ST 370 Course Syllabus

ST 370 – Probability and Statistics for Engineers

Section 002
FALL 2013
3 Credit Hours

Course Description

Calculus-based introduction to probability and statistics with emphasis on Monte Carlo simulation and graphical display of data on computer workstations. Statistical methods include point and interval estimation of population parameters and curve and surface fitting (regression analysis). The principles of experimental design and statistical process control introduced. Credit not allowed for both ST 370 and ST 361 or ST 380

Learning Outcomes

Course Goals:
• Construct basic numeric and graphical summaries of data.
• Plan and analyze simple factorial designs.
• Calculate probabilities using basic probability distributions.
• Make statistical inference using basic statistics.

Course Structure

Homework and In-Class: There will usually be weekly online homework (12 total) delivered and graded via WebAssign (approximately $20) http://webassign.ncsu.edu. The lowest two will be dropped. Therefore, no extensions or extra submissions will be given. Some in-class assignments will be given, two will be dropped. There will be no make-ups for these.

StatCrunch Software: As a registered student at NCSU, you are eligible to use StatCrunch software at no cost http://statcrunch.stat.ncsu.edu/. Some homework/class work may require the use of software.

Project: A group project will be assigned. There will be 3 or 4 students per group and you are required to choose at least one of your group members. The project will involve planning, collecting data, and analyzing the results of your group's data.

Exams: There will be two exams (closed book, closed notes) during the semester. Students will be provided the necessary formulas and tables for the exams. During exams, you may use a calculator, but no device that can connect to the internet. I may also use my discretion to allow or remove and device I see fit. Calculators will have their memories deleted prior to tests by myself or the TAs.

Missed Exams: If you miss an exam for a legitimate reason, you must let me know as soon as possible. Proper documentation must be given within 2 days after the exam, and I will decide if the reason is legitimate.
Final Exam: The final exam will be cumulative. The basic rules for the other exams hold for the final.

Course Policies

Courtesy and Respect in the classroom is expected (both ways). Please come on time and do not start packing up before class is over. Please turn off all cell phones before class begins. When e-mailing, please use proper etiquette.
I reserve the right to change any policy given, or add new policies as I feel appropriate.

Instructors

Dr Justin Blaze Post (jbpost2) - Instructor
Email: jbpost2@ncsu.edu
Phone: NA
Office Location: SAS Hall 5260
Office Hours: Tuesday 2-3 Thursday 10-11 Friday 10-12 Or by appointment!

Lin Su (lsu3) - Teaching Assistant
Email: lsu3@ncsu.edu
Phone: NA
Office Location: NA
Office Hours: Monday 9-10 SAS Hall Room 1101

Longshaokan Wang (lwang31) - Teaching Assistant
Email: lwang31@ncsu.edu
Phone: NA
Office Location: NA
Office Hours: Tuesday 9-10 Thursday 1:30-3:30 SAS Hall Room 1101

Course Meetings

Lecture

Days: MW
Time: 10:15AM - 11:30AM
Campus: Main
Location: 320 Brooks Hall
This meeting is required.

Course Materials

Textbooks

Applied Statistics and Probability for Engineers - Douglas C. Montgomery and George C. Runger
Web Link: NA
Cost: NA
This textbook is required.

Expenses
None.

Materials
Requisites and Restrictions

Prerequisites
- MA 241

Co-requisites
- None.

Restrictions
- None.

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

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
<th>Details</th>
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<tbody>
<tr>
<td>Homework &amp; In-Class</td>
<td>12%</td>
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<tr>
<td>Project</td>
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<tr>
<td>2 Midterm Exams</td>
<td>20% each</td>
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<td>Final Exam</td>
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Letter Grades

This Course uses Standard NCSU Letter Grading:

\[
\begin{align*}
97 \leq & \text{ A+ } \leq 100 \\
93 \leq & \text{ A } < 97 \\
90 \leq & \text{ A- } < 93 \\
87 \leq & \text{ B+ } < 90 \\
83 \leq & \text{ B } < 87 \\
80 \leq & \text{ B- } < 83 \\
77 \leq & \text{ C+ } < 80 \\
73 \leq & \text{ C } < 77 \\
70 \leq & \text{ C- } < 73 \\
67 \leq & \text{ D+ } < 70 \\
63 \leq & \text{ D } < 67 \\
60 \leq & \text{ D- } < 63 \\
0 \leq & \text{ F } < 60
\end{align*}
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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

There will usually be weekly online homework (12 total) delivered and graded via WebAssign (approximately $20) http://webassign.ncsu.edu. The lowest two will be dropped. Therefore, no extensions or extra submissions will be given. Some in-class assignments will be given, two will be dropped. There will be no make-ups for these.

Attendance Policy

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

Attendance Policy

None.
Absences Policy
None.

Makeup Work Policy
No extensions/extra submissions will be given. There will be no make-up in-class assignments.
Missed Exams: If you miss an exam for a legitimate reason, you must let me know as soon as possible. Proper documentation must be given within 2 days after the exam, and I will decide if the reason is legitimate.

