

# MA 262 – Probability and Statistics for Engineers

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**Office Hours:** 7:20 AM – 7:50 AM (M - Th); 9:00 PM – 9:50 PM (Tu); 11:00 AM – 11:50 AM (W)

**Prerequisite:** MA 231  
**Text:** None – Class notes will be provided, usually via email.

**Course Description** An introduction to the basic laws of probability needed to perform statistical analysis. Included are probability distributions, the Central Limit Theorem, confidence intervals, hypothesis testing, and Analysis of Variance.

**Course Objectives** A student successfully completing this course should be expected to:

- be familiar with the terminology and nomenclature of statistics.
- know the difference between a parameter and a statistic.
- know the difference between a population and a sample.
- understand the basic concepts of probability.
- understand the meaning and significance of the standard deviation.
- be able to calculate the mean and variance of a distribution.
- be familiar with, and able to calculate probabilities of, the binomial, Poisson, normal Student- $t$ , Chi-square, and F distributions.
- be able to construct appropriate confidence intervals for population parameters.
- be able to perform hypothesis tests concerning the means, variances, and proportions of one or two populations.
- be able to perform hypothesis tests concerning the comparison of means of more than two populations.

**Calculator and Computer Policy** Computers cannot be accessed at any time during class. However, a statistical calculator would be extremely beneficial in this course, although one is not necessary. The best statistical calculators available are the TI-89, TI-92, and Voyage 200. (All are basically equivalent in capability.) The advantage to these calculators is the built-in statistical tables and statistical tests. They make life much easier. In addition, they are very useful in other math classes because they do symbolic calculus (not just numerical approximations), matrix manipulations, some differential equations, etc. Although expensive, they are well worth the investment.

**Exams** In addition to the comprehensive final exam, there will be 3 exams given during the term.

**An exam can be taken neither early nor late.** Any student(s) who cannot take an exam at the scheduled time (as indicated in the syllabus) must notify the instructor **prior** to the conclusion of that scheduled exam time with a valid and verifiable excuse. (Oversleeping, forgetting about the exam, scheduling an interview, or anything that cannot be interpreted as an emergency or as a verifiable athletic conflict given at least one week in advance of the exam will not qualify the student for taking the substitute exam.) Such students will have the opportunity to take a **substitute exam** that will be given from 6:45 AM until 7:45 AM on the morning of the next scheduled class following the missed scheduled exam. These substitute exams will necessarily be different from those given in class and will be comprised of problems taken from various texts containing material equivalent to that material covered in class. Any student missing both the scheduled exam and the substitute exam will receive a grade of zero for that scheduled exam with no chance for appeal.

Any student for whom some special accommodation(s), as documented by a physician, might be necessary for an exam **must** inform the instructor a minimum of seven days prior to the scheduled date of that exam. This must be done for each exam and cannot be accomplished with a blanket request to cover more than one exam. Failure to do this will result in that student taking the exam without the accommodation(s).

**Grading Weights** The portions of the course that will be graded, and the weight of each portion, are given below:

<u>Graded Component</u>	<u>Note(s)</u>	<u>Weight</u>
Exams	The dates of the 3 exams are listed elsewhere in this syllabus.	3/13 each
Final Exam	The date of the <b>comprehensive</b> final exam is given elsewhere in this syllabus.	4/13

**Exam Dates** The 3 exams in this course will be given on Mondays of weeks 4, 7, and 10.

**Final Exam** The final exam will be given on **Thursday, November 15**, from 8 AM until 10 AM. The final exam **cannot** be taken at another time.

**Attendance Policy** – Class attendance is required. Attendance will be taken at the beginning of each class beginning with the second class of the quarter. Any student missing more than 10% of the term's classes in MA 262, i.e., more than 3 classes, for **any reason whatsoever**, will be dropped from the course without the opportunity for appeal. ("Missing class" means missing at least 15 minutes of a class.)

**Grading Scale** The following conversion will be used to assign course letter grades to the term average:

Numerical Range for Letter Grades			
$90 \leq A$	$80 \leq B < 85$	$70 \leq C < 75$	$55 \leq D < 65$
$85 \leq AB < 90$	$75 \leq BC < 80$	$65 \leq CD < 70$	$F < 55$

**Students with Documented Disabilities** Any student(s) with special needs requiring accommodations should present the appropriate paperwork to Betty Albrecht in the Student Support Services off, located on the ground floor of the CC building, room 27, or call (414) 277-7265. It is the student's responsibility to present this paperwork in a timely fashion and to follow up with the instructor about the accommodation(s) being offered well in advance of the implementation of the desired accommodation(s). Accommodation(s) for test-taking must be arranged at least 7 days prior to the exam. (For more concerning this, see paragraph under "Exams.")

**Student Integrity and Academic Dishonesty** The University's rules concerning student integrity and academic dishonesty will be observed in this class. These rules can be found on pages 22 – 23 of the 2012 – 2013 copy of the MSOE "Undergraduate Academic Catalog." It can also be found online at

[http://www.msoe.edu/academics/course\\_catalog/undergrad2012-13.pdf](http://www.msoe.edu/academics/course_catalog/undergrad2012-13.pdf)

The instructor reserves the right to revise this syllabus at any time for any reason.