



UNSW
SYDNEY

Course Outline

MATH1041

Statistics for Life and Social Sciences

School of Mathematics and Statistics

Faculty of Science

Term 1, 2023

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1. Staff

Position	Name	Email	Room
Course Convenor/Authority	Dr Bill Ellis	wjellis@unsw.edu.au	RC-3091
Lecturer	Dr Eka Shinjikashvili	eka@unsw.edu.au	RC-2054
Student Services	Mrs Hilda Cahya	ug.mathsstats@unsw.edu.au	RC-3072
RStudio Forum Manager	TBA	Moodle forum queries only	N/A

All general course enquiries should be posted on the course Moodle forum and not sent to staff via email since the answer could be of interest to everyone. A member of staff will check the forum each weekday (Monday to Friday).

You will also be able to get some help from other staff members: Online staff consultation times will be posted on Moodle and on the School of Mathematics and Statistics website (<https://www.unsw.edu.au/science/our-schools/maths/student-life-resources/student-services/consultation-mathematics-staff>) by the beginning of Week 2 each term.

If you have any questions in class, do not hesitate to ask on the spot! Out of class times, feel free to use the advertised online staff consultation hours or the discussion forum on Moodle or to arrange an online appointment via email.

2. Administrative Matters

Contact email address

Should we need to contact you, we will use your official UNSW email address of Zstudentno@student.unsw.edu.au in the first instance. **It is your responsibility to regularly check your university email account.** Please use your UNSW email address and state your student number in all emails to staff and the Student Services Office. **We will not reply to non-UNSW email addresses.**

Your unique (computing) assignment will be emailed to your official UNSW email address in Week 7. Note that redirection (e.g., to your Gmail account) does not always work for emails with attachments sent to a large group so you must check your UNSW email.

Contacting the Student Services Office

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.

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

- School Policies, Forms and Help for Students, go to “Student Services” tab
- Courses, please go to “Undergraduate” > “**Undergraduate courses**” for information on all **course offerings**.
- Latest student news, go to “Student noticeboard”. Notices are posted regularly for your information here.

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

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

- By email to ug.mathsstats@unsw.edu.au
- By phone: 9385 7011.

Course feedback

Constructive comments on course improvement can be emailed to either your lecturer, Course Authority or to the Director of First Year Mathematics and Statistics, Dr Jonathan Kress.

3. Course Information

Units of credit: 6

Pre-requisite(s): There are no formal pre-requisites for this course. The level of mathematics knowledge that is assumed is that you have achieved the equivalent of a mark of at least 60 in HSC Mathematics Advanced, or a minimum level of 70 in HSC Standard Mathematics.

Exclusions for MATH1041: ECON1203, ECON2292.

Timetable for course MATH1041: <https://timetable.unsw.edu.au/2023/MATH1041.html#S1S>

Course Description

This course is for undergraduate students of life and social sciences. It is not intended for students who propose to study a substantial amount of statistics beyond first-year level. Students are assumed to have received a mark of at least 60 in HSC Mathematics Advanced or at least 70 in HSC Mathematics Standard or equivalent.

The course first introduces the concepts on which statistics is built, namely: Descriptive statistics: exploring the data using numerical and graphical summaries; Study designs and sampling; Probability and independence; Discrete distributions: the binomial distribution. Continuous distributions: the normal, t and chi-square distributions. Random variables: calculating the mean and variance. Building on those, the second part of the course presents techniques for making inference about the population from a sample, that is, using confidence intervals and tests of hypotheses: z-test, t-test and Chi-squared test for statistical independence. Linear regression: correlation, residuals, estimation and prediction.

Technology is used throughout the course: Students will use the R software to analyse datasets.

Course Summary

This course will provide the following Science Faculty Graduate Attributes, in decreasing order of emphasis:

1. **Research, inquiry and analytical thinking abilities:** Statistics is an analytic field and statistical analysis plays a key role in the research process, hence there is a major focus on this attribute.
2. **Capability and motivation for intellectual development:** Foundation skills in statistical inference and an understanding of random variables is essential in order to achieve a higher-level understanding in most applied science majors.

