MXN501 Unit Information Guide

Semester 2 2022

The information contained in this guide supplements the information contained in the Unit Outline. This guide is maintained and updated on the MXN501 Blackboard page.

Academic Staff

Lecturer and Unit Coordinator

Dr Aiden Price
email: a11.price@qut.edu.au

Tutor

Ms Lily Zhang
email: baihe.zhang@hdr.qut.edu.au

Consultation

While there is no official consultation time for MXN501, you are welcome to make a time to meet with Aiden. Aiden and Lily are also happy to answer any questions have have via email or via Slack.

Lectures and Workshops

This information is subject to change based on government restrictions and university policy.

MXN501 consists of four contact hours per week. You are expected to attend one lecture (two hours) and one workshop (two hours) per week. All lectures will be recorded. These will be made available for you to watch via the MXN501 Blackboard site.

Lectures

During the lectures, we will explore a variety of probability and stochastic modelling concepts.

Lectures will be held from 9-11am on Tuesdays in GP-B121 and via Zoom (password: 017243).

Workshops

In the workshops, we will work individually and in groups to solve problems.

There are two workshop sessions each week:

- 12-2pm on Tuesdays via Zoom (password: 589489).
- 11am-1pm on Wednesdays in GP-P413.

Workshops will commence in week 1.

Course Content

This unit introduces probability and shows you how to apply its concepts to solve practical problems. The unit will lay the foundations for further studies in probability, statistics and other areas of mathematics and help you to develop your problem-solving and modelling skills. The topics covered include: basic probability rules, conditional probability and independence, discrete and continuous random variables, bivariate distributions,

Markov chains and Poisson processes. This unit is appropriate for those requiring an introduction to, or a refresher in, probability. The concepts in this unit will be extended in MXN601.

A general content outline is provided in the table below.

Week	Topic	Notes
0	**O-Week (No Lecture)**	Diagnostic Quiz (0%)
1	Introduction to Probability	
2	Conditional Probability	
3	Law of Total Probability & Bayes' Theorem	PST 1 Released
4	Combinatorics	
5	Random Variables and Distributions	PST 1 Due (10%)
6	Special Discrete Distributions	
7	Special Continuous Distributions	PST 2 Released
8	Bivariate Distributions	
9	Vectors and Matrices	PST 2 Due (10%) & GA Released
10	Markov Chains	
	Mid-semester break	
11	Simple Random Walks	
12	Poisson Processes	GA Due (20%)
13	Revision	
	Exam Block	Final Exam (60%)

Resources for the lectures and workshops will be provided under the Learning Resources section of Blackboard.

Assessment

The assessment for the unit consists of quizzes, problem solving tasks (PSTs), and a final exam.

An approximate due-date timeline is provided in the table above, along with the weighting of each task. Each item will be due on Sunday night of the listed week at 11.59pm.

Quizzes (0%)

The first quiz you take will be a diagnostic quiz. This will not contribute to your final grade, however it will allow me to tailor your learning throughout the semester. Additionally, this will give you an idea of how the online quizzes work, without impacting your grade. This quiz will be available via Blackboard. Weekly online quizzes will be held throughout the semester, providing frequent formative feedback. These quizzes will be made available via the Learning Resources section on Blackboard.

Problem Solving Tasks (20%)

Two problem solving tasks (PSTs) will be assessed throughout the semester. Each PST contributes 10% to your final grade. You will receive roughly three weeks to complete each PST.

PSTs are to be submitted via Blackboard. Note that these PSTs are **individual**. Any academic misconduct will be addressed according to QUT's Manual of Policies and Procedures.

Your solution must be your own. You are not permitted to copy, summarise, or paraphrase the work of others in your solution.

Group Assignment (20%)

There will be one group assignment in the semester, worth 20% of your final grade. You will receive roughly four in-semester weeks to complete the group assignment.

Groups must contain 3-4 students. Anyone who does not form their own group will be randomly assigned. This will be discussed more during the lectures.

The group assignment is to be submitted via Blackboard. The group assignment must be submitted by a single member of the group.

