
Catalogue Description:
Sets, logic, methods of proof including mathematical induction, functions, relations, elementary combinatorics, probability, Boolean algebras.

Course Goals: To introduce students to mathematical proofs, techniques, and terminology, and to begin developing mathematical sophistication.

Student Learning Outcomes are listed at the end of this sheet

Pre-requisites: Math 19, with a grade of C or better, or eligibility for Math 30 or 30P

Adding / Dropping: This class gets full quickly and the waiting list is usually long. If a registered student drops and an empty spot is created, add codes will first be given to Graduating Seniors who have a valid “card”, then to students graduating in Fall, then to Math Majors, then to Math Minors. Repeating students and those seeking “Grade Forgiveness” have the least priority.

GRADING (Total 600 Points. A- starts at 90%, B- at 80%, C- at 70% and D- at 60%)
Quiz-1 Quiz-2 and Quiz-3 50 points each. Dates February-8, March-15, May-8
Test-1 (Chapters 1,2 and 3) 100 Points. Thursday, February 22
Test-2 (Chapters 4, 5, 6 and 7) 100 Points. Thursday, April 19
Final Exam 200 Points. (Cumulative Exam) Wednesday, May 16, 7:15am to 9:30
Homework 50 Points (Will be assigned and collected weekly. Late penalty 20% per day.)

You should keep a record of all the homework problems. Homework will be collected, and a grade assigned for it. Late penalty 20% per day. We will discuss solutions to some odd-numbered homework problems, but not all. You will learn best if you think hard about each problem and write a partial solution before you see an answer. It is obvious that “you learn math by doing it and not by watching the instructor solve problems on the board”. You will notice that time spent on a homework pays off during a test, especially because many homework problems will show up on tests.

Make-up tests: You will receive a “zero-score” for missing a test. There are no “make-ups” or “extra credit”. In case of unusual circumstances please contact me before the exam (via phone, message, in-person, note, ...). Proof of sickness, accident, brother’s wedding, “my car broke down just before the quiz/exam” etc., will be required. If your reason for missing a test/quiz is accepted as “valid”, then your next test’s score will be counted in place of the missed test. Our pace will be about “three sections of the text book per week”, so, if you are left behind for some reason, be prepared to “catch up” at your own risk. An “Incomplete” grade will not be given on basis of poor performance.

Study Habits: In this 3-unit course, students are expected to spend 6 to 9 hours per week outside of class (computing, studying and doing homework). You must pay attention in class. It is obvious that “you learn math by doing it and not by watching the instructor solve problems on the board”. You will notice that time spent on a homework pays off during a test (quiz), especially because many homework problems may show up on tests (quizzes). You are encouraged to see me during my office hours, go to the Math-Lab in MH-221 and also visit the tutor center called “peer connections” http://peerconnections.sjsu.edu located in the tenth street garage, behind the Bursar’s office. You should keep a record of all the homework problems. Homework will be collected, and a grade assigned for it. We will discuss solutions to some homework problems, but not all. You will learn best if you think hard about each problem and write a partial solution before you see an answer. The following statement about homework is from page (xiii) of our textbook: “Students are strongly urged not to consult solutions (in appendix B) until they have tried their best to answer questions on their own.”
Academic Integrity: Cheating on any quiz or exam may result in an F grade in the course. On homework you can consult with other students on general matters. A copied homework is cheating. An answer that is not produced by your solution to a problem will be considered as cheating. On tests, exposing your work so others can see or copy it, is also considered as cheating. The Campus Integrity Policy requires you to be honest in all your academic coursework. Cheating on any quiz or exam may result in an F grade in the course. On homework and MATLAB projects, you can consult with other students on general matters. A copied homework is cheating. An answer that is not produced by your solution to a problem will be considered as cheating. On tests, exposing your work so others can copy, is also cheating. Students are expected to be aware of the Academic Integrity Policy at SJSU, which can be found at http://www.sjsu.edu/studentconduct/docs/Academic%20Integrity%20Policy%20F15-7.pdf

Academic integrity statement (from Office of Judicial Affairs): “Your own commitment to learning, as evidenced by your enrollment at San José State University, and the University’s Academic Integrity Policy requires you to be honest in all your academic course work. Faculty are required to report all infractions to the Office of Judicial Affairs.”

Disability: If you need course adaptations or accommodations because of a disability, please see the instructor privately or during regular office hours. The Disability Resource Center DRC is now called Accessible Education Center, AEC, phone: 408-924-6000, website: http://www.sjsu.edu/aec

Campus policy in compliance with the Americans with Disabilities Act: “If you need course adaptations or accommodations because of a disability, or if you need special arrangements in case the building must be evacuated, please make an appointment with your instructors as soon as possible, or see them during office hours. Presidential Directive 97-03 requires that students with disabilities register with DRC to establish a record of their disability.”

Class attendance According to University policy F69-24, “Students should attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to insure maximum benefit for all members of the class. Attendance per se shall not be used as a criterion for grading.”

General Expectations, Rights and Responsibilities of the Student As members of the academic community, students accept both the rights and responsibilities incumbent upon all members of the institution. Students are encouraged to familiarize themselves with SJSU’s policies and practices pertaining to the procedures to follow if and when questions or concerns about a class arises. See University Policy S90–5 at http://www.sjsu.edu/senate/docs/S90-5.pdf. More detailed information on a variety of related topics is available in the SJSU catalog, at http://info.sjsu.edu/web-dbgen/narr/catalog/rec-12234.12506.html. In general, it is recommended that students begin by seeking clarification or discussing concerns with their instructor. If such conversation is not possible, or if it does not serve to address the issue, it is recommended that the student contact the Department Chair as a next step.

