

**MATH 245: Discrete Mathematics**  
Spring 2016 TR 12:30-1:45pm, SSW 1500

**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, complexity, combinatorics, and graph theory.

**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 several mathematical theorems and algorithms, as found in the text, and apply these tools in the right contexts.

**Coursepack:**

*Lecture Notes in Discrete Mathematics*, by Marcel B. Finan

This is available as a coursepack, and also free online. Please use the correct (latest) version, at: <http://faculty.atu.edu/mfinan/2703/discretebook.pdf>

Students are expected to own and read the coursepack; it is inexpensive, clearly written, and brief. Students are expected to solve *all* the problems in the text (answers can be checked in the back). 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, there will be 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) will receive 5-10 points; quizzes not turned in will receive 0 points. The two lowest quiz scores will be dropped. Note that there will be quizzes on the days before and after the exams; the latter will typically be a second chance on one of the exam questions.

**Exams:**

The three in-class exams and final are closed book, closed notes, with no calculators or other aids permitted. Many questions will be similar to homework questions. The midterm and final exam are each cumulative, with additional emphasis on material not covered on the previous exams. All exams are graded on a 50-100 scale.

**Course Mechanics:**

The course proceeds at the pace of roughly one section per course meeting (Sections 22 and 23 will be combined). Special dates:

Thu Jan. 21: first meeting    Thu Feb. 11: mini-midterm (§1-5)  
 Thu Mar. 17: Midterm (§1-14)    Tue Apr. 19: mini-midterm (§15-20)  
 Thu May 5: last meeting    Thu May 12 10:30am: Final Exam (§1-26, in usual classroom)

**Grading:**

The daily quizzes (after dropping two) are worth a total of 25% of the course grade (approximately 1% each). The two mini-midterms are each worth 10%, the midterm is worth 20%, and the final is worth the remaining 35%. 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

**Collaboration:**

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

**Extra Credit:**

After one of the two mini-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.

**Online Materials:**

The professor maintains a comprehensive website (URL below). Here you may find old exams, solutions, syllabi, course evaluations, grade distributions. 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

<http://rohan.sdsu.edu/~vadim/> (all old materials may be found here, under “teaching”)  
 vponomarenko@mail.sdsu.edu

Office hours: GMCS 511, Tuesdays, Wednesdays, Thursdays 10:00-11:00am, and by appt.

BONUS: Dr. Rubalcaba OH: GMCS 516, Tuesdays, Thursdays 2:10-3:00pm

**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?