The **Faculty of Science and Technology** comprises 8 Departments:

- Department of Biomedical Sciences
- Department of Business Information Systems
- Department of Complementary Medicine
- Department of Computer Science and Software Engineering
- Department of Electronic, Networking and Communication Engineering
- Department of Human and Health Sciences
- Department of Molecular and Applied Biosciences
- Department of Psychology

The three departments highlighted in bold above offer modules from our Life Sciences portfolio of courses and a short introduction to each department followed by the modules available to study abroad students can be found below.

**Modules**

Many of the courses allow a wide choice of module options, once a student’s knowledge and interests in essential topics in the subject are firmly established. The courses are highly specialised and therefore all modules on offer to study abroad students are aimed at students who are currently studying a degree in the particular field. Many of the modules on offer including those at level 4 (introductory level), will require the student to have some background in the field. When considering intermediate (Level 5) or advanced (Level 6) modules please be aware that many of the modules will have a pre-requisite requirement in order to enrol onto the module.

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.

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.

**Department of Business Information Systems**

The Department of Business Information Systems has been part of the School of Electronics and Computer Science and, from 2013-14, will be part of the University’s new Faculty of Science and Technology which brings together expertise across computer science, electronics, business systems, biomedical sciences, complementary medicine, human and health sciences, molecular and applied biology, and psychology.

Under the overarching University role of preparing students for professional life, the department’s courses are designed to both contribute to and exploit the latest developments in business information systems, database systems, IT security, and business intelligence and analytics.

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Title</th>
<th>Semester</th>
<th>Level</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBSY401</td>
<td>Information and Data Modelling</td>
<td>2</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>EBSY403</td>
<td>Business Mathematics</td>
<td>2</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>EBSY504</td>
<td>Networked Enterprise</td>
<td>2</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>EBSY506</td>
<td>Database Design and Practice 2</td>
<td>2</td>
<td>5</td>
<td>15</td>
</tr>
</tbody>
</table>
INFORMATION AND DATA MODELLING
Module Code EBSY401 Level 4 Credits 15 Semester 2
Students will be looking at systems, what are the components of a system and how to build one. They will also be looking at data modelling. Students will develop skills required for effective modelling and the language for communicating this activity to other practitioners. The vehicle for this is a modelling language, through which IS development practice across various problem domains is demonstrated.

BUSINESS MATHEMATICS
Module Code EBSY403 Level 4 Credits 15 Semester 2
This module aims to provide the necessary mathematical techniques relevant to business, management and finance, and to show how quantitative information is derived and used in decision-making.

NETWORKED ENTERPRISE
Module Code EBSY504 Level 5 Credits 15 Semester 2
This module explains how modern enterprises can utilise computing networks and related software techniques to improve the efficiency of business processes. It introduces students to the most common models and forms of e-business. It gives an overview of Business to Business (B2B), Business to Customer (B2C) and Business to Government (B2G) e-business models. Students will learn the technological background and requirements to perform secure transactions on the Internet and will study techniques of e-business strategy formulation design and development. The module also explains the relationship between enterprise and e-business applications, and the role of Enterprise Resource Planning (ERP), Supply Chain Management (SCM) and Customer Relationship Management (CRM) systems in e-business.

DATABASE DESIGN AND PRACTICE 2
Module Code EBSY505 Level 5 Credits 15 Semester 2
To provide a thorough coverage of the database approach and the development of database technology including the current role of databases in today’s information society.

Department of Computer Science and Software Engineering
The Department of Computer Science and Software Engineering has been part of the School of Electronics and Computer Science and, from 2013-14 will be part of the University’s new Faculty of Science and Technology which brings together expertise across computer science, electronics, business systems, biomedical sciences, complementary medicine, human and health sciences, molecular and applied biology, and psychology.

Under the overarching University role of preparing students for professional life, the department’s courses are designed to both contribute to and exploit the latest developments in computer science, computer games, software engineering, multimedia, computer forensics, and mobile and web computing.

