations and appropriateness of approaches to project management.
- To demonstrate the progression from strategy formulation to project execution.
- To define the role and current issues faced by project managers in the context of project control.

F21RP Research Methods and Project Planning
- To develop MSc level skills in critical thinking, research planning, academic writing and experimental design.
- To impart skills in project planning and develop awareness of legal, social, ethical and professional issues.
- To enhance employability by developing job seeking and career planning skills.

We may alter the courses offered at any time. Some courses may not run every year. Not every course combination may be possible to take. Students must satisfy course prerequisites and course choices must be agreed with the degree's director.
Entry Requirements

Applicants require a first or second class honours degree or its overseas equivalent with a substantial academic component of computing or IT. Graduates with a little less than this may sometimes be admitted to the Postgraduate Diploma programme. If their exam and coursework performance is MSc level by May, they may then be recommended for transfer to the MSc.

Non-native English speakers must also satisfy the university’s requirements for competency in English. This can be done with an IELTS score of 6.5, an ECCE certificate, Pearson Test of Academic English 58, Cambridge First Certificate in English A or B, level C in academic English from our own English language teachers or by proving they have studied wholly in English at university level. A full range of English language training courses can be taken at Heriot-Watt University before starting a programme.

Applicants requiring sponsorship for a tier 4 visa to study in the UK via a CAS letter must also satisfy the UK Borders Agency’s minimum English language requirements. They are IELTS 5.5 in reading, writing, speaking and listening.

How to apply

Apply online at

www.hw.ac.uk/study/apply/uk/postgraduate.htm

Supporting documents including 2 academic references, degree certificates, transcripts of marks and English test results can be uploaded digitally to the online application facility.

Contact information

Postgraduate Admissions
Room 1.24
Earl Mountbatten Building
School of Mathematical & Computer Sciences
Heriot-Watt University, Riccarton
Edinburgh EH14 4AS, SCOTLAND

+44 (0) 131 451 3327
+44 (0) 131 451 8444
MACSpgenquiries@hw.ac.uk
www.macs.hw.ac.uk/cs/pgcourses

Post-Study Work Opportunities in Scotland

Opportunities exist for students who graduate in a specialism in demand in the Scottish economy to get employment here. The Scottish government is keen to help talented individuals from around the world come to study, work and live here. More information can be found at www.talentscotland.com

Career Prospects

Graduates from the programme can expect to be able to get employment with software houses, IT companies, computer services divisions of companies, financial services organisations, defence contractors or government IT agencies and as researchers or research students within universities.

Professional Accreditation

This MSc programme is accredited by the Chartered Institute of IT or BCS and should fulfil its further education requirements for a Chartered IT Professional. It also partially fulfils membership requirements for the CEng and CSci professional bodies.

Scholarships and Awards

International students can apply for a variety of scholarships from the Scottish executive, other bodies and our school. Please visit www.macs.hw.ac.uk/cs/pgcourses/finance.htm#international

Scottish and EU citizens can apply for SAAS loans covering most of the fees. Please visit www.saas.gov.uk

Other scholarships may be available from the university. Please visit www.hw.ac.uk/study/scholarships/postgraduate-taught.htm