3. **Information Technology literacy:** Computers play an important role in modern statistics, hence there will be weekly online computing classes, and the computing skills you develop will be assessed in the computing assignment.
4. **Communication:** Discussions in class and written submissions for assessment will develop your skills in communicating statistical ideas.

Course Aims

The aim of this course is to provide a foundation in statistics to students who will not extend their statistics study beyond this course. The aim of this of this course is to equip students with the tools needed to design a study, to collect, analyse and interpret data, which is fundamental to any form of quantitative research.

Relation to Other Mathematics Courses

This course is primarily aimed at students intending to pursue a major in a field involving quantitative research (hence knowledge of introductory statistics is essential) but for which higher-level mathematics or statistics is not essential. Maths courses MATH1231, MATH1241, or MATH1251 are pre-requisites for many later year mathematics courses, so if you have an interest in pursuing further study in mathematics or statistics, you should consider whether MATH1041 is the right course for you.

It is possible to study higher-level statistics courses after completing MATH1031 and MATH1041, provided that you received a credit grade in MATH1031. However, if you wish to complete a Major in Statistics, you will be better prepared if you study MATH1131 and MATH1231 (or MATH1141 and MATH1241 Higher Mathematics), as most of our Statistics major students do.

Course Learning Outcomes (CLO)

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

- CLO1:** Identify which analysis procedure is appropriate for a given research problem involving one or two variables.
- CLO2:** Apply the principles of study design to real life examples.
- CLO3:** Apply probability theory to practical problems.
- CLO4:** Interpret computer output for a statistical procedure.
- CLO5:** Calculate confidence intervals and conduct hypothesis tests by hand for small datasets.
- CLO6:** Apply statistical techniques appropriately to authentic problems.
- CLO7:** Apply statistical procedures using statistical s.

Teaching Strategies Underpinning the Course

New ideas and skills are introduced and demonstrated in lectures, and then students develop these skills by applying them to specific tasks in tutorials, and assessment tasks. Assessment in this course will use problem-solving tasks of a similar form to those practised in class tutorials and Mobius weekly computing lessons, to encourage the development of the core analytical and computing skills underpinning this course. Hence this course is structured with a strong emphasis on problem-solving tasks in tutorials and in assessments.

4. Learning and Teaching Activities

Lectures, Classroom Tutorials and Labs Schedule

In MATH1041, each week there are

- four hours of *lectures*,
- one hour of *classroom tutorial*: This is a synchronous activity which a student should attend at the time and location indicated in their timetable,
- one *Möbius Weekly Lesson*: This is an asynchronous activity that students complete in their own time each week online on a platform called Möbius,
- *Labs* will run in weeks 1 to 3 only and a student should attend at the time and location indicated in their timetable. These lab sessions will assist you with using the statistical software package RStudio and completing the Möbius Weekly Lessons (MWLs) for weeks 1 to 3 and indeed subsequent MWLs.

Lectures and classroom tutorials run in weeks 1 to 5 and 7 to 10 unless noted otherwise below. Lectures (LEC A) will be hybrid, i.e., in-person and also streamed live online using Echo360. Classroom tutorials will either be in-person, face to face (f2f), i.e., tutor and students in a room on campus OR hybrid, i.e., tutor on campus with both students in the room and online.

The lectures will be recorded, but the classroom tutorials will not necessarily be recorded.

Classes	Mon	Tue	Wed	Thu	Fri
LEC A		4-6pm Weeks 1-5,7-10 Science Theatre			2-4pm Weeks 1-5,7, 9-10 Ainsworth G03
Classroom Tutorials In-person and online	https://timetable.unsw.edu.au/2023/MATH1041.html#S1S				
Labs In Red Centre labs <u>Weeks 1-3 only</u>					

Note: Friday 7 April (Week 8) lecture will be cancelled due to public holiday.

