THE UNIVERSITY OF SYDNEY
Summer School, 2019

Information Sheet for **MATH1115 Interrogating Data**

Websites: It is important that you check both the Summer School website and the MATH1115 webpage regularly.

Summer School webpage: `http://www.maths.usyd.edu.au/u/UG/SS`

MATH1115 webpage: `http://www.maths.usyd.edu.au/u/UG/SS/SS1115`

Both sites may be accessed through the Learning Management System (Canvas).

MATH1115 Canvas site: `https://canvas.sydney.edu.au/courses/12586`

On the MATH1115 Canvas site you will find online resources and other useful links. Announcements regarding assessment tasks will be made on Canvas at various times throughout the semester.

Ed discussion forum: Please post any questions about MATH1115 content on the Ed discussion forum so that other students may either answer your question or benefit from seeing the answer.

`https://edstem.org`

Teaching days: There are only lab classes and no lectures for MATH1115. All lab classes will be held at 13:00–5:00 in Carslaw 705–706. The dates of the 10 lab classes are:

- Tuesday, 8th January (Week 1)
- Monday, 14th January (Week 2)
- Tuesday, 15th January (Week 2)
- Wednesday, 16th January (Week 2)
- Monday, 21st January (Week 3)
- Tuesday, 22nd January (Week 3)
- Tuesday, 29th January (Week 4)
- Wednesday, 30th January (Week 4)
- Monday, 4th February (Week 5)
- Tuesday, 5th February (Week 5)

Style of Learning: MATH1115 is designed as a "catch-up" course, so that students who have only completed MATH1005/1015 (3cp) can transition to the data science major. DATA1001 (6cp) = MATH1005/1015 (3cp) + MATH1115 (3cp). Hence MATH1115 is based on a flipped learning model. This means that your main learning will occur in the 2 hour labs, supplemented by a series of Readings taken from DATA1001. You can also watch the associated lecturers from DATA1001. To prepare for each lab, you will need to read the set reading, and then complete the assessable Lecture Quiz (LQuiz).

Labs: Labs start on the first teaching day. You should attend the lab given on your personal timetable. Attendance at labs will be recorded. Attendance does not count directly towards your mark, but allows tutors to monitor your progress and is taken into account with requests for special consideration. Labs use the computer software R.

Lab exercise sheets: The lab sheets will be available on the MATH1115 Canvas site.

Readings/Lectures: A series of readings is available on the MATH1115 Canvas site. The readings with the associated LQuiz should be completed before each lab class.

Consultation times: Consultation times and locations will be posted on the MATH1115 webpage.

Textbook: *Statistics* (4th Edition) – Freedman, Pisani, and Purves (2007). All students should have access to the text book, which is available in 3 forms: 1) E-text $65 (www.wileydirect.com.au/buy/statistics-4th-international-student-edition/), 2) hard copy (Co-op Bookshop), and 3) the Library.

Assessment: Your final raw mark for this unit of study will be calculated as follows:

5%:	LQuizzes (best 7 out of 8 quizzes)
10%:	Project 1
20%:	Project 2
65%:	Practical Exam at end of Summer School

Final grades are returned within one of the following bands:

> **High Distinction (HD), 85–100:** representing complete or close to complete mastery of the material; **Distinction (D), 75–84:** representing excellence, but substantially less than complete mastery; **Credit (CR), 65–74:** representing a creditable performance that goes beyond routine knowledge and understanding, but less than excellence; **Pass (P), 50–64:** representing at least routine knowledge and understanding over a spectrum of topics and important ideas and concepts in the course.

A student with a passing or higher grade should be well prepared to undertake further studies in mathematics which are dependent on this unit of study. A student achieving a distinction or higher grade should consider enrolling in advanced units in second semester.

Examination: There is one practical examination with 10 minutes of reading time and 90 minutes of computing and writing time. It will be held at 1:50pm on Monday 18 February in a room TBA. Further information about the exam will be made available at a later date on the website.

LQuizzes: The LQuizzes are designed to help you interact with the readings, in preparation for each lab.
- The LQuizzes will be held on the MATH1115 Canvas site. Each LQuiz consist of 5 randomised questions. The best 7 of your 8 LQuizzes will count, making each worth 5/7%. You cannot apply for special consideration for the LQuizzes. The better mark principle will apply for the total 5% - i.e. if your overall exam mark is higher, then your 5% for LQuizzes will come from your exam.
- Work through the relevant reading and then make up to 2 attempts at the LQuiz. The LQuizzes for each week should be completed before coming to each lab class, however the deadline for completion for all LQuizzes is **11:59 pm Tuesday 5 February**. We recommend that you follow the due dates outlined on the Unit Schedule in Canvas to gain the most benefit from these quizzes.

