



UNSW
SYDNEY

Course Outline

MATH1031

Mathematics for Life Sciences

School of Mathematics and Statistics

Faculty of Science

Term 1, 2023

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1. Staff

Position	Name	Email	Room*
Director of First Year	Assoc Prof Jonathan Kress	j.kress@unsw.edu.au	RC-3073
Course Convenor	Dr Joshua Capel	j.capel@unsw.edu.au	RC-5107
Lecturer-in-charge of Mobius	Dr Joshua Capel	j.capel@unsw.edu.au	RC-5107
Lecturers	Dr Amandine Schaeffer (Wk 1 – 5) Dr Thomas Britz (Wk 7 – 10)	a.schaeffer@unsw.edu.au britz@unsw.edu.au	RC-4102 RC-5111

*Note that the Red-Centre is scheduled to be re-opened at the time of production of this course outline, an announcement will be made if circumstances change. Staff consultation will take place online and in-person and begin in Week 2. See Moodle for more details.

2. Administrative matters

Contacting the Student Services Office

Please visit the School of Mathematics and Statistics website (located under “Student life & resources”) for a wide range of information on the following.

- School Policies, Forms and Help for Students, go to "[Student life & resources](#) " > “Student Services” tab.
- Courses, please go to “Undergraduate” > “Undergraduate courses” for information on all course offerings.
- Latest student news, go to "[Student life & resources](#) " > “Student noticeboard”. Notices are posted regularly for your information here.

Please familiarise yourself with the information found in these locations. The School web page is: <https://www.unsw.edu.au/science/our-schools/math>.

If you cannot find the answer to your queries on the web you are welcome to contact the Student Services Office directly. The First Year Advisor in the Student Services Officer is Ms Hilda Cahya. All administrative enquiries concerning first year Mathematics courses should be sent to H. Cahya, either:

- By email to ug.mathsstats@unsw.edu.au.
- By phone: 9385 7011 (leave a message with contact phone number for call to be returned).
- Or in person to the Red Centre building, level 3, room 3072. NB: There is no contact at the office without prior appointment, please email while working remotely.

Change of tutorials, due to timetable clashes or work commitments, advice on course selection and other administrative matters are handled in the Student Services Office. Constructive comments on course improvement may also be emailed to the Director of First Year Mathematics, A/Prof Jonathan Kress. Should we need to contact you, we will use your official UNSW email address in the first

instance. **It is your responsibility to regularly check your university email account. Please state your student number in all emails to the Student Services Office.**

3. Course information

Units of credit: 6

Assumed knowledge: a level of knowledge equivalent to achieving a band 4 HSC Mathematics Advanced. Students who have taken Mathematics Standard will not have achieved the level of knowledge which is assumed in this course.

Note: This course is not intended for students who propose to study a substantial amount of Mathematics beyond first year level. Many later year courses in Mathematics have completion of MATH1231, MATH1241 or MATH1251 as a prerequisite. This course can be taken as a preparatory course by students who need to take MATH1131 but do not meet the assumed knowledge requirement.

Teaching times and locations: see the link on the Handbook web pages:

<https://timetable.unsw.edu.au/2023/MATH1031.html#S1S>

Course description

MATH1031 provides a foundation in techniques in Calculus and Linear Algebra used for mathematical modelling in the life sciences and other disciplines. Applications are presented in interdisciplinary contexts through lectures, videos, and tutorial exercises. This course enhances students' analytical thinking and problem-solving skills through illustrative examples in lectures, problem-based tutorials and an assignment. Communication skills are developed through active participation in tutorials, by writing clear and logical arguments in the assignment and when solving tutorial problems.

This course is designed for students who need to use mathematical techniques for applications in the life and social sciences and other disciplines and who do not intend to continue to further studies in Mathematics. Although students who do intend to study Mathematics beyond first year can take MATH1031 as a preparation for MATH1131, which does provide the foundation for further study in mathematics.

Course aims

The aim of MATH1031 is to provide students with an introduction to the most common mathematical techniques used in modelling of real-world problems with an emphasis on applications in the life sciences. Students will learn how to use software as an aid in mathematical modelling and problem solving and gain experience in effective communication of mathematical ideas using technology, in the assignment, and orally in the tutorials.