Consent for Recording of Class and Public Sharing of Instructor Material University Policy S12-7, http://www.sjsu.edu/senate/docs/S12-7.pdf, requires students to obtain instructor’s permission to record the course:
(1) “Common courtesy and professional behavior dictate that you notify someone when you are recording him/her. You must obtain the instructor’s permission (in writing or orally and whether for the whole semester or on a class by class basis) to make audio or video recordings in this class. Such permission allows the recordings to be used for your private study purposes only. The recordings are the intellectual property of the instructor; you have not been given any rights to reproduce or distribute the material.”
(2) In classes where active participation of students or guests may be on the recording, permission of those students or guests should be obtained as well.
(3) “Course material developed by the instructor is the intellectual property of the instructor and cannot be shared publicly without his/her approval. You may not publicly share or upload instructor generated material for this course such as exam questions, lecture notes, or homework solutions without instructor consent.”

Calendar on next page
Calendar  Math-CS-42 Section 5  Spring 2018

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<thead>
<tr>
<th>Week</th>
<th>Starting</th>
<th>Activity for this week</th>
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<tbody>
<tr>
<td>1</td>
<td>January 22</td>
<td>Wednesday January 24 Classes Start. On Thursday cover sections 1.1, 1.2</td>
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<tr>
<td>2</td>
<td>January 29</td>
<td>Sections 1.3 2.1 2.2</td>
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<tr>
<td>3</td>
<td>February 5</td>
<td>Sections 2.3 3.1 3.2  <strong>QUIZ #1 on Thursday, 30 minutes, covers Chapters 1 and 2.</strong></td>
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<td>4</td>
<td>February 12</td>
<td>3.3 3.4 4.1</td>
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<td>5</td>
<td>February 19</td>
<td><strong>TEST #1 on Thursday February 22, covers CHAPitERS 1, 2 and 3</strong></td>
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<td>6</td>
<td>February 26</td>
<td>Sections 4.2 4.3 4.4</td>
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<td>7</td>
<td>March 05</td>
<td>Sections 5.2 5.3 5.5</td>
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<td>8</td>
<td>March 12</td>
<td>Sections 6.1 6.2  <strong>QUIZ #2 on Thursday, 30 minutes, covers Chapters 4 and 5.</strong></td>
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<td>9</td>
<td>March 19</td>
<td>Sections 6.3 6.4 7.1</td>
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<tr>
<td>10</td>
<td>March 26</td>
<td><strong>SPRING BREAK / NO CLASSES</strong></td>
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<td>11</td>
<td>April 02</td>
<td>Sections 7.2 7.3 7.4</td>
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<td>12</td>
<td>April 09</td>
<td>Sections 8.1 8.2 8.3</td>
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<td>13</td>
<td>April 16</td>
<td><strong>TEST #2 on Thursday April 19, covers CHAPitERS 4, 5, 6 and 7</strong></td>
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<td>14</td>
<td>April 23</td>
<td>Sections 9.1 9.2 9.3</td>
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<td>15</td>
<td>April 30</td>
<td>Sections 9.4 9.5 9.6</td>
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<td>16</td>
<td>May 07</td>
<td><strong>QUIZ #3 on TUESDAY covers Chapters 8 and 9.</strong>  Review for Finals</td>
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<tr>
<td>17</td>
<td>May 14</td>
<td>Monday May 14 is the Last Day of Classes. No DISCRETE MATH class this week</td>
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<tr>
<td>18</td>
<td>May 16</td>
<td><strong>FINAL EXAM Wednesday, May 16 , 7:15am to 9:30</strong></td>
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**Important Dates / Deadlines**
- Monday  February 5 Last Day to Drop Courses Without an Entry on Student's Permanent Record
- Monday  February 12 Last Day to Add Courses & Register Late
- Monday - Friday March 26-30 Spring Recess /Spring Break
- Friday March 30 Cesar Chavez Day (Observed) - Campus Closed
- Monday May 14 Last Day of Instruction – Last Day of Classes
- Final Exams Wednesday - Tuesday May 16-22

**Student Learning Outcomes:**

At the end of the semester, students should be able to:

1) State the converse, inverse, contrapositive and negation of a conditional statement, including quantified statements
2) Construct truth tables and interpret the results to determine whether a compound statement is a tautology, contradiction or neither, whether two logical statements are equivalent, and whether an argument form is valid or invalid
3) Recognize standard valid and invalid argument forms
4) Apply valid argument forms to arrive at a valid conclusion based on given premises
5) Construct counterexamples to disprove a statement
6) Write direct proofs, proofs involving division into cases, proofs involving the contrapositive, and proofs by contradiction to prove statements involving elementary number theory
7) Write induction proofs to prove appropriate mathematical statements
8) Find complements, unions, intersections and differences of sets
9) Prove set identities
10) Identify relations and functions
11) Determine whether a function is one-to-one and onto
12) Determine whether a relation is reflexive, symmetric and transitive
13) Apply the multiplication principle, inclusion-exclusion rule, permutations and combinations to solve combinatorics problems
14) Apply counting techniques to determine the probability of events