BIC6011-A module descriptor	
Module Title	Systems Integration
Credit Level	10 credits (FHEQ Level 6)
Session	2026/7 academic year
BDA occurrence	Semester 1 available at University of Bradford
BDA occurrence	Semester 2 available at University of Bradford
BDA occurrence	Semester 3 available at University of Bradford
BDB occurrence	Semester 3 available at University of Bradford

Transparency notice

This specification for module code BIC6011-A has been generated automatically in advance of the academic year 2026/7. Every effort has been made to ensure that the information is accurate at the time of publication, but changes permitted by our Student Contract Terms and Conditions could be made in the interval between publishing and commencement of teaching; where changes impact the terms and conditions of an applicant's or student's offer, these are communicated to them as soon as possible.

BIC6011-A module aims

This module will introduce you to the practice of mechatronics - a multidisciplinary field that brings together mechanics, electronics and computing.

On this module, you will learn about the essential features of mechatronics and their application in enabling innovative modern engineering design. The role of mechatronics and its relevance to modern systems engineering is covered in terms of product design, machine design, and process design.

BIC6011-A module learning outcomes

No.	Students completing the module will be able to:
01	Explain the principles of and approach to Mechatronics.
02	Illustrate the use of microprocessor-based control appropriately in the synthesis of solutions to mechatronics design problems.
03	Analyse the uses of microprocessors and embedded controller systems.
04	Evaluate how development tools and software are used in the operation of microprocessor and embedded control systems.
05	Apply knowledge of the programming languages used in microprocessor-based systems.

BIC6011-A module outline syllabus

The module will cover the following aspects of mechatronics:

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

For more information, visit the VLE (**Canvas**) page, go to our **Reading Lists webpage for this module** or search **https://bradford.rl.talis.com** for this module.

BIC6011-A module notional learning hours

- 20 hours Lectures
- 30 hours Practical Classes or Workshops
- 50 hours Directed Study

The overall expected hours may include contact time, scheduled learning activity, directed and independent study and any minimum expectations for placement learning. Most learning at the University of Bradford has some online content and sessions which are delivered fully by virtual means are labelled as "online".

BIC6011-A module learning, teaching and assessment

Groups are small and classes are student-centred and interactive.

The classroom approach is explicitly designed to help international students acquire new knowledge and skills, to build their confidence and enable them to become more independent learners. By doing this consistently and across all modules, the programme provides them with a strong foundation for further study in their chosen subject area.

The approach is inclusive and recognises that students come from different backgrounds with a range of previous learning experiences and associated expectations, beliefs and behaviours. Teaching and learning methods are clearly explained so students understand why (where appropriate) they need to engage in new ways of learning and why those they have used or relied on up to this point may be less suited to supporting their ongoing development and their chances of success in UK Higher Education.

Formative work is an integral part of the approach. In class, students are set tasks that require them to apply their knowledge and skills, to think critically and to solve problems.

The level of challenge is gradually increased as the students grow in confidence and Tutors help them to see that experimentation, trial and error are central to the learning process, providing constructive feedback on both what has been achieved and how.

Students are also expected to engage in independent study, to reflect on their own performance and to discuss this with their module tutor or personal academic tutor, who will provide support and advice and, when necessary, draw the attention of Module and Programme Leads to a struggling student using the Students of concern process.

Summative assessment is an essay where students are expected to demonstrate their understanding of key project management principles, tools and techniques or a report evaluating and explaining the success or otherwise of a real-world project.

The summative assessment consists of two parts. Part 1 is an interim test focused on the theoretical aspects of mechatronics and their application. Part 2 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.

BIC6011-A mode of assessment

Type	Mode	Assessment description	Weight
Summative	Examination - Closed Book	Interim Test on Principles of Mechatronic (1.5 Hrs)	40%
Summative	Coursework - Written	Report on practical work (1000 words)	60%

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