CS1231S Discrete Structures

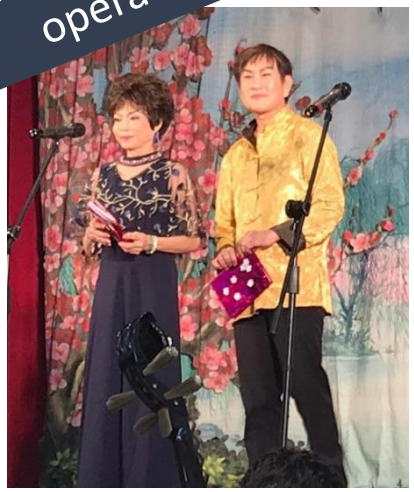
AY2020/21 Semester 1

1. Lecturer (1/2)

Running

Weekly group run with students.
You're welcome to join us!
Check out facebook.

Cantonese opera



A/P Tan Tuck Choy, Aaron
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Admin appointment:
Assistant Dean
(Undergraduate Studies)

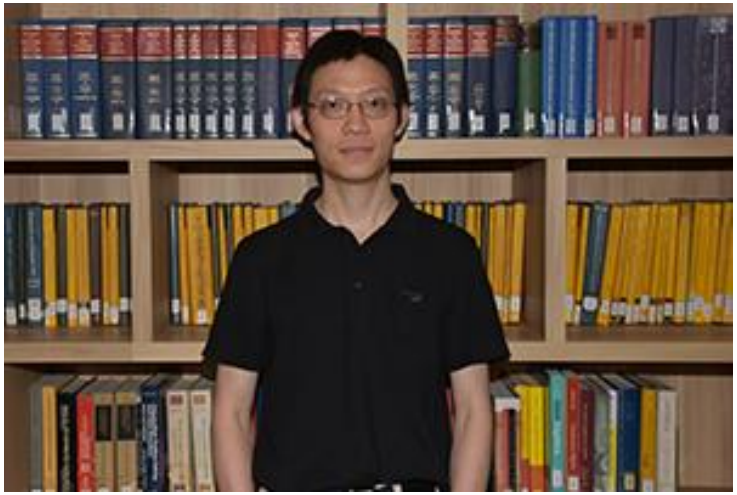
Singing

SoC Gala Dinner 2018

Wing Chun

Pottery

1. Lecturers (2/2)



Dr Wong Tin Lok, Lawrence
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2. Objectives

1. To develop mathematical maturity – the ability to formalize concepts, work from definitions, think rigorously, reason concisely, and construct a theory.
2. To provide basic mathematical prerequisites relevant to Computer Science.

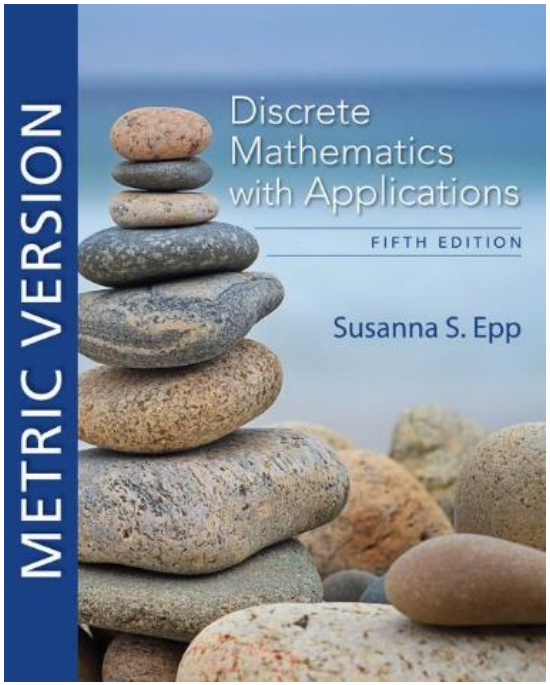
3. Topics

CS1231S and CS1231 have the same contents, midterm test and final exams.

