



**NANYANG
TECHNOLOGICAL
UNIVERSITY**
SINGAPORE

Discrete Mathematics

MH1812

Introduction

Welcome to Discrete Mathematics

Lecturer

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Video Lectures

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Teaching Assistants/Tutors

- Chen Ziwen : zwchen@ntu.edu.sg
- Jeven Syatriadi: jeve0002@e.ntu.edu.sg
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Schedule

1. Log on to NTULearn
2. Watch online video lessons each week
3. Attend a 1 hour F2F lecture each week (Fridays 15:30 – 16:20)
4. Attend a 1 hour tutorial session each week (commencing from Week 2)

Course Introduction

- This course serves as an introduction to **various topics** in discrete mathematics
- Familiarity with formal analysis through simple problems in some basic discrete structures is a key objective **rather than knowing these structures in depth**
- Specifically, the main aim is to learn topics from the following broad areas of discrete mathematics: **number theory, logic, combinatorics, and graph theory**
- This course aims to provide a **solid mathematical foundation** and is intended for first year computer science and computer engineering students

Learning Outcomes

By the end of this course, you should be able to:

1. Identify which integers are **congruent modulo** a positive integer
2. Formulate, interpret, and manipulate **logical statements**
3. Identify valid and invalid **arguments**
4. Prove elementary mathematical results using various **proof techniques**
5. Apply basic tools for **counting**
6. Solve **linear recurrence relations**
7. Identify two equal **sets** and provide justification that these sets are equal
8. Manipulate **relations and functions** between sets
9. Apply basic techniques in **graph theory**

Your Learning Roadmap

Elementary
Number Theory



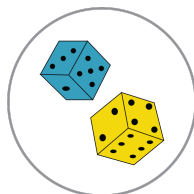
1

Predicate
Logic



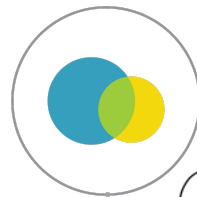
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Combinatorics



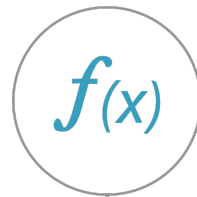
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Set Theory



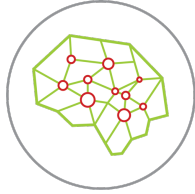
7

Functions



9

Propositional
Logic



2

Proof
Techniques



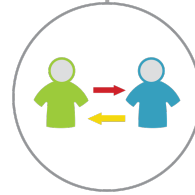
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Linear
Recurrence
Theory



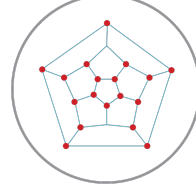
6

Relations



8

Graph
Theory



10

Midterm 1

CA2

Final Exam

Assessment

Closed book

↙ Exam Hall C

1. CA1 midterm test – 25% (Week 7)

2. CA2 midterm test – 25% (Week 11) ↙ Exam Hall C

3. Final Exam – 50%

↖ wait for email from NTU

Note: there will be no makeup tests for CA1 and CA2

- A student who is absent from a CA without a valid Leave of Absence will be given **0 marks** for the missed CA.
- If you have a valid reason for absence, inform the lecturer **before the CA**. You will also need to notify your school and obtain a **Leave of Absence**. In such cases the weight for the CA will be transferred to the final exam.