Classroom Tutorials

Students in MATH1041 are enrolled in one weekly classroom tutorial, with in-person or hybrid mode. The classroom tutorials involve group activities where students' contributions are expected. Therefore, students attending online part of a hybrid tutorial should have a working microphone and webcam, as well as a laptop or computer with internet access. A link to the virtual classroom on Blackboard Collaborate will be provided on Moodle.

The exercises for each week's classroom tutorial are available in the MATH1041 Classroom Tutorial Problem Book which can be downloaded from UNSW Moodle. The main reason for having classroom tutorials is to give you a chance to tackle and discuss problems which you find difficult or do not fully understand. Therefore, it is important that you try at least a selection of tutorial problems *before* attending your classroom tutorial, so that you know the questions you would like to ask of your tutor.

Short solutions to selected classroom tutorial exercises are available in the MATH1041 Classroom Tutorial Problem Book. Where there is no solution in this book, you will be given an opportunity to work through the exercise in class and get feedback from your tutor.

Classroom tutorials run in weeks 1 to 5 and 7 to 10. The time of your classroom tutorial can be found on myUNSW. Students can change the timing of their classroom tutorial via myUNSW until the end of week 1. After that time, you can only change your classroom tutorial by contacting the Mathematics and Statistics student services (see page 4) with evidence of a timetable clash or work commitments.

As part of University Policy, attendance each week is compulsory for all classroom tutorials and attendance will be noted (automatically recorded for online students in hybrid classroom tutorials). Please attend the classroom tutorial in which you are enrolled.

If your classroom tutorial falls on a public holiday, it will be cancelled for that week. You can optionally attend another classroom tutorial class for that week only. You can find the times and locations of Classroom tutorials on the central timetable:

<https://timetable.unsw.edu.au/2023/MATH1041.html#S1S>

There is an optional tutorial in the classroom tutorial booklet for Week 11, covering the material of the last chapter. You will need to do this in your own time since there is no classroom tutorial in Week 11. Detailed solutions for that tutorial are provided at the back of the book.

What should you do if you miss your scheduled classroom tutorial one week?

If you are unable to attend your scheduled Classroom Tutorial due to illness or another reason, please join as an online student in a hybrid Classroom Tutorial at another time that week. Your attendance will be automatically noted when you sign into the live online session through Blackboard Collaborate. You do not need to email the lecturer to have your attendance updated as we already collect this information. If you do not attend a live session (i.e., at the time the Classroom Tutorial is being delivered online) then your attendance will not be recorded.

Möbius Weekly Lessons

The Möbius Weekly Lessons (asynchronous) are separate and in addition to your Classroom Tutorials (synchronous). The Möbius Weekly Lessons will be accessed through Möbius using a link provided on Moodle. If you forget to submit your Möbius Weekly Lesson, do not worry, your answers will automatically be submitted for you when the deadline passes.

Your “User login” is your zID (z followed by your UNSW student number) and the “Password” is your zPass. **In Weeks 1 to 3 there is a computer lab booked, as shown in your myUNSW timetable, with a tutor in attendance to help answer questions**, see below.

There will also be an optional, non-marked Möbius Weekly Lesson in Week 11, to help you master the material of the last chapter.

The Möbius Weekly Lessons are an integral part of this course and are to be completed in your own time. We will be using RStudio, which is a graphical interface to the freely available statistical language and data analysis software R.

R can be downloaded and installed at home from: <http://www.r-project.org>.

RStudio can be downloaded and installed at home from (select the free version):
<http://www.rstudio.com/products/rstudio/download/>.

We encourage you to install these free programs in the order indicated above (**note that you need both R and RStudio**) on your own computer.

The Red-Centre Computer Labs may be used for student use but will be used for tests in Maths & Stats subjects so may have limited availability.

Note:

- Your answers submitted for the Möbius Weekly Lessons each week must be your own work, but you are encouraged to discuss the methods required with other students, directly or on the Moodle forum.
- Each version of the Möbius Weekly Lesson will be slightly different.
- Only a limited number of users can have simultaneous access to Möbius, so do NOT leave your work on these Möbius Weekly Lessons to the last day when the server may be busy.
- These Möbius Weekly Lessons were designed to help you keep up with the material so no deadline extensions will be granted. You should attempt these tests with sufficient remaining time before the deadline to allow for unplanned service interruptions.

