



UNSW
SYDNEY

Course Outline

MATH1031

Mathematics for Life Sciences

School of Mathematics and Statistics

Faculty of Science

Term 1, 2019

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1. Staff

Position	Name	Email	Room
Course Authority	Assoc Prof Jonathan Kress	j.kress@unsw.edu.au	RC-3073
Lecturers	Assoc Prof Adelle Coster Dr Joshua Capel	a.coster@unsw.edu.au j.capel@unsw.edu.au	RC-2086 RC-5107
Lecturer-in-charge of computing	Dr Chi Mak	chi.mak@unsw.edu.au	RC-4073

Staff consultation times are provided on Moodle and in the School of Mathematics and Statistics website for *current students > undergraduate > student services > help for students* page, at the beginning of each term.

2. Administrative matters

Contacting the Student Services Office

Please visit the School of Mathematics and Statistics web-site for a wide range of information on School Policies, Forms and Help for Students by visiting the “**Student Services**” page.

For information on Courses, please go to “Current Student”, “Undergraduate and/or Postgraduate”, “**Courses Homepage**” for information on all **course offerings**.

The “Student Notice Board” can be located by going to the “Current Students” page. Notices are posted regularly for your information here. Please familiarise yourself with the information found in these locations. The School web page is found: <http://www.maths.unsw.edu.au>

If you cannot find the answer to your queries on the web pages you are welcome to contact the Student Services Office directly. The First Year Advisor in the Student Services Office is Mrs Markie Lugton. All administrative enquiries concerning first year Mathematics courses should be sent to M Lugton, either:

- By email to fy.mathsstats@unsw.edu.au
- By phone: 9385 7011
- Or in person to the Red Centre building, level 3, room 3072

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 of zstudentno@unsw.edu.au 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 mark of at least 60 in HSC Mathematics. Students who have taken General Mathematics 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:

<http://timetable.unsw.edu.au/2019/MATH1031.html>

Course summary

MATH1031 will provide you with a good knowledge of topics in Calculus and Linear Algebra and show applications in interdisciplinary contexts through lectures, videos and exercises. It will enhance your skills in analytical thinking and problem solving through illustrative examples in lectures, problem based tutorials and an assignment. The course will also engage you in independent and reflective learning through your independent mastery of tutorial problems and Maple. The mathematical skills that you will develop are generic problem solving skills, based on logical arguments that can be applied in multidisciplinary work. You will be encouraged to develop your communication skills through active participation in tutorials, and by writing clear and logical arguments in the assignment and when solving tutorial problems.

For the course syllabus, see the syllabus and lecture schedule at the end of this document.

Course aims

The aim of MATH1031 is that by the completion of the course you understand the concepts and techniques involved in the topics listed in the syllabus, and have developed skills in applying these concepts and techniques to the solution of the actual problems within your discipline areas.

New ideas and skills are introduced in lectures with an emphasis on the use of examples taken from the biological sciences. You will then develop these skills by applying them in tutorials and to the assignment and computing problems. The use of Maple in MATH1031 provides an opportunity to see how computers can be used in a wide variety of mathematical problem solving.

Students often have great difficulty translating between a real world problem and its mathematical representation and so practising this skill is an important part of MATH1031. The ability to communicate effectively using mathematical language and to think analytically are important learning outcomes for this course.

Course learning outcomes (CLO)

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

1. Apply techniques and concepts from the syllabus to solve mathematical problems,
2. Formulate mathematical models from real world scenarios using techniques from the syllabus,
3. Recognise how mathematics is used to solve problems in other disciplines.
4. Use computer algebra as an aid to solving appropriate problems,
5. Communicate mathematical ideas, techniques and results effectively, using appropriate mathematical terminology.

4. Learning and teaching activities

Lectures and Tutorial Schedule

Please note that Lectures commence in week 1 and run to week 10 according to your myUNSW timetable. The end of the document has a lecture and tutorial schedule.

	Monday	Tuesday	Wednesday	Thursday	Friday
Lectures		2pm to 4pm (week 1-10) 4pm to 6pm (week 11 only)	1pm to 2pm (week 11 only)	4pm to 6pm (week 1-5, 7-9)	1pm to 2pm (week 1-8, 10)
Tutorials	Students must enroll in one of the following pairs of tutorials: Group A: Monday 2pm and Friday 10am Group B: Tuesday 10am and Thursday 10am Group C: Monday 2pm and Wednesday 10am Group D: Monday 1pm and Wednesday 1pm				

Tutorials

Tutorials commence in week 1, and run until week 10. There are two tutorials per week, and students will have the same tutor for both tutorials. Attendance at tutorials is compulsory and the roll will be called in tutorials.

