

## SCHOOL OF INFORMATICS

Information systems and software engineering are the key disciplines that ensure effective modelling, definition of requirements and specification, and the efficient design and construction of all software-based systems, products and services. These two disciplines also enable the effective introduction of software-based systems into the marketplace or the organisational enterprise.

Many courses within the School of Informatics focus on the creative application of computing in areas such as design, simulation and visualisation. The technical, managerial and business skills of the professional software engineer and information systems practitioner ensure the effective delivery of these systems. Courses emphasise the theoretical as well as the practical challenges of producing successful systems for a wide range of applications in the manufacturing and service industries. All courses employ industrial standard state-of-the-art principles, methodologies and practice providing you with a portfolio of highly marketable skills.

Electronic systems are at the heart of every aspect of modern life. You enable us to track the movement of objects from a satellite, to control cars, planes and trains to make maximum use of energy resources, and to produce equipment for people with disabilities. It takes highly creative and analytical people to make the technological advances demanded in the modern world, and the courses offered are designed to provide this edge. Strong numeracy skills and flexible minds are required, along with the ability to see beyond the boundaries of the possible and take leaps of imagination. How do you put millions of transistors on a single silicon chip so you work first time? How do you evaluate your position to within metres using satellites thousands of kilometres away?

Academic staff and researchers have been actively engaged in the rapid development of these technologies - helping to develop voice synthesisers for the British Telecom service, automatic sound synchronisation for modern movies, microelectronic circuits for mobile phones, and receivers for CD-quality digital audio broadcasts; manipulating sounds and images as streams of digital numbers and microwaves; and handling signals oscillating billions of times per second.

Courses are accredited by the two relevant professional institutions in the field of informatics: the Institution of Engineering and Technology (IET) (formerly the IEE) and the British Computer Society (BCS). Teaching is supported by over 300 workstations and over 20 laboratories providing access to Unix, Novell and NT servers, all supported by high-bandwidth networks and a strong team of specialist technicians to ensure you get the most out of these technologies.

### **Modules**

The School of Informatics offers modules from its two departments: the Department of Department of Electronic, Communication and Software Engineering, and the Department of Information Systems and Computing. Please note that because of the specific nature of these subjects, you must be prepared to demonstrate previous knowledge in the subject before you can undertake certain modules and pay great attention to any pre-requisites.

Please note that the University of Westminster is unable to guarantee the availability of the modules in this catalogue. All modules are subject to change, but are as accurate as possible at the time of going to print.

### ***Pre-requisites***

As explained earlier in the module catalogue, please be aware that some modules at Level 5 and Level 6 may have a pre-requisite requirement for you to have already completed specific modules or equivalents at a lower level.

e.g. **3SFE519 Software Engineering**  
has a pre-requisite of **3SFE408 Software Development Principles**.

As a study abroad student, you are not expected to have taken the specific pre-requisite requirement, but you must have studied a relevant or similar course / module in your home country / institution. Some modules have co-requisites, which mean that the module and the co-requisite must be taken at the same time.

### **DEPARTMENT OF SOFTWARE ENGINEERING**

| <b>Module Code</b> | <b>Title</b>                         | <b>Semester</b> | <b>Level</b> | <b>Credit</b> |
|--------------------|--------------------------------------|-----------------|--------------|---------------|
| 3SFE403            | System Software                      | 2               | 4            | 15            |
| 3SFE407            | Introduction to Internet Programming | 2               | 4            | 15            |
| 3SFE408            | Software Development Principles      | 2               | 4            | 15            |
| 3SFE509            | Human-Computer Interface Design      | 2               | 5            | 15            |
| 3SFE510            | Network Application Development      | 2               | 5            | 15            |
| 3SFE513            | Event Driven Programming             | 2               | 5            | 15            |
| 3SFE514            | Object-oriented Design               | 2               | 5            | 15            |
| 3SFE519            | Software Engineering                 | 2               | 5            | 15            |
| 3SFE602            | Compiler Design Techniques           | 2               | 6            | 15            |
| 3SFE609            | Real-Time and Embedded Systems       | 2               | 6            | 15            |
| 3SFE610            | Functional Programming               | 2               | 6            | 15            |
| 3SFE618            | Formal Methods                       | 2               | 6            | 15            |
| 3SFE619            | Network Architecture                 | 2               | 6            | 15            |

