

Faculty of Science Course Syllabus
Department of Mathematics and Statistics
CSCI/MATH 2112
Discrete Structures I
Fall 2019

Lectures: MWF 10:35 – 11:25 Carleton TUPPER BLDG THTR B
Instructor: Neil J. Ross neil.jr.ross@dal.ca Chase 213
Office hours: MW 15:00 – 16:30
TA: Sarah Meng Li sarah.li@dal.ca
Office hours: T 15:30 – 16:30

Course Description

This course, together with MATH/CSCI 2113.03, offers a survey of the following areas: set theory, mathematical induction, number theory, relations, functions, algebraic structures, and introductory graph theory. The topics to be discussed are fundamental to most areas of Mathematics and have wide applicability to Computer Science.

Course Prerequisites

NS Math 441 or equivalent.

Course Objectives/Learning Outcomes

- *Understand the structure of logical arguments and mathematical proofs.*
- *Become familiar with the basic concepts of logic, set theory, number theory, and combinatorics.*
- *Perform computations in modular arithmetic and understand the relevant number systems.*
- *Calculate the number of possible outcomes for problems involving combinations and permutations.*
- *Prove the correctness of simple recursive algorithms.*

Course Materials

The course has a presence on BrightSpace where course notes will be posted. For additional reading, students can use the following publicly available texts (links to these texts are on BrightSpace).

- *The Book of Proof (3rd ed.) by Richard Hammack.*
- *Lectures in Discrete Mathematics by Edward A. Bender and S. Gill Williamson.*

Course Assessment

Weekly assignments will be posted on BrightSpace. The assignment with the lowest grade will not count toward the final grade. There will be two midterms, both lasting 1.5 hours. The first midterm will take place on Wednesday October 2nd between 18:30 and 20:00 in S E260 (Kenneth Rowe Management Building) room 2018. The second midterm will take place on Thursday November 7th between 18:30 and 20:00 in S D420 (Marion McCain Arts and Social Sciences Building) AUD-1. The final examination will last 3 hours and will be scheduled by the registrar.

The final grade will be computed as the maximum of the grades obtained from the two grading schemes below. Students should prepare to be graded according to the first grading scheme. The second grading

scheme is mainly included in order to accommodate students who underperform on the midterms due to circumstances beyond their control.

Scheme 1

Component	Weight (% of final grade)	Date
Tests/quizzes		
• Midterm 1	20%	Wednesday October 2 nd 2019
• Midterm 2	20%	Thursday November 7 th 2019
Final exam	40%	(Scheduled by Registrar)
Assignments	20%	

Scheme 2

Component	Weight (% of final grade)	Date
Final exam	80%	(Scheduled by Registrar)
Assignments	20%	

The conversion of numerical grades to Final Letter Grades follows the Dalhousie Common Grade Scale.

Conversion of numerical grades to Final Letter Grades

A+ (90-100)	B+ (77-79)	C+ (65-69)	D (50-54)
A (85-89)	B (73-76)	C (60-64)	F (<50)
A- (80-84)	B- (70-72)	C- (55-59)	

Learning Centres

Two learning centres are available to CSCI/MATH 2112 students where teaching assistants can provide help.

- The Mathematics and Statistics Learning Centre: <https://www.dal.ca/faculty/science/math-stats/about/learning-centre.html>
- The Faculty of Computer Science Learning Centre: <https://www.dal.ca/faculty/computerscience/about/learningcentre.html>

Course Policies

Students are encouraged to collaborate when working on their assignments but must prepare their final copy individually. Assignments must be submitted electronically on BrightSpace in a single PDF file. Each problem must start on a new page. Submissions must be named as follows:

FirstNameLastName_BannerNumber.pdf (e.g. JaneDoe_B00123456.pdf).

Submissions must be legible, otherwise, marks may be deducted. Assignments must be submitted by the posted deadline. Late assignments will not be accepted and will result in a grade of 0 unless a prior arrangement was made.

Textbooks, course notes, and electronic devices are not permitted during exams. Missed exams will result in a grade of 0 unless a prior arrangement was made.

Course Content

The schedule below is subject to change (BoP = Book of Proofs. LDM = Lectures in Discrete Mathematics).

