



## Fall 2009 EAS 305: Applied Probability & Statistics Inference

Time: 11:00-11:50 AM Monday, Wednesday, Friday  
Place: Room 97 of Alumni Arena, North Campus  
Web: Please use [UBlearns](#) to assess all course information

### INSTRUCTOR

Jun Zhuang, 403 Bell Hall  
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Phone: 716.645.4707 (Office)  
Office hours: 1:00 PM-2:30 PM Monday, 11:00 AM-12:00 PM Tuesday

### TEACHING ASSISTANTS

Paul Berglund, 424 Bell Hall  
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Phone: 973.900.2478 (Cell)  
Office hours: 3:00 PM-4:00 PM Monday, 3:00 PM-4:00 PM Thursday

Shilan Jin, 416 Bell Hall  
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Phone: 716.380.3395 (Cell)  
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Yingying Kang, 435 Bell Hall  
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Phone: 716.725.2776 (Cell)  
Office hours: 2:00 PM-4:00 PM Tuesday

### TEXTBOOKS

- ★ **Required:** *Probability and Statistics in Engineering*, By William W. Hines, Douglas C. Montgomery, David M. Goldsman, and Connie M. Borrer, The fourth edition, 2003, John Wiley and Sons.
- ★ **Recommended:** *Introduction to Probability*, By Dimitri P. Bertsekas and John N. Tsitsiklis, 2002, Athena Scientific.
- ★ **Recommended:** *Introduction to Probabilities and Statistics for Engineers and Scientists*, By Sheldon M. Ross, Third Edition, 2004, Academic Press.

### TIME AND PLACES

Lectures are at 11:00-11:50 AM, MWF, in Room 97 of Alumni Arena, North Campus. We also have three recitation sessions, which are also an integral part of the course. Recitation meetings are:

| Day       | Time                | Place           | Recitation No. | TA                 |
|-----------|---------------------|-----------------|----------------|--------------------|
| Monday    | 12:00 PM - 12:50 PM | 88 Alumni Arena | 4              | Yingying Kang      |
| Wednesday | 12:00 PM - 12:50 PM | 88 Alumni Arena | 2              | Paul Berglund      |
| Friday    | 12:00 PM - 12:50 PM | 88 Alumni Arena | 1              | Shilan Jin         |
| Wednesday | 4:00 PM - 4:50 PM   | 216 Norton Hall | 3              | To be re-scheduled |

### CATALOG DESCRIPTION

Introduces probability and its application to engineering problems. Examines sample space, random variables, expected values, limiting theorems, error analysis, and provides introduction to random processes. Students may not receive credit for this course and CIE 308.

**Prerequisites:** Prerequisite for enrollment is MTH 241 College Calculus III or equivalent.

### COURSE GRADING

To qualify for a particular letter grade, the minimum course average shown after that grade will be needed: A (90); A- (86); B+ (82); B (78); B- (74); C+ (70); C (66); C- (62); D+ (58); D (54); and F (less than 54). I reserve the right to lower these cutoffs (i.e., give higher grades than indicated) under some circumstances (e.g., if one of the exams turns out much too difficult). Therefore, class average will not be lower than a B-. However, I will not raise the cutoffs.

| Item                 | Percentage |
|----------------------|------------|
| Homework             | 30%        |
| Quizzes              | 10%        |
| First mid-term exam  | 20%        |
| Second mid-term exam | 20%        |
| Third mid-term exam  | 20%        |

### HOMEWORK

Homework will be assigned in most weeks. It will generally be handed out on a Wednesday, due the following Wednesday, and returned to you by the Wednesday after that. Homework must be turned in by the end of the class period in which it is due. Provide your full name and student ID number for each of the homework that you submit. Late homework will not be accepted, except in extenuating circumstances (e.g., family emergency, illness, etc.), with official documents and instructor/TAs' permission. The lowest homework grade will be dropped in computing your average score, to make allowance for illness, family emergencies, etc. However, students should plan to turn in all homework assignments.

You are encouraged to join with other students in discussing the course, including homework. This is especially useful if you have first tried to solve the problem on your own, and focus on understanding the reasons for any differences between your answer and someone else's approach, rather than just copying the answer that someone else got. Note, however, that when you write up the work that you hand in, you should do so on your own. You are strongly recommended to turn in a computer-generated (e.g.,  $\LaTeX$ , MS Word) homework if possible.

## QUIZZES

Open-book, open-note, open-discussion, easy-question quizzes will be given at the beginning of many lectures and then be collected in the end of those lectures. Provide your full name and student ID number for each of the quizzes that you submit. There will be NO make-up quizzes. However, when computing the final grade, about 10% of the lowest quiz grades will be dropped. For example, suppose students were given twenty quizzes during the whole semester, the lowest two quiz grades do not count.

## EXAMS

There will be three mid-term exams and no final one. Exams will not be accumulative and will be held during class-time. Those exams will be closed book and closed notes. However, you are allowed to bring one double-sided A4 “cheat-sheet (formula sheet)” for each of the exams. Makeup exams will be administered only under extenuating circumstances with official documents, provided that I am notified in advance.

