MATH 245: Discrete Mathematics   Fall 2009

MWF 1-1:50 SH 247

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Office Hours: Mondays 12-12:45, 3:30-4:30, Tuesdays 10-11, and by appointment

Note: No class or office hours on **Sep.7,9, Nov.11,20-27** due to holidays and furloughs.

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. There will also be a brief introduction to set theory, relations, functions, complexity, combinatorics, probability, and graph theory.

Learning Objectives:

Students are expected to understand elementary mathematical syntax, identifying and constructing well-formed arguments. Students are also expected to understand elementary mathematical semantics, interpreting and constructing meaningful mathematical statements. These are the primary objectives.

Students are expected to learn a list of mathematical definitions, as provided on the "Vocabulary list" handout. For each definition, students are expected to not only memorize the statement, but be able to distinguish objects that do or do not satisfy the definition. This is a secondary objective.

Students are expected to learn several mathematical theorems and algorithms, as given throughout the text, such as De Morgan's Laws or finite state machines. For each, students are expected to correctly apply these tools in the right contexts. This is a secondary objective.

Finally, students are expected to appreciate the limitations of the material of this course, to identify how it connects to other fields of mathematics and how to further investigate each of the topics covered via further study. This is the tertiary objective.

Textbook:

Lecture Notes in Discrete Mathematics, by Marcel B. Finan

`http://www.atu.edu/mathematics/finan/main2.pdf`

This manuscript is freely available online, however students are urged to either print out a copy or buy the coursepack. This text does contain some minor typos, as provided on the "Typo list" handout. Any additional typos should be brought to the instructor's attention immediately.

This course will cover the entire text, at a pace of approximately one section per class meeting.

Homework:

Students are expected to solve *all* problems in the text, together with any supplementary problems assigned. Homework will not be collected or checked; however quizzes are often based on problems in the text.

Attendance:
Students are expected to attend every class; otherwise, they are personally responsible for copying notes from a classmate. *Makeup exams or quizzes are not given under any circumstances.*

Quizzes:
Each class day, other than exam days, there will be a 5 minute quiz on recent material. Students must complete these quizzes on 3×5 cards which they must bring. Approximately 25% of these quizzes will be collected, chosen at random each time. All quizzes are closed book, closed notes, with no calculators or other aids permitted. Students whose quizzes are collected will receive 5-10 points; students that missed the quiz will receive 0.

Exams:
The three in-class exams are open book, open notes; it is particularly helpful to have complete solutions to the exercises. Calculators or other aids are not permitted. The final exam will be cumulative, with additional emphasis on material not covered on earlier exams. All four exams will be graded on a 50-100 scale.

In-Class Exams: Mon. Sep. 21 (Chap.1)   Fri. Oct. 16 (Chap.2,3)   Mon. Nov. 9 (Chap.4)
Final Exam: Monday, December 14, 1-3pm.

Course Mechanics:
The daily quizzes will be scaled to be worth 20% of the course grade; each one will therefore count about 2-3%. The exams will be worth 15% each. The final will be worth 30%, and class participation will be worth the remaining 5%. All students get full class participation credit, unless they repeatedly do annoying things like disrupting class, skipping class, or arriving late.

The grading policy is as follows: A 92-100, B 82-87, C 72-77, D 62-67, $\pm$ as obvious

Extra Credit:
At most *three times* during the semester, students may submit their daily quiz even though it is not their turn to do so. They must decide to do this at the time quizzes are collected, before any quiz solutions are given. This extra credit quiz (or quizzes) will replace the students' lowest quiz scores.

Academic Integrity Policy:
While it is often helpful (and permitted) to cooperate on homework problems, absolutely no collaboration or cheating is permitted during quizzes and exams. Any violations will lead to an SDSU Academic Dishonesty Incident Report, as well as serious sanctions.

Calendar:

Sep.7,9: No class	Oct.16: Exam	Nov.11,20-27: No class
Sep.21: Exam	Nov.9: Exam	Dec.14, 1-3pm: Final