**Course Subject, Number and Title**
MATH 240 – Introduction to Discrete Mathematics

**Credits**
3

**Canvas Course URL**
https://canvas.wisc.edu/courses/183677

**Course Designations and Attributes**
Breadth - Natural Science
Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Meeting Time and Location**
Van Vleck B130 MWF 8:40-9:40 or MWF 11:00-11:50

**Instructional Mode**
Face-to-face

**Specify how Credit Hours are met by the Course**
This class meets for three 50-minute class period each week over the fall/spring 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. The syllabus includes additional information about meeting times and expectations for student work.

**INSTRUCTORS AND TEACHING ASSISTANTS**

**Instructor Title and Name**
Jun Le Goh

**Instructor Availability**
Office hours at Van Vleck 720, M 9:50-10:50 and T 2:30-3:30

Instructor Email/Preferred Contact
junle.goh@wisc.edu

OFFICIAL COURSE DESCRIPTION
Official Course Description

Requisites
MATH 217, 221, or 275

LEARNING OUTCOMES
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 SESSIONS
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 & 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 & OTHER MAJOR GRADED WORK**

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.

Midterm 1 Thursday, February 27 7:15–9:15PM  
Midterm 2 Tuesday, April 7 7:15–9:15PM  
Final Wednesday, May 6 7:45–9:45AM

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 & OTHER ASSIGNMENTS**

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

**RULES, RIGHTS & RESPONSIBILITIES**

- To see the Guide’s Rules, Rights and Responsibilities information, refer to http://guide.wisc.edu/undergraduate/#rulesrightsandresponsibilitiestext.

**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 studentconduct.wiscweb.wisc.edu/academic-integrity/.

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES
McBurney Disability Resource Center syllabus statement: “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.” http://mcburney.wisc.edu/facstaffother/faculty/syllabus.php

DIVERSITY & INCLUSION
Institutional statement on diversity: “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.” https://diversity.wisc.edu/