Course learning outcomes (CLO)

At the successful completion of this course you (the student) should be able to:

1. Apply the concepts and techniques from Algebra and Calculus to solve mathematical problems.
2. Formulate mathematical models using Algebra and Calculus from real world scenarios.

3. Use Algebra and Calculus to solve problems in other disciplines.
4. Use technology as an aid for both routine calculation and solving appropriate mathematical modelling problems.
5. Communicate mathematical ideas, techniques, and results effectively in written form.

4. Learning and teaching activities

Lectures

Lectures run in weeks 1 to 10 except for week 6 which will have no classes. You can find the lecture times on your myUNSW timetable. In Term 1 2023 live lectures given in a lecture theatre and live-streamed. A link will be provided on Moodle. These lectures will also be recorded and available to watch at a later time, however, it is recommended that students attend the lectures live face-to-face.

Note: The lectures on Monday 10th April (week 9) will be cancelled due to a public holiday. Pre-recorded lectures may be provided as a replacement. Details will be announced closer to the time.

Tutorials

There are two tutorials per week in MATH1031 and these run in weeks 1 to 10 with the exception of week 6. You can enrol in either a face-to-face tutorial, or a live online tutorial. The face-to-face tutorials are subject to availability and may closed if circumstances change.

In Term 1 2023 the online classroom tutorials will be organised using Blackboard Collaborate, a virtual classroom system. A link to the virtual classroom where you will attend your tutorial will be provided on Moodle. During these tutorials you will participate in breakout rooms, your camera and your audio must be on in these breakout rooms unless you have prior permission from the course convenor.

In both online and face-to-face tutorials, you will be expected to work through provided problems with your peers. For both types of tutorials (face-to-face or online), a laptop with internet access is recommended. Having installed the most recent version of Office 365 is also recommended.

Students can change their tutorials via myUNSW until the end of week 1. After that time, they can only change tutorials by requesting this through the ug.MathsStats@unsw.edu.au website, providing your student ID number and advice about a timetable clash or work commitments.

The end of the document has a lecture and tutorial schedule.

UNSW Moodle

The School of Mathematics and Statistics uses the Learning Management System called Moodle. To log into Moodle, use your zID and zPass at the following URL:

<https://moodle.telt.unsw.edu.au>

Once logged in you should see a link to MATH1031 that will take you to the course homepage in Moodle. Here you will find announcements, general information, notes, lecture slides, classroom tutorial and homework problems and links to online tests, exams and assessments.

5. Assessments

Overview

Your final raw mark will be made up as follows:

Assessment task	Weight	Course Learning Outcomes
Online tests	10%	1, 2 and 4
Mastery tests	45%	1, 2 and 4
Assignment	10%	1, 2, 3 and 5
End of term exam	35%	1, 2, 3, 4 and 5

Note:

- Students who complete the Online tests, Mastery tests, and Assignment to a satisfactory level will pass the course without the need to sit the end of term exam. A detailed explanation of the assessment structure is below.
- The end of term exam is aimed at students who are seeking a credit or above. The final exam will not contain any routine questions, it will contain substantial questions requiring a good understanding of the material presented in the course and thorough and clear explanation. The final exam mark will be moderated. See later section on the final exam for more details.
- Only students who have obtained 50 of the available 65 pre-exam marks will be permitted to sit the paper final exam. Students with less than 50 will sit further basic skills tests in order to pass with a final mark capped at 50.
- You will be able to view your final exam timetable once Exams Central has finalised the timetable. Please visit: <https://student.unsw.edu.au/exam-timetable> for details.
- It is very important that you understand the University's rules for the conduct of Examinations and the penalties for **Academic Misconduct Guide**. This information can be accessed through myUNSW at: <https://student.unsw.edu.au/exams> . NB: In recent years there have been cases where severe penalties have been imposed for misconduct in relation to tests and exams in Maths courses.
- Assessment criteria: 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: <http://www.maths.unsw.edu.au/currentstudents/assessment-policies>.
- If you are unwell / miss your **final examination**, please refer to the Special Consideration Policy by visiting the website: <https://student.unsw.edu.au/special-consideration>

Online Tests

There will be a sequence of eight online tests (OTs) conducted using a platform called Möbius. The tests may be attempted anywhere with internet access and a suitable web browser. Instructions for using Möbius will be provided on Moodle.

