BIC4019-B module descriptor	
Module Title	Mathematics for Engineering
Credit Level	20 credits (FHEQ Level 4)
Session	2026/7 academic year
BDA occurrence	Academic Year available at University of Bradford
BDA occurrence	Non Standard Year available at University of Bradford

Transparency notice

This specification for module code BIC4019-B 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.

BIC4019-B module aims

This module will provide you with a sound understanding and command of the key mathematical tools and techniques used to solve engineering problems.

The module covers the well-recognised elements of classical engineering mathematics which universally underpin the formation of the professional engineer. The principal aim of this module is to bring students up to a common standard in mathematics in order to facilitate their entry into second year engineering studies

BIC4019-B module learning outcomes

No.	Students completing the module will be able to:
01	Describe the fundamental mathematical principles which underpin engineering related disciplines.
02	Use the language and methods of mathematics in the description and analysis of engineering systems.
03	Apply mathematical methods, tools and notations proficiently in the analysis and solution of engineering problems.

BIC4019-B module outline syllabus

The module focuses on the following areas:

(a) understanding mathematical concepts associated with engineering applications
(b) applying mathematical skills and techniques to solve engineering problems

And covers the following topics:

Algebra - powers, matrices and vectors
Complex numbers - properties, algebra, polar and exponential forms, roots, loci and their application to engineering.
Differentiation - limits, definitions, tables, rules and techniques
Integration - definitions, tables, rules and techniques
Numerical methods - errors, power series, solution to equations
Ordinary differential equations - first and second orders
Introduction and use of graphs and digraphs
Computational analysis using MATLAB

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.

BIC4019-B module notional learning hours

- 100 hours Lectures
- 100 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".

BIC4019-B 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.

Whereas the initial focus is on teaching economic theory, students are encouraged from early on in the course to work independently and in groups and apply theory to real life business contexts. As they do this, the tutor takes on a facilitating role, supporting the students as they consider different aspects of the problem scenarios they are given.

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.

Progress is closely monitored by both subject tutors and each student’s personal academic tutor. Tutors hold one-to-one sessions with students during which they are encouraged to reflect on their own progress in meeting learning objectives. These meetings and discussions allow Tutors to provide weaker and stronger students with appropriate extra support and challenge.

Summative assessment takes the form of a mid-module test (end of Term 1) and a final exam taken at the end of Term 2.

BIC4019-B mode of assessment			
Type	**Mode**	**Assessment description**	**Weight**
Summative	Examination - Closed Book	Interim (mid-module) test covering topics studied up to that point (LO1, LO2)	40%
Summative	Examination - Closed Book	Unseen end-of-course examination, covering all topics and testing LO2 & LO3	60%

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