# AMS-5 Statistics – Fall 2004

**General course information and Syllabus**

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<tr>
<th>Instructor/TA</th>
<th>Office</th>
<th>E-mail</th>
<th>Phone</th>
<th>Office hours*</th>
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<tbody>
<tr>
<td>Athanasios Kottas</td>
<td>153A Baskin Engineering</td>
<td><a href="mailto:thanos@ams.ucsc.edu">thanos@ams.ucsc.edu</a></td>
<td>459-5536</td>
<td>Mon 2-3pm, Wed 1-2pm</td>
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<tr>
<td>Ethan Arenson</td>
<td>142 Baskin Engineering</td>
<td><a href="mailto:ethan@ams.ucsc.edu">ethan@ams.ucsc.edu</a></td>
<td>459-1413</td>
<td>Mon 9-10am, Fr 4-5pm</td>
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<td>Christopher Wong</td>
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<td><a href="mailto:chrislw@ams.ucsc.edu">chrislw@ams.ucsc.edu</a></td>
<td>459-1413</td>
<td>Tue 10-11am, Wed 3-4pm</td>
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* The TA office hours will be held in Jack’s Lounge (in the Baskin Engineering building).

**Web page:** [http://www.soe.ucsc.edu/classes/ams005/Fall04/](http://www.soe.ucsc.edu/classes/ams005/Fall04/)

**Lectures:** Tuesday, Thursday 2:00-3:45pm (Kresge Clrm 321)

**Discussion sections:**
- Section 01A: Monday 3:30-4:40pm, Eight Acad 242 (Ethan)
- Section 01B: Wednesday 5-6:10pm, Baskin Engineering 165 (Chris)
- Section 01C: Wednesday 6:30-7:40pm, Baskin Engineering 165 (Chris)
- Section 01D: Tuesday 4-5:10pm, Kresge Clrm 325 (Ethan)
- Section 01E: Thursday 6-7:10pm, Kresge Clrm 325 (Chris)

**Course description** (from the registrar): Introduction to statistical methods/reasoning, including descriptive methods, data-gathering (experimental design and sample surveys), probability, interval estimation, significance tests, one- and two-sample problems, categorical data analysis, correlation and regression. Emphasis on applications to the natural and social sciences. Students cannot receive credit for this course and course 7, and Mathematics 5 and 7. (Formerly ENGR 5.)

**Course objectives:** To provide an introduction to the basic ideas of probability and statistics with applications to the natural and social sciences (as well as everyday life). Emphasis will be placed on concepts, methods and interpretation of results. In the process, we will learn how to perform some calculations useful for statistical data analysis.

**Background:** There are no formal prerequisites, but you should be comfortable with high school math at roughly the level of college algebra. In particular, this is **not** a calculus-based course.


**Reading:** The material in this course is cumulative and may go quickly. It is expected that you will stay up to date by reading the relevant textbook chapters and practicing with problems, including the homework problems.

Note that, although attendance of the discussion sections is optional, it is **strongly** encouraged.
The TAs will discuss solutions to homework problems, work through additional examples, and answer questions.

**Homework:** Homework will be assigned (typically, on a weekly basis), but will not be collected or graded. Answers to all the textbook exercises (other than the review exercises) are given at the back of the book. Working on the homework problems will enable you to develop facility in statistical thinking through regular practice. Moreover, it will provide early and regular feedback on your performance in the course through the solutions provided in the book and also discussed during the sections and office hours. If you feel it would help, you are encouraged to work together on homework problems, of course, keeping in mind that you have to take the quizzes and exams individually.

**Quizzes:** There will be four in-class short quizzes. Tentative dates for the quizzes are

- Quiz 1: Thursday October 7
- Quiz 2: Tuesday October 19
- Quiz 3: Tuesday November 9
- Quiz 4: Tuesday November 23.

(If the date for a quiz is changed, it will be announced at least a week in advance of the new date.) In general, the problems for the quizzes will be based on the homework exercises. The quizzes will be closed-book; all the required formulas will be provided. You should have with you a calculator capable of computing square roots, logarithms and exponentials. The lowest quiz score will be dropped when computing your average quiz score. This is meant to account for nearly all reasons that might prevent you from taking a particular quiz, including illness. In addition, there will be an optional make-up quiz on Thursday December 2. If you take this quiz, you may use its score to replace a lower score of an earlier quiz.

**Exams:**

- Midterm exam: Thursday October 28
- Final exam: Wednesday December 8, 4-7pm

Note that the final exam date and time is designated by the registrar. The midterm will be in-class. Both exams will be closed-book, but you may bring one (letter size) piece of paper with notes on both sides. You should also bring a calculator. The final exam will be comprehensive.

**Re-grade requests:** We will consider re-grade requests for the midterm exam and the quizzes. In all cases, the request will be considered only within a week after returning the exam/quiz papers (except, of course, for outright grading mistakes, wrong addition of points etc.). You must provide your written request along with the exam/quiz paper.

**Course grade:** Quizzes: 30%, Midterm exam: 30%, Final exam: 40%

**Tentative syllabus:** We will cover the following topics:

1. *Design of experiments* (chapters 1,2)
2. *Descriptive statistics* (chapters 3,4,5)
3. *Probability* (chapters 13,14,15)
4. *Chance variability (expected values, standard errors)* (chapters 16,17,18)
5. *Sampling* (chapters 19,20,21,23)
6. *Correlation and regression* (chapters 8,9,10,11)