UCOR 1200-03: Mathematical Reasoning  
Fall Quarter 2013

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Office: Bannan 418, 398-4434  
Office hours:  M 2-3:30,  W 1-2:30,  Th 10-11:30,  and by appointment  

Course ANGEL page:  http://angel.seattleu.edu (syllabus, weekly schedule, homework assignments, homework solutions, and exam solutions are all posted here)

Course Description: This course serves as an introduction to mathematical ideas used in the modern world, with an emphasis on quantitative methods applied to life experiences and on developing problem-solving and critical thinking skills. Students will explore a variety of topics that involve mathematical reasoning and in doing so gain confidence and the ability to use various quantitative methods to solve problems. Topics include the mathematics of voting, weighted voting systems, the mathematics of money, probability, collecting statistical data, graphing and summarizing data, normal distributions, statistical inference, the mathematics of population growth, and Fibonacci numbers.

Goals: The mathematics department has established the following goals.

Goals for students in all mathematics courses. Each student will:

• develop the ability to think abstractly and critically;
• improve the ability to communicate mathematically through writing and speaking;
• represent abstract concepts pictorially;
• use mathematics as a modeling and problem-solving tool;
• appreciate and use appropriate technology, becoming proficient with, but not dependent on, symbolic graphing tools or mathematical software.

Additional goals for students in this section of UCOR 1200. Each student will:

• understand the fundamental ideas of the topics discussed, including various voting methods and fairness criteria, the significance of Arrow’s impossibility theorem, basic mathematical principles of money management, evaluating probabilities, methods of data collection and conducting clinical studies, methods of graphing and summarizing data, how normal curves can be used as models of real-life data sets, Fibonacci numbers and where they appear in nature;
• develop basic mathematical skills needed for lifetime proficiency, as well Core sciences and social sciences;
• recognize when mathematical tools are appropriate for solving both real word and abstract mathematical problems, and gain confidence in solving such problems;
• apply qualitative tests to determine whether a solution to a problem is reasonable;
• enjoy studying and writing about mathematical applications, and working with others in the class.

Core Curriculum Learning Objectives: This course helps students:

• learn mathematical principles and skills.
• learn to use mathematical reasoning and understand how mathematicians construct arguments and solve problems.
• improve their academic writing skills.
Text: *Excursions in Modern Mathematics, with Mini-Excursions* (7th edition), by Peter Tannenbaum. Publisher: Pearson/Prentice Hall.

Calculator: A calculator is a useful computational tool in this course, so you should have access to one for use on homework, class work, and exams. Your calculator should do exponentiation, but graphing capabilities are not needed.

Homework: Homework will be due once or twice a week. Late homework will not be accepted, but your lowest homework score will be dropped. Collaboration on solving homework problems is strongly encouraged. More precisely, you may work together and share information verbally, on scratch paper, or at a blackboard, but you are obligated under Seattle University’s Academic Integrity Policy (see below) not to share the homework papers that you plan to submit. Under no circumstances should a solution be copied from someone else.

Project: There will be four class projects. Project descriptions, guidelines, and due dates will be handed out about a week before the project is due.

Quizzes: There will be five short quizzes. Make-up quizzes will be given only in exceptional cases (e.g. serious illness).

Tests: There will be two in-class tests and a two-hour cumulative final exam. Make-up exams will be given only in exceptional cases (e.g. serious illness).

   **Test 1:** Monday, October 21  
   **Test 2:** Wednesday, November 20  
   **Final:** Wednesday, December 11, 12:00-1:50 PM

Study Groups: Voluntary 90-minute study groups will be held weekly. Time and location will be announced as soon as they have been set. The Study Groups will be led by Maria Principe, a learning assistant for SU’s Learning Assistance Programs.

Oral Reviews: There will be voluntary, nongraded oral reviews before each exam including the final. Orals provide an opportunity to prepare for the exams in a small-group setting. Students will be able to sign up for orals approximately ten days before each exam.

Participation: Students are expected to prepare for, attend, and participate in all class meetings. Students get the most out of class when they have read and are familiar with the material that will be discussed that day. To prepare for class you should look over your notes from the previous class and try the assigned homework problems. Once prepared, please come to class on time and with your **cell phones turned OFF**. Participating in class includes answering and asking questions, arriving on time, offering ideas and conjectures, listening and working effectively with your group, volunteering to do a problem on the board, and simply being alert and paying attention in class. Participating and talking are not necessarily the same thing.

Academic Honesty: SU is committed to the principle that academic honesty and integrity are important values in the educational process. Academic dishonesty in any form is a serious offense against the academic community. Acts of academic dishonesty will be addressed according to the SU
Academic Integrity Policy (see [https://www.seattleu.edu/registrar/Policies.aspx](https://www.seattleu.edu/registrar/Policies.aspx)) If you are not sure whether a particular action is acceptable according to the Academic Integrity Policy, you should check with your instructor before engaging in it.

**Grading:** The points for the course will be distributed as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>50</td>
</tr>
<tr>
<td>Quizzes (20 points each)</td>
<td>100</td>
</tr>
<tr>
<td>Projects</td>
<td>110</td>
</tr>
<tr>
<td>Midterm tests (100 points each)</td>
<td>200</td>
</tr>
<tr>
<td>Final exam</td>
<td>120</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>580</td>
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</tbody>
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Based on the above point distribution, students are guaranteed the following course grades, *including* + and -. The percentages may be lowered, but they will not be raised.

- **A:** 90% and above
- **B:** 80% and above
- **C:** 65% and above
- **D:** 55% and above

**Assistance:** There are a number of people who want to help you succeed in this course. When you have difficulties with a concept or just want to discuss an idea further, you are strongly encouraged to seek help from:

1. **Your instructor:** Come to my office hours, make an appointment to see me, or just drop by if my office door is open. I want to help each of you to do your best.

2. **Your classmates:** Many students learn the most when they work with others. You will often be required to work together in class, and I hope you will study together outside of class and cooperate on homework. Ask each other lots of questions. This even benefits students who are comfortable with the material – you know you really understand something if you can explain it to others.

3. **The Math Lab:** You may drop by the Math Lab, located on the second floor of the Lemieux Library, any time it is open to receive help (the hours will be announced in class). The Math Lab is open about 35 hours a week and is staffed by talented math students with good communication skills.

4. **Learning Assistance Programs:** These services include one-on-one consulting about study skills, course tutoring, and a variety of interactive workshops. For more information, visit them on the second floor of the Lemieux Library or online at [http://www.seattleu.edu/sas/learningassistance/](http://www.seattleu.edu/sas/learningassistance/).

5. **Support for Students with Disabilities:** If you have, or think you may have, a disability (including an “invisible disability” such as a learning disability, a chronic health problem, or a mental health condition) that interferes with your performance as a student in this class, you are encouraged to arrange support services and/or accommodations through Disabilities Services staff located in Loyola 100, (206) 296-5740. Disability-based adjustments to course expectations can be arranged only through this process.