

# ECE 103: Discrete Mathematics for Engineers

Spring 2009

## Course website

<http://www.math.uwaterloo.ca/~amchilds/ece103>

## Coordinates

Lectures: Monday/Wednesday/Friday, 12:30–1:20 pm, RCH 302

Tutorials: TUT 101 Monday 2:30–4:20 pm MC 4041  
TUT 102 Monday 2:30–4:20 pm MC 4058  
TUT 103 Monday 2:30–4:20 pm DWE 3518

## Instructor

Prof. Andrew Childs, [amchilds@uwaterloo.ca](mailto:amchilds@uwaterloo.ca)

Office: MC 4031; office hours on Monday, 11:30 am–12:30 pm and Friday, 2:30–3:30 pm

## Teaching assistants

	Section	Email	Office	Office hours
Sara Ahmadian		<a href="mailto:sahmadian@uwaterloo.ca">sahmadian@uwaterloo.ca</a>	MC 6098B	Wed/Thu 4:30-5:30 pm
Aaron Chan	TUT 101	<a href="mailto:acschan@uwaterloo.ca">acschan@uwaterloo.ca</a>	MC 6098A	Fri 11:30 am-12:30 pm
Junbo (Mario) Huang	TUT 102	<a href="mailto:j26huang@uwaterloo.ca">j26huang@uwaterloo.ca</a>	MC 6098B	Wed 11:30 am-12:30 pm
Bundit Laekhanukit	TUT 103	<a href="mailto:blaekhanukit@uwaterloo.ca">blaekhanukit@uwaterloo.ca</a>	MC 6224	Thu 11:30 am-12:30 pm

## Overview

ECE 103 introduces first-year engineering students to basic concepts of discrete mathematics. The goal is to gain familiarity with mathematical ideas of relevance to engineering on a rigorous footing. Topics to be covered include

- Logic, proofs, mathematical induction, recursion
- Divisibility, the greatest common divisor, Euclid's algorithm
- Linear Diophantine equations, linear congruences, the Chinese remainder theorem
- Prime numbers, Fermat's little theorem
- Public-key cryptography
- Counting, the binomial theorem
- Elementary graph theory: connectivity, trees, planarity

For a more detailed lecture schedule with recommended readings, see the course website.

## Text

*Discrete Mathematics for Engineers: Course Notes for ECE 103*, Spring 2009 edition

Department of Combinatorics and Optimization, University of Waterloo

Available from the UW Bookstore (South Campus Hall) for \$20.07

## Assignments

There will be 10 homework assignments during the course. Assignments are due at the end of each Monday tutorial (except that there will be no assignment due on June 15). The assignments will be graded and returned to you at the following tutorial. Your highest 8 scores will be counted toward your final grade.

Homework assignments will be made available on the course website at least one week before they are due. Solutions will be posted on the course website after the due date, so extensions will not be granted.

You are encouraged to discuss homework problems with your peers, with the TAs, and with the course instructor. However, your solutions should be based on your own understanding, and should be written independently. You are asked to acknowledge all sources of help on your assignments.

For privacy reasons, please include a cover sheet with each assignment. On the cover sheet, write the assignment number, your name, your student ID number, your tutorial number, and acknowledgements of help. Do not write any solutions on the cover sheet. On the remaining pages with your solutions, please include the assignment number, your student ID number, and your tutorial number, but do not write your name or acknowledgments. The cover sheet will be detached before your assignment is returned.

### **Tutorials and quizzes**

There will be a tutorial from 2:30–4:20 pm every Monday, starting on May 11 (with the exception of May 18, which is a university holiday). The last tutorial will be on July 27.

The first hour and twenty minutes of each tutorial will be an opportunity to review material covered in lecture, discuss problem-solving strategies, and ask questions about the homework assignments. During the last half hour of each tutorial (except for the tutorial on June 15), there will be a short quiz. To complete this quiz, you may consult the text and your course notes, but you may not discuss the problems with your classmates. The quizzes will be graded and returned to you at the following tutorial. Solutions will be posted on the course website.

There will be 10 quizzes in total. Your highest 8 scores will be counted toward your final grade.

### **Exams**

The midterm exam will be held on Wednesday, June 17, from 7:00–9:00 pm. The location of the midterm will be announced later in the term.

The final exam will be scheduled by the registrar's office, with the time and location to be announced. The final exam period is from Tuesday, August 4, to Saturday, August 15.

### **Evaluation**

Your final grade will be determined as follows:

Assignments	10%
Quizzes	10%
Midterm	30%
Final exam	50%

### **Avoidance of academic offenses**

Students are expected to know what constitutes academic integrity, to avoid committing academic offenses, and to take responsibility for their actions. Students who are unsure whether an action constitutes an offense, or who need help in learning how to avoid offenses (e.g., plagiarism, cheating) or about rules for group work/collaboration should seek guidance from the course professor, TA, academic advisor, or the Undergraduate Associate Dean. The Office of Academic Integrity at the University of Waterloo maintains a website with a number of items of interest to students. In particular the pages on Academic Integrity for students (<http://www.adm.uwaterloo.ca/infoacad/Students/index.html>) provide various examples as well as a tutorial on the subject. For information on categories of offenses and types of penalties, students should refer to Policy #71, Student Discipline (<http://www.adm.uwaterloo.ca/infosec/Policies/policy71.htm>). Students who believe that they have been wrongfully or unjustly penalized have the right to grieve; refer to Policy #70, Student Petitions and Grievances (<http://www.adm.uwaterloo.ca/infosec/Policies/policy70.htm>), as well as Policy #72, Student Appeals (<http://www.secretariat.uwaterloo.ca/Policies/policy72.htm>).

### **Students needing special help are accommodated**

The Office for Persons with Disabilities (OPD), located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the OPD at the beginning of each academic term.