For information about deadlines and how the Möbius weekly lessons contribute to your final mark, see Möbius Weekly Lessons [\(in the Assessment section\)](#).

Labs: A bit of help to get started with the Möbius Weekly Lessons

There are computer labs scheduled in weeks 1 to 3 in Red Centre labs, as shown in your myUNSW timetable. These labs will run as a “Question & Answer” session to assist you with using the statistical software package RStudio and completing the first three Möbius Weekly Lessons. Note Möbius Weekly Lesson 3 will be due at 3 PM Tuesday Week 4.

There are pre-recorded videos embedded in the Möbius Weekly Lessons for weeks 1 to 3. The Week 1 Lab videos introduce RStudio and explains how to answer some of the questions from the first Möbius Weekly Lesson. The Week 2 Lab videos explain the Week 2 Möbius Weekly Lesson and the Week 3 Lab videos explain the Week 3 Möbius Weekly Lesson.

As you watch the videos note down any questions you have and bring them to your lab.

You are expected to attempt the Möbius Weekly Lesson each week before attending your lab. Note that in week 1 to 3 videos embedded in the lessons on Möbius will give you step-by-step guidance.

You can attend any or multiple lab sessions each week, i.e., not only your scheduled lab.

Moodle

The School of Mathematics and Statistics uses a Learning Management System called Moodle. Login to Moodle to find announcements, general information, lecture slides, classroom tutorials and homework problems and links to the Möbius Weekly Lessons and assessments.

To log into Moodle, use your zID and zPass at the following URL: <http://moodle.telt.unsw.edu.au>

If you are unable to log into Moodle or cannot access MATH1041 once logged in, you should contact the IT Service Centre. Contact information is provided on the Moodle login page.

You should check UNSW Moodle regularly, and especially around the time that assessments are due. (A useful summary of the course assessment schedule is given on page [14](#).)

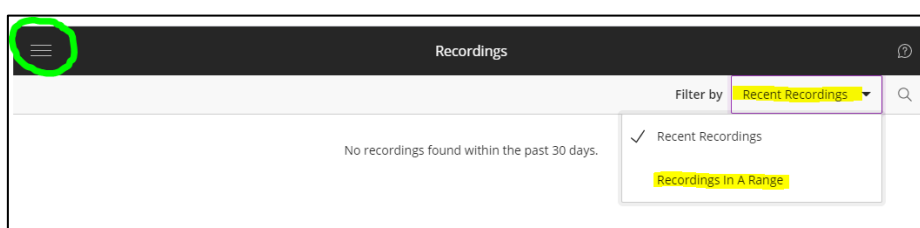
Marks obtained during the term can be seen in the Möbius or Moodle gradebooks as appropriate. These will be transferred to the Moodle gradebook at the end of the term. You should check that the marks recorded are correct and report any discrepancy to the Course Authority.

ECHO360 and Blackboard Collaborate

The hybrid lectures will use ECHO 360 whereas classroom tutorials, labs, staff consultations and Drop-in Centre consultations are accessed using Blackboard Collaborate. The links are provided on Moodle.

The lectures and may be some parts of classroom tutorials are recorded and you can view these recordings from within ECHO 360 and Blackboard Collaborate respectively. By default, the Blackboard Collaborate recordings list only shows recordings for the past 30 days. Old recordings are still available, but you have to choose to see them.

To find the recordings enter Blackboard Collaborate. In the top left of the window, you will see three horizontal lines. Click on this for a menu and then select "Recordings". Once you are on the recordings page, you can choose another date range by clicking on the drop-down menu to the right of the words "Filter by" near the top right corner of the Blackboard Collaborate recordings list. An image showing where to find these menus is below.