### **DEPARTMENT OF INFORMATION SYSTEMS**

| <b>Module Code</b> | <b>Title</b>                                  | <b>Semester</b> | <b>Level</b> | <b>Credit</b> |
|--------------------|---|-----------------|--------------|---------------|
| 3ISY402            | Database Systems                              | 2               | 4            | 15            |
| 3ISY452            | Business Information Systems                  | 2               | 4            | 15            |
| 3ISY453            | Modelling in Information Systems              | 2               | 4            | 15            |
| 3ISY509            | Project Management                            | 2               | 5            | 15            |
| 3ISY555            | Rapid Application Development                 | 2               | 5            | 15            |
| 3ISY558            | Business Organisation and Communication       | 2               | 5            | 15            |
| 3ISY560            | Management Accounting and Financial Modelling | 2               | 5            | 15            |
| 3ISY612            | Distributed Business Applications             | 2               | 6            | 15            |
| 3ISY658            | Knowledge Management                          | 2               | 6            | 15            |

### **SOFTWARE ENGINEERING**

#### **SYSTEM SOFTWARE**

**Module Code 3SFE403 Level 4 Credit 15 Semester 2**

***Co-requisite: 3SFE402 Programming Methodology or equivalent***

This module explores the software to support application programming, in particular operating system support and some common software tools. The module aims to enable you to be confident about reconfiguring and customizing your programming environment to support your working practices.

#### **INTRODUCTION TO INTERNET PROGRAMMING**

**Module Code 3SFE407 Level 4 Credit 15 Semester 2**

***Co-requisite: 3SFE402 Programming Methodology or equivalent***

This module provides a practical introduction to Internet programming in a variety of commonly used languages. The interaction of the different scripts with the Web site will be

introduced, together with other relevant aspects of the different languages used. You will gain practical experience of appropriate development and Web page design tools and will be expected to write programs.

#### **SOFTWARE DEVELOPMENT PRINCIPLES**

**Module Code 3SFE408 Level 4 Credit 15 Semester 2**

***Co-requisite: 3SFE402 programming Methodology or equivalent***

The aim of this module is for you to study the activities involved in the software development life cycle and the problems involved in the management of software projects are discussed. Particular emphasis is placed on the activities of program design, development, verification and documentation, and you will gain practical experience in these areas. The need for, and use of, standards will be emphasised throughout.

#### **HUMAN-COMPUTER INTERFACE DESIGN**

**Module Code 3SFE509 Level 5 Credit 15 Semester 2**

***Pre-requisite: 3SFE407 Introduction to Internet Programming or equivalent.***

This module introduces you to theoretical aspects of human-computer interaction and user interface design techniques for developing user-friendly and usable software interfaces. This module also investigates the use of input/output tools, visual requirements and software engineering concepts.

#### **NETWORK APPLICATION DEVELOPMENT**

**Module Code 3SFE510 Level 5 Credit 15 Semester 2**

***Co-requisite: 3SFE408 Software Development Principles***

The module aims to provide an in-depth understanding of major application level issues, as well as design and implementation skills in the development of applications using network architectural models such as client-server.

#### **EVENT DRIVEN PROGRAMMING**

**Module Code 3SFE513 Level 5 Credit 15 Semester 2**

***Pre-requisite: 3SFE550 Object-oriented Programming or 3SFE540 Java Mobile Application Development or equivalent***

This module offers a practical introduction to developing applications whose architecture is based on detecting and responding to user-generated events. The use of object-oriented frameworks in the development of such applications is also covered.

#### **OBJECT-ORIENTED DESIGN**

**Module Code 3SFE514 Level 5 Credit 15 Semester 2**

***Co-requisites: 3SFE550 Object-oriented Programming or 3SFE540 Java Mobile Application Development or equivalent***

This module examines the techniques and methods appropriate for the design of object-oriented software. The conceptual foundations of the object-oriented approach are covered, and you will acquire practical skills in object-oriented design, and in the implementation of such designs.

#### **SOFTWARE ENGINEERING**

**Module Code 3SFE519 Level 5 Credit 15 Semester 2**

***Pre-requisite: 3SFE408 Software Development Principles or equivalent***

The module offers the study of science, technology and hardware/ software of computer networks. The module combines teaching with practical work.

