

Students with Disabilities. Students with disabilities who may need accommodations please see me by September 10th during office hours or make an appointment by phone or via email. Also, please contact:

Disability Resource Center

Voice (831) 582-3672

TTY (831) 582-4024

E-Mail student_disability_resources@csumb.edu

<http://sdr.csumb.edu/>

INTRODUCTION TO THE COURSE

This course covers basic linear algebra, continuous and discrete probability, and a continuation of elementary discrete mathematics from MATH 170. It emphasizes mathematical theory as well as applicable methods. Topics include systems of linear equations, matrices, determinants, vector spaces, conditional probability, distributions and densities, expected value, functions of random variables, automata, and algorithmic complexity.

Course Learning Outcomes. The course learning outcomes, given below, support the following Computer Science Major Learning Outcome:

Core Outcome 4: Mathematics for Computing. Use mathematical concepts and constructs to express ideas and solve problems in computer science, and to communicate quantitative information.

- Use mathematical ideas to solve problems in Computer Science and Information Technology.
- Use mathematical thinking and models, charts, graphs, tables, figures, equations, and appropriate technologies to express ideas and concepts.
- Demonstrate an understanding of discrete mathematical concepts used in computing: Articulate and apply the concepts of binary numbers, combinatorics, logic, truth tables, graph theory and algorithms to problems in Computer Science and Information Technology.
- Analyze and evaluate the mathematical thinking and strategies of others.

At the completion of this course, successful students in MATH 270 will be able to do the following:

- ▷ Probability Outcomes
 - Understand the basic concepts of probability theory, including independence, conditional probability, Bayes' formula, expectation, variance and generating functions.
 - Understand the significance of the expectation and the variance for discrete and continuous random variables, and be able to compute these parameters for simple distributions.
 - Use random processes to model and predict phenomena governed by binomial, geometric, normal, and Poisson distributions.
- ▷ Linear Algebra Outcomes
 - Solve systems of linear equations using Gaussian elimination to reduce the augmented matrix to row echelon form or to reduced row echelon form.
 - Solve application problems of systems of linear equations.
 - Apply the basic techniques of matrix algebra, including the operations of addition, scalar multiplication, multiplication, and finding the inverses and transposes of matrices.
 - Calculate determinants using row operations, column operations, and expansion down any column or across any row.
 - Prove elementary statements concerning the theory of matrices and determinants.
- ▷ Computational Theory Outcomes
 - Understand the big- \mathcal{O} , big- Ω , and big- θ notations and their application to the analysis of algorithms.
 - Complete an analysis of algorithm efficiency in the context of sequential search, insertion sort, and selection sort.
 - Understand properties of logarithms that are particularly important in the analysis of algorithms and other areas of computer science.

- Apply properties to analyze algorithms whose orders involve logarithmic functions including binary search and merge sort.
 - Understand regular expressions and their utility for pattern matching in the context of compilers and general text processing.
 - Understand the concept of finite-state automaton.
 - Find a finite-state automaton that corresponds to a regular expression and write a program to implement a finite-state automaton.
 - Understand what it means for a finite automaton to be simplified.
- ▷ Verbal and Cognitive Outcomes
- Interpret and communicate mathematical analyses in written and oral form.
 - Solve unfamiliar problems in probability, linear algebra, and computational theory using appropriate problem solving techniques.
 - Place mathematical problems in context and explore their relationship with other problems.

ASSESSMENT AND GRADING POLICY

Course Components and Assessment.

Warning: If you stop coming to class your instructor will not automatically drop you. If you unofficially drop this course (stop attending) you will be given a grade of WU (equivalent to an F) if you have completed less than half your course work, and a grade of F if more than half has been completed.

A typical day in class will encompass both lecture and class activities. Assessment for this class depends on the following components.

Coursework and Participation (10%).

Homework Assignments (0%). You will be given written homework assignments, which will not be collected for a grade. However, it is expected that you complete the homework assignments and be able to do problems similar to the assigned homework problems on the weekly quizzes described below.

Review Packages (20%). Each week there will be a Review held by our TAs. The complete review package will be collected each week. You can attend the review session to get help on the problems or you solve them alone. The complete package must be turned in each week for any credit.

Quizzes (20%). Quizzes will be given weekly. The questions will be similar to the weeks homework and activities.

Exams (50%). Two Midterms (15% each) and a cumulative final (20%) will be administered throughout the semester. Midterm 1 ~ 5th week, Midterm 2 ~ 10th week and Final Exam will be on Monday of the assessment week. There will be no make up exam, so if you have a conflict let me know as soon as possible.

Extra Credit. There will be opportunities to earn extra credit throughout the semester that typically consist of programming.

Grading Policy. Grading in this class will be based on the following:

Grading Structure.	
Coursework & Participation	10%
Review Packages	20%
Quizzes	20%
Exam I	15%
Exam II	15%
Final Exam	20%

Grading Scale.	
A	90 - 100 %
B	80- 89 %
C	70 - 79 %
NC	less than 70 %

Grading Structure and Grading Scale may change slightly to reflect minor changes in the course during the semester.

CLASS POLICIES

Attendance and Participation. Students must attend all classes. Absences from class will inhibit your ability to fully participate in class discussions and problem solving session and therefore, affect your grade.

MISSING MORE THAN 3 CLASSES MEANS YOU FAILED THE CLASS, REGARDLESS OF THE AMOUNT OF POINTS YOU COLLECTED.

If anyone needs to leave class early you must let the instructor know before the class starts.

Conduct. Students need to treat each other and their professor with respect at all times. That includes raising their hands and waiting to be called if questions are asked/answered. Disruptive behavior will not be tolerated. Such student might be asked to leave the class. If such student is able to control his/her emotions the student can reenter the class.

If the disruptive behavior persists the instructor reserves the right to fail this student.

Cellular Phones and electronic devices. All cellular phones must be switched off during all class times and put away inside your pocket or backpack. No earphones are allowed. The only exception is if the instructor regards it as necessary for following course material. This must be clarified before.

Makeup Exam Policy. There will be no makeup quizzes and exams, except in rare situations where the student has a legitimate reason for missing the exam, including illness, death in the family, accident, requirement to appear in court, etc.