## Module Catalogue Computer Science and Engineering Postgraduate Study Abroad 2025/6 Semester 1

| **Module Code** | **Module Name** | **Level** | **Semester** | **UK Credit Value** |
| --- | --- | --- | --- | --- |
| **Computer Science and Engineering** | | | | |
| 7BDIN006W | [Big Data Theory and Practice](#7BDIN006W) | 7 | Semester 1 | 20 |
| 7BDIN007W | [Data Repositories Principles and Tools](#7BDIN007W) | 7 | Semester 1 | 20 |
| 7BUIS008W | [Data Mining and Machine Learning](#7BUIS008W) | 7 | Semester 1 | 20 |
| 7BUIS009W | [Data Visualisation and Dashboarding](#7BUIS009W) | 7 | Semester 1 | 20 |
| 7BUIS024W | [Business Analytics](#7BUIS024W) | 7 | Semester 1 | 20 |
| 7BUIS030W | [Data System Concepts and Fundamentals](#7BUIS030W) | 7 | Semester 1 | 20 |
| 7CSEF005W | [Network Security Management](#7CSEF005W) | 7 | Semester 1 | 20 |
| 7CSEF006W | [Principles of Cyber Security](#7CSEF006W) | 7 | Semester 1 | 20 |
| 7CSEF007W | [Principles of Digital Forensics](#7CSEF007W) | 7 | Semester 1 | 20 |
| 7SENG011W | [Object Oriented Programming](#7SENG011W) | 7 | Semester 1 | 20 |
| 7SENG012W | [Software Development Environments](#7SENG012W) | 7 | Semester 1 | 20 |

## Computer Science and Engineering

### Big Data Theory and Practice

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

**Level 7**

**Semester 1**

**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 Repositories Principles and Tools

[**Module Code: 7BDIN007W**](#7BDIN007W_return)

**Level 7**

**Semester 1**

**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***  
An introductory module that covers theoretical & practical issues related to data modelling and the technologies employed to store persistent data. It reviews and evaluates the predominant & emerging data models and underlying technologies & approaches used in capturing, maintaining & modelling persistent data; addresses in detail practical issues related to data modelling.  
**Assessment:** Coursework Group (100%)

### Data Mining and Machine Learning

[**Module Code: 7BUIS008W**](#7BUIS008W_return)

**Level 7**

**Semester 1**

**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 will provide an overview of modern techniques in Machine Learning and Data Mining that are particularly customised for Data Science applications. Students will be introduced to a range of toolkits, such as R and Python and they will explore the features and strengths of different machine learning and data mining methodologies using selected data sets related to specific public sector or businesses application domains.  
**Assessment:** In-Class Test/Assignment exam conditions (50%), Coursework (50%)

### Data Visualisation and Dashboarding

[**Module Code: 7BUIS009W**](#7BUIS009W_return)

**Level 7**

**Semester 1**

**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 covers the theoretical and practical aspects of data visualisation including graphical perception, dynamic dashboard visualisations, and static data ‘infographics’. Tools used include R and Tableau. The module prepares students for becoming data visualisation specialists.  
**Assessment:** In-Class Test/Assignment exam conditions (30%), Coursework (70%)

### Business Analytics

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

**Level 7**

**Semester 1**

**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%)

### Data System Concepts and Fundamentals

[**Module Code: 7BUIS030W**](#7BUIS030W_return)

**Level 7**

**Semester 1**

**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 introduces the student to computer systems fundamentals and data systems fundamentals. The aim of the module is to ensure that the student has a deep understanding of the high-level systems and software that support data storage and retrieval to be able to work with such systems and to be able to critically and confidently operate with system stakeholders and technical partners such as data providers, storage, and data processing actors. Concepts of computer systems and data creation, storage, and retrieval systems shall be introduced as well as compliance and security. This knowledge shall be reinforced by practical sessions where the student shall create, store and retrieve complex data using standard tools, as well as have the opportunity to analyse and critically evaluate typical real-world data lifecycle scenarios.  
**Assessment:** Coursework Practical (50%), Examination - closed book (50%)

### Network Security Management

[**Module Code: 7CSEF005W**](#7CSEF005W_return)

**Level 7**

**Semester 1**

**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 various aspects of network security, including theoretical and practical areas. A substantial amount of work will be laboratory-based, involving the deployment of network security tools, the analysis of network data, and identifying security threats to networked computers and devices, their consequences, and methods of dealing with such threats. It provides an overview of security issues for networked systems.  
**Assessment:** Portfolio (50%), Essay (50%)

### Principles of Cyber Security

[**Module Code: 7CSEF006W**](#7CSEF006W_return)

**Level 7**

**Semester 1**

**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 is divided into two parts. The first part introduces the fundamentals of Cyber security, such as the CIA tenets and the various models and formal methods used to design and understand threats and security methods. It will also introduce the human factor and its impact on organisations. The second part of the module will focus on understanding cryptographic concepts and introduce several applied cryptography models in different environments.  
**Assessment:** Presentation Group (50%), Examination - closed book (50%)

### Principles of Digital Forensics

[**Module Code: 7CSEF007W**](#7CSEF007W_return)

**Level 7**

**Semester 1**

**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 covers the fundamental concepts in computer forensics. Students will learn about the physical and logical structure and organisation of storage media for the purpose of digital forensics. Students will use a variety of investigative examination and software tools to determine disk and file organisation, the gathering of information and evidence, recovery of deleted files and revealing hidden files structures.  
**Assessment:** Coursework Practical (50%), Coursework Practical (50%)

### Object Oriented Programming

[**Module Code: 7SENG011W**](#7SENG011W_return)

**Level 7**

**Semester 1**

**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 teaches the fundamental concepts behind the object oriented programming (OOP) approach using a contemporary software framework such as C#.NET. The student is introduced to object oriented design techniques and taught how to translate the design into maintainable programs.It will cover the design and implementation of object oriented software through the entire software development lifecycle.  
**Assessment:** Coursework (50%), Examination - closed book (50%)

### Software Development Environments

[**Module Code: 7SENG012W**](#7SENG012W_return)

**Level 7**

**Semester 1**

**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 provides the general experience, knowledge and practical skills that a student needs to function as a professional practicing software engineer within a range of software development environments.The module introduces a number of software development tools, and the underlying theory and structure of operating systems, computer networks and computer hardware.  
**Assessment:** Lab-Based Practical (50%), Examination - closed book (50%)