#### **COMPILER DESIGN TECHNIQUES**

**Module Code 3SFE602 Level 6 Credit 15 Semester 2**

***Pre-requisite: 3SFE550 Object-oriented Programming***

This module provides students with an understanding of the theory of compiler design and practical experience of modifying a compiler. The basic design of compilers for high-level languages will be covered, together with the use of standard tools (such as *lex* and *yacc*) in their construction. Techniques for implementing the different phases of the compilation process will be covered.

## **REAL-TIME AND EMBEDDED SYSTEMS**

**Module Code 3SFE609 Level 6 Credit 15 Semester 2**

The module provides you with a sound insight into the issues associated with real-time & embedded systems & the software techniques developed to address you. A thorough knowledge of the software methodologies used to address the needs of programming real-time systems will be provided.

## **FUNCTIONAL PROGRAMMING**

**Module Code 3SFE610 Level 6 Credit 15 Semester 2**

***Pre-requisite: 3SFE550 Object-oriented Programming***

The purpose of this module is to teach programming skills using the functional programming language Miranda. Students will learn sound software design and code management techniques and be given a good foundation for research in computer science and for working in the area of graphics, simulation, executable specifications and prototyping. This is a practical programming module. Theoretical issues are avoided unless they are essential for a proper understanding of the use of the language. The approach adopted is to show good software engineering principles by discussion of both correct and incorrect design and coding decisions, using realistic examples.

## **FORMAL METHODS**

**Module Code 3SFE618 Level 6 Credit 15 Semester 2**

The module examines the use of formal methods in system specification. A formal specification language, such as Z, will be covered in depth with use of suitable case studies. Areas covered include: design of structured specs, use of tools to support development and rigorous reasoning about specs. The strengths & weaknesses of formal methods will be critically examined.

## **NETWORK ARCHITECTURE**

**Module Code 3SFE619 Level 6 Credit 15 Semester 2**

The module is for those who want to learn about advanced network architectures, protocols and security issues. Experience of hands-on operation of routers and other networking equipment is required.

## **INFORMATION SYSTEMS**

### **DATABASE SYSTEMS**

**Module Code 3ISY402 Level 4 Credit 15 Semester 2**

The module provides an understanding of the objectives of database technology and the architecture of database management systems via an in-depth examination of the relational data model. The module also provides an introduction to the ANSI standard relational database language - SQL.

### **BUSINESS INFORMATION SYSTEMS**

**Module Code 3ISY452 Level 4 Credit 15 Semester 2**

The aim of the module is to provide you with an understanding of the strategic role and importance of information systems within the organisational context. You are also introduced to business usage of networks and e-commerce.

### **MODELLING IN INFORMATION SYSTEMS**

**Module Code 3ISY453 Level 4 Credit 15 Semester 2**

You should already have been introduced to the role of modelling within Information Systems activity. In this module you are provided with a framework for developing the intellectual skills required for effective modelling and the language for communicating this activity to other practitioners.

### **PROJECT MANAGEMENT**

**Module Code 3ISY509 Level 5 Credit 15 Semester 2**

***Pre-requisite: Information Systems (3ISY401) or equivalent***

The module looks at the following: Project Management Framework, Project Management Strategy, Behavioural Analysis, Planning and Control, Financial Evaluation of Projects, Quality Assurance and the Project Manager and Management of People.

#### **BUSINESS ORGANISATION AND COMMUNICATION**

##### **Module Code 3ISY558 Level 5 Credit 15 Semester 2**

The module looks at the way business operates and the role of Information Systems within organisations. The module also reviews the approaches used for evaluating business value of Information Systems and problems involved.

#### **MANAGEMENT ACCOUNTING AND FINANCIAL MODELLING**

##### **Module Code 3ISY560 Level 5 Credit 15 Semester 2**

The module looks at Mayouatical and statistical techniques for accounting and business management and introduces you to the derivative securities market.

#### **DISTRIBUTED BUSINESS APPLICATIONS**

##### **Module Code 3ISY612 Level 6 Credit 15 Semester 2**

This module surveys the range of end-user applications based on distributed information systems, and discusses your design & development, together with your industrial and commercial advantages (and pitfalls).

#### **KNOWLEDGE MANAGEMENT**

##### **Module Code 3ISY658 Level 6 Credit 15 Semester 2**

The module aims to equip students with the knowledge and understanding to evaluate the impact of Knowledge Management (KM) on organisations today. It will give them an understanding of the roots of KM and possible future developments.