SIE 305- Introduction to Engineering Probability and Statistics  
Fall 2012, University of Arizona

Instructor: Dr. Haitao Liao  
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Office hours: T, Th 2:15pm -3:15 pm, and others by appointments

Graduate Teaching Assistant: Faranak Fathi  
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Office hours: MW 10:30 am -11:45 am, and others by appointments

Class meetings: MWF 1:00 pm -1:50 pm, Aero & Mech Engr, Room S212

Catalog description: Axioms of probability, discrete and continuous distributions, sampling distributions. Engineering applications of statistical estimation, hypothesis testing, confidence intervals.

Prerequisite(s): MATH 129  
Each student must be able to do:  
1. Differentiation (derivatives of exp., log, and polynomial, etc.)  
2. Integration (single integrals, simple double integrals)


Software packages: The state of the art software: MS Excel and Minitab, in the SIE PC lab (ENGR 125, 127) (or at home if you have these) will be used.

Course learning outcomes: Use basic probability correctly. Understand when and how to use discrete and continuous probability models in univariate and multivariate contexts. Apply to reliability. Derive functions of random variables. Use point estimation techniques. Develop confidence intervals, tolerance intervals, and prediction intervals. Develop tests of hypotheses in single and two-sample scenarios. Collect and describe data.

Topics covered:  
- Combinatorics  
- Basic Probability  
- Discrete R.V.  
- Continuous R.V.  
- Descriptive Stats.  
- Function of R.V.  
- Joint R.V.  
- Point Estimation  
- Sampling Dist.  
- Stat. Intervals  
- Hypothesis Tests
**D2L Website** – You will access this site by going to http://d2l.arizona.edu and logging in with your UA Net ID. If you need assistance with D2L you should contact D2L Help (http://help.d2l.arizona.edu); you may also try the 24/7 IT Support center on campus (http://the247.arizona.edu), which is available 24 hours a day, 7 days a week. When you log on to D2L, this course will be listed on the welcome page under “My Courses”. Once you select the page for this course, you will be greeted with a header that has a blue navigation bar with the following tabs:

- Course Home
- News
- Content
- Class list
- Quizzes
- Discussions
- Chat
- Dropbox
- Grades.

Announcements, class notes, PowerPoint files, spreadsheets used in class, homework assignments and solutions, exams from previous semesters, discussion questions, and links to news items of interest will posted to this website. You must be registered for the class to be permitted entry to the site.

Group emails will be sent to class list on D2L and you will receive it in your D2L email box. Make sure you check this email box frequently, otherwise please **FORWARD YOUR D2L EMAIL TO YOUR MOST FREQUENTLY USED EMAIL ADDRESS TO MAKE SURE YOU WILL RECEIVE ALL GROUP EMAILS.** To do so, go to D2L > D2L Email > Settings, then under “Forwarding Option” check the box next to “Forward incoming messages to an alternate email account” and then input your desired email address in the “Email Address” box. Even though class material is posted to D2L, class time is critical to learning. The class moves very quickly.

**Weekly Assignments**

a. **Quantity:** The course will include 10+ homework assignments.

b. **Teams:** **You may work in teams of 3 or less students on the weekly assignments, but each student should turn in his/her own assignment,** or you may complete your homework individually. You **MUST** write down your team members’ names on your assignments worked in group.

c. **Timeliness:** Unless announced differently, Homework is due via D2L or will be collected at the **beginning of class** on the first Wednesday of the week after the homework is assigned. You may always submit it early via D2L. Homework submitted up to 24 hours after due date, will have 20% deducted from the total score. For homework submitted 24 hours to 48 hours after the due date, the deduction is 40%, and NO homework will be accepted after the beginning of the class following the due date. Therefore, if homework is due on Wednesday, you must turn it in by the beginning of the class on Friday to get any credit at all. If you have a valid reason for handing in late homework, you must let me know in advance. Emergencies will be considered on a case-by-case basis. Homework assignments must be submitted on D2L or turned in at the beginning of the class. Homework cannot be emailed, faxed, given to the department secretary, stuffed into my or T.A.’s mailbox, or slipped under our office doors. If you cannot attend a class, you might arrange for another student to hand in your homework with his/her homework or upload via D2L. Keep your returned homework.

d. **Academic integrity:** Students are expected to uphold the University of Arizona academic integrity policy. Copied homework is not difficult to detect. Penalties for turning in copied homework are as follows: first offense – warning and 0% credit for copied problems for all parties; second offense – all parties involved will score a non-droppable 0% for the assignment; third offense – failing grade in the course. If you and/or your team work closely with other people, you **MUST** write a note on your homework listing the names of the other students. Group work is a great way to learn, and study groups are encourage, but you should try the problems on your own first, for your own benefit and also to be fair to the group. **(You MUST write up your homework independently).** You may NOT use the internet as a resource for your homework unless specifically permitted.