Topics include:

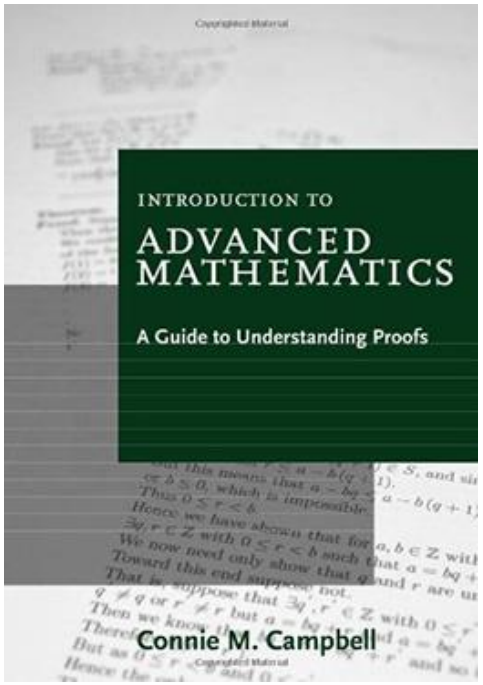
1. Propositional logic and predicate logic
2. Proof techniques
3. Number theory
4. Sequences and Mathematical Induction
5. Set theory, Functions and Relations
6. Counting and Probability
7. Graphs and Trees

4. Reference Books



Discrete Mathematics with Applications
5th Edition
Author: Susanna S. Epp
Publisher: Cengage Asia
ISBN-13: 9780357114087
ISBN-10: 0357114086
Online resource

It's ok if you get the 4th edition.

