

COURSE SYLLABUS

YEAR COURSE OFFERED: 2016

SEMESTER COURSE OFFERED: Spring

DEPARTMENT: MATHEMATICS

COURSE NUMBER: MATH 3338

NAME OF COURSE: PROBABILITY

NAME OF INSTRUCTOR: David H. Wagner

The information contained in this class syllabus is subject to change without notice. Students are expected to be aware of any additional course policies presented by the instructor during the course.

Learning Objectives To provide the basic probability background for computer scientists, mathematicians and biologists who have a minor in mathematics. *If you are a pre-med student do not enroll in this course unless you have a minor in mathematics. Choose Math 3339 instead.* This is a core course for those who major in Mathematical Biology. This course provides indispensable education for those who need to learn the basic probability theory required for subsequent studies in pattern recognition, biomedical imaging, geosciences, information theory, or for those who intent to do research in biology. This course will not teach you statistics. Mathematics majors receive the foundations for the actuarial exam in probability. This is also a very good course for finance/business majors, especially for those who would like to venture in investments and stock market and need to learn the basics for stock market analysis using time-series.

Textbook: This section is using a different textbook *Introduction to Probability and its Applications, 3rd edition*, by Richard L. Scheaffer and Linda J. Young.

Students should read Chapter 1, “Probability in the World Around Us”

Lectures start with:

Chapter 2, Foundations of Probability

Chapter 3, Conditional Probability and Independence

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Chapter 4, Discrete Probability Distributions, sections 1-10

Chapter 5, Continuous Probability Distributions, sections 1-10

Chapter 6, sections 1-6.

Chapter 7, sections 1-4. 6.

If time permits:

Chapter 8, Theorem 8.4 without proof and their applications.

This is an outline of the course. I may have to deviate from this outline to cover all the topics that you must learn in this course. Please, take the course seriously and work on problems. Don't try to memorize solutions of various problems. You must learn how to work the solutions of problems.

Grading

Your course grade will be based on a weighted average of normalized scores for the final exam, one midterm exam, and homework. The final exam will take place May 12, 5-8 PM in CBB 110. I am working on choosing a date for the midterm. I plan to have the midterm cover chapters 2 through 4 of the textbook, and the final exam will cover the entire course.

Normalized scores

Suppose X is your final exam score, μ is the average score for the final, and σ is the sample standard deviation for the final exam scores. Then $Z_{\text{Final}} = (X - \mu)/\sigma$ is your normalized score for the final exam.

In the same way, I compute normalized scores for the total of your homework scores, and for your midterm exam score. Your grade will be determined by a weighted average of normalized scores:

$$\text{Grade} = (1/4)*(Z_{\text{HW}} + Z_{\text{MT}}) + (1/2)*Z_{\text{Final}}.$$

This means that the midterm exam counts (1/4), the Final exam counts (1/2), and the homework total counts (1/4). The numerical result 'z' of this calculation will determine your grade as follows:

$z > 1.25$ A	$1.0 < z < 1.25$ A-	$.75 < z < 1.0$ B+	$.5 < z < .75$ B
$.25 < z < .5$ B-	$0 < z < .25$ C+	$-.25 < z < 0$ C	$-.5 < z < -.25$ C-
$-.75 < z < -.5$ D+	$-1.0 < z < -.75$ D	$-1.25 < z < -1.0$ D-	$z < -1.25$ F