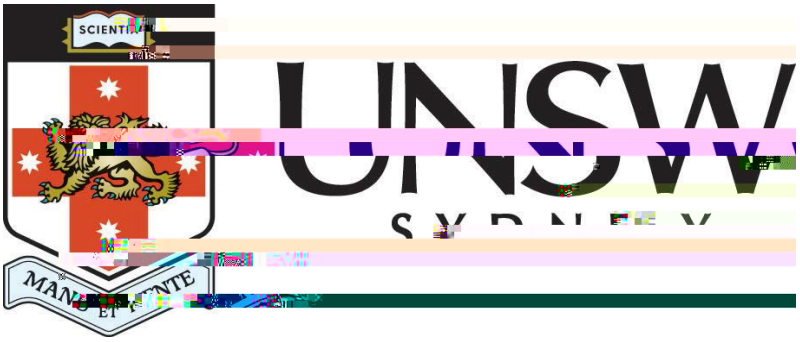

Course Outline

MATH1231 Mathematics 1B

MATH1241 Higher Mathematics 1B

School of Mathematics and Statistics

Faculty of Science

Term 1, 2023

5. Assessment

Overview

In Term 1 2023 Lab Tests and the End of Term Exam will be conducted in -person .

The assessment structure of MATH1231 and MATH1241 may be quite different to high school and other courses that you are used to. It is designed so that students should expect to be close to passing the course before taking the final exam with pre-exam assessment focusing on basic skills and the exam focusing on

- In recent years there have been cases where severe penalties have been imposed for misconduct in relation to tests and exams in Maths courses.
- UNSW assesses students under a standards based assessment policy. For how this policy is applied within the School of Mathematics and Statistics, please visit the web site:

  https://www.unsw.edu.au/science/our-schools/maths/student-life-resources/student-

Assignment

The purpose of the assignment is to improve your mathematical writing by providing feedback on your writing and helping you to recognise good mathematical writing. It will also give you practice at presenting solutions to exam style questions.

The questions will be presented to you on Möbius and you will write solutions to these questions. You will be able to check the correctness some parts of your answer using Möbius so your main task will be to present your answers well with good explanations of your working.

Your work will need to be typed (not handwritten and scanned) and you will submit your work online through links on Moodle. The assignment deadline will be 11:59pm on Tuesday of week 8. The assignment will have a maximum mark of 10. A penalty of 5% of the maximum mark will be deducted from the awarded mark per day late up to a maximum of 5 days late. Submissions over 5 days late will receive a mark of zero.

Complete details of the process for this will be provided when the assignment is released. Note that the marking criteria are focused on how you explain and present your answers.

End of Term Examination

In Term 1 2023 the End of Term Examination will be conducted using Möbius. The exam will be conducted under supervised conditions in the Red -Centre computer labs during the official exam period. Very limited exceptions will be allowed for students who are offshore during Term 1 and unable to travel to Sydney. The date and time of the final examination will be available on myUNSW and further details of the exam arrangements, including for students unable to come to Sydney, will be available on Moodle when the final exam timetable is released.

The final exam covers material from the whole of the algebra, calculus and computing (Maple) syllabi. The best guide to the style and level of difficulty is the past exam papers. Past exam papers will be provided on Moodle. Some have worked solutions and others do not. Examination questions are, by their nature, different from the short test questions. They may test a greater depth of understanding. The questions will be longer, and sections of the course not covered in other assessments will be examined. The end of term exam may contain some parts requiring knowledge of Maple.

This term's exam will be closest in format to the 2020, 2021 and 2022 exams. Earlier exams are also good for practice. More specific information on the format will be provided on Moodle close to the end of Term.

The assessment tasks during the term allow repeated attempts over an extended period and focus more on basic skills. As a result, students should be aiming for a high mark in the pre-exam assessment, and this indicates significant progress towards achieving the learning outcomes of this course. The exam is time limited and has more complex questions. Therefore, a high mark in the pre-exam assessment is not always an accurate indication of the final course mark.

