UNIVERSITY of BRADFORD

Module Descriptor

Module Details	
Module Title	Software Design and Development
Module Code	COS4017-B
Academic Year	2023/4
Credits	20
School	Department of Computer Science
FHEQ Level	FHEQ Level 4

Contact Hours	
Type	Hours
Lectures	12
Tutorials	4
Laboratories	36
Directed Study	148

Availability	
Occurrence	Location / Period
BDA	University of Bradford / Semester 2

Module Aims

Computer software is part of everyday life for a majority of citizens across the world, providing services in healthcare, education, manufacturing, and other sectors and supporting scientific discovery and progress.

In this module, we will introduce core concepts of software analysis and design, including Object-Oriented (OO) programming concepts. We will further develop theoretical understanding and practical skills for designing, developing, and evaluating software that works for people. We will also introduce basic software engineering principles and software development project management skills.

Outline Syllabus

The outline syllabus gives you an indication of which topics you will study. This information may be subject to change, so please keep a record of any module announcements regarding changes from your Module Tutor, from Canvas, or by electronic communication.

As a general outline, the topics of this module are broadly categorised as:

1. Introduction to the Software Design and Development lifecycle.

2. Methodologies for software requirements analysis.

3. Design techniques for usability.

4. Software testing paradigms.

5. Frameworks for software architecture.

There will be emphasis on intermediate to advanced level of Java programming language and making link between OO concepts and programming in Java. The coursework will also assess your recognition of risks on data protection legislation and ethical matters.

Learning Outcomes

Outcome Number	Description
LO1	Discuss and apply fundamental theoretical concepts in software project development;
LO2	Use fundamental principles of software design and express aspects of design in an appropriate modelling language.
LO3	Apply advanced object oriented analysis, design and programming concepts to construct reliable software;
LO4	Interpret and utilise software designs expressed in an appropriate modelling language.
LO5	Apply skills of research, problem-solving, project management and communication to express solutions of software design and development to case studies.
LO6	Demonstrate knowledge of ethical, social, environmental and social implications of software design.

Learning, Teaching and Assessment Strategy

Learning outcomes are developed through lectures, tutorials and laboratory sessions. These contact hours aim to introduce different design and programming concepts, introducing learners to design languages such as UML, as well as basic software engineering methods and techniques utilised in complex software project development.

Directed study includes reading activities, individual exercises and revision of concepts taught in the teaching sessions, and individual reading and application of documentation and programming examples from technical reports and book sections.

The assessment of Learning Outcomes 1, 2, 3, 4 will take the form of coursework requiring an understanding of key programming concepts and basic OO notations utilised in software analysis and design, methods, tools and techniques, and business contexts. The coursework will also assess your recognition of risks on data protection legislation and ethical and matters.

Learning Outcomes 1, 2, 3, 4, 5, 6 will be assessed through a software development project, including programming, testing and documentation. Student re-taking the assessment during resit period will deliver it as individual project.

Mode of Assessment

Type	Method	Description	Weighting
Summative	Coursework	Individual project testing theoretical understanding of core computer science concepts and ability to solve problems.	50%
Summative	Coursework	Group project including requirements analysis, programming,testing anddocumentation;Supplementary is Individual Project.	50%
Formative	Classroom test	In-class quiz and programming exercise	N/A

Reading List

To access the reading list for this module, please visit https://bradford.rl.talis.com/index.html

Please note:
This module descriptor has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but minor changes may occur given the interval between publishing and commencement of teaching. Upon commencement of the module, students will receive a handbook with further detail about the module and any changes will be discussed and/or communicated at this point.
