## Module Catalogue Computer Science and Engineering Postgraduate Study Abroad 2025/6 Semester 2

| **Module Code** | **Module Name** | **Level** | **Semester** | **UK Credit Value** |
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| **Computer Science and Engineering** | | | | |
| 7BDIN006W | [Big Data Theory and Practice](#7BDIN006W) | 7 | Semester 2 | 20 |
| 7BUIS010W | [Data Warehousing and Business Intelligence](#7BUIS010W) | 7 | Semester 2 | 20 |
| 7BUIS021W | [Simulation Modelling](#7BUIS021W) | 7 | Semester 2 | 20 |
| 7BUIS022W | [Cyber Security Applications](#7BUIS022W) | 7 | Semester 2 | 20 |
| 7BUIS024W | [Business Analytics](#7BUIS024W) | 7 | Semester 2 | 20 |
| 7BUIS025W | [Web and Social Media Analytics](#7BUIS025W) | 7 | Semester 2 | 20 |
| 7CSEF002W | [Cyber Security Threats and Countermeasures](#7CSEF002W) | 7 | Semester 2 | 20 |
| 7CSEF004W | [Information Security Governance and Compliance](#7CSEF004W) | 7 | Semester 2 | 20 |
| 7CSEF008W | [Digital Forensics and Incident Response](#7CSEF008W) | 7 | Semester 2 | 20 |
| 7CSEF009W | [Digital Forensics Applications](#7CSEF009W) | 7 | Semester 2 | 20 |
| 7SENG002W | [Mobile Application Development](#7SENG002W) | 7 | Semester 2 | 20 |
| 7SENG003W | [Advanced Software Design](#7SENG003W) | 7 | Semester 2 | 20 |
| 7SENG010W | [Data Structures and Algorithms](#7SENG010W) | 7 | Semester 2 | 20 |
| 7SENG014W | [Web Application Development](#7SENG014W) | 7 | Semester 2 | 20 |

## Computer Science and Engineering

### Big Data Theory and Practice

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

**Level 7**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

***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 no SQL 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%)

### Data Warehousing and Business Intelligence

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

**Level 7**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

***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%)

### Simulation Modelling

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

**Level 7**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

***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%), Lab-Based Practical (60%)

### Cyber Security Applications

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

**Level 7**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

***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%)

### Business Analytics

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

**Level 7**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

***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%)

### Web and Social Media Analytics

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

**Level 7**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

***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%)

### Cyber Security Threats and Countermeasures

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

**Level 7**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

***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%)

### Information Security Governance and Compliance

[**Module Code: 7CSEF004W**](#7CSEF004W_return)

**Level 7**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

***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***  
Information Security (IS) Governance and Compliance are both essential components of cyber security and Forensics activities within any organisation, incident, or case study. The Information Security governance part of this module focusses on identifying risk management frameworks to guide information security activities, while the Information Security compliance focusses on defining policies, procedures, and guidelines aligning with an organisation’s objectives and regulatory and legal requirements.  
**Assessment:** Presentation Group (40%), Coursework (60%)

### Digital Forensics and Incident Response

[**Module Code: 7CSEF008W**](#7CSEF008W_return)

**Level 7**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

***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 module examines digital forensics and security response with a practical focus. It introduces key network protocols and their potential vulnerabilities, emphasising tools like Wireshark, intrusion detection systems, and their role in incident response. Core topics covered include malware analysis, evidence handling and incident response procedures. Students will apply their learning to through the exploration of real world network security incidents to meet the constantly evolving and emerging challenges in forensics.  
**Assessment:** Lab-Based Practical (50%), Coursework (50%)

### Digital Forensics Applications

[**Module Code: 7CSEF009W**](#7CSEF009W_return)

**Level 7**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

***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 aim of this module is to explore the main aspects of the Digital Forensics Investigative process and apply the theory to practically based exercises, which would be similar to the work conducted in Industry.  
**Assessment:** In-Class Test/Assignment exam conditions (40%), Lab-Based Practical (60%)

### Mobile Application Development

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

**Level 7**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

***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%)

### Advanced Software Design

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

**Level 7**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

***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%)

### Data Structures and Algorithms

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

**Level 7**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

***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%)

### Web Application Development

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

**Level 7**

**Semester 2**

**Location: Cavendish**

**UK Credit Value: 20**

***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%)