Course description and prerequisites

A calculus-based introduction to probability theory, dealing (as the title suggests) with theory rather than applications. Intended for graduate students from various disciplines (including Statistics) who need to become familiar with advanced statistical models (beyond basic data analysis). Prerequisites: three semesters of calculus including theory of functions, continuity and differentiation, multiple integration, multivariate transformations and Jacobians, power series, Laplace transforms, limits, Taylor expansion.

Course objectives

By the end of the course, students should have the necessary theoretical background for the subsequent course on "Theory of Statistics – Statistical Inference" (STAT 611). In particular they should be familiar with the basic concepts of probability theory and know various models for probability distributions. They should be able to work with expectations of random variables and random vectors, to calculate distributions of transformations, and to know the basic limit concepts.

Instructor

Uschi Müller-Harknett
Office: BLOC 458E; Tel.: (979) 862-2049; Mail: uschi@stat.tamu.edu
Office hours: TR 2:15-3:15 (except 11/21), and by appointment.

Textbook and other resources

Your main resources for this course are our regular classes and the textbook: Statistical Inference, 2nd ed., by G. Casella and R.L. Berger, Duxbury.

Homework and additional materials will be posted at ecampus.tamu.edu.

Grader

Satwik Acharyya
Office: BLOC 401G; Mail: satwik@stat.tamu.edu
Office hours: W 12-2;
Additional help sessions in BLOC 162: MTR 10:15-12:15

Course topics and exam dates

<table>
<thead>
<tr>
<th>Topic</th>
<th>Required reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. The Probability Measure</td>
<td>Section 1.2 – 1.6</td>
</tr>
<tr>
<td>II. Working with Random Variables</td>
<td>Section 2.1 - 2.3, 3.6, 4.7</td>
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<td>III. Distribution Families</td>
<td>Section 3.2 - 3.5</td>
</tr>
<tr>
<td>IV. Random Vectors</td>
<td>Section 4.1 - 4.6</td>
</tr>
<tr>
<td>V. Random Samples</td>
<td>Section 5.3 - 5.5</td>
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</tbody>
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Exams will be held in class on Thursday, October 26 (midterm) and from 3:00 to 5:00 on Friday, December 8 (final).
Course grade

Your grade will be based on your performance over the semester: homework will make up 20% of the course grade, the midterm exam will count for 30% and the final exam for the remaining 50%. Your lowest homework score will be dropped. If your final exam score is better than your midterm score, the final exam will count for 80%.

If you have to miss the midterm exam because of illness or other circumstances beyond your control, please notify me or the Department of Statistics main office before the exam. If the absence is approved, we will either arrange for you to take the exam later (up to seven days after the originally scheduled date) or, if that is not possible, increase the weighting of the final exam. If you cannot complete a homework assignment on time because of illness or other circumstances beyond your control, please notify me.

The previous two paragraphs set out the only methods that will be used to determine course grades. If you feel that personal circumstances are affecting your academic performance, or are concerned that your work is not going to earn you the grade that you require for some purpose (e.g. getting/keeping an assistantship or a scholarship), please explore your options and take appropriate action in good time.

Other course information

Regular class attendance is assumed. I do not monitor attendance or give unannounced quizzes. However, syllabus details, including homework assignments and dates, may be changed by in-class announcements. Anything that is missed because a student is not in class is the student's responsibility.

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services: visit disability.tamu.edu for more information.

Academic integrity and fairness

I aim to treat you fairly. I expect you to treat me and your fellow students fairly. I take academic honesty seriously, and expect you to do so as well.

You should be aware of the Honor Council rules and procedures, the Honor Code, and the definitions of "academic misconduct" at http://aggiehonor.tamu.edu/Rules-and-Procedures/Rules/Honor-System-Rules.