Discrete Mathematical Structures

This course is a survey and development of the theoretical tools suitable for algorithmic applications. Major topics covered include propositional and predicate calculus, proofs, mathematical induction, order notation, recurrences and discrete structures. 3/1 hours credit. Prerequisites: CS 1713/1711 and MATH 1214. The objectives of this course are to introduce you to several mathematical concepts for analyzing computer programs and to give you experience in the use of these concepts.

Instructor
Name: Tom Bylander
Office: SB 4.01.38
Phone: 458-5693
Email: bylander@cs.utsa.edu
WWW: http://www.cs.utsa.edu/~bylander/cs2233
Office Hours: Monday 1-2pm, Wednesday 2-3pm, Friday 10-11am, or by appointment.

Book

Grading
Homework/Quizzes 20%
Participation 10%
Midterm 1 20%
Midterm 2 20%
Final Exam 30%

Late homeworks will be accepted only for reasonable excuses. Late quizzes are not accepted. Make-up exams are permitted as long as it’s a reasonable excuse, you inform me in a timely fashion, and you document the excuse.

Homeworks and Quizzes
There will be several homeworks. Generally, homework will be assigned during one week and be due the next week. The homework will be available on my web site. Collaboration is permitted on homework, but direct copying is not allowed.

All homeworks will be handed in electronically by using Blackboard (http://learn.utsa.edu). The preferred document type for answers is PDF (not handwritten, not .txt, not .doc, not .docx). On your own, you will need to learn how to use a word processor (e.g., MS Word or
OpenOffice) or a document formatting language (e.g., LaTeX) to produce the mathematical symbols needed for your answers and to produce PDF files.

There will also be several online quizzes. Like the homework, the quizzes will be assigned one week and be due the next week. The quizzes will be available on Blackboard (http://learn.utsa.edu).

One homework/quiz will be dropped; this is intended to cover any transient excuses (e.g., missed deadlines, brief illnesses).

**Attendance and Participation**

The participation grade is primarily based on attendance and submission of homework. If you attend class and recitations at least 80% of the time and you hand in at least 80% of the homeworks, that will fulfill that portion of the grading. However, blank answers on homeworks, arriving late to class, or leaving class early do not count.

**Recitation Policy**

The recitation sections will be devoted to questions about the homework. Many of the homework problems will be solved in the recitations, so it will be worth your time to go.

**Tentative Schedule**

<table>
<thead>
<tr>
<th>Day</th>
<th>Topic</th>
<th>Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan. 15ff</td>
<td>Logic and Proofs</td>
<td>§1</td>
</tr>
<tr>
<td>Jan. 29ff</td>
<td>Sets, Functions, Sequences, Sums</td>
<td>§2.1-2.5</td>
</tr>
<tr>
<td>Feb. 14</td>
<td>First Midterm</td>
<td></td>
</tr>
<tr>
<td>Feb. 19ff</td>
<td>Algorithms and Order Notation</td>
<td>§3</td>
</tr>
<tr>
<td>Mar. 5ff</td>
<td>Induction and Recursion</td>
<td>§5, §8.1-8.3</td>
</tr>
<tr>
<td>Mar. 28</td>
<td>Second Midterm</td>
<td></td>
</tr>
<tr>
<td>Apr. 2ff</td>
<td>Relations</td>
<td>§9</td>
</tr>
<tr>
<td>Apr. 9ff</td>
<td>Graphs</td>
<td>§10</td>
</tr>
<tr>
<td>Apr. 16ff</td>
<td>Trees</td>
<td>§11</td>
</tr>
<tr>
<td>Apr. 23ff</td>
<td>Modeling Computation</td>
<td>§13</td>
</tr>
<tr>
<td>Apr. 30</td>
<td>Last Class</td>
<td></td>
</tr>
<tr>
<td>May 10</td>
<td>Final Exam: 10:30am–1:00pm</td>
<td></td>
</tr>
</tbody>
</table>

**Scholastic Dishonesty**

The integrity of a university degree depends on the integrity of the work done for that degree by each student. The University expects a student to maintain a high standard of individual honor in his/her scholastic work.

In this course, collaboration is permitted on homework, but direct copying is not allowed. In particular, copying other students' homework with minor modifications will be regarded as a serious case of cheating. You must write your own answers.

Further information on UTSA’s policies regarding academic dishonesty can be found in UTSA’s Student Code of Conduct, Section 203.