MATH/CS 240 Syllabus
Introduction to Discrete Mathematics

COURSE INFORMATION

Description

Credits: 3
Prerequisite(s): MATH 217, 221, or 275
Breadths: Natural Science
Instructional Mode: Classroom Instruction

Canvas URL: https://canvas.wisc.edu/courses/183677
Piazza URL: piazza.com/wisc/spring2020/sp20math240001002/home

Lecture Schedule: Van Vleck B130  MWF 8:50–9:40 or MWF 11:00–11:50

How the Credit Hours are Met
[Traditional Carnegie Definition] This class meets for three 50-minute class periods each week over the semester and carries the expectation that students will work on course learning activities (reading, writing, problem sets, studying, etc) for about 2 hours out of classroom for every class period.

COURSE STAFF

Instructor: Jun Le Goh  junle.goh@wisc.edu
Office hours 720 Van Vleck, M 9:50–10:50 am and T 2:30–3:30 pm

Teaching Assistants: Asvin Gothandaraman  gothandarama@math.wisc.edu
James Hanson  jehanson2@math.wisc.edu
Jeremy Johnson  jjohnson99@wisc.edu
Alexander Mine  mine2@wisc.edu
Nathan Nicholson  nlnicholson@math.wisc.edu
Bogdan Veklych  veklych@wisc.edu

Teaching assistant office hours will be posted on Canvas.

GRADING AND COURSE MATERIALS

Course Learning Outcomes

- Be able to construct proofs by induction to prove properties in a variety of domains (mathematical formulas, recursively-defined structures, loop invariants, correctness of recursive programs).
- Apply basic combinatorial techniques to counting problems.
- Develop basic skills to construct mathematically rigorous arguments and proofs.
- Gain exposure to the basics of program analysis (program correctness, recurrences, asymptotic analysis).
- Demonstrate a familiarity with and an ability to reason about discrete structures/data types (integers, strings, bit strings, sets, relations, functions, graphs, trees).
Grading
Homework (34%), two midterms (22% each), one final (22%). There is no attendance or participation component. The curve is determined after the final exam is completed.

Discussion Sections
Each student attends one discussion section a week. In discussion section the student has the opportunity to get more practice with concepts in the course and solve problems under the direction of a teaching assistant. Attendance is strongly encouraged but not required. A student must attend the discussion section for which they are registered.

Required Textbook, Software and Other Course Materials
We will use *Discrete Mathematics and Its Applications*, 8th edition by Kenneth Rosen. An electronic version of the textbook (eText) and the associated digital learning tool (DLT) have been pre-purchased for you, unless you opted out of the eText pilot. Go to this link to integrate it with Canvas: https://canvas.wisc.edu/courses/183677/external_tools/261

Lecture slides will be distributed on Canvas.

EXAMS, QUIZZES, PAPERS AND OTHER MAJOR GRADED WORK

Exams
Unless otherwise stated, no books, notes, calculators or electronic devices are allowed during exams. The exams will be cumulative, but will overwhelmingly focus on material not tested in previous exams.

<table>
<thead>
<tr>
<th>Exam</th>
<th>Date</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midterm 1</td>
<td>Thursday, February 27</td>
<td>7:15–9:15PM</td>
</tr>
<tr>
<td>Midterm 2</td>
<td>Tuesday, April 7</td>
<td>7:15–9:15PM</td>
</tr>
<tr>
<td>Final</td>
<td>Wednesday, May 6</td>
<td>7:45–9:45AM</td>
</tr>
</tbody>
</table>

Students must notify the instructor (via a form to be posted on Canvas) of conflicts with any exam during the first three weeks of class.

Homework
There are 13 assignments due approximately weekly. Each assignment may contain:

- an online component posted and completed on Canvas;
- a written component posted on Canvas and submitted to your teaching assistant.

We will not accept late submissions. The two assignments with the lowest scores will be dropped from your homework grade.

OTHER COURSE INFORMATION

List of Topics (approximately 1 week per topic)

- Propositional and predicate logic
- Introduction to proofs
- Sets
- Induction
- Recursion and structural induction
- Program correctness
- Recurrences
- Asymptotic analysis
- Relations
- Graphs and trees
- Automata and regular expressions
- Counting
ACADEMIC POLICIES

ACADEMIC INTEGRITY
By enrolling in this course, each student assumes the responsibilities of an active participant in UW-Madison’s community of scholars in which everyone’s academic work and behavior are held to the highest academic integrity standards. Academic misconduct compromises the integrity of the university. Cheating, fabrication, plagiarism, unauthorized collaboration, and helping others commit these acts are examples of academic misconduct, which can result in disciplinary action. This includes but is not limited to failure on the assignment/course, disciplinary probation, or suspension. Substantial or repeated cases of misconduct will be forwarded to the Office of Student Conduct & Community Standards for additional review. For more information, refer to https://conduct.students.wisc.edu/academic-integrity/

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES
The University of Wisconsin-Madison supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act (ADA), Wisconsin State Statute (36.12), and UW-Madison policy (Faculty Document 1071) require that students with disabilities be reasonably accommodated in instruction and campus life. Reasonable accommodations for students with disabilities is a shared faculty and student responsibility. Students are expected to inform faculty [me] of their need for instructional accommodations by the end of the third week of the semester, or as soon as possible after a disability has been incurred or recognized. Faculty [I], will work either directly with the student [you] or in coordination with the McBurney Center to identify and provide reasonable instructional accommodations. Disability information, including instructional accommodations as part of a student’s educational record, is confidential and protected under FERPA.

DIVERSITY & INCLUSION
Diversity is a source of strength, creativity, and innovation for UW-Madison. We value the contributions of each person and respect the profound ways their identity, culture, background, experience, status, abilities, and opinion enrich the university community. We commit ourselves to the pursuit of excellence in teaching, research, outreach, and diversity as inextricably linked goals.

The University of Wisconsin-Madison fulfills its public mission by creating a welcoming and inclusive community for people from every background – people who as students, faculty, and staff serve Wisconsin and the world.