## Module Catalogue Computer Science and Engineering Postgraduate Study Abroad with Internship 2024/5 Semester 2

As part of the Internship programme all students must take three modules per semester, including the following module in either Semester 1 or 2:

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| --- | --- | --- | --- | --- | --- |
| 5BUSS005X | [Professional and Personal Skills Development](#5BUSS005X) | Level 5 | Semester 1 or 2 | 20 | US Credits 4 / ECTS credits 10\* |

If you choose to take the Internship option this semester, then you are able to take two free-choice modules in addition to the above module. Please note that the above module carries Undergraduate credit.

| **Module Code** | **Module Name** | **Level** | **Semester** | **UK Credit Value** | **Credit Equivalency** |
| --- | --- | --- | --- | --- | --- |
| **Computer Science and Engineering** | | | | | |
| 7BDIN006W | [Big Data Theory and Practice](#7BDIN006W) | 7 | Semester 2 | 20 | US Credits 4 / ECTS credits 10\* |
| 7BUIS010W | [Data Warehousing and Business Intelligence](#7BUIS010W) | 7 | Semester 2 | 20 | US Credits 4 / ECTS credits 10\* |
| 7BUIS021W | [Simulation Modelling](#7BUIS021W) | 7 | Semester 2 | 20 | US Credits 4 / ECTS credits 10\* |
| 7BUIS022W | [Cyber Security Applications](#7BUIS022W) | 7 | Semester 2 | 20 | US Credits 4 / ECTS credits 10\* |
| 7BUIS024W | [Business Analytics](#7BUIS024W) | 7 | Semester 2 | 20 | US Credits 4 / ECTS credits 10\* |
| 7BUIS025W | [Web and Social Media Analytics](#7BUIS025W) | 7 | Semester 2 | 20 | US Credits 4 / ECTS credits 10\* |
| 7CSEF002W | [Cyber Security Threats and Countermeasures](#7CSEF002W) | 7 | Semester 2 | 20 | US Credits 4 / ECTS credits 10\* |
| 7SENG002W | [Mobile Application Development](#7SENG002W) | 7 | Semester 2 | 20 | US Credits 4 / ECTS credits 10\* |
| 7SENG003W | [Advanced Software Design](#7SENG003W) | 7 | Semester 2 | 20 | US Credits 4 / ECTS credits 10\* |
| 7SENG010W | [Data Structures and Algorithms](#7SENG010W) | 7 | Semester 2 | 20 | US Credits 4 / ECTS credits 10\* |
| 7SENG014W | [Web Application Development](#7SENG014W) | 7 | Semester 2 | 20 | US Credits 4 / ECTS credits 10\* |

\* All transcripts are issued in UK credits. Please note the recommendation of a 4 US credit value equivalency is provided as guidance. Final credit values for all modules for US students are decided by your home institution and will be dependent on its credit transfer policies.

## Internship Module

#### Professional and Personal Skills Development

**Module Code: 5BUSS005X**

**Level 5**

**Semester 1 or 2**

**Location: Marylebone**

**UK Credit Value: 20**

**Equivalent Credit Value: US Credits 4 / ECTS credits 10\***

Internship Programme Information: You can apply for a study abroad internship as part of a single semester or year-long study abroad programme at the University of Westminster, but the maximum duration of the internship is one semester. Alongside your academic studies, you will be expected to work 14 hours over two to three days per week in your internship. Internships are part-time and run for 12 weeks, until the end of the teaching period.   
  
Module Description: The module is designed to allow you to draw upon your experience in the workplace in order to reflect on (and to challenge) your behaviours, attitudes and assumptions at work. This greater self-awareness will help you to appreciate differences in cultural and ethical working practices. The module uses coaching tools to help you to discover your own solutions to issues, thus developing you as an ‘independent’ self-reliant learner and increasing your resilience. The module also fosters the development of your analytical thinking skills by applying relevant theory and concept to your work experiences. Your learning and practical experience is designed to enable you to reflect on both your work and learning so that you can articulate your global skills set to future employers.   
  