- Check the availability of the online tests on the Möbius class for this course. There are an unlimited number of attempts in each test, but a new attempt must be started after 12 hours. You are strongly advised to complete the online tests as recommended in the Schedule of pre-exam assessments.

- All online tests will be closed by Friday Week 10. Although students can attempt any of the available online tests until they are closed, students are expected to take these tests in their designated weeks and failure to do so may result in rejection of applications for special consideration.
- Each online test contains a Mastery test component and a computing component. There will be six questions in the Mastery test component and two questions in the computing component. Make sure to review the gradebook after each attempt to better prepare yourself for the next attempt.
- Questions in the Mastery test component cover the materials from lectures.
- In MATH1031 you will learn how to use the computer algebra software called Maple. During on-campus teaching this software can be accessed on the computer Red-Centre labs, but at all other times you can Maple on your own computer via the myAccess service:

<https://www.myaccess.unsw.edu.au/>

Worksheets and notes are provided on Moodle for learning how to use software Maple. The questions in the computing component test your understanding of the worksheets and notes and the use of Maple.

More details of the Computing Component of this course are provided later in this course outline.

- A passing student would be expected to score at least 80% in these tests. The best 6 of these 8 tests will count 10% towards your final grade.
- The Online Tests are available for an extended period so no medical certificates or other reasons will be accepted for missing these tests.

Mastery Tests

The largest component of the assessment in MATH1031 is the Mastery Tests (MTs, 15% each). The Mastery Tests will be in-person and taken place in weeks 4, 7 and 10. Information for about how the tests will be posted on Moodle. Make sure to read every announcement.

- The three Mastery Test 1, 2, 3 will contain a selection of questions from the Mastery Test components in OT1 to OT3, OT4 to OT5, OT6 to OT8, respectively.
- A mark of 80% in each of the Mastery Tests is considered to be a passing level.
- If you miss a Mastery Test due to illness or other misadventure, you must obtain a medical certificate, or other suitable documentation, for the day of your test, and apply for special consideration online through myUNSW. Please refer to the information on Special Consideration and the fit-to-sit rule for details.
- If your pre-exam mark (composed of marks from the online tests, the assignment and the Mastery tests) is less than 50, there will be an opportunity to re-sit each of the Mastery Tests on a day in the study period at the end of the term chosen by the director of the first year. A student may retake any or all of the Mastery Tests to increase their pre-exam mark, but the new pre-exam mark will be capped at 50 out of 65.
- After the resit opportunity, eligibility to sit the final exam will be determined. Students who at this time have not achieved 50 of the 65 pre-exam marks will not be able to take the final exam but will be permitted to retake any of the Mastery Tests at the same time as the scheduled final exam. In that case the student's final mark will be capped at 50.

For example, a student gets 6 out of 10 for the assignment, 8 out of 10 from the online tests, 13, 10 and 8 in the Mastery Tests at the closing date of the online tests. The pre-exam mark will be 45. They

will be allowed to re-sit the Mastery tests in the study period. If they improve the marks of the three MTs to 15, 12 and 11, the total raw marks for the pre-exam components will be 53. Since, in this case, the pre-exam mark is capped at 50, the student will only get 50 for the pre-exam mark. This student would then be allowed to sit the final exam.

Written 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. The assignment will be in two parts.

In part A, several short videos on how the mathematics you are studying in MATH1031 is being used by someone working in a non-mathematical field will be provided. You will choose one of these and write a few paragraphs about the video.

In part B, exam style questions will be presented to you on Mobius and your job will be to write solutions to these questions. You will be able to check the correctness some parts of your answer using Mobius 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. After submission you will need to assess your own work and the work of 4 other students. Tutors will also grade parts of your submission and provide feedback on your writing.

Complete details of the process for this will be provided when the assignment is released.

Note that you must submit your work in two places – there are separate submission processes for the tutor to mark and for the peer review.

The assignment will be marked out of 10. A penalty of 0.5 marks per day late will be applied to late submissions up to a maximum of 5 days late. Work submitted later than 5 days will be marked, and feedback given, but a grade of zero will be recorded.

