

# Course Syllabus

## Course Information:

<b>Lecture:</b>	<b>Monday, Wednesday and Friday 9:40 to 10:30am, in WEB L103</b>
<b>Pre-requisite:</b>	Calculus II. Specifically: "C-" or better in (MATH 1220 OR MATH 1320).
<b>Credit:</b>	3 hours
<b>Instructor:</b>	Neal Patwari ( <a href="http://span.ece.utah.edu/neal-patwari">contact info (http://span.ece.utah.edu/neal-patwari)</a> )
<b>Office:</b>	3120 MEB
<b>Office Hours:</b>	Monday: 10:30 to noon and 3:45 - 4:45 pm Friday: 10:30 to noon
<b>Email:</b>	<a href="mailto:npatwari@ece.utah.edu">npatwari@ece.utah.edu (mailto:npatwari@ece.utah.edu)</a>
<b>Phone:</b>	801-581-5917
<b>Final Exam Period:</b>	May 1, 2015, 8:00 – 10:00 am
<b>Textbook:</b>	<i>Probability and Statistics for Engineers and Scientists</i> , 9th Edition, Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers, Keying E. Ye. ISBN: 0321629116

## Teaching Assistants:

Lead TA: Seyyedkazem "Kazem" Hashemizadehkolowri, [s.hashemizadehkolowri@utah.edu \(mailto:s.hashemizadehkolowri@utah.edu\)](mailto:s.hashemizadehkolowri@utah.edu)

Study Session: 11 - 12 am on Fridays (location t.b.a.)

Office hours: 3 - 4 pm on Wednesdays (location t.b.a.)

Grader: Andrew Bradbury, [a.bradbury8@gmail.com \(mailto:a.bradbury8@gmail.com\)](mailto:a.bradbury8@gmail.com)  
 [\(mailto:u0883644@utah.edu\)](mailto:u0883644@utah.edu)

## Exams:

There are three exams in the course, each covering one segment of the course material (see Topic Schedule below). None are comprehensive, although material in a section builds upon material learned in previous sections.

Students may have note sheets with them for each exam, and a calculator. Laptops, smart phones, and textbooks are not permitted to be used during the exam. Students may use two sides of an 8.5 by 11 inch sheet of paper of hand-written notes as a note sheet for exam 1. For exam 2 and exam 3, students may use the note sheet for the previous exam(s) in addition to a new note sheet. Thus for exam 2 a student may have up to four sides (of 8.5x11 inch paper) as note sheets, and for exam 3, a student may have up to six sides (of 8.5x11 inch paper) as note sheets.

Exams are each weighted as 25% of the course grade.

My philosophy is that your exam grades should reflect how well you master the material by the end of the semester. Thus I provide an opportunity at the end of the semester to be re-examined on any of the exams. The final exam period is an optional period during which you may take the exam retake from any of exam 1, 2, and/or 3. The exam retake is on the same material covered by the original exam, but with different questions. Your grade for an exam is the highest of the original exam score and the exam retake score.

## Homework:

Homework assignments are due as listed on Canvas, generally Wednesdays at 11:59pm, but with exceptions. Please see the Canvas assignment calendar. Your completed homework should be scanned and turned in on Canvas. No late homework is accepted, but your lowest homework score is dropped to account for extenuating circumstances. The final homework is for you to design a data collection experiment and to test a hypothesis on that data, called the [Experiment Design and Analysis](#) assignment. This is a "capstone" assignment and is a test one of the major outcomes of this course. As such, the score on this assignment cannot be dropped. Homework solutions will be posted on Canvas soon after the deadline for submission. Homework are weighted as 25% of the final grade.

## Collaboration Policy

You are encouraged to work together on homework assignments. Discussing is a great way to learn. After making a genuine attempt to solve the homework problems, you are encouraged to discuss the answers with other students currently enrolled in ECE 3530 to check answers and compare approaches. However, afterwards, **you must complete your answers on your own, without referring to the solutions** of other students, solutions from previous terms, or solutions books or sites. When working on Matlab problems, you **may not use or copy code** written by another student or downloaded from the web. You also may not provide your code to another student.

## Grading Policy

Exams and homework assignments are designed so that you can demonstrate your mastery of each of the topics within digital communications. Your grade percentage will reflect the percentage of the course topics which you have demonstrated proficiency. Competition is not necessary, since every student can get an A grade.

Grades are posted on Canvas. Canvas does not accurately calculate your final grade percentage until the end of the semester when all grades are posted on Canvas, so please calculate your final percentage yourself, using the rules: 1) Each exam is 25% of the final grade; 2) Homeworks are 25% of the final grade; 3) the lowest of (the original exam grade, exam retake) is dropped; 4) and the lowest homework score (excluding the Experiment Design and Analysis assignment) is dropped. The letter grade is then automatically assigned

from the final percentage by Canvas as follows:

- A:  $\geq 92$
- A-:  $\geq 90$  and  $< 92$
- B+:  $\geq 88$  and  $< 90$
- B:  $\geq 82$  and  $< 88$
- B-:  $\geq 80$  and  $< 82$
- C+:  $\geq 78$  and  $< 80$
- C:  $\geq 72$  and  $< 78$
- C-:  $\geq 70$  and  $< 72$
- D+:  $\geq 68$  and  $< 70$
- D:  $\geq 62$  and  $< 68$
- D-:  $\geq 60$  and  $< 62$

Email the instructor if a posted grade for an assignment is incorrect.

