California State University, Los Angeles
Computer Science Department
CS 2148 Discrete Structures
(Fall 2019)

COURSE INFORMATION

Instructor Information
Instructor: Yuqing Zhu
Office Location: E&T A327
Telephone: (323) 343-4572
Email: yuqing.zhu@calstatela.edu
Office hours: MW 2:00PM-3:30AM; by appointment
Class Days/Time: MW 4:30PM-5:45PM Lecture
Classroom: ET A309
Prerequisites: CS2012, Math 2120

Course Description
An introduction to discrete mathematics with applications to Computer Science; fundamentals of logic and set theory, counting techniques, relations, induction and recursion; graphs and trees; probability theory

Course Objectives/Outcomes
The Student Learning Outcomes that are addressed by the course are:
SLO #1. Students will be able to apply concepts and techniques from computing and mathematics to both theoretical and practical problems.
SLO #3. Students will have a strong foundation in the design, analysis, and application of many types of algorithms.
SLO #5. Students will have the training to analyze problems and identify and define the computing requirements appropriate to their solutions.

REQUIRED COURSE MATERIALS

Textbook
By: Susanna S. Epp

COURSE POLICIES
You are not allow to have make-up exams, late submissions, or incompletes. Your classroom participation and attendance will count towards your final grade. See the grading policy below.
Your classroom participation are your discussions with your peers and presentations for the classroom activities. Your attendance will be checked in the beginning of every class. To be considered in attendance, you must be present in the class for at least one half of the class time. If you missed classes more than 4 times, you will not receive any credit for participation or attendance. If you missed classes more than 7 times (25% of the classes), you will receive a F. No cell phone usage is allowed during the class/exams.

**Course Structure**
This course is to be conducted entirely face-to-face lectures. You will participate in the course using a [CSNS](#) learning management system.

**Computer Requirements**
You are required to use your computer (a desktop or laptop) to complete project assignments. Your computer should have Java development kit installed. You are required to submit your assignments (programs or documents) via [CSNS](#) learning management system. You are required to install an image viewer for PPM file formats such as [Irfanview](#) to view sample image test data. Check the [ITS Helpdesk Student Resources page](#) for available software.

**ASSIGNMENTS AND GRADING POLICY**

There will be some class meetings where students are requested to solve exercise problems on board. The students will be grouped. When a student solves the problem on board, all group members get the full credit. When a student cannot solve the problem, other members from the group can help him/her, and if the problem is solved, all members still get the full credit. However, please note that, a student cannot “save” the group for more than twice.

**Grading Criteria**

<table>
<thead>
<tr>
<th>Points Possible</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assignment</strong></td>
<td></td>
</tr>
<tr>
<td>Classroom Exercises</td>
<td>20%</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>30%</td>
</tr>
<tr>
<td>Fina Exam</td>
<td>40%</td>
</tr>
<tr>
<td>Assignments</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td>100%</td>
</tr>
</tbody>
</table>

**Grading Scale**

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90% and above</td>
</tr>
<tr>
<td>Letter Grade</td>
<td>Percentage</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>B</td>
<td>70% and below 90 %</td>
</tr>
<tr>
<td>C</td>
<td>60% and below 70 %</td>
</tr>
<tr>
<td>D</td>
<td>50% and below 60%</td>
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<tr>
<td>F</td>
<td>Below 50%</td>
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**Grades**
Grades for each assignment will be emailed via CSNS as soon as grading is finished. Any grading issues must be communicated through email with the instructor. Please do not post any grading concerns in a discussion forum.

**COURSE COMMUNICATION**

**Interaction with Instructor**
The Instructor will make every effort to communicate frequently with students through announcements and postings within the CSNS site. Post any questions or comments you have about the course content and/or requirements in the CSNS course forum. Questions of a more personal nature can be sent to the Instructor via email.

**Netiquette**
When posting on the discussion boards and chat rooms it is important to understand how to interact with one another online, *netiquette*. You can read more about the rules of netiquette at [15 Rules of Netiquette for Online Discussion Boards](#)

**HELPFUL STUDENT RESOURCES**

**Technical Resources**
Information on CSULA technical support resources for students: [Technical Support](#)

**Student Support Services**
Information on CSULA student support resources for students: [Student Services](#)

**Academic Support Services**
Information on CSULA academic support resources for students: [Academic Support](#)

**COURSE & UNIVERSITY POLICIES**

**Student Handbook**
Information on student rights and responsibilities, academic honesty, standards of conduct, etc., can be found in Schedule of Classes for the current quarter visit the Cal State LA [Schedule of Classes Information](#) under Policies and Procedures.

**Dropping and Adding**
Students are responsible for understanding the policies and procedures about add/drops, academic renewal, etc. Students should be aware of the current deadlines and penalties for adding and dropping classes by visiting the GET home page. (Registrar news and information)

**Americans with Disabilities Act (ADA)**
Reasonable accommodation will be provided to any student who is registered with the Office of Students with Disabilities and requests needed accommodation. For more information visit the Office for Students with Disabilities home page.

**Academic Honesty/Student Conduct**
All work you submit must be your own scholarly and creative efforts. Any act of using ideas, words, or work of another person or persons as if they were one’s own is considered as cheating. Cheating will not be tolerated. Cheating on any assignment or exam will be taken seriously. All parties involved will receive a grade of F for the course and be reported to the University Official. Check Appendix E - Student Conduct / Student Conduct Procedures to see student code of conduct in Cal State LA.

**Course Outline/Schedule of Assignments**

**Schedule**  
*This schedule is subject to change.* Any changes will be notified in the class room and via email and CSNS. Up-to-date schedule is maintained on CSNS.

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Assignments/Activities:</th>
</tr>
</thead>
</table>
| 1    | Speaking Mathematically  
• Variables |  |
| 2    | Speaking Mathematically  
• Mathematical Statements  
• Sets  
• Relations and Functions |  |
| 3    | Exercise  
The logic of Compound Statements  
• Logic Form and logic equivalence |  |
| 4    | The logic of Compound Statements  
• Statements  
• Compound Statements  
• Logical Equivalence |  |
| 5    | Exercise  
The logic of Compound Statements  
• Conditional Statements  
• Valid and Invalid Arguments |  |
| 6    | The logic of Quantified Statements  
• Predicates and Quantified Statements I |  |
| 7    | The logic of Quantified Statements  
• Predicates and Quantified Statements II  
• Statements with Multiple Quantifiers |  |
<p>| 8    | Exercise | Midterm |</p>
<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Assignments/Activities:</th>
</tr>
</thead>
</table>
| 9    | Sequences  
• Summation and Production  
• Change of Variables |   |
| 10   | Mathematical Induction  
Exercise |   |
| 11   | Recursive Sequence  
Exercise |   |
| 12   | Counting and Probability  
• Introduction  
• Possibility Trees and the Multiplication Rule |   |
| 13   | Counting and Probability  
• The Addition Rule  
• The Pigeonhole Principle  
• Combinations  
Exercise |   |
| 14   | Counting and Probability  
• Conditional Probability  
• Bayes’ Theorem |   |
| 15   | Exercise  
Review of Topics for the final exam (Q&A) |   |
| Final |       | **Prepare for Class:** You are required to review lecture slides, your midterm exams, and sample questions for the final exam. |