ST 371 Course Syllabus
Introduction to Probability and Distribution Theory

Sections 001
FALL 2016
3 Credit Hours

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 Structure
This course is taught in a student-centered manner and will include periods of lecture, discussion, and group activities.

Course Policies
Students are expected to check their unity email and the course website regularly for announcements and materials.

Instructors
Shu Yang (syang24) - Instructor
- Email: syang24@ncsu.edu
- Phone: 919-513-1661
- Office Location: 4266 SAS Hall
- Office Hours: MW 12:30-2 pm

Renfei Gong (rgong2) - Teaching Assistant (section 1)
- Email: rgong2@ncsu.edu
- Office Location: Tutorial Center, 1101 SAS Hall
- Office Hours: W 1:15 pm - 2:45 pm & F 9:30am – 11:00 am
- Office Hours: WF 11:00 am – 12:30 am (Section002)

Course Meetings (Section 001): Tu/Th 8:30 am - 9:45 am, 210 Park Shops

Course Materials
Textbooks
Probability and Statistics for Engineering and the Sciences - Devore
Edition: 9th
ISBN: 9781305251809
Cost: About $230 new but used copies are available; a copy is on reserve in the library. This textbook is required.

Materials
- Basic Calculator – Cost May Vary
- Several free software packages, such as StatCrunch or R, may be used during the semester – No cost

Requisites and Restrictions
Prerequisites
MA 241 (Calc II)

Co-requisites
MA 242 (Calc III)

Restrictions
General Education Program (GEP) Information

GEP Category
This course does not fulfill a General Education Program category.

GEP Co-requisites
This course does not fulfill a General Education Program co-requisite.

Transportation
This course will not require students to provide their own transportation. Non-scheduled class time for field trips or out-of-class activities is NOT required for this class.

Safety & Risk Assumptions
None.

Grading

Grade Components

In-class activities — 60 points
- During class students will complete activities and exercises that illustrate course content. The instructor will randomly select 12 activities to grade and students will receive points accordingly. Students who do not attend these classes will receive a zero for that day’s participation. The lowest two scores will be dropped.

Homework — 100 points
- There will be 11 homework assignments. These will be posted to the course website each Tuesday and will be due in class one week after they are assigned. The lowest homework grade will be dropped.

2 Midterm Exams — 100 points each
- All exams are closed book. For each midterm exam students may use one 8 ½ X 11 page of notes (front and back). Basic calculators (such as TI-83) may be used on all exams. Requests for re-grading of exams must be made in writing. These requests should contain a complete description of the reason for grade adjustment and the student’s name. The request should be attached to the exam and submitted to instructor within two weeks of the day exams are returned in class.

Comprehensive Final Exam — 200 points
- All exams are closed book. For the final exam, students may use three 8 ½ X 11 pages of notes (front and back). Basic calculators (such as TI-83) may be used on all exams. Requests for re-grading of exams must be made in writing. These requests should contain a complete description of the reason for grade adjustment and the student’s name. The request should be attached to the exam and submitted to instructor within two weeks of the day exams are returned in class.

Total Possible — 560 points

Letter Grades
This Course uses Standard NCSU Letter Grading. Percentage cutoffs are firm and no rounding occurs.

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<thead>
<tr>
<th>Percentage</th>
<th>Grade</th>
<th>Total</th>
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<tbody>
<tr>
<td>97 ≤</td>
<td>A+</td>
<td>100</td>
</tr>
<tr>
<td>93 ≤</td>
<td>A</td>
<td>&lt; 97</td>
</tr>
<tr>
<td>90 ≤</td>
<td>A-</td>
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<tr>
<td>87 ≤</td>
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<tr>
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<td>C-</td>
<td>&lt; 73</td>
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<tr>
<td>67 ≤</td>
<td>D+</td>
<td>&lt; 70</td>
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Requirements for Credit-Only (S/U) Grading
In order to receive a grade of S, students are required to take all exams and quizzes, complete all assignments, and earn a grade of C- or better. Conversion from letter grading to credit only (S/U) grading is subject to university deadlines. Refer to the Registration and Records calendar for deadlines related to grading. For more details refer to http://policies.ncsu.edu/regulation/reg-02-20-15.

Requirements for Auditors (AU)
Information about and requirements for auditing a course can be found at http://policies.ncsu.edu/regulation/reg-02-20-04.

Policies on Incomplete Grades
If an extended deadline is not authorized by the instructor or department, an unfinished incomplete grade will automatically change to an F after either (a) the end of the next regular semester in which the student is enrolled (not including summer sessions), or (b) the end of 12 months if the student is not enrolled, whichever is shorter. Incompletes that change to F will count as an attempted course on transcripts. The burden of fulfilling an incomplete grade is the responsibility of the student. The university policy on incomplete grades is located at http://policies.ncsu.edu/regulation/reg-02-50-3.

