Sierra College
Math 15
Discrete Mathematics
Spring Semester
2019

Instructor:

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Course Identification:

Math 15, Discrete Mathematics
Course Code #45069
V319, MW 7:15-9:20 am
4 units

Office Hours:

MW: 9:30-10:30 am,
TTh: 10:15 am-11:15 pm,
I will be available in the Math Center
on Saturdays, 8 am to 1 pm.

Math Lab:

The Math Lab is located in V329.
This is free, walk in tutoring.
M: 8 am – 5 pm
T: 8 am – 7:20 pm
W: 8 am – 7 pm
Th: 8 am – 7:20 pm
F: 8 am – 4 pm
S: 8 am – 1 pm

Materials:

Text: We are using an open source text whose second edition can be found at: discrete.openmathbooks.org/home.php

Calculator: A scientific calculator is required. In addition, a graphing calculator is recommended. Either a graphing calculator or a computer algebra system will be used periodically in the classroom for demonstration purposes. The graphing utility device is an excellent tool for acquiring the understanding of many of the concepts of this course due to its ability to rapidly investigate both the numerical and graphical aspects of these concepts. However, there will not be any opportunity to use graphing calculators, cell phones, or any other online devices on the quizzes and exams. A scientific calculator is allowed on some exams and quizzes.

Prerequisites:

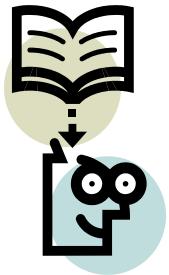
Math 30, Calculus I

Withdraw Date:

February 10, without a W
April 12, with a W

Holidays:

Feb. 15 & Feb. 18, Presidents Weekend
March 15 & 17, Spring Break

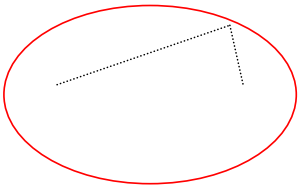


Workload:

The material is treated with a scope and intensity that requires the student to study independently and with peers outside of class.

Attendance:

Attendance is not incorporated in the final course grade. Nevertheless, a solid attendance record is necessary to succeed in a course that is both rigorous and fast paced.



Homework:

Homework will be assigned daily, but will not be collected. Instead, a quiz will be given each Wednesday (except those days on which we have an exam) covering the material from the previous homework.

Exams:

There will be four 100 point exams and a 150 point comprehensive final exam. The lowest of the four regular exam scores or the quiz total will be dropped in the computation of the final course grade. The exam dates are given below:

Exam I: February 13
Exam II: March 6
Exam III: March 27
Exam IV: April 24
Final Exam: Week of May 20

Drop/Refunds:

A student must drop him/herself in order to be eligible for a refund. Instructor drops do not generate refunds.

Grading:

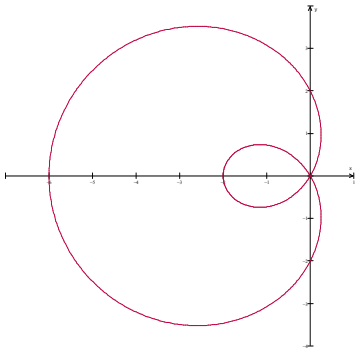
Quizzes: 100 pts
Exams: 400 pts
Final Exam: 150 pts

Quizzes:

There will be more than 10 quizzes, worth 10 points each. Only the top 10 scores will be used in the computation of your final course grade.

Group Work:

Working with other students outside of class is strongly encouraged. The Math Lab is an ideal location for working with your peers.



Honesty Policy:

Cheating is of course forbidden. College policy on cheating, as outlined in the student conduct code, will be strictly enforced.

Student Outcomes:

Through homework assignments, quizzes, exams, projects & classroom discussions, the student will be able to:

1. Logically present clear, complete, accurate, and sufficiently detailed solutions to communicate reasoning and demonstrate the method of solving problems.

2. Construct valid proofs of theorems using the following techniques: mathematical induction, direct and indirect proofs, by contradiction, with truth tables, and by logical equivalences.

3. Solve counting problems using combinatorics, recurrence relations, and generating functions.

4. Solve applied problems using discrete probability theory, graph theory, tree diagrams, and Boolean Algebra.

Topical Outline:

1. **Basic Notions of Sets and Set Operations Including Union, Intersection, and Complements;**
2. **Introduction to Logic and the Nature of Proofs Including Direct and Indirect Proofs and Counter Examples;**
3. **Relations and Functions;**
4. **Principle of Proof by Mathematical Induction and Its Application to a Variety of Formulas Including the Binomial Formula;**
5. **Basic Counting Techniques Including Permutations, Combinations, and the Use of Generating Functions;**
6. **Discrete Probability;**
7. **Matrix Theory;**
8. **Recurrence Equations;**
9. **Trees and Graphs.**

If you want your work to be accepted and graded, then the following must be followed:

- **Remove any fringe from paper torn out of spiral notebook.**
- **Do not use graph paper unless it is used solely for graphing.**
- **All work must be clear and organized.**
- **A full name must be included.**
- **Any take home work must be turned in at the very beginning of class on the next class meeting. No late materials will be accepted.**
- **All paper turned in must be on paper that is approximately 8½ X 11.**

Harassment and Discrimination:

Sierra College is committed to providing a safe learning environment, free of harassment and discrimination as described in District policies found on our website. It is my goal that you feel you can share information related to your life experiences in classroom discussions, in your written work, and in our one-on-one meetings and I will seek to keep information you share private to the greatest extent possible; however, I am required to report information about incidents of gender based discrimination, violence and harassment to the College's Title IX Coordinator.