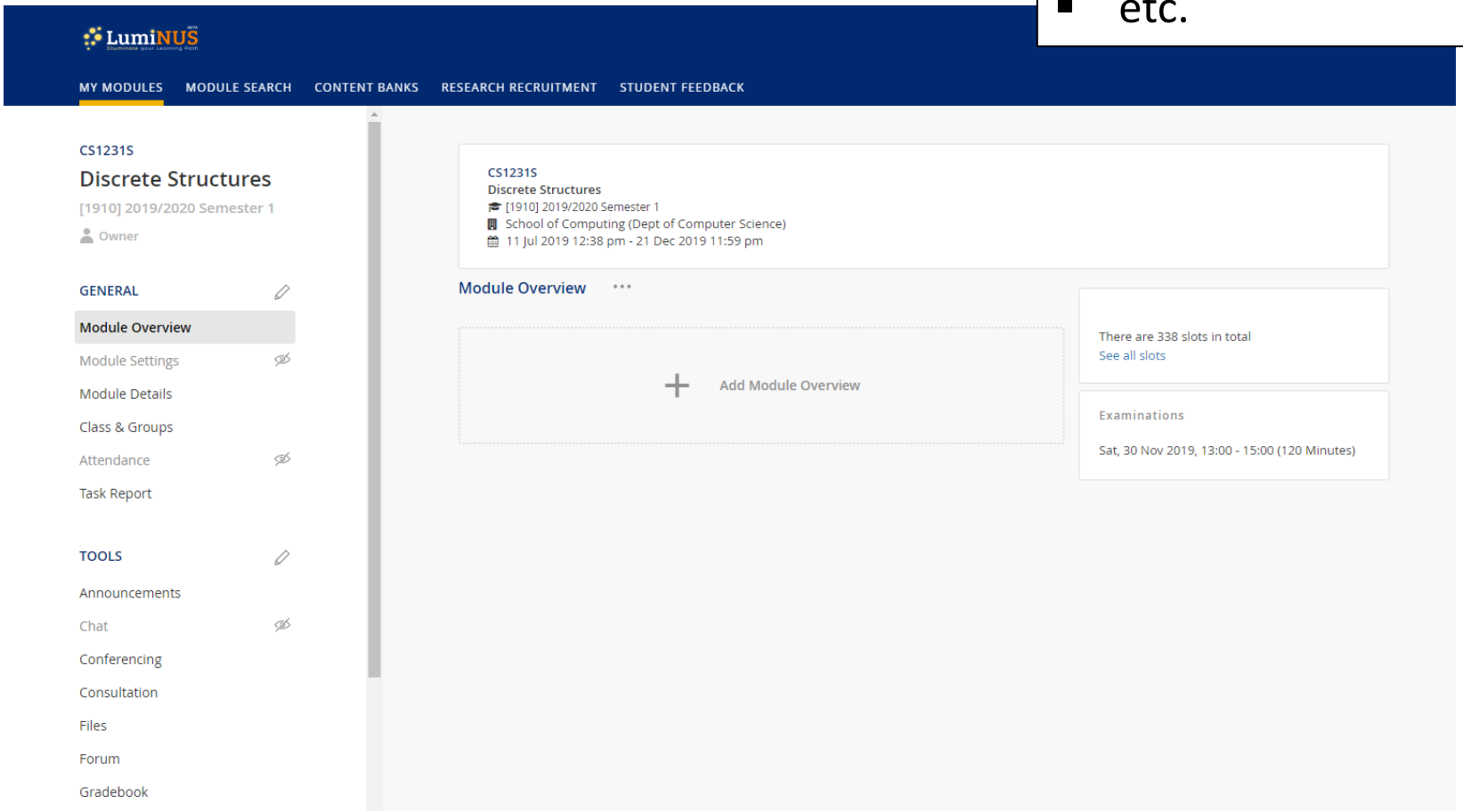


Introduction to Advanced Mathematics:
A Guide to Understanding Proofs
Author: Connie M. Campbell
Publisher: Cengage Asia
ISBN-13: 9780547165387
ISBN-10: 0547165382

5. Online Resources (1/2)

- Lecture recordings
- Announcements
- Forum
- Files
- etc.

LumiNUS: https://luminus.nus.edu.sg



5. Online Resources (2/2)

CS1231S module website:
https://www.comp.nus.edu.sg/~cs1231s

As backup in case LumiNUS is down.

6. Assessments

CA component	Date	Weightage
Tutorial attendance	-	5%
Two assignments	Due: weeks 6 & 11	20%
Midterm test	3 Oct (Sat)	25%
Final exam	25 Nov (Wed) 9-11am	50%

- Midterm test and final exam are open book, online and proctored. More details will be given later.
- Timing of midterm test will be announced later.

7. Lecture Plan (See CS1231S website for latest updates)

Week	Lecture topics	Tutorial
1	Speaking Mathematically; The Logic of Compound Statements	
2	The Logic of Quantified Statements	
3	Methods of Proofs	1
4	Sets	2
5	Functions, Bijections and Cardinality	3
6	Mathematical Induction and Recursion	4
	Recess	
7	Divisibility, Primes and Base Expansion	5
8	Euclidean Algorithm, Fundamental Theorem of Arithmetic and Modular Arithmetic	6
9	Relations, Equivalence Relations and Partitions, and Partial Orders	7
10	Counting and Probability	8
11	Counting and Probability (cont'd); Graphs	9
12	Graphs (cont'd); Trees	10
13	Filler (Countability – non-examinable)	11

Lectures are online and recorded over Zoom.

8. Tutorial Schedule (Refer to ModReg site)

- Information on the next slide is subject to changes as tutorial registration is dynamic and last-minute changes may be made (groups removed/deleted, etc.) Please refer to ModReg for the most up-to-date information.
- Please do NOT email us (acad staff) on requests such as adding you to a group or moving you to a different group. We are not permitted to do this. All requests/appeals should be sent to the official system where dedicated admin staff will handle and process your requests. Sending your requests to us will just cause further delay as we could at most forward your request to the admin.
- I will be monitoring the situation on my side and will post updates via LumiNUS announcements.

8. Tutorial Schedule (Refer to ModReg site)

- See tutorial schedule as at 5 Aug (as mentioned, this is dynamic and subject to changes) on the following CS1231S web page: https://www.comp.nus.edu.sg/~cs1231s/1_module_info/sched.html
- Tutorials start in week 3 (24 August).

9. Why is Discrete Mathematics Important?

Discrete Math (DM) is important, especially for Computer Science.

Every field in CS is related to discrete objects – databases, neural networks, automata, etc.

It is the backbone of CS.

Concepts and notations from DM are useful in studying the describing objects and problems in all branches of CS, such as algorithms, programming languages, theorem proving and software development

Modeling with DM is an extremely important problem solving skill.

Useful for algorithms modules:

CS2040 (Data Structures and Algorithms), CS3230 (Design and Analysis of Algorithms), etc.

Logic part is useful in CS2100 (Computer Organisation).

10. CS1231S Tagline

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