A 4pm deadline means you must submit before 4pm. A submission at 4pm is late. If you submit late to the peer review, then you will need to wait an extra week before you complete your peer review.

Timeline

Week 6 Monday 9am (or earlier)	Assignment opens and details released
Week 8 Friday 4pm	Submission deadline
Week 8 Friday 5pm	Peer assessment opens
Week 9 Friday 4pm	Peer assessment deadline
Week 10 Friday 4pm	Feedback released

Grade

The mark for your assignment will be divided between the tasks as shown below.

Mark from tutor	4 marks
Correct answers on Möbius	2 marks
Review from peers	2 marks
Peer assessment quality mark from Moodle	2 marks

Schedule of pre-exam assessments

Week	Online Tests	Mastery Tests	Assignment
Week 1			
Week 2	OT1		
Week 3	OT2		
Week 4	OT3	Based on Mastery test component of OT1 to OT3	
Week 5	OT4		
Week 6			Assignment released
Week 7	OT5	Based on Mastery test component of OT4 to OT5	
Week 8	OT6		Submission deadline
Week 9	OT7		Peer assessment deadline
Week 10	OT8	Based on Mastery test component of OT6 to OT8	

Final exam

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 studying 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 is designed for students seeking a credit or above. To be allowed to attend the final exam, a student must have scored at least 50/65 in the pre-exam assessment after the study period Mastery Test resit.

The exam contains only harder problems that require the use of techniques from the course applied in new unseen situations. There are no pass level questions in the exam and so a mark of zero in the exam is consistent with obtaining a pass since a pass must be obtained before the final exam.

The exam will be marked out of 40 with up to 10 marks allocated to the correctness of mathematical notation, clarity of explanation, including well written conclusions for each question. The mark for the exam will be moderated so that a student obtaining a close to full marks in the pre-exam assessment and about half of the marks in the exam will receive a distinction. This means that 20/40 in the exam will be moderated to approximately 10/35. See the next section for more details of this moderation.

Explanation of grade standards in MATH1031

The assessment structure in MATH1031 is designed so that a pass level is demonstrated in the pre-exam assessment which consists of the Online Tests, the Mastery Tests and the Assignment. The Online Test assesses basic skills and ability to use mathematical software. The Mastery Tests assess

basic skills, and the assignment assesses critical thinking, mathematical writing and applications of the basic skills to extended problems

To pass, a student must score 50/65 in the pre-exam assessment. There is no requirement to attend the final exam to pass the course.

To obtain a credit, a student is expected to easily meet the pass level and do well, but not perfectly, in about one third of the exam. For example, a raw exam mark of 10/40 would be moderated to 5/35 and combine with a pre-exam mark of 60/65 to give a final mark of 65.

To obtain a distinction, a student is expected to have a near perfect score in the pre-exam assessment and obtain about half of the exam marks. For example, a raw exam mark of 20/40 would be moderated to 10/35 and combine with 65/65 to give 75.

To obtain a high distinction, a student is expected to have a near perfect score in the pre-exam assessment and obtain about 3 quarters of the exam marks. For example, a raw exam mark of 30/40 would be moderated 20/35 and combine with 65/65 to give 85.

6. Computing in MATH1031

Why computing?

MATH1031 covers many mathematical techniques that are useful in understanding and predicting the behaviour of biological and other real-world systems. In order for you to become comfortable with these techniques, the problems presented in lectures and tutorials often involve only small data sets, few variables or simple functions.

The aim of the computing component of this course is to show you how you can use **computer algebra software** to apply the mathematics you have learnt to solve problems that would be very cumbersome to tackle by hand. In MATH1031, the software we will be using is called Maple. Even for relatively simple problems Maple can be useful as it does not make simple arithmetic errors!

Whether you continue with mathematics after first year or not, the computing skills you learn with us should still be useful in your university studies and beyond because:

- Your experience with Maple will make it easier to learn other software packages.
- Many other disciplines use packages like Maple.
- Symbolic computing techniques will be useful when you use mathematics in your future career.

UNSW has a policy that all students (no matter what program they are in) should be introduced to the basic techniques of computer use. For students in science and engineering programs, part of this requirement is met by the computing included in first year mathematics.

What sort of computer or applications do I need?

