



## THE UNIVERSITY of LIVERPOOL

# MSc in ISM

### Aims of the Programme

The overall aim of our MSc in ISM programme is to give you the knowledge and skills to be an effective manager in an Information Systems-rich environment.

Core and elective modules enable you to update your theoretical and practical knowledge of Computer Science while you establish a firm foundation in the concepts and skills needed for effective management of projects, people, products and resources. You study and collaborate with classmates who are highly motivated professionals from all across the world. Together, you bring a wealth of experience and expertise to the virtual classroom. This unique peer network, along with the academics and industry experts who are your instructors, will expose you to cutting-edge technologies, the latest in management concepts and global best practices.

As you work independently and in groups to develop creative solutions to management issues in IS-rich environments, you will grow in confidence and improve your intercultural team-building skills. Further, you will strengthen your communication and critical thinking abilities as you subject your work and that of your classmates to ongoing analysis and evaluation.

This programme is a bridge between technology and management; it was developed in response to the need of IT professionals to develop advanced management skills, that were formerly provided only by the MBA.

Our flexible, customisable MSc in ISM enables you to develop the core leadership and management skills covered by the MBA, while paying special attention to the needs of managers in IS-rich environments. The programme will meet the needs of those moving from a technical position into one in which managerial skills are also required; or those who are already operating in a managerial position in an IT-related field. It will equip you with the theoretical foundations, practical abilities and 'soft' skills that will make you uniquely qualified to take advantage of a host of new career opportunities.

### Learning Outcomes

At the end of the programme, you will have a thorough grasp of the current terminology, standards and knowledge in both Management and Computer Science – and complete confidence in your ability to evaluate IS issues and management methodologies. Your ability to manage resources, people and marketing in IT projects will be matched by your understanding of the principles of leadership. You will also be well equipped to analyse IT investments and understand the associated benefits and risks.

### Programme Structure

The programme has five core modules, including *Computer Structures*, which covers the foundations of computer science, and four management modules. The student then chooses three electives in computing, enabling them to specialise according to their particular needs, followed by a dissertation. Each module lasts

eight weeks and it is possible to take a break of four weeks between modules, if work or other commitments demand it. By taking one module at a time you can explore a specific subject in depth without distractions.

**Core modules**

Computer Structures  
People, Technology and Management  
IT Project Management  
Managing Organisational Resources  
Principles of Marketing

**Elective modules (students choose at least two of the following)**

Systems Analysis and Design using an Object Oriented Approach  
Software Engineering  
Security Engineering  
Management of QA and Software Testing  
Computer Forensics

**Elective module (students choose up to one of the following)**

e-Commerce  
Computer Communication and Networks  
Programming the Internet  
Web XML Applications

**Module Abstracts**

**Core modules**

**Computer Structures**

**Aim**

To provide a comprehensive overview of core software and hardware technologies.

**Description**

Covers everything from computer architecture to databases, algorithms, languages, operating systems, communications, computer networks, artificial intelligence and the theoretical foundations of computation. This module will give you a sound theoretical and practical foundation on which to build your understanding of future technical developments.

Required for: MSc in IT programme and Specialisation Tracks; MSc in ISM

**People, Technology, and Management**

**Aim**

To provide the keys to understanding and effectively managing people in IS-rich environments and high-tech business.

**Description**

Learn to manage people in a technology-rich environment. As well as the traditional aspects of organisational behaviour, such as individual/team roles, human resource management and change management, you will examine the use of information technology in support of managerial functions, including outsourcing, off-shoring and other critical issues fundamental to the way contemporary organisations are run.

Required for: MSc in ISM

Elective for: Not an elective module for any other programme or Specialisation Track

### **Information Technology Project Management**

#### **Aim**

To provide a full understanding of the management roles, responsibilities and techniques needed in technology projects.

#### **Description**

This module teaches how technology project management adapts as a computer system evolves from concept to implementation. You will master all areas of the subject, including organisation, work breakdown structure and scheduling, resources and project financing, project control and evaluation, management considerations, critical success factors and risk management.

Required for: MSc in IT (Software Engineering); MSc in ISM

Elective for: MSc in IT programme and all other MSc in IT Specialisation Tracks

### **Managing Organisational Resources**

#### **Aim**

To deliver a broad understanding of the issues, language, tools and techniques of finance, accounting and operations management to significantly improve business efficiency.

#### **Description**

This module provides a sound foundation for the non-specialist in accounting, finance, operations management and the business benefits they can generate. You will understand mathematical modelling and how to use computer-aided quantitative tools for decision-making. You will also explore operations strategy, forecasting, materials management, supply chain management and project management.

Required for: MSc in ISM

Elective for: Not an elective module for any other programme or Specialisation Track

### **Principles of Marketing**

#### **Aim**

To provide an understanding of the roles, responsibilities, and management techniques needed by a technology-savvy marketing manager.

#### **Description**

Learn to apply marketing strategy in the context of various high tech industries and products, where innovation, market uncertainty, abrupt technological shifts and short product lifecycles abound. You will study the use of technology in marketing and the marketing of technology-rich products and services, with a focus on international marketing, ethics, sourcing and marketing strategy.

Required for: MSc in ISM

Elective for: Not an elective module for any other programme or Specialisation Track

***Elective modules (students choose at least two of the following)***

### **Systems Analysis and Design Using an Object-Oriented Approach**

**Aim**

To help you develop the critical skills to understand complex systems and problems and to create automated solutions.

