MATH 245: Discrete Mathematics
Fall 2017 MWF 1:00-1:50pm NE 60

Overview:
This course is a rigorous introduction to many of the tools useful in higher mathematics and computer science. The major topics to be covered will be logic and proof techniques. Also included will be a brief introduction to set theory, number theory, relations, functions, recurrences, and complexity.

Learning Objectives:
Students will carefully state all definitions relevant to the course, and apply these definitions to objects and determine whether or not the definition applies. This will often involve a calculation. Students will have a ready supply of examples and non-examples to these definitions, and will be able to justify why these are examples or non-examples.Students will prove and disprove statements using the methods of discrete mathematics. They will construct rigorous proofs following the rules of logic. Students will learn many mathematical theorems and algorithms, as found in the text. They will be able to state them precisely, and will apply these tools in the right contexts.

Coursepack:
Mathematical Maturity via Discrete Mathematics, written by some tool. Be sure to have the latest (1.2) edition, with this exact title. The first chapter is available on the instructor's website, in case the bookstore is temporarily out of stock.

Students are expected to own and read the coursepack; it is inexpensive, very helpful, and brief. Students are expected to solve *all* of the problems in the text. Hints can be found in the back; solutions are not available, by design (see pp. xiv-xv for an explanation). Homework is not collected, and is generally not discussed in class due to time constraints – please bring homework questions to office hours, or ask via email.

Attendance:
Students are expected to attend every class, and are responsible for any missed material. Makeup quizzes and exams are not given under any circumstances. Under extraordinary circumstances (e.g. hospitalization), an alternate grading policy may be arranged.

Quizzes:
On all class days except exam days, students take a 5 minute quiz on recent material. Students must complete these quizzes on $3'' \times 5''$ index cards, which they must bring. All quizzes are closed book, closed notes, with no calculators or other aids permitted. Quizzes turned in (even blank ones) receive 5-10 points; quizzes not turned in receive 0 points. The three lowest quiz scores are dropped, to account for unexpected emergencies. Note that there are quizzes on the days before and after the exams; the latter is typically a second chance on one of the exam questions.

Exams:
The three midterm exams are closed book, closed notes, with no calculators or other aids permitted. Many questions are similar to homework questions. Definitions and named theorems are tested thoroughly. The final exam is similar, with a note sheet permitted. The final is half on material not covered on the previous exams, and half cumulative (equally on all material). All exams are graded on a 50-100 scale.

Collaboration:
Students are strongly encouraged to study together, and to work together to solve exercises. Quizzes and exams must be taken without assistance, however.

Course Mechanics:

The course proceeds at the pace of one chapter per week of class. Important dates:

Sep. 20: Exam 1 (Chaps. 1-3)   Oct. 13: Exam 2 (Chaps. 4-6)   Nov. 6: Exam 3 (Chaps. 7-9)
FINAL EXAM: Friday December 15 1:00pm–3:00pm

Grading:

The daily quizzes (after dropping three) are worth a total of 15% of the course grade (approximately 0.5% each). The three midterms are worth 15% each, and the final is worth the remaining 40%. All grades are normalized to lie between 50% (blank but present) and 100% (perfect score). Missing grades are still worth 0%. The cutoffs for each letter grades are as follows:

A	A-	B+	B	B-	C+	C	C-	D+	D	F
92.0	90.0	88.0	82.0	80.0	78.0	72.0	70.0	68.0	62.0	0

Extra Credit:

(1) If you find an error in the textbook, check the errata sheet on the instructor's website. If your error is new, email it to the instructor for extra credit.

(2a) After one of the three midterms (your choice), you may submit revised solutions to all of the questions. Feel free to get assistance in this process from whatever sources you like. This is due at the beginning of the next class day, before getting your exam back. Your grade will become the average of your original and revised grades.

(2b) If you do not submit revised solutions to any midterm, you will automatically get +2 extra credit points on the final exam. This is better for you, unless your midterm revisions are at least a full letter grade better than the original.

Online Materials:

The professor maintains a comprehensive website (URL below). Here you may find old exams, solutions, syllabi, course evaluations, grade distributions. Keep in mind that the textbook has not always been identical. He is very diligent and prompt about responding to emails. If you wish to know your grade, please email anytime. However, there is *not* a Blackboard presence for this course, because Blackboard is evil.

SDS:

If you are a student with a disability and believe you will need accommodations for this class, it is your responsibility to contact Student Disability Services at (619) 594-6473. To avoid any delay in the receipt of your accommodations, you should contact Student Disability Services as soon as possible. Please note that accommodations are not retroactive, and that accommodations based upon disability cannot be provided until you have presented your instructor with an accommodation letter from Student Disability Services. Your cooperation is appreciated.

Professor:

Vadim Ponomarenko   vponomarenko@mail.sdsu.edu
http://vadim.sdsu.edu/ (all old materials may be found here, under "teaching")
Office hours: GMCS 511, Mondays and Fridays 11:00am-12:30pm, and by appt.

What if I really need grade X in this course?

Step 1: Are the quiz and exam grades you're getting at least X?
Step 2: Are you coming to every class, doing all the exercises, and reading the textbook?