CS1231S Discrete Structures

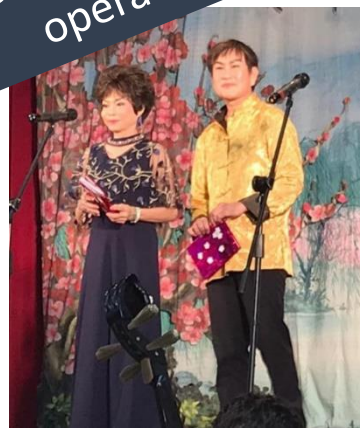
AY2024/25 Semester 1

1. Coordinator/Lecturer

Running

Used to have weekly runs with students every week (pre-Covid days)

Cantonese opera



A/P Tan Tuck Choy, Aaron
Office: COM1-03-12
Email: tantc@comp.nus.edu.sg

Admin appointment:
Assistant Dean
(Undergraduate Studies)

Wing Chun

Singing

SoC Gala Dinner 2018

SoC 25th Anniversay
July 2023

1. Lecturers

A/P Chin Wei Ngan

Office: COM3-02-11
Email: chinwn@comp.nus.edu.sg

Dr Ashish Deepak Dandekar

Office: COM2-03-58
Email: dcsashi@nus.edu.sg

1. Tutors


Dr Eldon Chung


Jason Ciu (lead TA)


Enzio Kam


Karen


Chin Herng


Ikhoon


Ryan Guai


Phuong Anh


Bryce


Justin Tan


Wei Jian

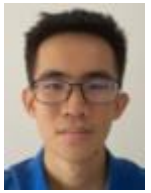

Chen Xu


Kuan Jak


Ding Feng


Rajesh


Shashank


Valentin Han


Jordan Chan


Josh Thoo


Jun Jie


Jie Hui


Matthew Lee


James Lim


Yong Zhe


Ryan Low


Dinh Nam


Phu Hao


Patrick


Ting Xuan


Yuexi


Khay Liang


Tze Tzun (Joseph)

2. Objectives

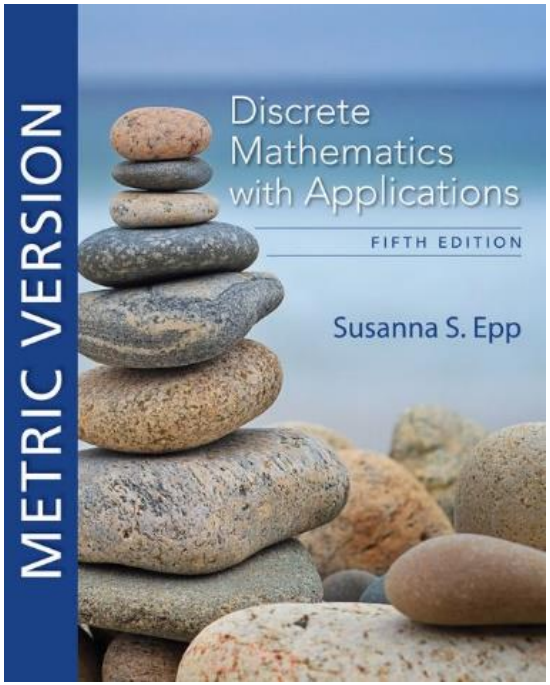
1. To develop mathematical maturity – the ability to formalize concepts, work from definitions, think rigorously, reason concisely, and construct a theory.
2. To provide basic mathematical prerequisites relevant to Computer Science.

