

Module Details	
Module Title	Technical and Professional Skills
Module Code	COS4015-B
Academic Year	2022/3
Credits	20
School	Department of Computer Science
FHEQ Level	FHEQ Level 4

Contact Hours	
Type	Hours
Online Tutorials (Synchronous)	12
Tutorials	12
Laboratories	24
Directed Study	164

Availability	
Occurrence	Location / Period
BDA	University of Bradford / Semester 1

Module Aims
To raise awareness of, and interest in, legal, social, ethical, and professional issues; to equip students with a range of academic, professional, personal transferable and employability skills; to introduce the basics of shell programming; to improve analytical skills essential to design algorithms for solving various computing problems; to provide an understanding of the techniques and skills required to develop more usable interactive secure computer systems; to provide fundamental subject specific concepts, e.g. artificial intelligence, machine learning, big data and cyber security.

Outline Syllabus
A broad introduction to, and overview of, the discipline of computing. Basic Linux shell programming. Algorithm development for solving various computing problems and computational complexity analysis. Design and implementation of computer applications as a team-based exercise. Introduction to artificial intelligence, machine learning and big data systems. Introduction to cyber security and ethical hacking. Library and information skills using suitable tools. Reflective and scientific academic writing and referencing. Plagiarism awareness. Aspects of code of ethics, professional conduct, copyright, open source, patents, piracy, privacy and GDPR.

Learning Outcomes	
Outcome Number	Description
01	Demonstrate a broad knowledge and overview of your specific field of study. Outline the importance of key skills for professionals from a subject specific point of view.
02	Identify and describe basic principles, techniques and concepts underpinning artificial intelligence, machine learning, big data systems and cyber security.
03	Develop algorithmic problem solving skills; design and develop software programmes and computer applications; analyse the computational complexity.
04	Understand legal, social, ethical, and professional issues within the context of computer science and IT and responsibilities around these issues.
05	Apply a range of communication skills including collaborative working, report writing and presenting.

Learning, Teaching and Assessment Strategy
Lecture sessions present the concepts, principles and theories underpinning the design and development of interactive computer systems. Lectures provide guidance on the availability of supporting resources within the University for individual professional development. Labs incorporate both tutorials and practical exercises aimed at introducing and improving key skills. Activities in labs range from problem solving to interactive sessions. Directed reading enables the development of study skills and support the material covered in lecture sessions. Assessment is by coursework and weekly lab exercises. Supplementary Assessment as original with the group element substituted by individual.

Mode of Assessment			
Type	Method	Description	Weighting
Summative	Coursework - Written	1: Weekly lab and tutorial tasks	25%
Summative	Coursework - Artefact	2: Group-based development of a prototype. SUPP if required: Individual contribution	25%
Summative	Coursework - Written	3: Individual reflective and scientific report on a computer science topic	50%

Reading List
To access the reading list for this module, please visit <a href="https://bradford.rl.talis.com/index.html">https://bradford.rl.talis.com/index.html</a>

*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.*