The School of Mathematics and Statistics provides computing labs in Red Centre with everything you will need for computing in MATH1031. This term, the Labs will be open, but you can use Maple on your own computer via the myAccess web service.

<https://www.myaccess.unsw.edu.au/>

What will I have to do and when?

You will learn how to use the application Maple via working through a set of Maple worksheets. There will be questions that require the use of Maple in the weekly Online Tests.

You use Maple via myAccess, you should follow the instruction on the myAccess web page to install Citrix Receiver and access your applications. You then should watch the introductory videos for Maple provided on Moodle.

You can continue to work through the Maple worksheets and notes. Information about which worksheet is relevant to which online test will be provided on Moodle.

Getting help

There is a wide range of self-help material in the computing pages of our School web site and in MATH1031 module on UNSW Moodle. These should be the places you check in the first instance.

The Maths Drop-in Centre incorporates Lab Consultations who can help with Maple if you need help using this software.

For all Maple problems (but not equipment faults, login problems and password problems) you should use the online Drop-in-Centre service.

<https://www.maths.unsw.edu.au/currentstudents/Mathematics-Drop-in-Centre>

For problems in installation of Citrix Receiver, myAccess, connection problems of Möbius, you should contact UNSW IT Service Centre. Phone number and email address of the IT Service Centre can be found on myAccess web page.

If all else fails, contact or send an email to the Course Convenor, Dr. Joshua Capel (Red Centre Room 5107), email j.capel@unsw.edu.au.

Information about School computing facilities can be found in

<https://www.maths.unsw.edu.au/currentstudents/computing-information>

Code of Conduct

All students are assumed to be aware of the *Acceptable Use of UNSW ICT Resources* policy, a copy of which is at

<https://my.unsw.edu.au/student/resources/ComputingCommunicationRule.html>

In addition, the School of Mathematics and Statistics reserves the right to monitor all use of its computer systems, and to share the monitoring results with the relevant law enforcement authorities. The computing facilities provided by the School of Mathematics and Statistics must be used only for tasks related to the mathematics course(s) for which your computing account has been created. Misuse of computers is a serious offence and will be treated as a case of academic misconduct. This includes damage to or theft of any part of the equipment. A breach of security will be treated as a case of serious academic misconduct.

Breach of security includes but is not limited to

- deliberately providing a password to another person (student or otherwise);

- attempting to gain unauthorised access to files within the system (“hacking”);
- deliberately introducing computer viruses;
- copying of assignments (by email or any other means).

Electronic mail (email) facilities are provided by the University so that you can communicate with lecturers and tutors. All use of email is monitored, and action will be taken against anyone who makes excessive use of email or uses it to send annoying, obscene, sexist or racist messages to other users or to engage in academic misconduct. Internet and other electronic communication services are provided to allow you to access our computers from other parts of the campus and from home and to transfer assignments which have been completed on other computers. These services are NOT provided so that you can play games, watch videos, or indulge in other activities not related to university studies. All electronic communications using the School's facilities are monitored to ensure that these facilities are being used in a responsible manner. Likewise, the disk space allocated to your account should be used only for keeping files related to your course, and the system administrator may remove any files which are not associated with University work.

These restrictions are imposed because computing resources are limited and there are thousands of other users of the system (over 4000 students with logins for the Red Centre labs). We all have to live and work together and you are expected to be considerate to other users. This is the bottom line when it comes to acceptable behaviour. If you have any doubts about whether an action is acceptable, don't do it.

Health and Safety Issues

Students should be aware that using a keyboard or performing any repetitive task for a long uninterrupted period may be associated with physical discomfort and/or muscular or other injury. To lessen the risk of such problems, a break from typing should be taken at regular intervals, a good body position adopted, wrists should be kept straight as much as possible and not rested on a sharp edge.

If you feel pain, numbness, tingling, weakness, cramping, or stiffness in your hands, wrists, arms, shoulder, neck, or back, see a qualified health professional. For further information contact the School of Mathematics and Statistics General Office.

7. 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 University of New South Wales. Individual courses may also adopt other policies in addition to or replacing some of the School ones. These will be clearly notified in the Course Initial Handout and on the Course Home Pages on the Maths Stats web site.