The second tutorial in weeks with a Mastery Lab Test will be cancelled as the Master Lab Tests will take place during those tutorial times.

Students are able to change their tutorials via myUNSW until the end of week 1. After week 1, they can only change their tutorials with the agreement of the Student Services Office, RC-3072.

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

5. Assessments

Overview

Your final raw mark will be made up as follows:

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

Note:

- Students who complete the Online tests, Mastery Lab 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 duration is 2 hours and 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://my.unsw.edu.au/student.unsw.edu.au/exams> 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>
- Students with a **final mark in the range of 45-49** will be permitted to take the Additional Assessment Exam as a Concessional Additional Assessment (AA). There will be no notification to the individual student of the right to take the Concessional AA, but the details of the courses AA exam schedule will be provided on the School's website Notice Board, after the Provisional Results are published (normally 1 week after the exam period ends).
 - The final mark after completing the Concessional AA will not increase to a mark higher than 50. Website to School Notice: <http://www.maths.unsw.edu.au/currentstudents/current-students>

Online Tests

There will be a sequence of nine weekly online tests conducted using Maple TA and may be attempted anywhere with internet access and a suitable web browser. Instructions for using Maple TA will be provided on Moodle.

- Online test 1 (OT1) will be available on Monday Week 1 and students are expected to complete this test by Friday Week 2. Similarly, OT2 will be available in Week 2 is expected to be completed by Friday Week 3, and so on. There is no time limit on each test and there are an unlimited number of attempts in each test.
- 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.
- Material in the Mastery test component in OT_n will be roughly the materials from lectures in Week n.
- In MATH1031 you will learn how to use the computer algebra software called Maple which is installed in the Red-Centre labs and also available to use on your own computer via the myAccess service:

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

Worksheets and notes are provided for this on Moodle. 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 9 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 Lab Tests

The largest component of the assessment in MATH1031 is the Mastery Lab Tests (15% each). The Mastery Lab Tests will be conducted in the Red-Centre labs in weeks 4, 7, and 10. You need to make a booking for your test. Details will be provided on Moodle.

- The three Mastery Lab Test 1, 2, 3 will contain a selection of questions from the Mastery Test components in OT1 to OT3, OT4 to OT6, OT7 to OT9, respectively.
- A mark of 80% in each of the Mastery Lab Tests is considered to be a passing level.
- If you miss a Mastery Lab 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 within 3 days of your test time. You must then have your documents verified at Student Central. **A resit will be arranged but may be refused if you have not completed the relevant Online Mastery Tests in their corresponding weeks.**

- If your pre-exam mark (composed of marks from the online tests, the assignment and the Mastery Lab tests) is less than 50, there will be an opportunity to resit each of the Mastery Lab 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 of the Mastery Lab Tests, the pre-exam mark will be capped at 50 out of 65.
- After the resit opportunity, eligibility to sit the final paper 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 paper exam but will be permitted to retake any of the Mastery Lab Tests at the same time as the scheduled paper exam. In that case the student's final mark will be capped at 50.
- After the final exam, a student whose mark is in the range 45 to 49 will be offered concessional additional assessment as a last opportunity to pass the course. The form of this concessional additional assessment will be announced at the time it is offered.

For example, a student gets 6 out of 10 for the assignment, 8 out of 10 from the online tests, 13, 10, 8 in the MLTs as at the closing date of the online tests. The pre-exam mark will be 45. They will be allowed to resit the Mastery Lab tests in the study period. If they improve the marks of the three MLTs to 15, 12 and 11, the total raw marks for the pre-exam components will be 53. Since the pre-exam mark is capped at 50, the student will only get 50 for the pre-exam mark.

Note that

- You must bring your **student ID card** to each Master Lab Test.
- You may use a calculator with a UNSW approved sticker during the Mastery Lab Tests.

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 Maple TA 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 Maple TA 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 hand written and scanned) and you will submit your work online through links on Moodle. After submission you will need to assess and rank 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.

Timeline

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

Grade

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

Video review mark from peers	2 marks
Exam questions mark from peers	2 marks
Exam questions mark from tutor	4 marks
Peer assessment and ranking mark from tutor	2 marks

Schedule of pre-exam assessments

Week	Online Tests	Mastery Lab 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	OT5		Assignment released
Week 7	OT6	Based on Mastery test component of OT4 to OT6	
Week 8	OT7		Submission deadline
Week 9	OT8		Peer assessment deadline
Week 10	OT9	Based on Mastery test component of OT7 to OT9	

Final paper exam

The final exam is designed for students seeking a credit or above. To be allowed to attend the final paper exam, a student must have scored at least 50/65 in the pre-exam assessment by the end of the final Master Lab 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 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.