## ATTENDANCE

Although positively correlated with your quiz, homework and exam grades, attendance at the lectures and recitations will not be directly included in your grade. However, attendance is fundamental to the course, so if you don't come to class, you are giving yourself a disadvantage. Absenteeism can also be a sign of illness or other serious problems; don't hesitate to email or call to discuss the reasons for any absences. If you need help, please let me know, and I will try to connect you with the appropriate campus resources.

## OFFICE HOURS

To be fair to all of the students and to the colleagues that we work with, please cooperate with us in respecting the office hours of the TAs and the professor. However, individual appointments can be made, if the posted office hours are insufficient or inconvenient. You may email the instructor or TAs at any time to discuss your questions by email, or to set up an appointment. We will respond as soon as possible, but you should be aware that we do not always check emails on the evenings and weekends, or when we are traveling. If you need to reach us on an urgent basis (e.g., before an exam), you can also try leaving a message on our voice mails with information on when and how we can reach you by phone.

## UNIVERSITY POLICY ON ACADEMIC INTEGRITY

All work must be your own. Plagiarism is never allowed. If any student is found in violation of maintaining academic integrity, sanctions will be imposed. This can be as severe as receiving an F in the course. Especially flagrant violations will be considered under formal review proceedings, which can call for harsher sanctions including expulsion from the University. If you ever have any questions or concerns regarding the policy, particularly as it related to this course, see the instructor.

COURSE OUTLINE **\*\*This outline is subject to change\*\***

| <b>Week</b> | <b>Date</b> | <b>Course Material</b>                     | <b>Note</b>                |
|-------------|-------------|--|----------------------------|
| No. 1       | 08/31       | Introduction to the class and the syllabus | First day of class         |
|             | 09/02       | Chapter 1.1–1.4                            |                            |
|             | 09/04       | Chapter 1.5–1.6                            |                            |
| No. 2       | 09/07       | No Class                                   | Labor Day                  |
|             | 09/09       | Chapter 1.7–1.9                            |                            |
|             | 09/11       | Chapter 2.1–2.2                            |                            |
| No. 3       | 09/14       | Chapter 2.3–2.4                            |                            |
|             | 09/16       | Chapter 2.5–2.7                            |                            |
|             | 09/18       | Chapter 3.1–3.3                            |                            |
| No. 4       | 09/21       | Chapter 3.4–3.5                            |                            |
|             | 09/23       | Chapter 3.6–3.8                            |                            |
|             | 09/25       | Chapter 4.1–4.3                            |                            |
| No. 5       | 09/28       | No Class                                   | Yom Kippur Holiday         |
|             | 09/30       | Chapter 4.4–4.6                            |                            |
|             | 10/02       | Chapter 4.7–4.9                            |                            |
| No. 6       | 10/05       | Chapter 4.10–4.11                          |                            |
|             | 10/07       | Chapter 4.12–4.15                          |                            |
|             | 10/09       | Chapter 5.1–5.3                            |                            |
| No. 7       | 10/12       | Review for Mid-term Exam 1                 | Review for Mid-term Exam 1 |
|             | 10/14       | Mid-term Exam 1                            | Mid-term Exam 1            |
|             | 10/16       | Chapter 5.6–5.7                            |                            |
| No. 8       | 10/19       | Chapter 5.8–5.11                           |                            |
|             | 10/21       | Chapter 6.1–6.3                            |                            |
|             | 10/23       | Chapter 6.4–6.7                            |                            |
| No. 9       | 10/26       | Chapter 7.1–7.4                            |                            |
|             | 10/28       | Chapter 7.5–7.9                            |                            |
|             | 10/30       | Chapter 8.1–8.3                            |                            |
| No. 10      | 11/02       | Chapter 8.4–8.5                            |                            |
|             | 11/04       | Chapter 9.1–9.2                            |                            |
|             | 11/06       | Chapter 9.3–9.6                            |                            |
| No. 11      | 11/09       | Chapter 10.1                               |                            |
|             | 11/11       | Review for Mid-term Exam 2                 | Review for Mid-term Exam 2 |
|             | 11/13       | Mid-term Exam 2                            | Mid-term Exam 2            |
| No. 12      | 11/16       | Chapter 10.2                               |                            |
|             | 11/18       | Chapter 10.3                               |                            |
|             | 11/20       | Chapter 10.4–10.9                          |                            |
| No. 13      | 11/23       | Chapter 11.1                               |                            |
|             | 11/25       | No Class                                   | Thanksgiving               |
|             | 11/27       | No Class                                   | Thanksgiving               |
| No. 14      | 11/30       | Chapter 11.2                               |                            |
|             | 12/02       | Chapter 11.3                               |                            |
|             | 12/04       | Chapter 11.4–11.7                          |                            |
| No. 15      | 12/07       | Review for Mid-term Exam 3                 | Review for Mid-term Exam 3 |
|             | 12/09       | Mid-term Exam 3                            | Mid-term Exam 3            |
|             | 12/11       | Conclusion                                 | Last day of class          |