

Module Details	
Module Title	Systems Integration
Module Code	BIC6011-A
Academic Year	2022/3
Credits	10
School	UoB International College
FHEQ Level	FHEQ Level 6

Contact Hours	
Type	Hours
Lectures	20
Practical Classes or Workshops	30
Directed Study	50

Availability	
Occurrence	Location / Period
BDA	University of Bradford / Non-Standard Academic Year
BDA	University of Bradford / Semester 1
BDA	University of Bradford / Semester 3

Module Aims
The objective of this module is to provide students preparing for an engineering Master's degree with insight and understanding into the approach and philosophy of mechatronics. Furthermore, the module will demonstrate the essential features of mechatronics and its application in realising innovative modern engineering design. The role of mechatronics and its relevance to modern engineering will feature in terms of product design, machine design, and process design.

Outline Syllabus

- * Definition of mechatronics and an introduction to the concepts of a 'mechatronics systems' approach to engineering design via several case studies.
- * Measurements and errors.
- * Feedback, analysis and simulation.
- * Typical transducers, actuators and instrumentation.
- * Microprocessors/embedded controller systems and related technologies for mechatronic system solutions.
- * Development tools and software for microprocessor/embedded control based systems.
- * Programming languages for microprocessor-based systems.
- * The control of sensors, actuators and instrumentation utilising microprocessor-based systems.

Learning Outcomes

Outcome Number	Description
LO1	Explain the principles of and approach to Mechatronics.
LO2	Illustrate the use of microprocessor-based control appropriately in the synthesis of solutions to mechatronics design problems.
LO3	Analyse the uses of microprocessors and embedded controller systems.
LO4	Evaluate how development tools and software are used in the operation of microprocessor and embedded control systems.
LO5	Apply knowledge of the programming languages used in microprocessor-based systems.

Learning, Teaching and Assessment Strategy

Working in groups of up to eighteen, students learn via tutor-led seminars and practical sessions. The teaching approach places considerable emphasis on interactivity between teacher and students, and between individual students within the group. This will be facilitated by the range of activities introduced into classes, the use of group and pair work, particularly in practical work.

Student progress will be closely monitored by both subject staff and each student's Personal Tutor. Personal Tutors will facilitate one-to-one sessions with students during which they are encouraged to reflect on their progress in meeting their objectives. This monitoring will provide tailored learner support in specific, identified areas for development.

The summative assessment consists of two parts. Part 1 will be an interim test on the theoretical aspects of Mechatronics and its application. Part 2 of the summative assessment consists of a report reflecting on the practical activities that take place throughout the module to apply the students' knowledge and skills in systems integration.

Mode of Assessment

Type	Method	Description	Weighting
Summative	Classroom test	Interim unseen exam (1 Hr)	40%
Summative	Coursework - Written	Report on practical work (1000 words)	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.

© University of Bradford 2022

<https://bradford.ac.uk>