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Title</th>
<th>Semester</th>
<th>Level</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECSC407</td>
<td>Web Technology</td>
<td>2</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>ECWM511</td>
<td>Mobile Application Development</td>
<td>2</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>ECWM512</td>
<td>Web Programming</td>
<td>2</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>EIMM508</td>
<td>Image Processing</td>
<td>2</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>EIMM514</td>
<td>Human Computer Interface Design</td>
<td>2</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>ECSE609</td>
<td>Computer Systems Security</td>
<td>2</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>ECSE615</td>
<td>Computer Systems Administration</td>
<td>2</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>ECWM601</td>
<td>Native Programming</td>
<td>2</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>ECWM604</td>
<td>Advanced Web Technology</td>
<td>2</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>ECWM611</td>
<td>Real Time and Embedded Systems</td>
<td>2</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>ECWM618</td>
<td>The Semantic and Social Web</td>
<td>2</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>EIMM609</td>
<td>Mobile User Experience</td>
<td>2</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>EIMM610</td>
<td>Pervasive Computing and Interactive Platforms</td>
<td>2</td>
<td>6</td>
<td>15</td>
</tr>
</tbody>
</table>
WEB TECHNOLOGY
Module Code ECSC407 Level 4 Credits 15 Semester 2
This module provides a practical introduction to Internet programming in a variety of commonly used languages. The interaction of the different scripts with the Website will be introduced, together with other relevant aspects of the different languages used. Students will gain practical experience of appropriate program development and Web page design tools, and will be expected to write programs and Web pages conforming to given stylistic guidelines. The module will also introduce students to legislation relevant to web page content.

MOBILE APPLICATION DEVELOPMENT
Module Code ECWM511 Level 5 Credits 15 Semester 2
Mobile programming architecture, restrictions of using small devices. Programming user interfaces, networking, persistent storage and multi-threading. Device profiling, application deployment and installation.

WEB PROGRAMMING
Module Code ECWM512 Level 5 Credits 15 Semester 2
Prerequisites: ECSC407 Web Technology, and ECSC410 Software Development I or ECSC401 Programming Methodology
Commercial web applications are often a complex mix of programs running in the web browser and programs that run on the web server. In addition, there are issues and problems to do with, for example, state management, that do not exist in conventional systems. This module will cover the analysis, design and implementation of these systems from a programming and technical perspective, as well as the technical infrastructure of the web as it relates to application programming, and will be suitable for students with a background in programming, HTML, and browser scripting.

IMAGE PROCESSING
Module Code EIMM508 Level 5 Credits 15 Semester 2
The movie industry uses a variety of image processing techniques to produce special visual effects. Unreal images and otherwise costly scenes are artificially produced using computer graphics and image processing. This module discusses the main image processing methods and algorithms such as morphing that are becoming increasingly common in advertising and motion pictures.

HUMAN COMPUTER INTERFACE DESIGN
Module Code EIMM514 Level 5 Credits 15 Semester 2
This module introduces students to the theoretical aspects of human-computer interaction and user-centred interface design. It covers techniques for developing user-friendly and usable graphical user interfaces within a stand-alone system, mobile devices or on the Internet. This module also investigates cognitive issues, interaction design, requirements and task analysis methodology, usability, prototyping and evaluation techniques.

COMPUTER SYSTEMS SECURITY
Module Code ECSE507 Level 6 Credits 15 Semester 2
Prerequisites: ECSE507 Network Software Development
This module examines the issues involved with recognising security threats to computer systems, their consequences and methods of dealing with such threats. In particular, it provides an overview of security issues for database, operating systems and networked systems, and discusses the relationship between computer forensics and computer security.

COMPUTER SYSTEMS ADMINISTRATION
Module Code ECSE615 Level 6 Credits 15 Semester 2
The role and responsibilities of a computer systems administrator are reviewed, practical experience of server installation is gained, and the challenges facing the computer system designer are explored.