Your solution must be your own. You are not permitted to copy, summarise, or paraphrase the work of others in your solution.

Final Exam (60%)

Note: This information is subject to change based on government restrictions and university level decisions.

The Final Exam will be held during the formal examination period (check the examination timetable when it's released) and is worth 60%. The exam will be three hours long with ten minutes for perusal. You may bring one double-sided A4 resource sheet and any calculator.

This examination will consist of questions relating to material taught throughout the semester. Further details will be given in Week 13, when we'll also look through some examples.

Your solution must be your own. You are not permitted to copy, summarise, or paraphrase the work of others in your solution.

Special Consideration and Late Assignments

Any requests for extensions need to be submitted before the assignment is due. If you can't apply by this date due to circumstances beyond your control, contact HiQ to discuss your options. You need to provide supporting documentation to verify your special circumstances claim and to show how the circumstances impact your ability to submit the assignment by the due date.

If you submit an assessment item after the due date without an approved extension (or after the extended date where an extension has been granted) your work will not be marked and will be awarded a grade of 1, or 0%.

If special circumstances prevent you from meeting the assessment due date, you can apply for an extension (see above). If you don't have an approved extension you should submit the work you have completed by the due date and it will be marked against the assessment criteria.

For further information on special consideration, see
www.student.qut.edu.au/learning-and-assessment/exams/special-consideration/

STIMulate

STIMulate is a support structure for all first year mathematics students (as well as science and IT). They offer fantastic support through a variety of avenues, and will be very helpful for anyone needing extra assistance with MXN501.

You can visit the STIMulate V Block, level 2, at any time, for one-on-one help with the Peer Learning Facilitators (PLFs), who are all current QUT students. You can also use STIMulate to meet other mathematics and science students, read some textbooks, etc.

You may ask the lovely people at STIMulate anything you like, with the exception of assessment questions. Your best bet is to ask about other questions from the relevant workshop that are similar, they will gladly help.

For more information, timetables, etc, visit the STIMulate Blackboard site and Facebook page.
www.tinyurl.com/Stimulate-Bb
www.facebook.com/STIMulateQut

Textbook

There are no required textbooks for MXN501. All required materials will be available via Blackboard.

The following books are recommended as references during the semester. You do not need to purchase these book, as it is available at no charge to students as an eBook through the QUT Library:

- **Probability for Dummies (Rumsey, Deborah J.)**. This book is a great introduction to the first half of the unit. It doesn't have a lot of worked problems, but should explain things in a reasonable intuitive way.
- **Understanding Probability (Henk Tijms)**. This book is meatier than *Probability for Dummies*, and gives a lot of the theory and examples for the unit.

All computation will be performed with the R software inside the RStudio integrated development environment. Both of these pieces of software are required for performing analyses, are available in QUT's SEF computer labs and are available online at no charge for students to install on to their personal computers

Student Evaluations

Throughout the semester, you will receive a number of formal surveys from QUT (via your student email) about MXN501 and the MXN501 teaching team. Please keep an eye out for these surveys. Your feedback is very valuable and helps us improve the unit.

It is expected that some (informal) surveying of students will be carried out by us in order to make any necessary changes to benefit current students of this unit. In addition, you are encouraged to contact us at any time throughout the semester to provide feedback on any aspect of the unit.

Academic Integrity

QUT takes the issue of academic integrity seriously and has a comprehensive set of guidelines on how cases of academic misconduct are to be handled. Academic misconduct, the breaching of academic integrity, may be viewed as involving plagiarism, cheating, fabricating or falsifying data or inappropriate collaboration and collusion.

Examples of academic misconduct include (but are not limited to):

- Using a student's assessment response from a previous year.
- Sharing a copy of your work with a friend.
- Posting an assessment question/task online.
- Copying the work of another student.
- Paying someone to do the assessment/task for you.
- Copying working for an assessment/task from a friend/website/book.

If you are suspected of academic misconduct, your grade for the semester will be withheld until the case can be heard by QUT's academic misconduct committee.

To assist you in understanding what is meant by academic integrity, QUT provides a link on every Blackboard page, under the Unit Details page.