Möbius

Möbius Weekly Lessons and other assessments in this course use a system called Möbius. Information on how to access and use Möbius is provided on Moodle.

Firefox or Chrome are the recommended browsers for Möbius. Edge, Safari and Internet Explorer have caused problems in the past. No special consideration will be considered for students using a non-recommended browser, except by prior arrangement.

5. Assessment

Assessment Overview

The assessment structure of MATH1041 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 more advanced skills.

- The Möbius Weekly Lessons allow answers to be checked while working on them, they allow unlimited attempts, they are available for an extended period and students can work together, seek help, and use any resources they wish. Most students gain a perfect score in these.
- The two Lab tests are designed to give students feedback on progress and mastery of the course, under exam conditions and to evaluate progress towards the stated learning outcomes.

- Marks less than 80% on Lab tests should be seen as a warning sign of possible failure in the course.
- The (computing) Assignment is available over a two-week period and students can work on this at home with the benefit of all the course resources.
- The final exam focuses on questions that require understanding rather than routine calculation. A student's pre-exam mark is not a good predictor of the exam mark.
- If your performance in or ability to complete any assessment is affected by illness or other reasons beyond your control, you may be eligible for special consideration. Note that the Course Convenor/Authority and your lecturer cannot grant special consideration. See Section 12. Applications for Special Consideration on page 19 for details.
- To pass MATH1041 you need a mark of 50% or greater overall. There is no requirement to gain any particular mark in any individual assessment items.

The final raw mark for MATH1041 will be made up of the following weightings (see also page 14):

Assessment	Weight	Where	Duration	Due Date	Topics	CLOs*
Möbius Weekly Lessons	10%	Möbius	1 week for each lesson	3 PM on Tuesdays (Weeks 2-5, 7-10)	All topics	1, 2, 3, 4, 5, 7
Lab Test 1	10%	Möbius On-campus	40 minutes	Week 4 EXM timeslot/location on your UNSW Timetable	Chapters 1-3	1, 2, 3
Assignment	20%	Moodle	2 weeks	Week 9 Friday 23:59 PM	Chapters 1-6	1-7
Lab Test 2	10%	Möbius On-campus	40 minutes	Week 10 EXM timeslot/location on your UNSW Timetable	Chapters 4-8	1, 3, 4, 5, 7
Final examination	50%	Möbius On-campus	2 hours (**)	TBA	All topics	1, 2, 3, 4, 5, 7

(*) CLOs stands for Course Learning Outcomes (CLO) (click to read their descriptions)

(**) The final examination is 2 hours and will be on campus, i.e., in-person except for those students who can establish they are remote, i.e., overseas.

Each type of assessment is described below in detail.

Note:

- You will be able to view your final exam timetable on myUNSW. Details of when this timetable will be released is available on the university website.
<https://student.unsw.edu.au/dates-and-timetables>
- 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/conduct>
- In recent years there have been cases where severe penalties have been imposed for misconduct in relation to tests and exams in Maths and Stats 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 website: <https://www.maths.unsw.edu.au/currentstudents/assessment-policies>
- All assessment tasks will evaluate your progress towards the learning outcomes outlined on page 6. In assessments, we look for a demonstrated understanding of key concepts and analysis procedures. We will award marks on the basis of correctness of final responses, correctness of working used to derive the final answer, and the logic of the setting out of the response. In the case of written responses (as opposed to symbolic, numerical or graphical responses), we are just as interested in your *reasoning* as we are in your final answer.
- For information on how the School implements special consideration policies for assessments during the term and the final examination, refer to the School's website: <https://www.maths.unsw.edu.au/currentstudents/special-consideration-illness-misadventure>

Möbius Weekly Lessons

Rationale: Möbius weekly lessons are designed to give immediate in-session feedback to students on their progress and mastery of the material. These Möbius Weekly Lessons are submitted using the Möbius system, which can be accessed via Moodle.

Because these Möbius Weekly Lessons are meant to be formative, there are labs in weeks 1, 2 and 3 to help you with the first three lessons. Please attend the labs in those weeks to become familiar with RStudio. You need to watch the pre-recorded lab videos embedded in the questions before attending.