Students in courses run by the School of Mathematics and Statistics should be aware of the School and Course policies by reading the appropriate pages on the Maths Stats web site starting at:

<https://www.maths.unsw.edu.au/currentstudents/assessment-policies>

The School of Mathematics and Statistics will assume that all its students have read and understood the School policies on the above pages and any individual course policies on the Course Initial Handout and Course Home Page. Lack of knowledge about a policy will not be an excuse for failing to follow the procedure in it.

Academic Integrity and Plagiarism

UNSW has an ongoing commitment to fostering a culture of learning informed by academic integrity. All UNSW staff and students have a responsibility to adhere to this principle of academic integrity. Plagiarism undermines academic integrity and is not tolerated at UNSW. *Plagiarism at UNSW is defined as using the words or ideas of others and passing them off as your own.*

The **UNSW Student Code** provides a framework for the standard of conduct expected of UNSW students with respect to their academic integrity and behaviour. It outlines the primary obligations of students and directs staff and students to the Code and related procedures.

In addition, it is important that students understand that it is not permissible to buy essay/writing services from third parties as the use of such services constitutes plagiarism because it involves using the words or ideas of others and passing them off as your own. Nor is it permissible to sell copies of lecture or tutorial notes as students do not own the rights to this intellectual property.

If a student breaches the Student Code with respect to academic integrity, the University may take disciplinary action under the **Student Misconduct Procedure**.

The UNSW Student Code and the Student Misconduct Procedure can be found at:
<https://student.unsw.edu.au/plagiarism>

An online Module “[Working with Academic Integrity](https://student.unsw.edu.au/aim)” (<https://student.unsw.edu.au/aim>) is a six-lesson interactive self-paced Moodle module exploring and explaining all of these terms and placing them into your learning context. It will be the best one-hour investment you’ve ever made.

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.

Additional Support

ELISE (Enabling Library and Information Skills for Everyone)

ELISE is designed to introduce new students to studying at UNSW.

Completing the ELISE tutorial and quiz will enable you to:

- analyse topics, plan responses and organise research for academic writing and other assessment tasks
- effectively and efficiently find appropriate information sources and evaluate relevance to your needs
- use and manage information effectively to accomplish a specific purpose
- better manage your time
- understand your rights and responsibilities as a student at UNSW
- be aware of plagiarism, copyright, UNSW Student Code of Conduct and Acceptable Use of UNSW ICT Resources Policy
- be aware of the standards of behaviour expected of everyone in the UNSW community
- locate services and information about UNSW and UNSW Library

Some of these areas will be familiar to you, others will be new. Gaining a solid understanding of all the related aspects of ELISE will help you make the most of your studies at UNSW.

The *ELISE* training webpages:

<https://subjectguides.library.unsw.edu.au/elise/aboutelise>

Equitable Learning Services (ELS)

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 (previously known as SEADU) who provide confidential support and advice.

They assist students:

- living with disabilities
- with long- or short-term health concerns and/or mental health issues
- who are primary carers
- from low SES backgrounds
- of diverse genders, sexes and sexualities
- from refugee and refugee-like backgrounds
- from rural and remote backgrounds
- who are the first in their family to undertake a bachelor-level degree.

Their web site is: <https://student.unsw.edu.au/els/services>

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 your Lecturer-in-charge in the first instance.

Academic Skills Support and the Learning Centre

The Learning Centre offers academic support programs to all students at UNSW Australia. We assist students to develop approaches to learning that will enable them to succeed in their academic study. For further information on these programs please go to:

<http://www.lc.unsw.edu.au/services-programs>

8. Readings and resources

Text Book

There is no set textbook for MATH1031. All topics listed in the syllabus will be comprehensively covered by the lecturers at the appropriate times. The syllabus and lecture schedule at the end of this document contains references for each topic.

9. Getting help outside tutorials

Staff Consultations

From week 3 there will be a roster which shows for each hour of the week a list of names of members of staff who are available to help students in the first-year mathematics courses, no appointment is necessary. This roster will be announced in the Moodle course page at the end of week 2 and can be located by visiting web page:

<http://www.maths.unsw.edu.au/currentstudents/consultation-mathematics-staff>

Mathematics Drop-in Centre and Lab Consultants

The Maths Drop-in Centre provides free help to students with certain first and second year mathematics courses. All first year MATH courses are supported. The Maths Drop-in Centre operates online via Moodle and in-person in the Red-Centre lab RC-G012B. The Drop-in Centre has a dedicated Moodle page where you can find details of opening hours.

