ST371: Introduction to Probability and Distribution Theory, Spring 2012

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Course times/location: Section 001—TH 8:30-9:45am, 210 Harrelson  
Section 002—TH 10:15-11:30am, 214 Cox

Course website: [http://moodle.wolfware.ncsu.edu/](http://moodle.wolfware.ncsu.edu/)


Prerequisites: MA 241 (Calc II); also should have taken or be taking MA 242 (Calc III).

Course description: Basic concepts of probability and distribution theory for students in the physical sciences, computer science, and engineering. Provides the background necessary to begin study of statistical estimation, inference, regression analysis, and analysis of variance.

Course objectives: This course is the first semester of a two-course sequence, ST371-2, covering probability and statistics. The objective of this course, ST371, is to develop a calculus-level understanding and working knowledge of basic probability. The course provides an introduction to the rudiments of probability calculus, to discrete and continuous random variables and their probability distributions, and to sampling distributions. Concepts, methods and applications are emphasized, rather than theory. Successful completion of this course will prepare you for ST372 and provide you with a foundation for understanding probability-based material presented in other courses.

Topics Covered: We will cover most of the material from chapters 1 through 5 in the text.

- Probability basics: experiments, outcomes, sample space, sample point, events, set algebra, probability, counting tools.
- Probability basics II: independence of events, conditional probability, Bayes theorem, calculating probabilities.
- Models for the distribution of discrete random variables: probability and cumulative distribution functions, expectation.
- Families of discrete distributions (including binomial, geometric, negative binomial, hypergeometric, and Poisson).
- Models for the distribution of continuous random variables: the probability density function, cumulative distribution function, expectation.
- Families of continuous distributions (including uniform, normal, gamma, beta, and exponential).
- Models for the joint distribution of two or more random variables: probability distributions, joint, marginal, and conditional distributions; independence, expectation of functions of random variables, covariance, moments of linear functions.
- Important sampling distributions; the central limit theorem.
Grading: Your final grade in this course will depend on the following

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<tr>
<td>Quizzes</td>
<td>100 points</td>
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<tr>
<td>Midterm exam</td>
<td>100 points</td>
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<td>Final exam</td>
<td>200 points</td>
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<td><strong>Total</strong></td>
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Grades will be determined by calculating the student’s percentage out of the available points and comparing with predetermined cutoff points as follows:

- **A+: 98%**
- **A: 92%**
- **A-: 90%**
- **B+: 88%**
- **B: 82%**
- **B-: 80%**
- **C+: 78%**
- **C: 72%**
- **C-: 70%**
- **D+: 68%**
- **D: 62%**
- **D-: 60%**

Percentage cutoffs are firm and no rounding occurs. Incomplete (IN) grades are given only as specified in university regulations.

Quizzes: There will be 5 quizzes throughout the semester, each worth 25 points. No make ups will be offered for the quizzes; however, the lowest quiz score will be dropped. Quizzes will occur on the following dates: January 19, February 2, February 16, March 29, and April 19.

Exams: The midterm is scheduled for March 1. The cumulative final exam will be held on May 3 from 8-11am for Section 002 and May 8 from 8-11am for Section 001.

Students who are unable to attend an exam for a legitimate unavoidable reason may take a make-up exam only if the student provides suitable documentation (such as a physician’s note) of the absence. Students who have a personal emergency (extreme family illness or death, etc.) should contact the Division of Undergraduate Academic Programs (Park Shops, 515-3037) to obtain documentation. According to university policy, a student must notify the instructor in advance if s/he will miss an exam. If it is not possible to notify the instructor in advance, the instructor must be given notice as soon as possible after the exam.

Policies for quizzes and exams:
- All quizzes and exams will be closed book.
- Students are allowed one 8½ by 11 inch sheet of notes (both sides, any content).
- Students should bring a calculator. Students may NOT share calculators during quizzes and exams.
- All cell phones, PDAs and any web-enabled devices must be turned off and put away during quizzes and exams; these devices can NOT be used as calculators or time keeping devices.
- Students may NOT leave the room and return for any reason during quizzes and exams.

Policy on academic integrity: Copying someone else's work and presenting it as your own is plagiarism. Plagiarism, cheating, and other forms of academic dishonesty will not be tolerated. To create a fair and equitable environment the instructor aggressively enforces the universities policies on academic misconduct. All cases of academic misconduct will be handled as set out in university policies. For additional information see [http://www.ncsu.edu/policies/student_services/student_conduct/POL445.00.1.htm](http://www.ncsu.edu/policies/student_services/student_conduct/POL445.00.1.htm).

Students with disabilities: Reasonable accommodations will be made for students with verifiable disabilities. Any student who feels they may need an accommodation based on the impact of a disability should contact the instructor privately to discuss your specific needs. In order to take advantage of available accommodations, students must register with Disability Services for Students at 1900 Student Health Center, Campus Box 7509, 515-7653. [http://www.ncsu.edu/provost/offices/affirm_action/dss/](http://www.ncsu.edu/provost/offices/affirm_action/dss/). For more information on NC State's policy on working with students with disabilities, please see [http://www.ncsu.edu/policies/academic_affairs/pols_regs/REG205.00.28.php](http://www.ncsu.edu/policies/academic_affairs/pols_regs/REG205.00.28.php).