Calculator Information

For end of term UNSW exams, students must supply their own calculator. Only calculators on the UNSW list of approved calculators may be used in the end of term exams. Before the exam period, calculators must be given a "UNSW approved" sticker, obtained from the School of Mathematics and Statistics Office, and other student or Faculty centres. The UNSW list of calculators approved for use in end of term exams is available at: <https://student.unsw.edu.au/exam-approved-calculators-and-computers>

6. Computing in MATH1031

Why computing?

MATH1031 covers many mathematical techniques that are useful in understanding and predicting the behaviour of biological 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. Most of the School's computers run Linux, and we encourage you to use these. There are also PCs running Microsoft Windows that you may use.

Maple is installed in all computers in the computer labs. You can also 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 two questions on Maple in the computer component of each weekly online test. Before you attempt any of the online tests, you must first complete the test called **declaration** in which you agree to attempt the online tests without assistance from any other person.

If you prefer to 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 should use some of your free time in week 1 go to the Red Centre lab G012 and complete the Maple introductory materials, available in UNSW Moodle, and complete the assignment **Using Maple TA** in Maple TA. Consultants will be on duty from 11am to 4pm each day in weeks 1 to 9 to help you get started with these tasks.

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.

A **lab consultant** will be available in Room G012B from 11 am to 4 pm every weekday in weeks 1 to 9 unless lab tests or lab classes use G012B. The consultant will be sitting at the **Consultant's Terminal** at the front of the main blocks of PCs or helping people at their computers. If you have a problem with Maple, ask the consultant.

For all Maple problems (but not equipment faults, login problems and password problems) you should see the consultant, or see your tutor if it is a problem with the mathematics involved.

Equipment faults, login problems and **password problems** should be notified to the operators at the **Help Desk** (the window in Room M020). Please note that the operators and other staff of the Computer Centre are NOT available to act as consultants. They are not experts in Maple.

For problems in installation of Citrix Receiver, myAccess, connection problems of Maple TA, 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 Lecturer in Charge of MATH1031 Computing, Dr. Chi Mak (Red Centre Room 4073), email chi.mak@unsw.edu.au.

Information about School computing facilities can be found in <https://www.maths.unsw.edu.au/currentstudents/computing-information>

Using the computers

Passwords

The computers in the school labs, UNSW Moodle, Maple TA and the School of Mathematics and Statistics student web portal ALL require your UNSW username z followed by your student number and your zPass to log in.

Before you can use your account you must have a valid zPass and it must be unlocked. You can create or unlock your zPass using the UNSW Identity Manager at

<https://idm.unsw.edu.au>

If you have trouble logging in to a computer in a School of Mathematics and Statistics lab, you should first try resetting your zPass using IDM.

Remember that *YOU ARE RESPONSIBLE FOR YOUR ACCOUNT*, and any misuse of it by you or anyone else (for example, using the account for anything not related to your mathematics subjects) will be treated as a case of Academic Misconduct. *DO NOT GIVE YOUR ZPASS TO ANYONE ELSE*. You must NOT write your zPass down anywhere where it can be identified with your student number. If you think someone has found out what your zPass is, change it immediately.

Accounts

If you are enrolled in a Mathematics or Statistics course, you will be able to log in to the computers in the Mathematics and Statistics computer labs using your zID and zPass. Once logged in you will have access to your university home drive. Any file that we wish to be preserved after you log out should be stored on your hdrive.

If you have trouble logging in to a computer in the lab first try changing your zPass using the UNSW Identity Manager and if that fails, go to the Help Desk window in RC-M020 between 9 am and 5 pm on any weekday.

Using the Linux Desktop

The Linux interface is known as **KDE**, which stands for K Desktop Environment. It is designed to work in a manner very similar to Microsoft Windows. It is assumed that a windows like environment will be familiar to you.

Note describing the Mathematics and Statistics computer labs will be available from www.maths.unsw.edu.au/currentstudents/first-year-computing-notes

Important. Our computers are designed to be left on and you will never need to switch one off.

NEVER SWITCH THE COMPUTER OFF

If you are really stuck and nothing seems to be working on your keyboard, report this at the Help Desk.

