EIND 354 – Engineering Probability and Statistics I

Instructor: William Schell, PhD, PE

Office Hours: Roberts Hall 403, MW 9:30 – 10:30, W 15:00 – 16:00 or appointment/drop in.

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General Course Information

Website: http://www.coe.montana.edu/ie/faculty/schell/teaching/EIND354/

Meeting Location and Time: Roberts Hall 307, MWF 1:10 – 2:00

Description: Understanding the statistical nature of engineering processes. Emphasis on proper data collection and classification, characteristics of variables and their distributions, joint probability distributions, and establishing hypotheses and statistical significance over engineering design specifications.

Prerequisites and Co-Requisites: M172 or 182, junior standing or instructor approval


Recommended Viewing:

21, 2008 with Kevin Spacey   Moneyball, 2011 with Brad Pitt

These movies were selected to assist students gain an understanding of practical applications of Probability Theory. While the books that these movies are based on provide more insight on the applications, students should find value in the movies.

Etiquette and Attendance: All members of the class are expected to conduct themselves professionally at all times. Key components of professional behavior include arriving on time, engaging in discussions, and not adding distractions to class (e.g. cells). Class attendance is not mandatory, however, class members are expected to be present when attending and are expected to know all course materials regardless of attendance. MSU Student Conduct Guidelines can be found at www2.montana.edu/policy/studentconduct

Objectives: Upon completion of this course, students will be able to:

1. Define basic Probability Concepts and apply these concepts to decision making.
2. Utilize Descriptive Statistics for engineering design and decision making.
3. Make decisions about a population using Inferential Statistics, including hypothesis testing for parametric and non-parametric populations.
Grading and Evaluation

**Grading Scale**: Grades will be earned based on performance against the following cut offs:

- **A**: 93
- **A-**: 90
- **B+**: 88
- **B**: 83
- **B-**: 80
- **C+**: 78
- **C**: 73
- **C-**: 70
- **D+**: 68
- **D**: 60
- **F**: Below 60

**Graded Assignments**: The final course grade will be earned through performance on the following set of assignments:

- **Homework**: 15% (homework will be assigned in most class periods)
- **Quizzes (5)**: 20% - 5 half period quizzes throughout the semester
- **Exams (2)**: 40% - two full period exams
- **Final Exam**: 25%

1. The grading scale presented above represents the guaranteed grade a student will earn if these performance levels are met. Final grades may be curved, or additional opportunities to earn course points presented, if determined necessary by the instructor.
2. Each semester I find more and more students with access to the instructor’s manual (it is quite obvious). If at any time during the semester there is evidence of a student cheating on homework in this or any other way, the minimum action taken is that they will earn a 0 on the entire homework portion of their course grade. Alternatively, students may opt to never turn in homework and this portion of the course will not be included in their grade calculation. MSU Student Conduct Guidelines, including academic integrity can be found at www2.montana.edu/policy/studentconduct

**Late Assignments**: Homework is due at the beginning of the class period after it was assigned. Late assignments will be accepted up until the next class period begins, but will be penalized 20%. Exams must be taken during the scheduled time period. Make up exams are allowed only for unanticipated and approved absences.

**Quizzes**: Students will have 25 minutes at the beginning of the scheduled period to complete quizzes. Students may utilize a handwritten single side of one 3.5 x 5” index card for each quiz, and any calculator of their choosing (unless instructed otherwise).

**Exams**: Students will have the entire 50 minute period to complete exams. Students may utilize a handwritten single side of one 8.5 x 11” sheet of paper for each exam, and any calculator of their choosing (unless instructed otherwise). The final exam will be comprehensive in nature and will take place during the common hour exam period assigned by the university. Students may utilize both sides of a handwritten 8/5 x 11” sheet of paper for the final exam.

**Grade Corrections**: Adjustments will be made to the score of a graded assignment only when a grading error has been made. If the student believes an error was made in grading, the written request for correction must be made within 24 hours of the assignment being returned and include the original graded material.

Course Communications

Assignments and other key information regarding this course will be published to the course website after the class period in which it was assigned. The MSU course listserv will be utilized for any reminders, and to draw attention to any new materials (e.g. corrections) published to the website. As noted above, the instructor is available outside of office hours.