The Maths Drop-in Centre schedule will be available on Moodle page below by the end of week 1. Please note that no appointment is necessary, this is a drop-in arrangement to obtain one-on-one help from tutors. The Drop-in Centre includes Lab Consultants who can help with Maple.

<https://www.unsw.edu.au/science/our-schools/mathematics/student-life-resources/student-services/mathematics-drop-in-centre>

<https://www.unsw.edu.au/science/our-schools/mathematics/student-life-resources/student-services/computing-information/maple-lab-consultants>

Additional support for students

- The Current Students Gateway: <https://student.unsw.edu.au/>

- Academic Skills and Support: <https://student.unsw.edu.au/academic-skills>
- Student Wellbeing, Health and Safety: <https://student.unsw.edu.au/wellbeing>
- Equitable Learning Services: <https://student.unsw.edu.au/els> (formerly Disability Services Unit)
- UNSW IT Service Centre: <https://www.it.unsw.edu.au/students/index.html>

10. Special Consideration

Please adhere to the Special Consideration Policy and Procedures provided on the web page below when applying for special consideration.

<https://student.unsw.edu.au/special-consideration>

Please note that the application is not considered by the Course Convenor, it is considered by a centralised team of staff at the Nucleus Student Hub.

The School will contact you (via student email account) after special consideration has been granted to reschedule your missed assessment.

For applications for special consideration for *assignment extensions*, please note that the new submission date and/or outcome will be communicated through the special consideration web site only, no communication will be received from the School.

For *final exams* with special consideration granted, the Exams Unit will email the rescheduled “supplementary exam” date, time and location to your student zID email account directly. Please ensure you regularly check your student email account (zID account) for this information.

The supplementary exam period/dates can be found at this web site:

<https://student.unsw.edu.au/exam-dates>

Please ensure you are aware of these dates and that you are available during this time.

University Statement on Plagiarism

This statement has been adapted from statements by the St James Ethics Centre, the University of Newcastle, and the University of Melbourne.

Plagiarism is the presentation of the thoughts or work of another as one's own.¹ Examples include:

- Direct duplication of the thoughts or work of another, including by copying work, or knowingly permitting it to be copied. This includes copying material, ideas or concepts from a book, article, report or other written document (whether published or unpublished), composition, artwork, design, drawing, circuitry, computer program or software, web site, Internet, other electronic resource, or another person's assignment without appropriate acknowledgement
- Paraphrasing another person's work with very minor changes keeping the meaning, form and/or progression of ideas of the original;
- Piecing together sections of the work of others into a new whole;
- Presenting an assessment item as independent work when it has been produced in whole or part in collusion with other people, for example, another student or a tutor; and,
- Claiming credit for a proportion a work contributed to a group assessment item that is greater than that actually contributed.²
- Submitting an assessment item that has already been submitted for academic credit elsewhere may also be considered plagiarism.
- The inclusion of the thoughts or work of another with attribution appropriate to the academic discipline does not amount to plagiarism.

Students are reminded of their Rights and Responsibilities in respect of plagiarism, as set out in the University Undergraduate and Postgraduate Handbooks, and are encouraged to seek advice from academic staff whenever necessary to ensure they avoid plagiarism in all its forms.

The Learning Centre website is the central University online resource for staff and student information on plagiarism and academic honesty. It can be located at: <http://www.lc.unsw.edu.au/academic-integrity-plagiarism>

The Learning Centre also provides substantial educational written materials, workshops, and tutorials to aid students, for example, in:

- Correct referencing practices;
- Paraphrasing, summarising, essay writing, and time management;
- Appropriate use of, and attribution for, a range of materials including text, images, formulae and concepts.

Individual assistance is available on request from The Learning Centre.

Students are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting, and the proper referencing of sources in preparing all assessment items.

¹ Based on that proposed to the University of Newcastle by the St James Ethics Centre. Used with kind permission from the University of Newcastle.

² Adapted with kind permission from the University of Melbourne.