NATIVE PROGRAMMING
Module Code ECWM601 Level 6 Credits 15 Semester 2
Prerequisites: Objective C/C++ primer (3-day course)
This module will give the necessary knowledge and practical experience to develop applications for native platforms. It will give the student the necessary skills to produce applications that take advantage of the underlying hardware features of contemporary devices such as multi-touch surfaces, location features, and
natural gesturing though combination of accelerator and touch surfaces. The module will also give the student the necessary skills to transfer the knowledge gained in this module to other native platforms by emphasising good programming practice, design patterns and strict memory management.

ADVANCED WEB TECHNOLOGY
Module Code ECWM604 Level 6 Credits 15 Semester 2
Prerequisites: ECWM512 Web Programming
This module presents a variety of techniques used in the development of systems based around contemporary Internet servers and development frameworks. It will be suitable for students with some background in Web server programming who wish to deepen their understanding of the advanced features used in Internet-based server solutions.

REAL TIME AND EMBEDDED SYSTEMS
Module Code ECWM611 Level 6 Credits 15 Semester 2
Prerequisites: C/C++ programming language
This module covers the concepts of real-time systems and techniques used for their design and implementation. A practical application of the relevant concepts and techniques will be demonstrated and explored in the embedded system environment.

THE SEMANTIC AND SOCIAL WEB
Module Code ECWM618 Level 6 Credits 15 Semester 2
This module discusses the new generation of the World Wide Web known as the Semantic and Social Web as the emerging platform for Web-based Information Systems and Search Engines. Particular emphasis is given to the convergence of the Semantic and Social Web with media technologies such as e-paper, geo-browsers, GPS, TV, etc., as well as to data and knowledge exchange and integration across all types of data (text, video, image, audio, etc.) and devices, e.g., handheld ones.

MOBILE USER EXPERIENCE
Module Code EIMM609 Level 6 Credits 15 Semester 2
This module is designed to give students an exposure to the complete design process of mobile interfaces, from concept creation to product testing, the future of small interfaces, usability engineering in practice in the mobile environment. The module uses an industry-standard authoring tool (FlashLite) to demonstrate the aforementioned topics by implementing games for mobiles.

PERVASIVE COMPUTING AND INTERACTIVE PLATFORMS
Module Code EIMM514 Level 6 Credits 15 Semester 2
This module is designed to give students a theoretical and practical background to the development of immersive environments for various platforms, using industry standard toolkits. Particular emphasis is given to the algorithms, theories and design of new digital media and their application to multi-platform environments such as mobile interfaces, pervasive games, interactive installations, interactive museum guides, virtual and augmented environments. Particular attention is given to the new contextual usage of this media in creative industries.

Department of Electronic, Networking and Communication Engineering

The Department of Electronic, Network and Communications Engineering has been part of the School of Electronics and Computer Science and, from 2013-14, will be part of the University's new Faculty of Science and Technology which brings together expertise across computer science, electronics, business systems, biomedical sciences, complementary medicine, human and health sciences, molecular and applied biology, and psychology.

Under the overarching University role of preparing students for professional life, the department's courses are designed to both contribute to and exploit the latest developments in electronic engineering, computer networks and communications, computer systems engineering, computer network security, embedded systems, microelectronic system design, and mobile, wireless and broadband communications.
Please note that all applications to take one of the following modules must be approved by an academic, the Education Abroad Team will contact you to confirm whether you have been accepted onto the module.

