COMP 2214A, Fall 2022
Discrete Structures for Computing
Syllabus

Course Information

Calendar Description

This course presents an introduction to the mathematical foundations of computer science, with an emphasis on mathematical reasoning, combinatorial analysis, discrete structures, applications and modeling, and algorithmic thinking. Topics include sets, functions, relations, algorithms, number theory, matrices, mathematical reasoning, counting, graphs and trees.

Prerequisite Requirements

Prerequisites: Either 1) Computer Science 1027A/B, Computer Science 1037A/B, or the former Computer Science 2101A/B, in each case with at least 65%, and 1.0 course with at least 60% in each from: Applied Mathematics 1201A/B, Numerical and Mathematical Methods 1411A/B, Numerical and Mathematical Methods 1412A/B, Numerical and Mathematical Methods 1414A/B, Calculus 1000A/B, Calculus 1301A/B, Calculus 1500A/B, Calculus 1501A/B, Mathematics 1600A/B, the former Applied Mathematics 1411A/B, the former Applied Mathematics 1412A/B, the former Applied Mathematics 1414A/B, the former Applied Mathematics 1413; or 2) Integrated Science 1001X with at least 60%.

Antirequisites: Mathematics 2151A/B, Mathematics 2155F/G.
Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

Teaching Staff + Office Hours

Alex Brandt
abrandt5@uwo.ca
MC 365, Mondays 16:00 - 17:30

Teaching Assistants

TBA

Class Schedule

Mondays, 10:30 - 12:30, SH 3345
Wednesdays, 10:30 - 11:30, SH 3345

First class: September 12
Last class: December 7
There is no class October 10, October 31, or November 2.

In the event of a COVID-19 resurgence which requires moving away from in-class teaching, lectures will proceed synchronously via Zoom. Details to be announced, if required. The grading scheme will not change. Any remaining assessments will also be conducted online.

If exams do not proceed in-person, tests and examinations in this course will be conducted using a remote proctoring service. By taking this course, you are consenting to the use of this software and acknowledge that you will be required to provide personal information (including some biometric data) and the session will be recorded. Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for this service. More information about this remote proctoring service, including technical requirements, is available on Western's Remote Proctoring website at: Western's Remote Proctoring website.

Course Materials

All course materials will be posted to OWL: http://owl.uwo.ca. This includes course notes and supplementary materials. Students are responsible for checking OWL on a regular basis for news, announcements, and forum posts. This is the primary method by which information will be disseminated to all students in the class. If students need assistance, they can seek support on the OWL Help page. Alternatively, they can contact the Western Technology Services Helpdesk at 519-661-3800.

There is no required textbook for this course. However, suggested readings will be given from *Discrete Mathematics and Its Applications*, 7th Edition, 2012, Kenneth Rosen, McGraw-Hill.

Forums and Email Contact

Students should post all questions about course content to the OWL site's forums. This includes any question about lectures, assignments, tutorials, exams, etc. Please check existing questions and answers on the forums first before submitting a new question. Emails (from your uwo.ca account only) should be used only for personal and private matters only. If your forum question goes unanswered for a day or two, a friendly email reminder to the TAs or the professor is okay.

Include "CS2214" in your email subject. Otherwise, you may not receive a reply to your email.

Course Topics + Tentative Schedule

1. Logic and Proofs (2 weeks)
   - Propositional Logic
   - Predicate Logic
   - Proofs

2. Set Theory (1 week)

3. Basic Structures (1 week)
   - Functions
   - Sequences, Sums
   - Matrices

4. Relations (1 week)

5. The Integers (1 week)
   - Modular Arithmetic
   - Primes, Greatest Common Divisors

6. Induction and Recursion (2 weeks)
   - (Weak) Induction, Strong Induction
   - Recursion, Structural Induction

7. Counting and Combinatorics (2 weeks)

8. Discrete Probability (1 week)

9. Graphs (1 week)

Evaluations & Regulations

Assignments		**30%**
	February 4	6%
	February 18	6%
	March 18	6%
	April 1	6%
	April 1	6%
Problem Sets	Ongoing	**10%**
Mid-Term Test	October 19	**20%**
Final Exam	TBD	**40%**