Additional i nformation for MATH1 241 Higher Mathematics 1A

Content: Higher Mathematics 1A includes everything which is in the MATH12 31 course and this accounts for 85% of the content of the higher course. The remaining time is spent treating some of the common topics in greater depth and covering some extra topics. The assessment in MATH1241 has a greater emphasis on proof and abstraction and covers a wider range of examples. The syllabus sections of this booklet indicate the additional topics for MATH1241.

Problem sets: The basic problem sets for MATH1241 are the same for MATH1231, but you should pay special attention to the problems labelled [H] and [X] because they are particularly intended for the Higher course. It is also important to work through all the [R] labelled questions to make sure you get adequate practice on more routine problems.

Assessment: In terms were both MATH1231 and MATH1241 are offered, marks in Higher Mathematics 1B will be moderated so that students in the higher course MATH1241 are not at any disadvantage compared to students in the ordinary course MATH1231. The final examination will contain at least one question in common between the two courses so that student achievement in the two courses can be compared.

Schedule of all asses sments

The table below gives the schedule all assessments.

Week	Assignment/lab tests	Weekly Möbius Lessons (MATH1241: 3pm; MATH1231: 5pm)
1		
2		
3		
4		
5		
6		
7		
8		
9		
0		
1		

* The last Möbius Lesson will remain available until Week 11 Tuesday 3pm for MATH1241 and Tuesday 5pm for MATH1231.

6. Expectations of students

School and UNSW Policies

The School of Mathematics and Statistics has adopted a number of policies relating to enrolment, attendance, assessment, plagiarism, cheating, special consideration etc. These are in addition to the Policies of The

Plagiarism

Plagiarism is presenting another person's work or ideas as your own. Plagiarism is a serious breach of ethics at UNSW and is not taken lightly. So how do you avoid it? A one-minute video for an overview of how you can avoid plagiarism can be found https://student.unsw.edu.au/plagiarism.

Detection of academic misconduct

The School of Mathematics and Statistics uses a variety of means to detect and investigate potential academic misconduct in assessments, including the use of data from University systems and websites.

7. Readings and resources

Course Pack

Your course pack should contain the following three items:

1. Algebra Notes (for MATH1231/1241)
2. Calculus Notes (for MATH1231/1241)
3. Past Exam Papers Booklet

A printed version of the course pack can be purchased from the bookshop. These items can also be downloaded from UNSW Moodle but many students find the hardcopy more efficient for study.

NB: The Course Outline can be downloaded from Moodle or the School website only.

Information on administrative matters, lectures, tutorials, assessment, syllabuses, class tests, computing, special consideration and additional assessment.

Textbook

S.L. Salas, E. Hille and G.J. Etgen, Calculus – One and Several Variables, any recent edition, Wiley.

Note, the 10h Edition of the textbook above comes with access to the electronic resources known as WileyPlus. This electronic version provides internet access to the textbook, problems, worked solutions, test (for self-assessment) and other electronic resources related to the text material. If purchased from the UNSW Bookshop, you will have access to the WileyPlus server for one year; it is possible to renew the web access on a yearly basis or for one year, at a fee determined by the publisher. Note that these WileyPlus electronic resources are provided by the publisher John Wiley, and not by the School of Mathematics and Statistics. Any difficur( )-12.22kdif69 0 Td [(by12.3 (l)31.1 ( )-.1 (r)-6.3 c7)31.1 ( )-.1 (r)-6.3 c7hih-ceshn dicesmenbe, et12.2 (y)(r)-1 (i)3.2l

Important Notes

If you believe your application for Special Consideration has not been processed, you should email specialconsideration@unsw.edu.au immediately for advice.