DO NOT FORGET TO LOGOUT

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 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:

<http://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.

8. Academic integrity, referencing and plagiarism

Academic integrity is fundamental to success at university. Academic integrity can be defined as a commitment to six fundamental values in academic pursuits: honesty, trust, fairness, respect, responsibility and courage.¹ At UNSW, this means that your work must be your own, and others' ideas should be appropriately acknowledged. If you don't follow these rules, plagiarism may be detected in your work.

Further information about academic integrity and **plagiarism** can be located at:

- The *Current Students* site <https://student.unsw.edu.au/plagiarism>, and
- The *ELISE* training site <http://subjectguides.library.unsw.edu.au/elise/presenting>

The *Conduct and Integrity Unit* provides further resources to assist you to understand your conduct obligations as a student: <https://student.unsw.edu.au/conduct>.

9. 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.

10. 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

¹ International Center for Academic Integrity, 'The Fundamental Values of Academic Integrity', T. Fishman (ed), Clemson University, 2013.

necessary. This roster is displayed on the same Notice Board as timetables, near the School Office (room 3070, Red Centre), it is also available from the web page:

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

Mathematics Drop-in Centre

The Maths drop-in centre provides free help to students with certain first and second year mathematics courses. First year courses supported are MATH1011, MATH1031, MATH1081, MATH1131, MATH1141, MATH1231 and MATH1151. The Maths drop-in centre office is located in RC-3064, and opening times during term is from 10am – 12pm and 1pm – 3pm from Mondays to Fridays. The Maths drop-in centre schedule will be available on the Schools website:

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

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.

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>
- Disability Support Services: <https://student.unsw.edu.au/disability-services>
- UNSW IT Service Centre: <https://www.it.unsw.edu.au/students/index.html>

Applications for Special Consideration

If you feel that your performance in, or attendance at a final examination or another assessment scheduled has been affected by illness or circumstances beyond your control, or if you missed the examination because of illness or other compelling reasons, you may apply for special consideration.

It is essential that you take note of the rules listed below which apply to applications for special consideration in all first year Mathematics courses.

1. Applications must be submitted online within 3 working days of the assessment to which it refers to. In exceptional circumstances, an application may be accepted outside the 3-day limit. Please ensure you contact the Course Authority with advice if your application cannot be submitted within the 3-day limit.

Visit website for further information on how to Apply for Special Consideration, and important things to note: <https://student.unsw.edu.au/special-consideration>

2. If your course involves a Maple/Matlab lab test and you apply for Special Consideration for that assessment, you should contact the lecturer in charge of computing as soon as possible. A resit will be organised for later time.
3. Applications for Special Consideration for continuous assessment, such as online tutorials or online exercises that are available for an extended period are only accepted in exceptional circumstances as they already offer substantial flexibility.
4. If your application for Special Consideration refers to a missed class test, the School will provide advice on your application through Moodle or your UNSW Student email. A resit may be arranged.
5. If your application for Special Consideration is for the final examination, please do not expect an immediate response from the School. All applications will be considered together. See the information below.
5. Please note that you **will NOT be granted Additional Assessment in a course if your performance in the course** (judged by attendance, class tests, assignments and examinations) **does not meet a minimal standard**. A total mark of greater than 40% on all assessment not affected by a request for Special Consideration will normally be regarded as the minimal standard to allow an Additional Assessment.
6. It is YOUR RESPONSIBILITY to find out from the School of Mathematics and Statistics, whether you have been granted Additional Assessment and when and where the additional assessment examinations will be held. Please visit the School's Notice Board for information:
<http://www.maths.unsw.edu.au/currentstudents/current-students>

Information about award of Additional Assessment for the final exam and a provisional list of results will be made available on the Maths & Stats Marks page later in the term. A link to the Maths & Stats Marks page is provided on Moodle.

7. **The Additional Assessment exam for MATH1031 will be held within the period from 22 May to 2 June 2019.** A link to the Additional Assessment timetable, including locations, will be placed on the Current Students Notice Board (see 6 above) under heading "Special Consideration and Additional Assessment" information. You will need to produce your UNSW Student Card to gain entry to the Additional Assessment examination.
8. If you have two Additional Assessment examinations scheduled for the same time, please consult the Student Services Office either by email or phone (fy.mathsstats@unsw.edu.au or 9385 7011), so that special arrangements can be made.