**Description**

A modern object-oriented approach is taken to modelling systems and producing designs for software packages that can automate those systems. This module will teach you the skills you need to master this technique, as well as how to use the Unified Modelling Language (UML) to describe these models.

Required for: MSc in IT (Software Engineering)

Elective for: Other MSc in IT, MSc in ISM

### **Software Engineering**

**Aim**

To provide a firm theoretical foundation and practical skills in software engineering.

**Description**

Encompasses the theoretical foundation and practice of the three key phases of problem definition, software development and maintenance. Covers identification, definition, design, analysis, verification and management of basic requirements, coding, testing, evaluation and quality assurance. You will emerge equipped to lead a programming project and deliver products on time and in budget.

Required for: MSc in IT (Software Engineering)

Elective for: MSc in IT programme and all other Specialisation Tracks; MSc in ISM

### **Security Engineering**

**Aim**

To provide an understanding of the principles and practice of building secure distributed systems.

**Description**

This module provides a foundation in the principles and practice of building secure distributed systems. You will discover how to protect systems against malicious attacks, using your understanding of technologies such as cryptography, software reliability, secure message transmission, tamper resistance, secure printing and auditing.

Required for: MSc in IT (Information Security)

Elective for: MSc in IT programme and all other Specialisation Tracks; MSc in ISM

## **Management of QA and Software Testing**

### **Aim**

To provide an extensive understanding of how to guarantee software quality, including testing, maintenance and effective management.

### **Description**

Learn the techniques you need to design and implement tests, conduct inspections and employ release and maintenance procedures. This module also addresses the management aspects of the quality assurance process you need to consider.

Required for: MSc in IT (Software Engineering); MSc in IT (Information Security)

Elective for: Other MSc in IT, MSc in ISM

## **Computer Forensics**

### **Aim**

To provide an extensive range of forensic techniques to determine the root causes of breaches in computer security.

### **Description**

With identity theft and information security of rising concern, this module teaches you how to identify, extract, document, interpret and preserve computer media as digital evidence and/or to analyse the root cause of security breaches. It will give you an understanding of electronic media, crypto-literacy, data hiding, hostile code, and Windows™ and/or UNIX system forensics in the digital environment.

Required for: MSc in IT (Information Security)

Elective for: Other MSc in IT, MSc in ISM

***Elective module (students choose up to one of the following)***

## **E-Commerce**

### **Aim**

To provide an overview of key issues relating to e-Commerce.

### **Description**

An introduction to the fundamentals of e-Commerce, from business models through technical infrastructure and implementation to social, legal and ethical considerations. You will act as a CIO/CEO working on an e-Commerce business proposal, with evaluations from a peer review group. Learning to build an e-Business holistically in a risk-free environment will help you become a more effective and successful manager.

Required for: Not a requirement for any programme or Specialisation Track

Elective for: MSc in IT programme and all its Specialisation Tracks; MSc in ISM

## **Computer Communications and Networks**

### **Aim**

To familiarise you with principles and techniques of computer networks.

### **Description**

The development of computer communications is accelerating with the exponential growth of the Internet. In keeping with this dynamic field, you will study a range of hardware technology protocols and network applications. Learn the principles of communication networks and protocol architectures, assessing the suitability of different switching and multiplexing techniques for carrying a variety of distributed systems.

Required for: MSc in IT (Information Security); MSc in IT (Internet Computing)

Elective for: MSc in IT programme; MSc in IT (Software Engineering); MSc in ISM

## **Programming the Internet**

### **Aim**

To give you the theoretical and practical tools necessary for building advanced, content-rich Internet sites.

### **Description**

This module covers markup languages and advanced technologies, including HTML, Java Script, DHTML, CSS, XML and CGI. On completion, you will be able to design and create an advanced Internet site and will be equipped to undertake complex projects in this most innovative field of IT.

Required for: MSc in IT (Information Security); MSc in IT (Internet Computing)

Elective for: MSc in IT and MSc in IT (Software Engineering); MSc in ISM

## **Web XML Applications**

### **Aim**

To provide an overview of the uses of the XML language and its role in the next generation of e-Business applications.

### **Description**

This advanced module provides you with an understanding of core XML technologies, the standardised development environment they provide and their implications on future developments with Internet applications. You will study XSL, Databases and the information discovery and exchange standards: SOAP, WDSL, UDDI and the use of XML for structuring data on the Semantic Web.

Required for: MSc in IT (Internet Computing)

Elective for: MSc in IT programme and all other MSc in IT Specialisation Tracks; MSc in ISM

## **Dissertation**

Students choose their dissertation topic in conjunction with their Personal Dissertation Advisor, an academic supervisor, who will provide support throughout the study and writing process.

### **Aim**

The culmination of your programme, this original piece of written work demonstrates your mastery and integration of all the knowledge you have acquired.

An original, scholarly work that applies your new knowledge and work experience; the result must be of merit beyond the narrower scope of your particular need. It should demonstrate your ability to develop and manage autonomous computer science projects. If you wish to follow a Specialisation Track, you must produce your dissertation on an appropriate topic.

Required for: MSc in IT programme and Specialisation Tracks, MSc in ISM

## **Prerequisites**

A Bachelors degree from a accredited college or university or a degree from a recognised institution comparable and/or equivalent to a British Honours degree.\*

Two years professional IT experience working directly in an IT related environment.

English Language skills relevant to an online program and comparable to IELTS 6.5, TOEFL 600, or GCSE C.

\* Applicants that do not directly meet the educational requirements will be evaluated on an individual basis.