11. Syllabus, Lecture Schedule and References

Week	Topics To Be Covered	References
1	Introduction	
	Matrix algebra	(4): 2.1
	Matrix applications	(4): 2.1
	Inverse, identity and zero matrices	(4): 2.2, 2.3
	Matrix equations	(4): 2.3
2	Functions	(1): 1.4
	Further trigonometry	(1): 8.1, 8.2
	Special functions	(1): 4.1, 4.3, 8.3
	Limits and continuity	(1): 1.5, 1.6
	Differentiation	(1): 2.1, 2.2, 2.4, 2.5, 3.1
3	Calculus of the special functions	(1): 4.2, 4.4, 6.4
	Curve sketching	(1): 3.7
	Maxima and minima	(1): 3.3, 3.4
	Modelling with the exponential function	(1): 4.5
	Revision	
4	Modelling with the trigonometric functions	(1): 8.4
	Least squares line of best fit	(4): 2.5
	Semi-log plots	(2): 3.3
	Log-log plots	(2): 3.3
	Points, lines and planes in space	(1): 7.1, 7.2
5	Echelon form and row operations	(4): 1.1,
	Systems of linear equations with unique solutions	(4): 1.1, 1.2
	Applications of systems with unique solutions	(4): 1.3
	Systems of linear equations with non-unique solutions	(4): 1.2
	Applications of systems with non-unique solutions	(4): 1.3
7	Matrix transformations	(4): 2.5
	Markov processes	(4): 2.5
	Long term and steady state solutions	(4): 2.5
	First and second order difference equations	(2): 11.3, 11.4
	Implicit and parametric differentiation	(1): 2.7, (2): 4.7
8	Related rates	(1): 2.8
	Applications of the integral	(1): 5.1 - 5.4
	Integration by substitution	(1): 6.1
	Integration by parts	(1): 6.2
	Separable differential equations	(1): App D1, D2

1. Calculus an Applied Approach by Larson and Edwards
2. Mathematics for the Biological Sciences by Arya and Lardner
3. Advanced Engineering Mathematics by Erwin Kreyszig, 7th edition.
4. Elementary Linear Algebra by Larson and Edwards, 4th edition

Copies of the above four books can be found in the LIBRARY

Week	Topics To Be Covered	References
9	Linear first order differential equations	(1): App D3
	Modelling with first order differential equations	(1): App D3
	Homogeneous second order differential equations	(3): 2.2, 2.3
	Non-homogeneous second order differential equations	(2): 10.7
	Systems of differential equations - competing species	(3): 2.2, 2.3
10	Newton's method - bisection of the interval	(1): 10.6
	Maclaurin series	(1): 10.5
	Partial differentiation	(1): 7.3, 7.4
	Local maxima and minima in space	(1): 7.5
	Revision	

1. Calculus an Applied Approach by Larson and Edwards
 2. Mathematics for the Biological Sciences by Arya and Lardner
 3. Advanced Engineering Mathematics by Erwin Kreyszig, 7th edition.
 4. Elementary Linear Algebra by Larson and Edwards, 4th edition
- Copies of the above four books can be found in the LIBRARY**

12. Tutorial Schedule

Week	Topics To Be Covered
1	Welcome to MATH1031 Tutorials Revision on basic algebra and trigonometry
	About online tests Matrix algebra
2	Matrix applications Inverse, identity and zero matrices
	Matrix equations Functions/further trigonometry
3	Special functions Limits and continuity
	Differentiation Calculus of the special functions
4	Curve sketching Maxima and minima
	Modelling with the exponential function Modelling with the trigonometric functions
5	Least squares line of best fit Semi-log plots/log-log plots
	Points lines and planes in space Echelon form and row operations
7	Systems of linear equations with unique solutions Applications of systems with unique solutions
	Systems of linear equations with non-unique solutions Applications of systems with non-unique solutions
8	Matrix transformations Markov processes/long term and steady state solutions
	First and second order difference equations Implicit and parametric differentiation/related rates
9	Applications of integration Integration by substitution/integration by parts
	Separable/first order differential equations Modelling with first order differential equations
10	Homogeneous and non-homogeneous second order differential equations/systems of differential equations
	Newton's method - bisection of the interval Maclaurin series