## Tips

- Read the corresponding section in the book before lecture.
- Come to office hours as soon as you have questions about the material.
- Do additional problems, beyond the homework.

## Topic Schedule

### First Segment:

- Lectures 1-3: Intro and applications of probability and statistics, sample space, events, set algebra
- Lectures 4-6: Tree diagrams, multiplication rule, uniform probability law, permutations and combinations
- Lectures 6-10: Conditional probability, Bayes' Law, independence, games

### Second Segment:

- Lectures 11-12: Random variables, probability mass functions, probability density functions
- Lectures 12-13: Expectation, Expected value of a function, variance
- Lectures 14-17: Binomial, Gaussian, and other distributions
- Lectures 18-22: Joint distributions, covariance of two random variables, linear combinations of random variables

### Third Segment:

- Lectures 23-24: Chebyshev's theorem, Introduction to statistics
- Lecture 25-26: Distribution of a function of a sample
- Lecture 28-29: Estimation of confidence intervals
- Lectures 30-33: Hypothesis testing
- Lectures 34-35: Review

End of the semester:

- Lectures 37: Linear Regression
- Lectures 36,38-39: review sessions

## Disability Accommodations

The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Olpin Union Building, 801-581-5020 (V/TDD). The Center for Disability Services will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in alternative format with prior notification to the Center for Disability Services.

Date	Details	
Mon Jan 12, 2015	<a href="https://utah.instructure.com/calendar?event_id=683153&amp;include_contexts=course_319936#7b2273686f77223a2267726f75705f636f757273655f333139393336227d">ECE 3530 / CS 3130 First Lecture (https://utah.instructure.com/calendar?event_id=683153&amp;include_contexts=course_319936#7b2273686f77223a2267726f75705f636f757273655f333139393336227d)</a>	9:40 10:30
Wed Jan 21, 2015	<a href="https://utah.instructure.com/courses/319936/assignments/1944654">Homework 1 (https://utah.instructure.com/courses/319936/assignments/1944654)</a>	due by 11:59pm
Wed Jan 28, 2015	<a href="https://utah.instructure.com/courses/319936/assignments/1944655">Homework 2 (https://utah.instructure.com/courses/319936/assignments/1944655)</a>	due by 11:59pm
Fri Feb 6, 2015	<a href="https://utah.instructure.com/courses/319936/assignments/1944656">Homework 3 (https://utah.instructure.com/courses/319936/assignments/1944656)</a>	due by 11:59pm
Wed Feb 11, 2015	<a href="https://utah.instructure.com/courses/319936/assignments/1944651">Exam 1 Original (https://utah.instructure.com/courses/319936/assignments/1944651)</a>	due by 9:40am
Wed Feb 18, 2015	<a href="https://utah.instructure.com/courses/319936/assignments/1944657">Homework 4 (https://utah.instructure.com/courses/319936/assignments/1944657)</a>	due by 11:59pm
Wed Feb 25, 2015	<a href="https://utah.instructure.com/courses/319936/assignments/1944658">Homework 5 (https://utah.instructure.com/courses/319936/assignments/1944658)</a>	due by 11:59pm
Wed Mar 4, 2015		

	<a href="https://utah.instructure.com/courses/319936/assignments/1944659">Homework 6 (https://utah.instructure.com/courses/319936/assignments/1944659)</a>	due by 11:59pm
Wed Mar 11, 2015	<a href="https://utah.instructure.com/courses/319936/assignments/1944660">Homework 7 (https://utah.instructure.com/courses/319936/assignments/1944660)</a>	due by 9:40am
Fri Mar 13, 2015	<a href="https://utah.instructure.com/courses/319936/assignments/1944652">Exam 2 Original (https://utah.instructure.com/courses/319936/assignments/1944652)</a>	due by 9:40am
Wed Apr 1, 2015	<a href="https://utah.instructure.com/courses/319936/assignments/1944661">Homework 8 (https://utah.instructure.com/courses/319936/assignments/1944661)</a>	due by 11:59pm
Wed Apr 8, 2015	<a href="https://utah.instructure.com/courses/319936/assignments/1944662">Homework 9 (https://utah.instructure.com/courses/319936/assignments/1944662)</a>	due by 11:59pm
Wed Apr 15, 2015	<a href="https://utah.instructure.com/courses/319936/assignments/1996646">Experiment Design &amp; Analysis (https://utah.instructure.com/courses/319936/assignments/1996646)</a>	due by 11:59pm
	<a href="https://utah.instructure.com/courses/319936/assignments/1944663">Homework 10 (https://utah.instructure.com/courses/319936/assignments/1944663)</a>	due by 11:59pm
Mon Apr 20, 2015	<a href="https://utah.instructure.com/courses/319936/assignments/1944653">Exam 3 Original (https://utah.instructure.com/courses/319936/assignments/1944653)</a>	due by 9:40am
Fri May 1, 2015	<a href="https://utah.instructure.com/courses/319936/assignments/1944664">Exam 1 Retake (https://utah.instructure.com/courses/319936/assignments/1944664)</a>	due by 8am
	<a href="https://utah.instructure.com/courses/319936/assignments/1944665">Exam 2 Retake (https://utah.instructure.com/courses/319936/assignments/1944665)</a>	due by 8am
	<a href="https://utah.instructure.com/courses/319936/assignments/1944666">Exam 3 Retake (https://utah.instructure.com/courses/319936/assignments/1944666)</a>	due by 8am