
CISC 102 – DISCRETE MATHEMATICS FOR COMPUTING I

Fall 2020

Course Info

Lectures: Time & Venue	Online Videos Live Session: Mo 4:30-5:30
Course Web Page	https://onq.queensu.ca/d2l/home/434934
Textbook	[KR] <i>Discrete Mathematics and Its Applications</i> Kenneth H. Rosen, McGraw Hill, 8th Edition , 2019 [LL] <i>Schaum's Outline of Discrete Mathematics, Revised Third Edition</i> Seymour Lipschutz and Marc Lipson, McGraw Hill, 2009 [LPV] L. Lovász, J. Pelikán, K. Vesztergombi. <i>Discrete Mathematics Elementary and Beyond</i> . Springer, 2003.
Instructor	Hazem Abbas hazem.abbas@queensu.ca 123B Avery Hall during office hours, 360 Avery Hall otherwise Office hours: M/W 1:30 – 2:30
TA	TBD

Course Description

This course enables students to strengthen and increase the understanding of discrete mathematics with special emphasis on computer science applications. Topics include sets, number systems, the nature of proof, formal logic, functions and relations, combinatorics and recurrence relations.

Learning Outcomes

After completing CISC 102, students should be able to:

1. Apply standard Mathematics notation used in the field of Computing.
2. Recognize the difference between a proof and a counter example.
3. Formulate elementary proofs using mathematical induction.
4. Recognize comparative magnitudes of functions such as $\log(n)$, n^2 , $2n$.
5. Read and understand some elementary logical proofs.

Schedule

Below is a list of nine topics that will be covered along with the relevant sections of the [KR] text.

Topic	Sections
1. Sets	2.1 - 2.2
2. Predicate Logic	1.3 - 1.5
3. Proofs	1.5 - 1.8
4. Functions	2.3
5. Sequence and Recursion	8.1 - 8.2, 8.5
6. Number Theory	4.1-4.4
7. Induction	5.1 - 4.2
8. Counting & Combinatorics	6.1 - 6.2, 6.3 - 6.5
9. Relations	9.1-9.6

I intend to teach from a combination of slides and videos and both will be available on the course webpage before the start of the topic. You are ultimately responsible for the material, and you will be expected to *read the relevant sections of the textbook before viewing the topic*.

A set of solved problems will be posted with each topic to help you understand and practice the contents.

There will be a weekly live session which is devoted for Q&A. No new materials will be presented during the session. It is an opportunity for you to see more examples of concepts presented in video lecture, therefore you should come prepared with any questions or examples that you wish to see worked out.

Grading

Grading will be based on homework, quizzes and two exams with the following contributions.

Homework (9)	40%
Quizzes (9)	20%
First Exam	20%
Second Exam	20%
Bonus	4%

Homework: There will be one homework. Homework may consist of selected exercises from the text as well as original problems. They will be posted to the Assignments section on onQ. Answers should be submitted (in pdf format generated from a LaTeX source) on onQ as well. Please carefully follow the indications below:

- You will be expected to follow all instructions specified on each homework assignment.
- Clarity and legibility are of great importance. If homework is sloppy or unclear, points *will* be deducted.
- You are *required* to typeset your homework assignments, and it is *strongly* recommended that you do so using \LaTeX or a similar typesetting system. Resources for \LaTeX are available on the course web page. You must submit the PDF file onQ.

Quizzes: There will be a quiz/topic and it will be announced in advance. They will generally be composed of T/F, MCQ, and/or short answers. In general, *there will be no make-up quizzes*. Exceptions may be made in certain circumstances such as health or emergency, but you must make every effort to make the prior Accommodation request.

Exams: There will be two exams; one at week 6 and the other at week 12. Each exam will have 20% weight. You are required to make 50% in total (both Exams not each) to pass the course. These exams will be also online, closed-book exams, but you have the option of using a single 8.5x11 sheet of blank paper. The exams could be proctored. In general, *there will be no make-up exams*. Exceptions may be made in certain circumstances such as health or emergency, but you must make every effort to make the prior Accommodation request.

Grading policy: If you have questions about grading or believe that points were deducted unfairly, you must first contact the TA to see if the problem can be resolved. Such questions should be made within a reasonable amount of time after the graded assignment has been announced. No further consideration will be given to any assignment one week after it has been graded and announced. It is important to emphasize that the goal of grading is consistency.

Late work: Please make note of the following policies:

- All homework are due at the announced due date.
- You are allowed to turn in two and only two late assignments (without penalty) twenty four hour (24 hours) after the homework was due. No assignments will be accepted after this time.

Scale: Letter grades will be awarded based on the Arts & Science Letter Grade Input Scheme.

A+	≥ 93	B+	≥ 78	C+	≥ 68	D+	≥ 58	F+	< 48
A	≥ 87	B	≥ 75	C	≥ 65	D	≥ 55		
A-	≥ 82	B-	≥ 72	C-	≥ 62	D-	≥ 52	F	< 24

Academic integrity: All homework assignments, programs, quizzes, and exams must be your own work. No collaboration with fellow students, past or current, is allowed unless specified otherwise. Queen's University and The School of Arts & Science have an Academic Integrity Policy. All students enrolled in any computer science course are bound by this policy. You are expected to read, understand, and follow this policy. Violations will be dealt with on a case by case basis. The most recent version of the Academic Integrity Policy can be found at <https://www.queensu.ca/artsci/staff-and-faculty/teaching/academic-integrity>.

Communication

The best way to communicate a general enquiry is to post it to the course Discussion Forum. One of the teaching staff will respond to your question. If the enquiry is of a personal nature, you can email the TA who is assigned to your group first. Given the huge number of the students enrolled in the course, mailing the instructor should be your last resort. Moreover, I may send out emails or make announcements on onQ.

Another valuable communication tool is the course web page. Announcements and resources will periodically be made available.