

MATH 483
MATHEMATICAL STATISTICS IN ENGINEERING AND THE SCIENCE
Fall 2016

INSTRUCTOR: Yaser Samadi (ysamadi@siu.edu, 618-453-6502)

OFFICE: Neckers 281

OFFICE HOURS: M W F, 12:30 - 2:30pm, or by appointment.

MEETING HOURS: M W F, 3:00pm - 3:50pm, EGRA, Room 320
R, 3:00pm - 3:30pm, EGRA, Room 219

TEXTBOOK: Mathematical Statistics with Applications (7th Ed.), Wackerly, Mendenhall and Sheaffer (Brooks/Cole Cengage Learning).

PREREQUISITE: Calc II (MATH 250 or equivalent) with C or better.

COURSE OBJECTIVES: This course aims to provide a solid foundation in statistical theory and an indication of the relevance and importance of the theory in solving practical problems in the real world. Students will learn the mathematical and probabilistic underpinnings of statistical theory, which is essential for understanding and properly applying statistical techniques used in other fields such as economics, biology, engineering, social science, and so on. Using the concepts of probability and distribution, students will learn about statistical inference from a variety of perspectives, including point and interval estimation, and hypothesis testing. Students will learn how to derive estimators and tests for some common situations (comparing two or more means, comparing two proportions).

COURSE OUTLINE: Set operations; laws of probability; conditional probability and Bayes' theorem; discrete distributions; continuous distributions; bivariate and multivariate distributions; distributions of functions of random variables; sampling distributions; moment generating functions; laws of large numbers and central limit theorems. Point estimation; confidence intervals; properties of estimators, methods of estimation, hypothesis testing, relationship between hypothesis testing and interval estimation; estimation and testing in one- and two-sample problems.

GRADES: Grades will be based on the following scheme. Course grade will be assigned based on total points earned. Straight scale will be adopted to determine a +/- letter grade.

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| Homework | 20% |
| Quizzes | 15% |
| Midterm Exams(2 exams, each 20%) | 40% |
| Final Exam | 25% |

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HOMEWORK: These will be assigned periodically, graded and returned.

EXAMS: Tentative Exam schedule is as follows: Exam 1 - Thursday, September 29th; Exam 2 - Thursday, October 27th; and the Final exam will be on Friday, December 16th from 2:45pm to 4:45pm in EGRA, Room 320.

ATTENDANCE: I expect you to attend every class, to arrive on time, and to participate in all class activities. Good attendance will be taken into account in borderline cases.

NOTES: The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.

Last day to Drop with Refund: Friday, September 2; Last day to Drop (Salukinet, no refund, resulting a W grade) Sunday, October 30.