Module Descriptor

Title	Introductory Mathematics B		
Session	2025/26	**Status**	Published
Code	MATH06002	**SCQF Level**	6
Credit Points	10	**ECTS (European Credit Transfer Scheme)**	
School	**Computing, Engineering and Physical Sciences**		
Module Co-ordinator	Ryan P. Meeten		

Summary of Module

This module is designed to follow on from Introductory Mathematics A, although this is not a mandatory prerequisite.

The purpose of this module is to provide students with a solid understanding of elementary differential and integral calculus at the level an incoming university STEM student.

The module will begin by discussing the key concept of a limit. This allows the construction of the notion of an "instantaneous rate of change", from which the derivative emerges. After introducing the derivative, students will learn how to differentiate some of the elementary functions discussed in Introductory Mathematics A. Some important applications of derivatives, such as optimisation and constructing tangent lines will be considered, and important techniques of differentiation, such as the chain rule, will be shown.

The second part of this module will take up the topic of integral calculus. This is the study of areas and volumes. It is a remarkable fact that integration and differentiation are inverse processes, a result known as the Fundamental Theorem of Calculus, which will be proved in class. After learning about both definite and indefinite integrals, the module will end by exploring some techniques of integration, such as the method of integration by substitution.

Module Delivery Method	**On-Campus**[1]	**Hybrid**[2]	**Online**[3]	**Work -Based Learning**[4]
	☒	☒	☐	☐

[1] Where contact hours are synchronous/ live and take place fully on campus. Campus-based learning is focused on providing an interactive learning experience supported by a range of digitally-enabled asynchronous learning opportunities including learning materials, resources, and opportunities provided via the virtual learning environment. On-campus contact hours will be clearly articulated to students.

[2] The module includes a combination of synchronous/ live on-campus and online learning events. These will be supported by a range of digitally-enabled asynchronous learning opportunities including learning materials, resources, and opportunities provided via the virtual learning environment. On-campus and online contact hours will be clearly articulated to students.

[3] Where all learning is solely delivered by web-based or internet-based technologies and the participants can engage in all learning activities through these means. All required contact hours will be clearly articulated to students.

[4] Learning activities where the main location for the learning experience is in the workplace. All required contact hours, whether online or on campus, will be clearly articulated to students

Campuses for Module Delivery	☐ Ayr ☐ Dumfries		☐ Lanarkshire ☐ London ☒ Paisley		☐ Online / Distance Learning ☐ Other (specify)	
Terms for Module Delivery	Term 1	☐	Term 2	☐	Term 3	☒
Long-thin Delivery over more than one Term	Term 1 – Term 2	☐	Term 2 – Term 3	☐	Term 3 – Term 1	☐

Learning Outcomes	
L1	Appreciate and use the concept of a limit.
L2	Understand and apply the definition of the derivative.
L3	Differentiate elementary functions and combinations thereof.
L4	Integrate standard elementary functions.
L5	State and apply the Fundamental Theorem of Calculus to find areas under and between curves.

Employability Skills and Personal Development Planning (PDP) Skills	
SCQF Headings	**During completion of this module, there will be an opportunity to achieve core skills in:**
Knowledge and Understanding (K and U)	**SCQF 6** Students will obtain essential foundational knowledge in calculus for studying science, technology, engineering, mathematics and other technical disciplines at university level.
Practice: Applied Knowledge and Understanding	**SCQF 6** The key concepts of differential and integral calculus will be discussed, including the most important applications. These will be contextualised with reference to physics, chemistry and financial applications.
Generic Cognitive skills	**SCQF 6** Students will enhance their numeracy and logic abilities, as well as their overall preparedness for university study.
Communication, ICT and Numeracy Skills	**SCQF 6** Collaborative group working at the whiteboard during tutorial sessions will be encouraged. Peer teaching will happen naturally during these interactions. Students will also be shown the GeoGebra software for graphing and manipulating geometric objects.
Autonomy, Accountability and Working with Others	**SCQF 6** Those choosing to attend this summer school module will have already displayed ownership of their own learning. These qualities will be further developed, with students being encouraged to identify and address their own knowledge gaps, thereby solidifying their mathematical foundations in preparation for future study. The importance of academic honesty will be instilled throughout the module.