Projects: The projects are designed to develop your statistical literacy and computational ability.
- They must be submitted electronically **as an HTML file** in Turnitin (an internet-based plagiarism-prevention service), via the MATH1115 Canvas site by the deadline. It is your responsibility to check that your assignment has been submitted correctly, otherwise it will not be marked.
- The better mark principle does not apply to the projects as they assess different learning outcomes to the final exam.

Late penalties: All projects must be submitted by the due date. Students are expected to manage their time and to prioritise tasks to meet deadlines. Assessment items submitted after the due date without an approved extension using a special consideration or special arrangement form or request will incur penalties.
If you encounter a problem submitting your work on time, you may be able to arrange a simple extension. A simple extension is an informal arrangement between you and your unit of study coordinator. You may be able to receive an extension of up to two working days for non-examination tasks, as outlined in clause 66A of the Coursework Policy 2014. If you need an extension for a longer period, you may be eligible to apply for special consideration. `sydney.edu.au/students/simple-extensions`

Special consideration: A special consideration application can be made for short-term circumstances beyond your control, such as illness, injury or misadventure, which affect your preparation or performance in an assessment. `sydney.edu.au/special-consideration-and-arrangements`.

Assessment and feedback schedule:

Task	Available	Deadline/date	Latest extension*	Feedback
LQuizzes	Tue 8 Jan	11:59pm Tue 5 Feb	On submission	
Project1 Presentation	Mon 14 Jan	11:59 pm Mon 21 Jan	11:59 pm Mon 28 Jan	Fri 1 Feb
Project1 Interrogation	Mon 14 Jan	11:59 pm Wed 23 Jan	11:59 pm Wed 30 Jan	Fri 1 Feb
Project2 Presentation	Tue 29 Jan	11:59 pm Tue 5 Feb	11:59 pm Tue 12 Feb	Mon 11 Feb
Project2 Interrogation	Tue 29 Jan	11:59 pm Fri 8 Feb	11:59 pm Fri 15 Feb	Fri 15 Feb

* Extensions for assignments are only possible for students registered with Disability Services or applying for Special Consideration or Special Arrangements.

Any questions? Before you contact us with any enquiry, please check the FAQ page:

`http://www.maths.usyd.edu.au/u/UG/JM/FAQ.html`.

Where to go for help: For administrative matters, go to the *Student Services Office, Carslaw 520*. For help with mathematics, see your lecturer, your tutor, a duty tutor, or use the Ed discussion forum (`https://edstem.org`). Lecturers guarantee to be available during their indicated office hours, but may be available at other times as well. If you are having difficulties with mathematics due to insufficient background, you may seek help from the *Mathematics Learning Centre*. You may also email questions about the subject to `MATH1115@sydney.edu.au`. Ensure that any emails that you send to this address contain your name and SID, because anonymous emails will be ignored.

Graduate qualities: The graduate qualities are the qualities and skills that all University of Sydney graduates must demonstrate on successful completion of an award course. As a future Sydney graduate, the set of qualities have been designed to equip you for the contemporary world. For more information go to `sydney.edu.au/students/graduate-qualities`.

GQ1 Depth of disciplinary expertise

GQ2 Critical thinking and problem solving

GQ3 Communication (oral and written)

GQ4 Information & digital literacy

GQ5 Inventiveness

GQ6 Cultural competence

GQ7 Interdisciplinary effectiveness

GQ8 Integrated professional, ethical and personal identity

GQ9 Influence

Overall: MATH1115 will develop your ability to problem solve with data, using statistical thinking and computational skills. You will also develop the essential soft skills of curiosity, communication and collaboration.

Learning Outcomes: You will learn to:
1. Interrogate data in a team and communicate findings to diverse audiences through reproducible written and oral reports.
2. Explain the complexities of data wrangling.
3. Produce, interpret and compare graphical and numerical summaries, using ggplot.
4. Examine the relationships between variables using correlation and visualisation, and justify whether regression is an appropriate model for the data.
5. Given real multivariate data and a problem, formulate an appropriate hypothesis and perform a range of hypothesis tests.
6. Investigate a real data story by researching associated literature, both in media and research journals.

Teaching day outline:

Week	**Readings (Lectures)**	**Labs**
Module 1: Exploring Data		
1	Review R	Lab1
2	ggplot1	Lab2
2	Data Wranging	Lab3
4	ggplot2	Lab4
5	**Project 1 Presentation**	
Module 2: Modelling Data and Decisions with Data		
6	Linear Models	Lab 5
7	Regression Tests and Non-Linear Models	Lab 6
8	Hypothesis Tests	Lab 7
Module 3: Sampling Data		
9	Binomial Tests	Lab 8
10	**Project 2 Presentation**	

ADDITIONAL INFORMATION

Attendance: Unless otherwise indicated, students are expected to attend a minimum of 80% of timetabled activities for a unit of study, unless granted exemption by the Associate Dean.
For some units of study the minimum attendance requirement, as specified in the relevant table of units or the unit of study outline, may be greater than 80%.
The Associate Dean may determine that a student has failed a unit of study because of inadequate attendance.
Further details are available from the Science Undergraduate Handbook 2018: `http://sydney.edu.au/handbooks/science/coursework/faculty_resolutions.shtml` and the Science Postgraduate Handbook 2018: `http://sydney.edu.au/handbooks/science_PG`.

