

University of the West of Scotland

Module Descriptor

Session: 2024/25

Title of Module: Mathematical Analysis			
Code: MATH07009	SCQF Level: 7 (Scottish Credit and Qualifications Framework)	Credit Points: 20	ECTS: 10 (European Credit Transfer Scheme)
School:	School of Computing Engineering and Physical Sciences		
Module Co-ordinator:	Dr Wan Mekwi		
Summary of Module			
<p>Manipulate expressions involving inequalities and absolute values. Use triangle and Cauchy-Schwarz inequalities.</p> <p>Limits, continuity and differentiability.</p> <p>Parametric, implicit and logarithmic differentiation.</p> <p>Differentiation under the integral (Fundamental theorem of Calculus).</p> <p>Inverse trig functions, hyperbolic functions and their inverses.</p> <p>Improper integration. Reduction formulae</p> <p>Power series, Maclaurin and Taylor series expansions and applications.</p>			

Module Delivery Method					
Face-To-Face	Blended	Fully Online	HybridC	Hybrid 0	Work-Based Learning
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
See Guidance Note for details.					

Campus(es) for Module Delivery
The module will normally be offered on the following campuses / or by Distance/Online Learning: (Provided viable student numbers permit) (tick as appropriate)

Paisley:	Ayr:	Dumfries:	Lanarkshire:	London:	Distance/Online Learning:	Other:
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Add name

Term(s) for Module Delivery

(Provided viable student numbers permit).

Term 1	<input type="checkbox"/>	Term 2	<input checked="" type="checkbox"/>	Term 3	<input type="checkbox"/>
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Learning Outcomes: (maximum of 5 statements)
These should take cognisance of the SCQF level descriptors and be at the appropriate level for the module.

At the end of this module the student will be able to:

L1	Calculate, determine and state solutions to analytic problems using a range of mathematical constructs.
L2	Apply and adapt techniques of algebra and calculus in routine, and non-routine analytic contexts.
L3	Select appropriate analytic approaches to tackle problems in algebra and calculus.
L4	Work autonomously, and within a group, to obtain results from mathematical software, and to communicate written conclusions in a report.

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 Level 7 Demonstrating a knowledge and understanding of a range of important mathematical constructs.
Practice: Applied Knowledge and Understanding	SCQF Level 7 Using a range of standard techniques to solve problems, sometimes in an applied context.
Generic Cognitive skills	SCQF Level 7 Conceptualising and analysing problems in an applied context.
Communication, ICT and Numeracy Skills	SCQF Level 7 Implementing and interpreting mathematical software. Making a formal written presentation based on mathematical output.
Autonomy, Accountability and Working with others	SCQF Level 7

	<p>Exercising independence and initiative in carrying out a range of activities.</p> <p>Identifying learning needs through reflection based on self, tutor and peer evaluation of work.</p>	
Pre-requisites:	Before undertaking this module the student should have undertaken the following:	
	Module Code:	Module Title:
	Other:	Higher Mathematics or equivalent
Co-requisites	Module Code:	Module Title:

*Indicates that module descriptor is not published.

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.	
<p>Learning Activities During completion of this module, the learning activities undertaken to achieve the module learning outcomes are stated below:</p>	<p>Student Learning Hours (Normally totalling 200 hours): (Note: Learning hours include both contact hours and hours spent on other learning activities)</p>
Lecture/Core Content Delivery	48
Laboratory/Practical Demonstration/Workshop	12
Independent Study	140
	Hours Total
**Indicative Resources: (eg. Core text, journals, internet access)	

The following materials form essential underpinning for the module content and ultimately for the learning outcomes:

"Calculus: One and Several Variables" by SL Salas, GJ Etgen & E Hille.

"Calculus I", TM Apostol

[Openstax: Calculus 2](#)

Please ensure the list is kept short and current. Essential resources should be included, broader resources should be kept for module handbooks / Aula VLE.

Resources should be listed in Right Harvard referencing style or agreed professional body deviation and in alphabetical order.

(*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.

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](#).

Please ensure any specific requirements are detailed in this section. Module Co-ordinators should consider the accessibility of their module for groups with protected characteristics..

(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 and Physical Sciences
Assessment Results (Pass/Fail)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
School Assessment Board	Computing, Engineering and Physical Sciences
Moderator	Dr Ken Nisbet

External Examiner	P Wilson
Accreditation Details	
Changes/Version Number	1.06 Changes to module summary Updated module moderator. Slight change to component description.

Assessment: (also refer to Assessment Outcomes Grids below)
Assessment 1 – A portfolio of written and computer work (40%)
Assessment 2 – Class Test (Unseen, closed book) (60%)
(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.)

Assessment Outcome Grids (See Guidance Note)

Component 1							
Assessment Type (Footnote B.)	Learning Outcome (1)	Learning Outcome (2)	Learning Outcome (3)	Learning Outcome (4)	Learning Outcome (5)	Weighting (%) of Assessment Element	Timetabled Contact Hours
Portfolio	✓	✓	✓	✓		40	

Component 2							
Assessment Type (Footnote B.)	Learning Outcome (1)	Learning Outcome (2)	Learning Outcome (3)	Learning Outcome (4)	Learning Outcome (5)	Weighting (%) of Assessment Element	Timetabled Contact Hours
Class Test	✓	✓	✓			60	3
Combined Total for All Components						100%	3 hours