CS 2813-001
Discrete Structures
Spring 2008

General Information
Class Time: Tuesday and Thursday 1:30 - 2:45 PM
Location: CEC 119
Prerequisite: CS 1323 Fundamentals of Computer Programming
 Dependencies: CS 2413 Data Structures has this class as a prerequisite. Since 2413 is a prerequisite for all upper division and graduate classes in computer science, this class is an indirect prerequisite for every upper division and graduate computer science class.
Instructor: Dr. K. Thulasiraman
Office: 126 Engineering Laboratory
Mailbox: 120 Engineering Laboratory
Office Phone: 325-0566 (voice mail available)
Email: thulasi@ou.edu
Office Hours: Tuesday-Thursday 10:30 AM - 12 Noon

Teaching Assistant: The teaching assistant Javed Mohammad will grade all homework. Any questions about homework grading should be first addressed to the teaching assistant. TA Office Hours Tuesday – Thursday 3- 4 PM.

Objectives
Discrete mathematics is complementary to calculus. In calculus, continuity is usually assumed. In computer science, continuity is not possible. The mathematical term for things which are not continuous anywhere is “discrete”. This fundamental difference means that computer scientists need to be familiar not only with calculus, but with the mathematical techniques and ideas which are used when things are discrete instead of continuous. This class will teach those techniques.

1. Define mathematical terms which are common in computer science.
2. Develop an understanding of the methods of proof writing, including developing the skill to write proofs independently.
3. Develop an understanding of the principles of enumeration.
4. Examine the foundations of set theory, relations, functions, and graph theory.
Topics:

- Review of Logic and sets: Sections 1.1-1.4, 2.1-2.2
- Proof Techniques: Sections 1.5-1.7
- Functions: Section 2.3
- Induction and Recursion: Sections 4.1-4.3
- Counting: Sections 5.1-5.5
- Advanced Computing: Chapter 7
- Relations: Chapter 8
- Graphs: Sections 9.1-9.4

Course Policies

**Class Attendance:** Class attendance is important because we will discuss concepts and examples that are not in the textbook. Another student’s notes are an inadequate substitute for class attendance. Students are responsible for all material covered in class.

**Homework:** Homework will be assigned every Thursday. The assigned homework will be due at the beginning of class the next Thursday. Late homework will not be accepted. If class attendance is impossible on a day when homework is due, it may be placed in my departmental mailbox before that start of class. Following grading, solutions to all of the problems will be available on the Blackboard.

**Accommodation of Disabilities:** Any student in this course who has a disability that may prevent him or her from fully demonstrating his or her abilities should contact me personally as soon as possible so we can discuss accommodations necessary to ensure full participation and facilitate his or her educational opportunities.

**Collaboration:** All graded work should represent the work of a single individual. Working in pairs or groups is strictly prohibited on any work which is to be handed in for a grade. The first documented occurrence of collaborative work will result in a grade of zero on the assignment for all participants, as well as the loss of the borderline grade consideration. The second documented occurrence of collaborative work will result in a grade of F in the course for all participants as well as other penalties which might be applicable for the College of Engineering and the University of Oklahoma. The procedure to be followed is documented in the University of Oklahoma Academic Misconduct Code.

**Tests:** In addition to the final exam, there will be two tests during the term. The dates for the test will be announced in class. Missing a test without a previously approved excuse will result in a grade of zero for that test. If a test is missed for a verifiable, documented, and approved reason the test component of the grade will be calculated from the tests which are taken. **Makeup tests are never available.**
Grading: There are four components to the course grade. They are weighted as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Tests (2)</td>
<td>40</td>
</tr>
<tr>
<td>Homework</td>
<td>20</td>
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<tr>
<td><strong>Final Exam</strong></td>
<td><strong>40</strong></td>
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The grading scale will be no higher than the following. It may be lower at the discretion of the instructor.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>90+</td>
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<tr>
<td>B</td>
<td>80-89</td>
</tr>
<tr>
<td>C</td>
<td>70-79</td>
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<tr>
<td>D</td>
<td>55-69</td>
</tr>
<tr>
<td>F</td>
<td>Otherwise</td>
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**Borderline Grades:** Although it would be preferable that all grades are cleanly decided, it is usually the case that a few final course grades are decided by only a few points. A grade is a borderline grade if it is within two points of the next higher grade. Therefore, grades like 69 and 78 are borderline grades, but grades like 81 and 72 are not. The final examination will be used to determine borderline grades.