Important Notes

- The Additional Assessment exam may be of a different form to the original exam and must be expected to be at least as difficult.
- If you believe your application for Special Consideration has not been processed, you should immediately consult the Director for First Year Mathematics, A/Prof Jonathan Kress (Room 3073, Red Centre).
- If you believe that the above arrangements put you at a substantial disadvantage, you should send full documentation of the circumstances to: Director of First Year Mathematics, School of Mathematics and Statistics, email to j.kress@unsw.edu.au at the earliest possible time.
- 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 Disability Support Services who provide confidential support and advice. Their web site is: <https://student.unsw.edu.au/disability>
- Disability Support Services (DSS) 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 DSS.
- Additionally, if you have suffered misadventure during semester then you should provide full documentation to the Director of First Year Mathematics as soon as possible. In these circumstances it may be possible to arrange discontinuation without failure or to make special examination arrangements.

Professor B. Henry
Head, School of Mathematics and Statistics

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. 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.
- 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: www.lc.unsw.edu.au/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.

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, 3.1
3	PRODUCT, QUOTIENT AND CHAIN RULES	(1): 2.4, 2.5
	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	(4): 2.5
4	MODELLING WITH THE TRIGONOMETRIC FUNCTIONS	(2): 3.3
	LEAST SQUARES LINE OF BEST FIT	(2): 3.3
	SEMI-LOG PLOTS	(1): 4.5
	LOG-LOG PLOTS	(1): 8.4
	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
6	MATRIX TRANSFORMATIONS	(4): 2.5
	MARKOV PROCESSES	(4): 2.5
	LONG TERM AND STEADY STATE SOLUTIONS	(4): 2.5
7	FIRST AND SECOND ORDER DIFFERENCE EQUATIONS	(2): 11.3, 11.4
	IMPLICIT AND PARAMETRIC DIFFERENTIATION	(1): 2.7, (2): 4.7
	RELATED RATES	(1): 2.8
	REVISION OF 2-UNIT INTEGRATION THEORY	(1): 5.1 - 5.3
	APPLICATIONS OF THE INTEGRAL	(1): 5.4

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
8	INTEGRATION BY SUBSTITUTION	(1): 6.1
	INTEGRATION BY PARTS	(1): 6.2
	SEPARABLE DIFFERENTIAL EQUATIONS	(1): App D1, D2
	LINEAR FIRST ORDER DIFFERENTIAL EQUATIONS	(1): App D3
	MODELLING WITH FIRST ORDER DIFFERENTIAL EQUATIONS	(1): App D3
9	HOMOGENEOUS SECOND ORDER DIFFERENTIAL EQUATIONS	(3): 2.2, 2.3
	NON-HOMOGENEOUS SECOND ORDER DIFFERENTIAL EQUATIONS	(3): 2.8
	SYSTEMS OF DIFFERENTIAL EQUATIONS - COMPETING SPECIES	(2): 10.7
	NEWTON'S METHOD - BISECTION OF THE INTERVAL	(1): 10.6
	PUBLIC HOLIDAY	
10	MACLAURIN SERIES	(1): 10.5
	PARTIAL DIFFERENTIATION	(1): 7.3, 7.4
	PUBLIC HOLIDAY	
	PUBLIC HOLIDAY	
	LOCAL MAXIMA AND MINIMA IN SPACE	(1): 7.5

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	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 PRODUCT, QUOTIENT AND CHAIN RULES
4	CALCULUS OF THE SPECIAL FUNCTIONS CURVE SKETCHING
	MAXIMA AND MINIMA MODELLING WITH THE EXPONENTIAL FUNCTION
5	MODELLING WITH THE TRIGONOMETRIC FUNCTIONS LEAST SQUARES LINE OF BEST FIT
	SEMI-LOG PLOTS LOG-LOG PLOTS
6	POINTS LINES AND PLANES IN SPACE ECHELON FORM AND ROW OPERATIONS
	SYSTEMS OF LINEAR EQUATIONS WITH UNIQUE SOLUTIONS APPLICATIONS OF SYSTEMS WITH UNIQUE SOLUTIONS
7	SYSTEMS OF LINEAR EQUATIONS WITH NON-UNIQUE SOLUTIONS APPLICATIONS OF SYSTEMS WITH NON-UNIQUE SOLUTIONS
	MATRIX TRANSFORMATIONS MARKOV PROCESSES/LONG TERM AND STEADY STATE SOLUTIONS
8	FIRST AND SECOND ORDER DIFFERENCE EQUATIONS IMPLICIT AND PARAMETRIC DIFFERENTIATION
	RELATED RATES REVISION OF INTEGRATION/ APPLICATIONS OF INTEGRATION
9	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