A reminder that that this module carries Undergraduate credit.   
**Assessment:** Individual Oral Presentation (25%), Individual Reflective Learning Log (25%), Essay (50%)   
\*All transcripts are issued in UK credits.

## Computer Science and Engineering

### Big Data Theory and Practice

[**Module Code: 7BDIN006W**](#7BDIN006W_return)

**Level 7**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

**Equivalent Credit Value: US Credits 4 / ECTS credits 10\***

***Pre-requisite: Computer science or related first degree/industry background.***  
***IELTS 6.5 with at least 6.5 in writing and no element below 6.0***  
The module discusses how to manage the volume, velocity and variety of Big Data, SQL and noSQL databases, and it touches on issues related to data governance and data quality, including regulatory challenges.  
**Assessment:** In-Class Test/Assignment exam conditions (40%), Coursework Group (60%)  
\*All transcripts are issued in UK credits.

### Data Warehousing and Business Intelligence

[**Module Code: 7BUIS010W**](#7BUIS010W_return)

**Level 7**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

**Equivalent Credit Value: US Credits 4 / ECTS credits 10\***

***Pre-requisite: Computer science or related first degree/industry background.***  
Business Intelligence, Data Mining and Analytics are a set of methods and technologies that transform raw data into meaningful and useful information. A Data Warehouse is the architecture or structure that supports these activities. This module teaches students how to build Data Warehouses by understanding their structures and the concept of multi-dimensional modelling. The focus is on Data Warehouse design, multi-dimensional modelling, the integration of multi-source data and business intelligence, aiming to support customer relationship management (CRM) and organisational change/management (CM).  
**Assessment:** Coursework (50%), Coursework Group (50%)  
\*All transcripts are issued in UK credits.

### Simulation Modelling

[**Module Code: 7BUIS021W**](#7BUIS021W_return)

**Level 7**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

**Equivalent Credit Value: US Credits 4 / ECTS credits 10\***

***Pre-requisite: Computer science or related first degree/industry background.***  
The module focuses on the choice and use of appropriate simulation modelling approaches to treat real–world problems, developing solution(s) using powerful simulation software and explaining the business and industrial implications thereof. Relevant applications to problems such as stock control, reliability, project management, and service redesign will be considered in domains such as healthcare, supply-chain, and transport.  
**Assessment:** In-Class Test/Assignment exam conditions (40%), Coursework (60%)  
\*All transcripts are issued in UK credits.

### Cyber Security Applications

[**Module Code: 7BUIS022W**](#7BUIS022W_return)

**Level 7**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

**Equivalent Credit Value: US Credits 4 / ECTS credits 10\***

***Pre-requisite: Computer science or related first degree/industry background.***  
Cyber security threats and countermeasures in the large-scale context of cyber warfare at commercial and state level. Operational frameworks, cryptography and latest developments and research in the area.  
**Assessment:** In-Class Test/Assignment exam conditions (50%), Portfolio (50%)  
\*All transcripts are issued in UK credits.

### Business Analytics

[**Module Code: 7BUIS024W**](#7BUIS024W_return)

**Level 7**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

**Equivalent Credit Value: US Credits 4 / ECTS credits 10\***

***Pre-requisite: Computer science or related first degree/industry background.***  
***IELTS 6.5 with at least 6.5 in writing and no element below 6.0***  
This is a self–contained module in applied statistics and operational research (OR) for decision making that lays the foundations for more advanced modules in data mining, optimisation and simulation modelling. It covers the essential of descriptive, predictive, and prescriptive analytics in an application driven manner and makes use of appropriate software tools to derive meaningful solutions.  
**Assessment:** Coursework (70%), In-Class Test/Assignment exam conditions (30%)  
\*All transcripts are issued in UK credits.