- If you suffer from a chronic or ongoing illness that has, or is likely to, put you at a serious disadvantage, then you should contact the Equitable Learning Services (formerly known as the Disability Support Services) who provide confidential support and advice. Their web site is: https://student.unsw.edu.au/els
- Equitable Learning Services (ELS) may determine that your condition requires special arrangements for assessment tasks. Once the School has been notified of these, we will make every effort to meet the arrangements specified by ELS.
- Additionally, if you have suffered significant misadventure that affects your ability to complete the course, please contact the Director of First Year, Associate Professor Jonathan Kress by email or in person for advice. The contact details are the Red Centre, level 3 room RC-3073 or by email to j.kress@unsw.edu.au

Professor A Coster

Head, School of Mathematics and Statistics

10. Algebra Syllabus and Lecture timetable (MATH1231/1241)

The algebra course for both MATH1231 and MATH1241 is based on chapters 6 to 9 of the Algebra Notes. Lecturers will not cover all of the material in these notes in their lectures as some sections of the notes are intended for reference and for background reading.

The following timetable is the basic timetable and syllabus which will be followed by MATH1231 algebra lecturers. MATH1241 lecturers will include extra material in their lectures. Lecturers will try to follow this timetable, but some variations are inevitable.

Lecture	Topics	Algebra Notes
	Chapter 6 . Vector Spaces	
	The aim of this section of the course is to introduce the general theory of vector spaces and to give some basic examples. The majority of examples will be for the real vector space 9á, but occasional examples may be given for complex vector space ' á, as well as from vector spaces of polynomials.	
1	Introduction to vector spaces and examples of vector spaces.	6.1
2	PropertPropertehealex	

The

Chapter 6. Subspace of a vector space, linear combination of a set of vectors, span of a set of vectors, linear independence of a set of vectors, spanning set for a vector space, basis for a vector space, dimension of a vector space.

Chapter 7. Linear function, kernel and nullity of a linear function, image and rank of a linear function.

Chapter 8. Eigenvalue and eigenvector, diagonalizable matrix.

Chapter 9. Probability, statistical independence, conditional probability, discrete random variable, expected value (mean) of a random variable, variance of a random variable, binomial distribution, geometric distribution.

You should be able to give STATEMENTS of the following theorems and propositions.

Chapter 6. Theorem 1 of §6.3, Propositions 1 and 3 and Theorem 2 of §6.4, Proposition 1 and Theorems 2, 3, 4, 5 and 6 of §6.6.

Chapter 7. Theorem 2, 3, and 4 of §7.1, Theorem 1 and 2 of §7.2, Proposition 7 and Theorems 1, 5, 8, 9 and 10 of §7.4.

Chapter 8. Theorems 1, 2 and 3 of §8.1, Theorem 1 and 2 of §8.2.

You should be able to give PROOFS of the following theorems and propositions.

Chapter 6. Theorem 2 of §6.4, Theorems 2 and 3 of §6.5, Theorem 2 of §6.6.

Chapter 7. Theorem 2 of §7.1, Theorem 1 of §7.2, Theorems 1, 5 and 8 of §7.4.

Chapter 8.

	15.9	19.1, 19.2
Modelling with odes 2		9.1, 9.2

Furthermore, learning some Maple introduces you to some of the basic ideas in computer programming.

x

Assessment

During the term, the assessment for the Computing Component (Maple Coding) of the course is embedded in the Möbius lessons. See that section for more information.

The assessment in the Computing Component is linked to topics in algebra and calculus so knowledge of other parts of the course is required.

Finally, the end of term exam may contain one or two sub-questions requiring knowledge of Maple.

Student -owned computers for Mathematics coul(m)-8.9 (cew (-)Tj -c4 (u)-4.8er)-13.1 (12

SOME GREEK CHARACTERS

Listed below are the Greek characters most commonly used in Mathematics.

Name	Lower case	Upper case	Name	Lower case	Upper case
Alpha	Ù		Nu	å	
Beta	Ú		Xi	æ	
Gamma	Û		Pi	è	+
Delta	Ü		Rho	é	
Epsilon	óor	Ý	Sigma	ê	-
Zeta	Þ		Tau	ì	
Eta	ß		Phi	ö or	î 0
Theta	à	#	Chi	ï	
Kappa	â		Psi	ð	2