Assignments

- Assignments are to be submitted electronically to Gradescope. See the OWL website for instructions.
- Assignments are due at 23:55 on the due date. Late assignments will be handled as follows.
    - 0-24 hours late: you make the professor sad :(
    - 24-47 hours late: -20%
    - 48-72 hours late: -50%,
    - >72 hours late: submissions are no longer accepted, you will receive 0.
- Under extenuating circumstances, students may not be able to complete an assignment on time. In such cases, students should contact the professor at least 24 hours **before** the due date to arrange accommodations. The default accommodation will be a waiver of the late penalties. That is, students must still submit the assignment within 72 hours of the original due date, but will not receive late penalties.
- In exceptional circumstances, students may not be able to complete an assignment within the late period (or may be unable to contact the instructor before the due date). In these cases, students should contact their home faculty's academic counselling office to receive accommodation. The default accommodation is a reweighting of the assignment's value onto the other assignments, up to a maximum of two missed assignments. If more than two assignments are missed, the weight will be moved to the final exam.
- Plagiarism is unacceptable. It is reasonable to assume that students discuss assignments and possible solutions, however all assignments shall be independent.
- Any concerns with assignment marking must be addressed *within one week* of the assessment being returned. No adjustments will be made after this time. Such concerns should be submitted as a "regrade request" on Gradescope. If no resolution is possible between student and TA, the professor will re-mark the *entire assignment*.

Problem Sets

- There are 10 problem sets to be given throughout the semester. One per week, given and worked on during the tutorial.
- Students should submit their solutions to the problem sets electronically to Gradescope.
- Problem sets are due on the Friday (at 23:55) of the week in which they are given.
    - Sep. 14, Sep. 21, Sep. 28, Oct. 5, Oct. 12, Oct. 26, Nov. 9, Nov. 16, Nov. 23, Nov. 30
- Late submission of problem sets *will not be accepted*.
- The 8 best problem sets will be used to calculate the Problem Set portion of the student's final mark. Thus, a student may miss 2 problem sets throughout the semester without penalty. No communication with the instructor is required for missed problem sets.

Mid-term and Final

- The mid-term will occur **in-class** on October 19, 10:30–12:30.
- The final exam will be scheduled by the registrar's office later in the semester.
- Tests and exams are closed book. Any required information, numerical constants, formulas, etc. will be provided to you.
- No electronic devices other than a simple scientific calculator may be used.

Policies, Accommodation, Accessibility

Physical Health

Students should also note that individual instructors are not permitted to receive documentation directly from a student, whether in support of an application for consideration on medical grounds, or for other reasons. All documentation required for absences must be submitted to the Academic Counselling office of a student's Home Faculty

For the policy on Accommodation for Medical Illness - Undergraduate Students, see: https://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf and for the Student Medical Certificate (SMC), see: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf

Mental Health

Mental and emotional well-being is highly important and should not be treated lightly. Students who are in emotional/mental distress should refer to Health and Wellness at Western for a complete list of options about how to obtain help. Students in immediate distress should contact Student Health Services, Campus Police, or Psychological Services whose contact information can be found here.

Religious Accommodation

Students should consult the University's list of recognized religious holidays, and should give reasonable notice in writing, prior to the holiday, to the Instructor and an Academic Counsellor if their course requirements will be affected by a religious observance. Additional information is given in the Western Multicultural Calendar: https://multiculturalcalendar.com/ecal/index.php?s=c-univwo

Accessibility

Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Student Accessibility Services via their website or at (519)-661-2147 if you have any questions regarding accommodations.

Ethical Conduct

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at this web site.

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com Computer-marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

Student Support

Western University is committed to a thriving campus as we deliver our courses in the mixed model of both virtual and face-to-face formats. We encourage you to check out the Digital Student Experience website to manage your academics and well-being.

Learning-skills counsellors at the Student Development Centre are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exams, textbook reading, and more. Support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round via individual counselling.

Other services are also provided by the University Students' Council

Registration Services

Students should refer to the Registrar's website for registration information and services.