Week	Topic	Text
1: 03/09 - 06/09	Sets	BOP 1
2: 09/09 - 13/09	Sets	BOP 1
3: 16/09 - 20/09	Counting	BOP 3
4: 23/09 - 27/09	Logic	BOP 2
5: 30/09 - 04/10	Logic	BOP 2
6: 07/10 - 11/10	Number Theory	BOP 4-6 & LDM NT-1
7: 14/10 - 18/10	Number Theory	BOP 4-6 & LDM NT-1
8: 21/10 - 25/10	Induction	BOP 10
9: 28/10 - 01/11	Induction	BOP 10
10: 04/11 - 08/11	Recursive Functions	BOP 10 + Notes
11: 11/11 - 15/11	Fall Study Break	
12: 18/11 - 22/11	Recursive Functions	BOP 10 + Notes
13: 25/11 - 29/11	Equivalence Relations	BOP 11
14: 02/12 - 03/12	Review	

Faculty of Science Course Syllabus (Section B)
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University Policies and Statements

This course is governed by the academic rules and regulations set forth in the University Calendar and by Senate

Academic Integrity

At Dalhousie University, we are guided in all of our work by the values of academic integrity: honesty, trust, fairness, responsibility and respect (The Center for Academic Integrity, Duke University, 1999). As a student, you are required to demonstrate these values in all of the work you do. The University provides policies and procedures that every member of the university community is required to follow to ensure academic integrity.

Information: https://www.dal.ca/dept/university_secretariat/academic-integrity.html

Accessibility

The Advising and Access Services Centre is Dalhousie's centre of expertise for student accessibility and accommodation. The advising team works with students who request accommodation as a result of a disability, religious obligation, or any barrier related to any other characteristic protected under Human Rights legislation (Canada and Nova Scotia).

Information: https://www.dal.ca/campus_life/academic-support/accessibility.html

Student Code of Conduct

Everyone at Dalhousie is expected to treat others with dignity and respect. The Code of Student Conduct allows Dalhousie to take disciplinary action if students don't follow this community expectation. When appropriate, violations of the code can be resolved in a reasonable and informal manner—perhaps through a restorative justice process. If an informal resolution can't be reached, or would be inappropriate, procedures exist for formal dispute resolution.

Code: https://www.dal.ca/dept/university_secretariat/policies/student-life/code-of-student-conduct.html

Diversity and Inclusion – Culture of Respect

Every person at Dalhousie has a right to be respected and safe. We believe inclusiveness is fundamental to education. We stand for equality. Dalhousie is strengthened in our diversity. We are a respectful and inclusive community. We are committed to being a place where everyone feels welcome and supported, which is why our Strategic Direction prioritizes fostering a culture of diversity and inclusiveness

Statement: <http://www.dal.ca/cultureofrespect.html>

Recognition of Mi'kmaq Territory

Dalhousie University would like to acknowledge that the University is on Traditional Mi'kmaq Territory. The Elders in Residence program provides students with access to First Nations elders for guidance, counsel and support. Visit or e-mail the Indigenous Student Centre (1321 Edward St) (elders@dal.ca).

Information: https://www.dal.ca/campus_life/communities/indigenous.html

Important Dates in the Academic Year (including add/drop dates)

https://www.dal.ca/academics/important_dates.html

University Grading Practices

https://www.dal.ca/dept/university_secretariat/policies/academic/grading-practices-policy.html

Missed or Late Academic Requirements due to Student Absence (policy)

https://www.dal.ca/dept/university_secretariat/policies/academic/missed-or-late-academic-requirements-due-to-student-absence.html

Student Resources and Support

Advising

General Advising https://www.dal.ca/campus_life/academic-support/advising.html

Science Program Advisors: <https://www.dal.ca/faculty/science/current-students/academic-advising.html>

Indigenous Student Centre: https://www.dal.ca/campus_life/communities/indigenous.html

Black Students Advising Centre: https://www.dal.ca/campus_life/communities/black-student-advising.html

International Centre: https://www.dal.ca/campus_life/international-centre/current-students.html

Academic supports

Library: <https://libraries.dal.ca/>

Writing Centre: https://www.dal.ca/campus_life/academic-support/writing-and-study-skills.html

Studying for Success: https://www.dal.ca/campus_life/academic-support/study-skills-and-tutoring.html

Copyright Office: <https://libraries.dal.ca/services/copyright-office.html>

Fair Dealing Guidelines <https://libraries.dal.ca/services/copyright-office/fair-dealing.html>

Other supports and services

Student Health & Wellness Centre: https://www.dal.ca/campus_life/health-and-wellness/services-support/student-health-and-wellness.html

Student Advocacy: <https://dsu.ca/dsas>

Ombudsperson: https://www.dal.ca/campus_life/safety-respect/student-rights-and-responsibilities/where-to-get-help/ombudsperson.html

Safety

Biosafety: <https://www.dal.ca/dept/safety/programs-services/biosafety.html>

Chemical Safety: <https://www.dal.ca/dept/safety/programs-services/chemical-safety.html>

Radiation Safety: <https://www.dal.ca/dept/safety/programs-services/radiation-safety.html>

Scent-Free Program: <https://www.dal.ca/dept/safety/programs-services/occupational-safety/scent-free.html>