***No extra-credit assignments will be given.***

Additional Excuses Policy
None.

Academic Integrity

Academic Integrity
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

Academic Honesty
See http://policies.ncsu.edu/policy/pol-11-35-01 for a detailed explanation of academic honesty.

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.

Electronically-hosted Components: WebAssign

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](http://policies.ncsu.edu/policy/pol-04-25-05) or [http://www.ncsu.edu/equal_op/](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.

## Course Schedule

**NOTE:** The course schedule is subject to change.

<table>
<thead>
<tr>
<th>Lecture MW 10:15AM - 11:30AM — Class 1 — 08/21/2013 - 08/21/2013</th>
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<tbody>
<tr>
<td>Syllabus, Introduction to Statistics; Read Ch 1</td>
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<tr>
<th>Lecture MW 10:15AM - 11:30AM — Class 2 — 08/26/2013 - 08/26/2013</th>
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<tbody>
<tr>
<td>Basic Terminology/Sampling; Read Ch 6.1-6.4</td>
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<tbody>
<tr>
<td>Descriptive and Graphical Methods</td>
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<tr>
<td>DUE at midnight 8/29</td>
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<th>Lecture MW 10:15AM - 11:30AM — No Class - Memorial Day — 09/02/2013 - 09/02/2013</th>
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<td>No Class</td>
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<tbody>
<tr>
<td>Descriptive and Graphical Methods; Read Ch 13.1, 13.2, 13.4</td>
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<thead>
<tr>
<th>Lecture MW 10:15AM - 11:30AM — HW 2 (Graphical 1) DUE at midnight — 09/05/2013 - 09/05/2013</th>
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<td>Due at midnight</td>
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<tbody>
<tr>
<td>Design of Experiments</td>
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<tr>
<td>Lecture MW 10:15AM - 11:30AM — Class 7 — 9/16/2013 - 9/16/2013</td>
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<tr>
<td>Design of Experiments; Read Ch 14.1-14.3</td>
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<tr>
<th>Lecture MW 10:15AM - 11:30AM — Class 8 — 09/18/2013 - 9/18/2013</th>
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<tr>
<td>Factorial Data Analysis</td>
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<th>Lecture MW 10:15AM - 11:30AM — HW 4 (DOE) DUE at midnight — 9/19/2013 - 9/19/2013</th>
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<td>Due at midnight</td>
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<tr>
<td>Project Proposal Due, ANOVA</td>
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<tr>
<td>ANOVA; Read Ch 11.1, 11.2, 11.8</td>
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<tr>
<th>Lecture MW 10:15AM - 11:30AM — HW 5 (Factorial) DUE at midnight — 09/26/2013 - 9/26/2013</th>
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<td>Due at midnight</td>
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<tr>
<th>Lecture MW 10:15AM - 11:30AM — Class 11 — 9/30/2013 - 9/30/2013</th>
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<tr>
<td>Regression/Correlation</td>
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<th>Lecture MW 10:15AM - 11:30AM — Class 12 — 10/2/2013 - 10/2/2013</th>
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<td>Project Protocol Due, Review</td>
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<tr>
<th>Lecture MW 10:15AM - 11:30AM — Class 13: Exam 1 — 10/7/2013 - 10/7/2013</th>
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<td>EXAM 1</td>
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<tr>
<td>Regression/Correlation</td>
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<td>Lecture MW 10:15AM - 11:30AM — Class 15 — 10/14/2013 - 10/14/2013</td>
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<tr>
<td>Regression/Correlation; Read Ch 3/1-3.6</td>
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<th>Lecture MW 10:15AM - 11:30AM — Class 16 — 10/16/2013 - 10/16/2013</th>
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<tr>
<td>Discrete RVs</td>
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<tr>
<th>Lecture MW 10:15AM - 11:30AM — Class 17 — 10/21/2013 - 10/21/2013</th>
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<tbody>
<tr>
<td>Discrete RVs; Read Ch 4.1-4.6</td>
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<tr>
<td>Continuous RVs</td>
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<tr>
<th>Lecture MW 10:15AM - 11:30AM — HW 7 (SLR/Correlation) DUE at midnight — 10/24/2013 - 10/24/2013</th>
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<tr>
<td>Continuous RVs; Read Ch 4.6</td>
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<th>Lecture MW 10:15AM - 11:30AM — Class 20 — 10/30/2013 - 10/30/2013</th>
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<tr>
<td>Normal Distribution</td>
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<tr>
<th>Lecture MW 10:15AM - 11:30AM — HW 8 (Discrete RVs) Due at Midnight **Friday, not Thursday — 11/1/2013 - 11/1/2013</th>
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<tr>
<td>Due at midnight (Friday, not Thursday)</td>
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<tr>
<td>Initial Project due! Normal Distribution; Read Ch 7.1-7.2</td>
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<tr>
<td>Sampling Distributions</td>
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<tr>
<th>Lecture MW 10:15AM - 11:30AM — HW 9(Continuous RVs) Due at midnight — 11/7/2013 - 11/7/2013</th>
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