



# Course Outline

**MATH1041**

**Statistics for Life and Social Sciences**

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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 couCLO7

## 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	<a href="https://timetable.unsw.edu.au/2023/MATH1041.html#S1S">https://timetable.unsw.edu.au/2023/MATH1041.html#S1S</a>				
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 work and students 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.

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.

**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.





**ECHO360**

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



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.** VW\* nBTBT/F3 10 Tf1 0 0 1 3nBT/F3 10 Tf8(s)-24(e)6(. 65 842 )11(r)-10(in)-10(g)11( )-146(t)-16(h)11(

## 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 <b>Friday 23:59 PM</b> (submit through Turnitin on Moodle)	

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

**Probability Theory:** an introduction to probability and random variables. Many of the ideas developed

## 8. Expectations of Students

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### **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





<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**

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## **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, 9<sup>th</sup> 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

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### 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

times announced on this roster.

<https://www.unsw.edu.au/science/our-schools/maths/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/maths/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/maths/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

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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.

