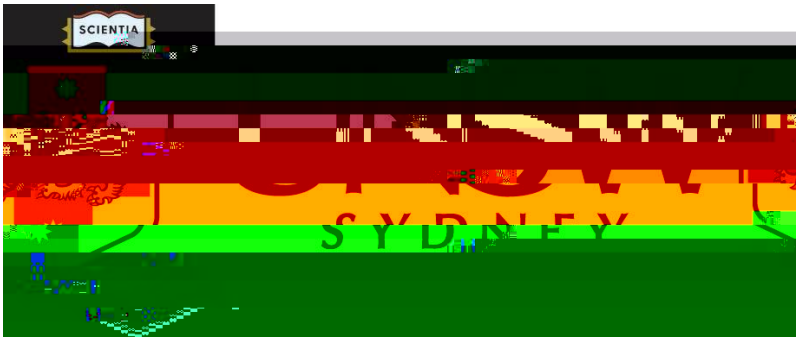

Course Outline

MATH1081 Discrete Mathematics

School of Mathematics and Statistics

Faculty of Science

Term 3, 2022

Contents

3.Course information

Units of credit: 6

Assumed knowledge: The assumed knowledge for this course is equivalent of a combined mark of at least 100 in the HSC Mathematics and HSC Mathematics Extension 1.

Co-requisite: The formal co-requisite is MATH1131 or MATH1141 or MATH1151. (You must either be taking one of these courses at the same time or have passed one already.)

Teaching times and locations: see the link on the Handbook web page:

Timetable for course MATH1081: https://timetable.unsw.edu.au/2022/MATH1081.html#S3S

Offered in: Terms 1, 2 & 3

The subject matter of this course is very different from “high school mathematics” and success at high school is no guarantee of success in Discrete Mathematics. In MATH1081 emphasis is placed on reasoned argument and clarity of exposition as well as algebraic and computational skills.

Course summary

The MATH1081 course will enhance your research, inquiry, and analytical thinking abilities as it will provide you with the mathematical language and mathematical techniques to unravel many seemingly unrelated problems. The theory covered will provide good foundation for understanding many problems that arise in all science disciplines, particularly computer science. The mathematical problem-solving skills that you will develop are generic problem-solving skills, based on logical arguments and mathematical language that can be applied in multidisciplinary work. The course will engage you in independent and reflective learning through your independent mastery of a wide range of tutorial problems. You will be encouraged to develop your communication skills through active participation in tutorials, critical analysis of the work of others, and presenting clear, logical arguments when solving problems.

Course aims

The course aims to provide students with foundational knowledge of Discrete Mathematics, broken into five main topics: set theory, number theory, proofs and logic, combinatorics, and graph theory. Students who successfully complete this course will have developed important problem-solving skills and improved their mathematical thinking and communication skills.

Course learning outcomes (CLO)

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

1. State definitions and theorems in the syllabus and apply them to specific examples.
2. Apply the concepts and techniques of the syllabus to solve appropriate problems.
3. Communicate mathematical ideas effectively using correct terminology.
4. Use technology as an aid to communicate mathematical ideas.
5. Recognise and create valid mathematical arguments.

UNSW Moodle

The School of Mathematics and Statistics uses the Learning Management System called Moodle. To log into Moodle, use your zID and zPass at the following URL:

http://moodle.telt.unsw.edu.au

Here you will find announcements, general information, notes, lecture slide, classroom tutorial and homework problems and links to Numbas lessons and assessments.

5.Assessment

Assessment overview

In Term 3 2022, all assessments apart from the end of term exam will be online.

The final mark will be made up as follows:

Assessment task	**Weight**	**CLOs**
Numbas exercises Weekly lessons: 10% for combined best 6 of 9 scores Lab test 1: 10% Lab test 2: 15%	35%	1,2,5
Assignment	15%	1,2,3,4,5
End of term examination	50%	1,2,3,5

Weekly Numbas Lessons

Each week there will be a Numbas Lesson to complete on Moodle. These lessons

Schedule of all assessments

Lectures and tutorials run during Weeks 1 to 5 and 7 to 10. The table below gives the schedule of all assessments.

Week	Assignment/lab tests	Weekly Numbas Lessons
1		Start work on your first Weekly Numbas Lesson
2		Week 1 Numbas Lesson due Monday 5pm
3		Week 2 Numbas Lesson due Monday 5pm
4	Lab Test 1 (EXM class in timetable)	Week 3 Numbas Lesson due Monday 5pm
5	Assignment draft due Friday 5pm	Week 4 Numbas Lesson due Monday 5pm
6		

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) 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.

Detection of academic misconduct

The School of Mathematics and Statistics uses a variety of means to detect and investigate potential academic misconduct in assessments, including the use of data from University systems and websites.

8.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 at the end of week 1 and can be located by visiting web page:

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 help to students with certain first and second year mathematics courses. All first year MATH courses are supported. The Maths Drop-in Centre operates online via Moodle. Some limited in-person sessions may also be arranged. For opening times, week the Drop-in Centre Moodle page.

The Maths Drop-in Centre schedule will be available on the Schools website and Moodle page below by the start 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

Additional support for students

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

Their web site is: https://student.unsw.edu.au/els/services

Equitable Learning Services (ELS) may determine that your condition requires special arrangements for

10. Syllabus

References are to the textbook by Epp, unless marked otherwise. F indicates the textbook by Franklin and Daoud and R indicates the book *Discrete Mathematics with Applications* by K.H. Rosen (6th edition). The UNSW Library has multiple copies of Rosen numbered P510/482A,B,C, etc.

The references shown in the righthand column are *not* intended to be a definition of what you will be expected to know. They are just intended as a guide to finding relevant material. Some parts of the course are not covered in the textbooks and some parts of the tex