3. Topics

Topics include:

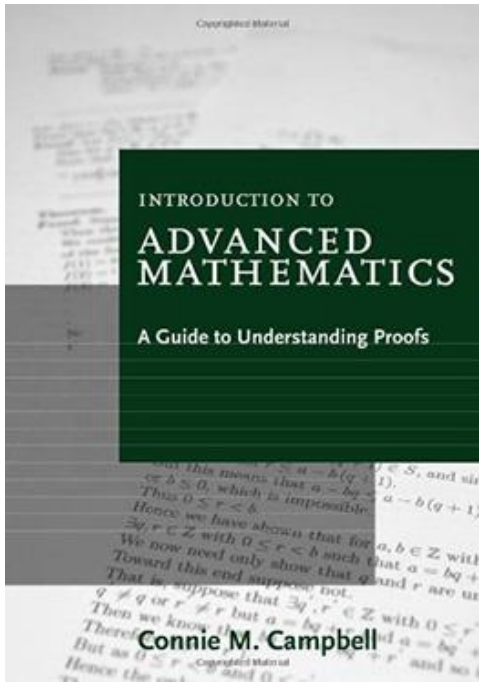
1. Propositional logic and predicate logic
2. Proof techniques
3. Sets
4. Relations
5. Mathematical Induction
6. Functions
7. Cardinality
8. Counting and Probability
9. Graphs and Trees

4. Reference Books



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

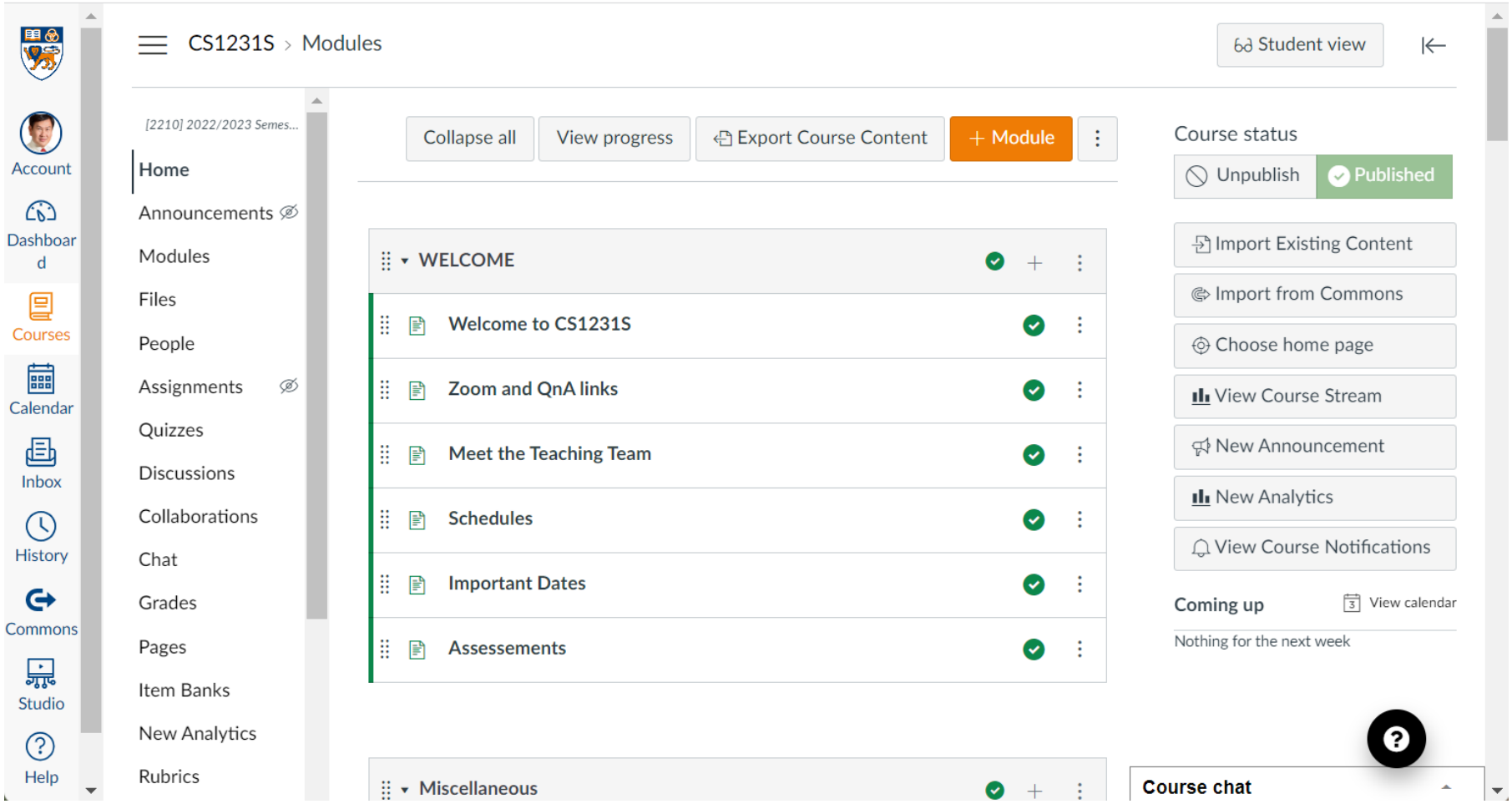
It's ok if you get the 4th edition.



