

Module Details	
Module Title	Concurrent and Distributed Systems
Module Code	COS6012-B
Academic Year	2020/1
Credits	20
School	Department of Computer Science
Subject Area	Computer Science
FHEQ Level	FHEQ Level 6
Pre-requisites	N/A
Co-requisites	N/A

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

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

Module Aims
To introduce the nature and applications of concurrent programming with typical problems requiring synchronisation of, and communication between, concurrent processes; to introduce a variety of language primitives for inter-process communication and synchronisation, and to illustrate their applications.

Outline Syllabus

- 1) Introduction to modelling concurrent programs; modelling and implementing processes; implementing processes in a multi-threaded program.
- 2) Modelling mutual exclusion; language primitives for implementing mutual exclusion.
- 3) Modelling condition synchronisation; language primitives for implementing mutual exclusion.
- 4) Modelling deadlock, safety and liveness; analysing programs to demonstrate safety and liveness.
- 5) Synchronous and asynchronous message passing.
- 6) Introduction to distributed systems; problems in distributed systems such as distributed mutual exclusion, distributed clock synchronisation, and distributed shared memory.
- 7) Architectures for concurrent and distributed systems.

Learning, Teaching and Assessment Strategy

The delivery of the module will consist of online lectures and lab classes supplemented by directed study.

The first coursework will focus on theoretical and analytical aspects in the construction of concurrent and distributed systems.

The second coursework will involve modelling and implementing a concurrent system.

Students requiring supplementary assessment will conduct similar assessment to the original.

Mode of Assessment

Type	Method	Description	Length	Weighting
Summative	Coursework	Report	N/A	40%
Summative	Coursework	Modelling and implementing a real concurrent system (report and software demonstrating practical work)	N/A	60%

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.