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Title</th>
<th>Semester</th>
<th>Level</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EECN401</td>
<td>Computer Networks and Communications</td>
<td>2</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>EECN406</td>
<td>Data Communications and Networks</td>
<td>2</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>EEEL405</td>
<td>Linear Systems Analysis</td>
<td>2</td>
<td>4</td>
<td>15</td>
</tr>
<tr>
<td>EECN505</td>
<td>Wide Area Networks</td>
<td>2</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>EECN510</td>
<td>Network Software Engineering</td>
<td>2</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>EEEL510</td>
<td>Digital Communications</td>
<td>2</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>EEEL530</td>
<td>Broadcast Media Systems</td>
<td>2</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>EECN605</td>
<td>Multimedia Streaming</td>
<td>2</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>EECT600</td>
<td>Real-Time and Embedded Systems</td>
<td>2</td>
<td>6</td>
<td>15</td>
</tr>
</tbody>
</table>

**COMPUTER NETWORKS AND COMMUNICATIONS**
Module Code EECN401 Level 4 Credits 15 Semester 2
This module introduces students to the principles of radio communications, and the operation of computer networks. It covers the techniques used in digital serial communication interfaces and networks and surveys LAN and TCP/IP networking as preparation for more detailed treatments in later modules. It also builds skills in analysing communication systems and signals.

**DATA COMMUNICATIONS AND NETWORKS**
Module Code EECN406 Level 4 Credits 15 Semester 2
This module introduces you to the principles of radio communications and the operation of communication networks. It covers the techniques used in digital communication interfaces and networks, explores the trade-off between power and bandwidth, and surveys LAN and TCP/IP networking as preparation for more detailed treatments in later modules. Also it introduces probability theory and its uses in telecommunications and networks.

**LINEAR SYSTEMS ANALYSIS**
Module Code EEEL405 Level 4 Credits 15 Semester 2
Provides an introduction to the theory of systems; explores practical applications of the theory in various engineering areas with special attention to electronics; teaches how to describe, analyse and simulate systems, and how to extract their vital properties using suitable mathematical tools (ordinary differential equations (ODE), Laplace transform, state space models) and software packages (Matlab, Simulink).

**WIDE AREA NETWORKS**
Module Code EECN505 Level 5 Credits 15 Semester 2
Prerequisites: EECN500 Network Engineering
This module covers WAN technologies and Network Security. Common WAN protocols will be studied in some detail with supporting laboratory work involving implementation, configuration and troubleshooting. Network security concepts, access control and addressing services will also be covered.

**NETWORK SOFTWARE ENGINEERING**
Module Code EECN510 Level 5 Credits 15 Semester 2
Prerequisites: EECN500 Network Engineering
This module gives a thorough grounding in socket-level network programming, covering client server systems and common networked applications.

**DIGITAL COMMUNICATIONS**
Module Code EEEL510 Level 5 Credits 15 Semester 2
Prerequisites: EECN406 Data Communications and Networks, and EEEL405 Linear Systems Analysis
Describes the elements of a digital wireless communications system, including the characteristics of communication channels, fields and waves in communication and the principles of radio wave propagation.

**BROADCAST MEDIA SYSTEMS**
Module Code EEEL530 Level 5 Credits 15 Semester 2
Prerequisites: EECN401 Computer Systems Project
This module aims: to show how humans perceive and physiologically react to audio and visual information; to explain and derive broadcast standards, interfaces and systems; to discuss and demonstrate principles of digital representation, compression, capture, playback and processing of media sources; to explain the principles and development of video and television.

MULTIMEDIA STREAMING
Module Code EECN605 Level 6 Credits 15 Semester 2
Prerequisites: EECN510 Network Software Engineering, and EECN600 Enterprise Network Engineering
Multimedia streaming, both sound and video, is rapidly increasing its share of Internet traffic. This module covers the concepts underlying modern multimedia streaming and the practical techniques used to robustly deliver it in the presence of competing network traffic. Measurement and analysis of the effect of Quality of Service (QoS) policies on network traffic form the basis of laboratory work.

REAL-TIME AND EMBEDDED SYSTEMS
Module Code EECT600 Level 6 Credits 15 Semester 2
This module covers the concepts of real-time systems and techniques used for their design and implementation. A practical application of the relevant concepts and techniques will be demonstrated and explored in the embedded system environment. Key words: real-time operating systems; scheduling; concurrent programming; inter-task communication.