Weight: see [Assessment Overview](#)

Due date: see Schedule of All Assessments

Lab Tests

Rationale: The two lab tests will both be held under exam conditions respectively in week 4 and week 10. They are designed to give students feedback on progress and mastery of the corresponding parts of the course, and to evaluate progress towards the stated learning outcomes.

For in-person campus lab tests you will have access to lecture notes on the computer. For remote offshore students you will be able to use your own notes. Further details will be on Moodle.

All the possible test problems will be provided prior to the Lab tests on Möbius. There you will also find a practice test with the same format as the Möbius Weekly Lessons. You are allowed an unlimited number of attempts at the practice tests.

You are expected to have worked out exactly how to answer the questions before you attend the Lab tests because you are allowed unlimited practice of the actual test questions, and you can view your practice test results for these tests in the Möbius gradebook.

Weight: see [Assessment Overview](#)

Lab Test dates, see Schedule of All Assessments: Lab Test 1 (respectively Lab Test 2) will be conducted at your EXM time/location in your UNSW timetable in Week 4 (respectively Week 10). For The location of the tests is in a campus computer lab and it will be supervised. For offshore students

they should have enrolled in an online EXM timeslot, and these students will be supervised remotely. Students will typically have 40 mins to complete their test once they begin. **Students will only get one attempt at the lab tests test during this period.**

Assignment

Rationale: The rationale for assignments is to give students feedback on their progress and mastery of the material, and to obtain measures of student progress towards the stated learning outcomes. Assessments using take-home assignments, rather than under exam conditions, offer the opportunity to assess more challenging questions and gives you the opportunity to think more deeply about your responses. It also enables the assessment of computer-aided data analysis and problem solving.

The assignment will be emailed to a student' s UNSW account on Friday of Week 7. Students will have 2 weeks to complete their assignment. The details of how the assignment is to be submitted will be made available on Moodle.

Late submissions attract a 5% penalty per day (5% of the maximal mark) up to 5 days late and later submissions are not accepted.

Weight: see [Assessment Overview](#)

Due date, see Schedule of All Assessments

End of Term Final Examination

Rationale: The final examination will assess student mastery of the material covered in classes.

The exam will be on Möbius and be a 2-hour exam. The exam is weighted 50% of your final mark, see [Assessment Overview](#)

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.

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 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.

Note:

- You will be able to view your final exam timetable once Exams Central has finalised the timetable. Please visit the web page: <https://student.unsw.edu.au/exams> for details.
- 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>

Schedule of All Assessments

Week	Assignment/lab tests	Weekly Möbius Lessons Due at 3 PM (*)
1		Start work on your first Möbius Weekly Lesson
2		Week 1 Möbius Weekly Lesson due Tuesday
3		Week 2 Möbius Weekly Lesson due Tuesday
4	MATH1041 Lab Test 1 (EXM timeslot/location on your UNSW Timetable)	Week 3 Möbius Weekly Lesson due Tuesday
5		Week 4 Möbius Weekly Lesson due Tuesday
6	Flexibility Week	
7		Week 5 Möbius Weekly Lesson due Tuesday
8		Week 7 Möbius Weekly Lesson due Tuesday
9	Assignment due Friday 23:59 PM (submit through Turnitin on Moodle)	Week 8 Möbius Weekly Lesson due Tuesday
10	MATH1041 Lab Test 2 (EXM timeslot/location on your UNSW Timetable)	Week 9 Möbius Weekly Lesson due Tuesday Week 10 Möbius Weekly Lesson due Sunday(**)
11	Monday to Thursday: Study break Friday: Start of exams – Check myUNSW for exam timetable	

* Note this deadline of the Möbius Weekly Lessons will remain the same even when it falls on a public holiday.

** The last Möbius Weekly Lesson will remain available until Week 11 Tuesday 3 PM.

7. Course Schedule, Evaluation and Development

Course Evaluation and Development

The School of Mathematics and Statistics evaluates each course each time it is offered. We carefully consider your responses and their applications for course development.