Late Assignments
All due dates are firm and no late work will be accepted, no exception. Computer failures, lost files, sickness or other difficulties are not valid excuses for submitting an assignment late.

Attendance Policy
For complete attendance and excused absence policies, please see http://policies.ncsu.edu/regulation/reg-02-20-03

Students are required to attend each class period; no excused absences are permitted for the course. Attendance and participation will be tracked through in-class activities; the lowest two activity scores will be dropped.

Absences Policy
Students may miss up to 2 in-class activities without needing documentation or needing to contact the instructor. Students who miss more than 2 activities need to speak with the instructor as soon as possible; documentation justifying the absences will be required (see next section for information about documentation).

Makeup Work Policy
- There is no make up for homework assignments or in-class activities.
- Students who are unable to attend an exam for a legitimate unavoidable reason may take a make-up exam only if they provide suitable 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.
- Suitable documentation of an absence: Examples include a physician’s note in case of illness or letter from the University or a student's advisor. Students who have a personal emergency (extreme family illness or death, etc.) should contact the Student Ombuds
Services through the Division of Academic & Student Affairs (515-2963; ombuds.dasa.ncsu.edu/) to obtain documentation.

**Academic Integrity and Honesty**

- Students are required to comply with the university policy on academic integrity found in the Code of Student Conduct found at http://policies.ncsu.edu/policy/pol-11-35-01
- See http://policies.ncsu.edu/policy/pol-11-35-01 for a detailed explanation of academic honesty.
- 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. Although working together on written assignments to overcome obstacles is encouraged, each student must compose and write their own analysis and reports. All cases of academic misconduct will be handled as set out in university policies.

**Honor Pledge**

Your signature on any test or assignment indicates "I have neither given nor received unauthorized aid on this test or assignment."

**Electronically-Hosted Course Components**

Students may be required to disclose personally identifiable information to other students in the course, via electronic tools like email or web-postings, where relevant to the course. Examples include online discussions of class topics, and posting of student coursework. All students are expected to respect the privacy of each other by not sharing or using such information outside the course.

**Accommodations for Disabilities**

Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, student must register with the Disability Services Office (http://www.ncsu.edu/dso), 919-515-7653. For more information on NC State's policy on working with students with disabilities, please see the Academic Accommodations for Students with Disabilities Regulation at http://policies.ncsu.edu/regulation/reg-02-20-01.

**Non-Discrimination Policy**

NC State University provides equality of opportunity in education and employment for all students and employees. Accordingly, NC State affirms its commitment to maintain a work environment for all employees and an academic environment for all students that is free from all forms of discrimination. Discrimination based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation is a violation of state and federal law and/or NC State University policy and will not be tolerated. Harassment of any person (either in the form of quid pro quo or creation of a hostile environment) based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation also is a violation of state and federal law and/or NC State University policy and will not be tolerated. Retaliation against any person who complains about discrimination is also prohibited. NC State's policies and regulations covering discrimination, harassment, and retaliation may be accessed at http://policies.ncsu.edu/policy/pol-04-25-05 or http://www.ncsu.edu/equal_op/. Any person who feels that he or she has been the subject of prohibited discrimination, harassment, or retaliation should contact the Office for Equal Opportunity (OEO) at 919-515-3148.
Tentative Course Schedule
NOTE: The course schedule is subject to change.

- Week 1: Introduction to distribution theory
- Week 2: Plots, location, variability, sample space, probability, conditional probability
- Weeks 2-3: Total law of probability, Bayes Theorem, independence
- **August 31, 2016: Last day to drop a course without a W grade**
- Week 4: Introduction to discrete random variables
- Week 5: Binomial random variables
- Week 6: Hypergeometric, Negative Binomial, and Poisson random variables
- Week 7: **Exam 1 in class on September 29 (covers all of Chapters 2 to 3.4)**
- Week 8: Introduction to continuous random variables
- Week 9: Introduction to continuous random variables (Fall break)
- **October 10, 2016: Last day to drop a course or change to credit only**
- Week 10: Normal random variables
- Weeks 11-12: Other continuous random variables (e.g. Gamma, Weibull, Beta)
- Weeks 12: Joint distributions for two random variables
- Week 13: **Exam 2 in class on November 10 (covers Ch3.6- Chapter 4)**
- Week 14: Distributions for sample statistics
- Week 15-16: Distributions for linear combinations of random variables
- **Dec 13, 2016: Final Exam for Section 001, 8-11am in our regular classroom**