Online components: This unit of study requires regular use of the University's Learning Management System (LMS), Canvas. Internet access is required to use the LMS.

Assessment submission: Assessment tasks must be submitted by the due date. Submission will be online through the LMS unless instructed otherwise.

Compliance statement: All students must submit a signed statement of compliance with each piece of work submitted to the University for assessment, presentation or publication. A statement of compliance certifies that no part of the work constitutes a breach of the Academic Honesty in Coursework Policy 2015: `https://sydney.edu.au/policies/showdoc.aspx?recnum=PDOC2012/254&RendNum=0`.
This will be completed as part of the Turnitin assignment submission.

Educational integrity: While the University is aware that the vast majority of students and staff act ethically and honestly, it is opposed to and will not tolerate academic dishonesty or plagiarism and will treat all allegations of dishonesty seriously.
All written assignments submitted in this unit of study will be submitted to the similarity detecting software program known as Turnitin. Turnitin searches for matches between text in your written assessment task and text sourced from the Internet, published works and assignments that have previously been submitted to Turnitin. If such matches indicate evidence of plagiarism to your teacher, they are required to report your work for further investigation.
Plagiarism is defined as presenting another persons work as ones own by presenting, copying or reproducing it without appropriate acknowledgement of the source.
Plagiarism includes presenting work for assessment, publication, or otherwise, that includes:

a. phrases, clauses, sentences, paragraphs or longer extracts from published or unpublished work (including from the internet) without appropriate acknowledgement of the source; or

b. the work of another person, without appropriate acknowledgement of the source and in a way that exceeds the boundaries of legitimate co-operation.

Further information on academic honesty and the resources available to all students can be found on the Academic Integrity page of the current students website: `sydney.edu.au/educational-integrity`.

Academic Honesty Education Module (AHEM): All students commencing their study at the University of Sydney are required to complete the Academic Honesty Education Module. You will find the AHEM in your Learning Management System.

Special consideration: In the event of serious illness or misadventure which affects your preparation or performance in an assessment task, you may be eligible for Special Consideration. Further information is available at: `https://sydney.edu.au/students/special-consideration-and-arrangements.html`.
You should *not* submit an application for Special Consideration or Special Arrangements for this unit of study

- if you are absent from a tutorial and there is no assessment associated with the missed tutorial, or
- if you miss a quiz, since the better mark principle applies.

The assessment category for the assignments is "Submitted Work".

Student feedback: The Unit of Study Survey. At the completion of each Unit of Study, students are asked via email to complete an online survey to provide feedback on their experiences in that Unit of Study. This feedback is invaluable when reviewing curriculum design and implementation styles.

University Work Health and Safety Policy: We are governed by the Work Health and Safety Act 2011, Work Health and Safety Regulation 2011 and Codes of Practice. Penalties for non-compliance have increased. Everyone has a responsibility for health and safety at work. The University's Work Health and Safety policy explains the responsibilities and expectations of workers and others, and the procedures for managing WHS risks associated with University activities.
General Laboratory Safety Rules

- No eating or drinking is allowed in any laboratory under any circumstances
- A laboratory coat and closed-toe shoes are mandatory
- Follow safety instructions in your manual and posted in laboratories
- In case of fire, follow instructions posted outside the laboratory door
- First aid kits, eye wash and fire extinguishers are located in or immediately outside each laboratory

As a precautionary measure, it is recommended that you have a current tetanus immunisation. This can be obtained from University Health Service (`http://www.unihealth.usyd.edu.au/`).
For more details please refer to Emergencies and safety on campus: `https://sydney.edu.au/students/emergencies-and-safety-on-campus.html`

Student support services:
A guide for new students:
`https://sydney.edu.au/students/browse.html?category=new-students&topic=getting-started`
Counselling and mental health support:
`https://sydney.edu.au/students/counselling-and-mental-health-support.html`
Disability Support:
`https://sydney.edu.au/students/disability-support.html`
International Student Support:
`https://sydney.edu.au/students/support-for-international-students.html`
Learning Services / Study Skills Support:
`https://sydney.edu.au/students/learning-services.html`
Student IT and online learning:
`https://sydney.edu.au/students/browse.html?category=student-it-and-online-learning&topic=online-learning`
Academic Writing:
`https://sydney.edu.au/students/writing.html`