Prerequisites	**Module Code** N/A	**Module Title** N/A
	Other Introductory Mathematics A (Encouraged but not required)	
Co-requisites	**Module Code** N/A	**Module Title** N/A

Learning and Teaching	
In line with current learning and teaching principles, a 20-credit module includes 200 learning hours, normally including a minimum of 36 contact hours and maximum of 48 contact hours.	
Learning Activities During completion of this module, the learning activities undertaken to achieve the module learning outcomes are stated below:	**Student Learning Hours** (Note: Learning hours include both contact hours and hours spent on other learning activities)
Lecture / Core Content Delivery	9
Tutorial / Synchronous Support Activity	9
Independent Study	12
Please select	
Please select	
Please select	
TOTAL	30

Indicative Resources
The following materials form essential underpinning for the module content and ultimately for the learning outcomes: Module materials will be sufficient and self-contained, however any textbook in introductory level university mathematics will contain all topics in this module. We will make use of the free resource openstax Calculus (Volume 1).
(N.B. Although reading lists should include current publications, students are advised (particularly for material marked with an asterisk*) to wait until the start of session for confirmation of the most up-to-date material)

Attendance and Engagement Requirements
In line with the Student Attendance and Engagement Procedure, Students are academically engaged if they are regularly attending and participating in timetabled on-campus and online teaching sessions, asynchronous online learning activities, course-related learning resources, and complete assessments and submit these on time. **For the purposes of this module, academic engagement equates to the following:** The School of Computing, Engineering and Physical Sciences considers attendance and engagement to mean a commitment to attending, and engaging in, timetabled sessions. You will scan your attendance via the scanners each time you are on-campus and you will log in to the VLE several times per week. Where you are unable to attend a timetabled learning session

due to illness or other circumstance, you should notify that Programme Leader that you cannot attend. Across the School an 80% attendance threshold is set. If you fall below this, you will be referred to the Student Success Team to see how we can best support your studies.

Equality and Diversity
The University's Equality, Diversity and Human Rights Procedure can be accessed at the following link: UWS Equality, Diversity and Human Rights Code. Aligned with the University's commitment to equality and diversity, this module supports equality of opportunity for students from all backgrounds and learning needs. Using the VLE, material will be presented electronically in formats that allow flexible access and manipulation of content. This module complies with University regulations and guidance on inclusive learning and teaching practice. Secialist assistive equipment, support provision and adjustment to assessment practice can be put in place, in accordance with the University's policies and regulations.
(N.B. Every effort will be made by the University to accommodate any equality and diversity issues brought to the attention of the School)

Supplemental Information

Divisional Programme Board	**Engineering Physical Sciences**
Overall Assessment Results	☐ **Pass / Fail** ☒ **Graded**
Module Eligible for Compensation	☐ **Yes** ☒ **No** **If this module is eligible for compensation, there may be cases where compensation is not permitted due to programme accreditation requirements. Please check the associated programme specification for details.**
School Assessment Board	Mathematics and Physics
Moderator	R. Carragher
External Examiner	P. Wilson
Accreditation Details	N/A
Module Appears in CPD catalogue	☒ **Yes** ☐ **No**
Changes / Version Number	2.0 Moved to the new template

Assessment (also refer to Assessment Outcomes Grids below)
Assessment 1
Class Test (Open Book)
Assessment 2
Assessment 3
(N.B. (i) Assessment Outcomes Grids for the module (one for each component) can be found below which clearly demonstrate how the learning outcomes of the module will be assessed.

(ii) An indicative schedule listing approximate times within the academic calendar when assessment is likely to feature will be provided within the Student Module Handbook.)

Component 1							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Class Test (Open Book)	☒	☒	☒	☒	☒	100	2

Component 2							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
	☐	☐	☐	☐	☐		

Component 3							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
	☐	☐	☐	☐	☐		
Combined total for all components						100%	2 hours

Change Control

What	**When**	**Who**
Moved to new template and added EDI and Engagement statements	March 2025	R. Meeten
Minor updates to the module summary	March 2025	R. Meeten