Course Content

Four general topics are covered in MATH1041:

Study Design: some key ideas to consider when collecting data.

Descriptive Statistics: useful tools for graphically and numerically summarising data.

Probability Theory: an introduction to probability and random variables. Many of the ideas developed in probability theory depend on an appropriate study design.

Statistical Inference: how to make general statements (*inferences* about populations) based on just a sample of data. You will learn a set of powerful and important inferential tools for quantitative research, particularly the life and social sciences, which will come in handy later in your degree and probably when you enter the workforce.

These topics are closely intertwined. You need a sound knowledge of key Probability Theory concepts (Weeks 3-4) in order to gain a deep understanding of Statistical Inference (Weeks 5, 7-10).

Statistical Inference involves some quite subtle concepts, and it often takes people a while to understand the core ideas. Hence, five weeks of the course are devoted to inference, to give you as much time as possible to master these subtle but important concepts. The following table shows the order in which the course material is covered and approximately which week we will begin each topic. Note that sometimes a topic may take more or less than one week, so some variations from this schedule are inevitable.

Approximate Schedule of Topics

Week	Lecture topic
1	Study Design: Design of experiments
2	Descriptive Statistics: Graphical and numerical summaries (revision) Scatterplots and correlation Least-squares regression
3	Probability Theory: Probability (revision) Independence and conditional probability Discrete random variable Means and variances of random variables Binomial Distribution
4	Continuous random variables: Density curves The Normal distribution Simulations
5	Statistical Inference: Point estimation and simple random samples Confidence intervals and the t -distribution
7	Hypothesis testing: The Central Limit Theorem and Applications to inference
8	Inference about a population proportion
9	Inference for two population parameters Two-independent samples t-test paired t-test Inference for two-way tables
10	Inference for linear regression

8. 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 website.

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 website starting at:

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

Examples of Plagiarism 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 of work contributed to a group assessment item that is greater than what you actually contributed to.
- 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 to 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.

Useful resources are available at <https://www.student.unsw.edu.au/plagiarism>.

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.

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>

10. Readings and Resources

Textbook

It is recommended but not compulsory that you purchase the following textbook:

Introduction to the Practice of Statistics, by David S. Moore, George P. McCabe, and Bruce A. Craig, 9th Edition, (2017), W.H. Freeman and Co., New York.

Not only will this textbook be useful for this course, but it will be a handy book to have available on your shelf in later years!

MATH1041 is closely based on the above Moore *et al.* text, and students may want to refer to it. It can be purchased from the UNSW bookshop or used in the library in Special Reserve. Most tutorial exercises come from this text.

11. Getting help outside tutorials

Staff Consultations

From week 2 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 and linked to the folder in Moodle called "Help is available!" It is also provided in the link below. Your lecturers will have their consultation times announced on this roster.

<https://www.unsw.edu.au/science/our-schools/mathematics/student-life-resources/student-services/consultation-mathematics-staff>

Mathematics Drop-in Centre

The Maths drop-in centre provides free one-on-one help to students with certain first- and second-year mathematics courses. All first-year MATH courses are supported but only selected tutors provide help with MATH1041. In Term 1 2023, the drop-in centre will operate in-person and online sessions. See Moodle for details.

The Maths drop-in centre is open daily. Its schedule will be available on the School's webpage and 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.

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

Lab Consultants

For help with the R computing component of MATH1041, consultants will be available online as part of the Drop-in Centre or in the Red Centre lab RC-G012B when permitted.

For more details, visit website:

<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>

12. Applications for Special Consideration

If you are unable to complete an assessment on time or during the prescribed period due to illness or other reason beyond your control, you can apply for special consideration.

For all information on Special Consideration, including the circumstances that are covered or excluded and how to apply, see the Special Consideration web site:

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

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

The central team will advise you, by email to your UNSW student email, of the outcome of your application and the date of any supplementary assessment or extension as appropriate. 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.