e. **Quality:** Always indicate your answers clearly. Please put a large letter indicating the first letter of your last name on the top right of the first page of your homework. Also staple the homework pages together at the upper, left corner. Unstapled homework is not acceptable. Please print your name on each sheet. Anything that cannot be read will be considered wrong. Please remember that it’s easier to claim more partial credit if your homework is clearly done.
Exams
a. There will be 2 exams during the semester and a final exam at the end of the semester. Final exam will be cumulative.
b. Exams are closed-book, but you may bring ONE sheet of paper with useful information handwritten on both sides and with your name printed on it. Hint sheets will be collected with exams and will be returned to you with your graded exam. You may not use a photocopy or printout of someone else’s hint sheet. You will be provided with tables.
c. Calculators may not be programmed unfairly or connect wirelessly to internet or to each other.
d. Hats are not allowed during exams, except for religious headwear worn on a daily basis.
e. All cellphones must be OFF and put away during exams. This applies to class time, too.
f. Anyone caught acting against UA Code of Academic Integrity, will receive a non-droppable grade of zero on an exam.
g. Re-grade requests may be submitted ONLY in the class following the return of the exam, and they MUST be in writing. Attach a note describing clearly why you think you deserve more points. Any detected post-exam manipulation of your paper will result in a non-droppable grade of zero on the exam.
h. If you are stuck on a problem and write a verbal explanation of how you might approach it and what concepts apply, you will get partial credit. Partial credit is better than no credit!
i. Class exams cannot be taken before or after the scheduled time for the exam. If the final exam schedule conflicts with another final exam, let the instructor know early in the semester. Missed final exam will receive a zero score.
j. Exam scope. Tests and exams will never cover probability/statistics topics beyond the realm of topics covered in class, or addressed on related textbook pages. Some questions that are similar, yet not identical, to homework exercises may appear on examinations.

Grading - The final grades will be given based on weekly assignments, 2 exams, quizzes, and a final exam.

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A: 90-100; B: 80-89.9; C: 70-79.9; D: 60-69.9; F: ≤59.9

Attendance policy - attendance is not taken in this class, however you will lose the credit for quizzes if you are not present at the time of quiz. In class, material that is in the text is covered, material that is not in the text is presented, examples are performed, demonstrations will be done with the computer, and discussions will be conducted on the material. All material from the class is fair game on the exams. It is critical that you do not miss class, since material will not be repeated or private tutoring will not be given. If you are continuously absent, you are taking on a huge risk of failing the course and you will miss the social structure of the class. The Web page can be used as a backup for a missed class and for additional help, but it is not a substitute for class activities, discussions, demonstrations, and performed examples. Missed announcements that may pertain to exam schedules, modifications in syllabus, handouts, and homework assignments are your responsibility to obtain if you miss a class.

Students with Special Needs - Students with disabilities or special needs who require accommodations to fully participate in course activities or meet course requirements must register with the S.A.L.T. Center or Disability Resource Center. Students needing special accommodations should contact SALT, 1010 N Highland Ave., or the Center for Disability Related Resources, 1224 E. Lowell Street, for documentation of special needs. If you qualify for special accommodations, bring your letter of request to the instructor as soon
as possible. An exam taken in the DRC testing center is to be taken at exactly the same time the exam is
given in class.

**Academic behavior** - If any form of academic dishonesty occurs in this course, procedures as given by the
Dean of Students will be followed. The reduction in credit in the following bulleted list is the minimum
action to be taken – other actions (e.g., notes on transcripts, reduction in final grade in course) may be taken
as deemed appropriate.

You are encouraged to work together on homework assignments, but do not copy. Do not copy someone
else’s work and do not let other people copy yours. If an individual assignment has been copied, then ALL
copies (including the original) will receive a grade of zero.

Plagiarism is a serious offense! Students are advised to review the library site (http://www.library.arizona.edu/help/tutorials/plagiarism/index.html) on plagiarism. Plagiarized material will receive a zero score and the incident will be reported to the dean.

Anyone found cheating on an exam is in violation of the Student Code of Academic Integrity and will
receive a zero on that exam and will be reported to the Dean of Students or appropriate designee.

The Arizona Board of Regents’ Student Code of Conduct, ABOR Policy 5-308, prohibits threats of
physical harm to any member of the University community, including to one’s self. See: http://policy.web.arizona.edu/~policy/threaten.shtml.

**Academic integrity policy** – Students are encouraged to share intellectual views and discuss freely the
principles and applications of course materials. However, graded work, exercises, homework, and
exams must be the product of independent effort unless otherwise instructed. Students are expected to
know and to adhere to the UA Code of Academic Integrity as described in the UA General Catalog. See:
http://catalog.arizona.edu/2011-12/policies/aaindex.html
http://deanofstudents.arizona.edu/codeofacademicintegrity

Any violation of the academic integrity code will be dealt with using the procedures detailed in the
code.

**Confidentiality of Student Records** – the UA policy on confidentiality is on the web at:
http://www.registrar.arizona.edu/ferpa/default.htm

**Classroom Behavior Policy** – The Arizona Board of Regents’ Student Code of Conduct, ABOR Policy 5-
308, prohibits threats of physical harm to any member of the University community, including to one’s self. See: http://policy.web.arizona.edu/~policy/threaten.shtml.

**Restricted communication devices** - Cell phones and other communication devices are to be turned off
during class and during examinations. Lap top computers are prohibited during exams.

**University absence policies** - 1) All holidays of special events observed by organized religions will be
honored for those students who have affiliation with that particular religion. 2) Absences pre-approved by the
UA Dean of Students (or Dean’s designee) will be honored.

**Revisions** - Modifications may occur in this syllabus. The grading policy, regarding tests, exams, and
homework is rigidly fixed. Students will receive timely updates on any modifications.

**Student feedback** - Students may be asked to provide written feedback on the course and its contents.