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

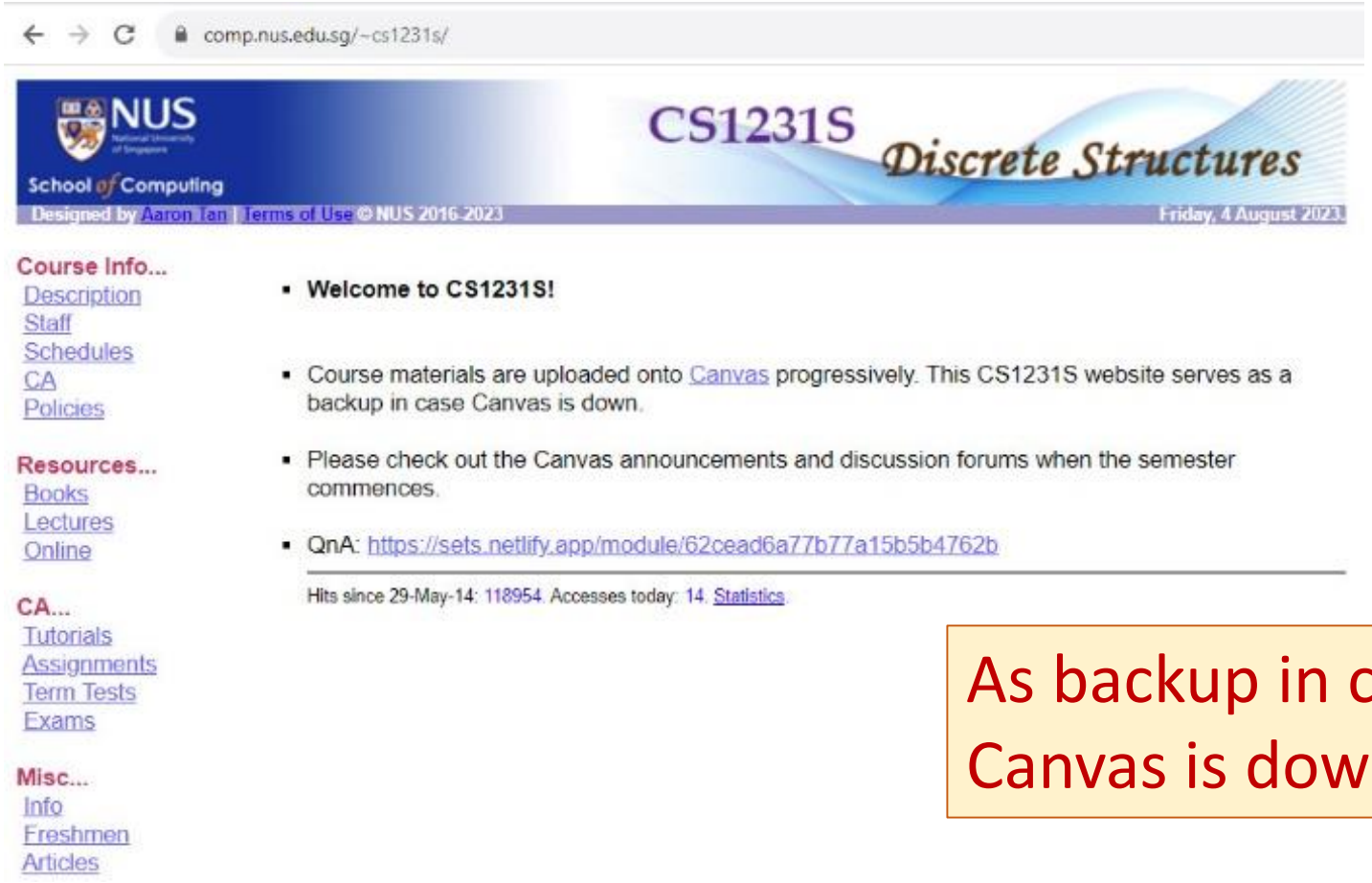
5. Online Resources (1/2)