### Web and Social Media Analytics

[**Module Code: 7BUIS025W**](#7BUIS025W_return)

**Level 7**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

**Equivalent Credit Value: US Credits 4 / ECTS credits 10\***

***Pre-requisite: Computer science or related first degree/industry background.***  
This module provides a comprehensive overview of the techniques used to analyse, integrate and interpret web and social data. The first part of the module will cover the use of modelling to understand web usage and online user behaviour. During this component students will develop an understanding of how website data can be collected through various methods, including clickstream data and cookies, and used to develop models that measure website impact and effectiveness. Specific topics and techniques covered include: A/B testing, multivariate testing, web metrics and presence, Google Analytics and online privacy. During the second part of the module students will be introduced to several contemporary analytical techniques that can be used to collect, model and interpret social media data for the purposes of collecting feedback and informing marketing decisions. Specific topics and techniques covered include sentiment and polarisation analysis, tokenisation, data pre-processing and topic modelling.  
**Assessment:** Lab-Based Practical (40%), Coursework (60%)  
\*All transcripts are issued in UK credits.

### Cyber Security Threats and Countermeasures

[**Module Code: 7CSEF002W**](#7CSEF002W_return)

**Level 7**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

**Equivalent Credit Value: US Credits 4 / ECTS credits 10\***

***Pre-requisite: Computer science or related first degree/industry background.***  
Cyber security threats and countermeasures at physical and digital level focusing on behaviour of employees, home users, software developers. Developments in automated threats and counter-measures.  
**Assessment:** Essay (50%), Coursework (50%)  
\*All transcripts are issued in UK credits.

### Mobile Application Development

[**Module Code: 7SENG002W**](#7SENG002W_return)

**Level 7**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

**Equivalent Credit Value: US Credits 4 / ECTS credits 10\***

***Pre-requisite: Computer science or related first degree/industry background.***  
This module shall give the student the necessary knowledge and practical experience to develop native applications for mobile platforms and in particular iOS and iPadOS. Swift and relevant OOD principles are taught. Essential frameworks and design patterns required for the development of rich data and UI centric application are taught and utilised. This module shall give the necessary knowledge and practical experience to develop mobile applications, focusing on iOS/iPadOS based native platforms. It will give the student the necessary skills to produce native applications that take advantage on the underlying hardware features of contemporary devices such as multi-channel input, location and network services, and local and remote persistent data management. The module shall also give the student skills and knowledge that can be transferred to other native platform by emphasizing common programming practice and object-oriented design patterns.   
**Assessment:** Lab-Based Practical (40%), Presentation Group (60%)  
\*All transcripts are issued in UK credits.

### Advanced Software Design

[**Module Code: 7SENG003W**](#7SENG003W_return)

**Level 7**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

**Equivalent Credit Value: US Credits 4 / ECTS credits 10\***

***Pre-requisite: Computer science or related first degree/industry background.***  
This module examines techniques, methods and methodologies appropriate for the development of large-scale object-oriented software applications and systems. The module will cover advanced programming in an object-oriented programming language, including design patterns and idioms, inheritance, polymorphism and generics/templates, exceptions, debugging, and testing. In addition, students will acquire practical experience in object-oriented design.  
**Assessment:** Coursework Group (50%), Coursework Group (50%)  
\*All transcripts are issued in UK credits.

### Data Structures and Algorithms

[**Module Code: 7SENG010W**](#7SENG010W_return)

**Level 7**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

**Equivalent Credit Value: US Credits 4 / ECTS credits 10\***

***Pre-requisite: Computer science or related first degree/industry background.***  
The module provides the knowledge required to select, design, implement and analyse a wide range of standard data structures and algorithms. Examplesare provided of how these can be used within a range of typical applications. The data structures and algorithms are implemented using an object oriented language.The module also covers the use of standard libraries.  
**Assessment:** Coursework Group (50%), Examination - closed book (50%)  
\*All transcripts are issued in UK credits.

### Web Application Development

[**Module Code: 7SENG014W**](#7SENG014W_return)

**Level 7**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

**Equivalent Credit Value: US Credits 4 / ECTS credits 10\***

***Pre-requisite: Computer science or related first degree/industry background.***  
This module covers the design and implementation of web applications. It is suitable for students with a strong interest in SQL, server-side web programming, HTML, CSS and browser scripting. Client-side and server-side programming languages, as well as markup languages, are covered to the level required for implementing fully functional web-enabled database applications.  
**Assessment:** Coursework (40%), Coursework (60%)  
\*All transcripts are issued in UK credits.