Canvas: https://canvas.nus.edu.sg



5. Online Resources (2/2)

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



As backup in case Canvas is down.

6. Assessments

CA component	Date	Weightage
Tutorial attendance	-	5%
Two assignments	Due: weeks 6 & 12	20%
Midterm test	9 Oct (Wed) 6:30-8:30pm	25%
Final exam	29 Nov (Fri) 2:30-4:30pm	50%

- Midterm test and final exam are open book and face-to-face. More details will be given out later.
- Please post on "Canvas > Discussions > Midterm Test" by end of August if the CS1231S midterm test clashes with your other test. Please provide details (such as the other module code and timing).

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

https://www.comp.nus.edu.sg/~cs1231s/1_module_info/sched.html

Week	Lecture topics
1	Speaking Mathematically; The Logic of Compound Statements
2	The Logic of Quantified Statements
3	Methods of Proofs
4	Sets
5	Relations
6	Modular Arithmetic and Partial Orders
Recess	
7	Mathematical Induction and Recursion
8	Functions
9	Cardinality
10	Counting and Probability
11	Counting and Probability (cont'd); Graphs
12	Graphs (cont'd); Trees
13	Filler

Lectures are webcast; recording will be published on Canvas.

8. Tutorial Schedule (Refer to ModReg site)

- Tutorials start in week 3 (26 August) and are face-to-face.
- See tutorial schedule as at 15 August (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 or refer to NUSMODS for the most up-to-date schedule.
- 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 ModReg 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 Canvas announcements.

9. Blended Learning

- CS1231S has been selected to go semi-Blended Learning mode.
  - Students are to view the lecture slides and previous semester's lecture recordings before the lecture.
  - Students are to post questions on the topics to be discussed in the coming week.
  - The process will evolve over time as we experiment.

10. 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).

11. Plagiarism

- Use or close imitation of the language and thoughts of another author and the representation of them as one's own original work.
- Plagiarism by students, professors, or researchers is considered academic dishonesty or academic fraud, and offenders are subject to academic censure, up to and including expulsion.
- Do not plagiarise or commit any acts of dishonesty.
- Further information:
  - https://www.comp.nus.edu.sg/cug/plagiarism/
  - http://nus.edu.sg/celc/programmes/plagiarism.html

12. CS1231S Tagline

What have you heard about CS1231S from those who have taken it before?

CS1231R

- For students who find CS1231S too easy and are looking for more challenges!
- CS1231R – 1 unit, credited in the NEXT semester if you complete it.
- Additional lectures will be conducted by Dr Maciej Lukasz Obremski. (Time slot to be decided later – we will do a poll.)
- Additional assignments will be given out.

Dr Maciej Obremski
Research Assistant Professor
Works on theoretical CS, mostly cryptography.

- Some possible topics (may subject to changes): Analysis of algorithms (recurrences); Cryptography (fields/groups (mod arithmetics), polynomials, Chinese reminder theorem, encryption, secret sharing); Randomness (union bounds, probabilistics proofs).

- Limited spots, thus there might be an entrance test!
- Plan:
  - Sign-up (+ test): week 3, details to be announced.
  - Lectures start in week 4.

END OF FILE