ECE511/PSY511 PSYCHOPHYSICS
A Joint Offering by the School of Electrical and Computer Engineering
And the Department of Psychological Sciences
Purdue University
Fall 2009

Lecture Hours:	Thursdays, 9:00 – 11:00 am; also see http://shay.ecn.purdue.edu/~ece511/f09_schedule.html for course details
Lecture Room:	MSEE 184 (VISE lab)
Instructors:	Prof. Hong Z. Tan, School of Electrical and Computer Engineering
Instructor Office:	MSEE 272
Instructor Phone:	494–6416
Instructor Email:	hongtan@purdue.edu
Required Text:	N. A. Macmillan & C. D. Creelman, *Detection Theory: A User's Guide* (2nd edition). Additional readings will be required. Copies will be provided online.

COURSE DESCRIPTION

Psychophysics is the quantitative study of the relationship between a physical stimulus and perception. This course focuses on the theory and practice of assessing human performance in terms of detection, discrimination, reconstruction and identification of physical events. Furthermore, it discusses mathematical and computational modeling of the underlying psychological mechanisms. Course material will be presented in the context of visual, auditory, and haptic human-machine interfaces. The laboratory component of the course enables the students to practice designing, implementing and conducting psychophysical experiments.

COURSE OBJECTIVES

A student who successfully completes this course should be able to

- Identify a psychophysical problem;
- Formulate the problem as a detection, discrimination, reconstruction or identification experiment;
- Select an appropriate experimental paradigm;
- Determine range of physical parameters that are meaningful for the specific problem;
- Determine experimental parameters such as number of subjects and total trials with consideration for the statistical robustness of experimental data;
- Predict possible experimental outcomes based on literature survey;
- Analyze experimental data in terms of threshold or information transmission;
- Form mathematical model of the relationship between physical stimuli and perceptual judgments.

COURSE REQUIREMENTS

Homework Assignments (10%): There will be regular homework assignments.

Course Project (30%): There will be one (1) team-based semester project assignment.

Exams (30% each): There will be one midterm and one final exam for this course. Each will cover approximately 50% of the course material. The two exams will carry the same weight (30% each) in the final evaluation.

GRADE

- Your course grade will be determined from the total points that you receive from homework assignments, course project, and exams.
- There will be no extra-credit projects.
- Homework assignments are due at the **beginning** of class. No homework will be accepted after the lecture has started.
- If you do not show up for an exam, you will receive a zero, unless you made other arrangements before the exam, or unless extenuating circumstances exist.
- You are responsible for all information given in class verbally and/or in writing. Any information about the course (including but not limited to exam dates and course schedule) may be superseded by the information given in class at any time.
- Cooperative efforts at understanding the material and the assignments of the course are encouraged. However, you are required to present only work that you have completed individually. Submitting any work that is not a student's own work is considered cheating.
- Grades will be assigned as "A", "B", "C", etc. The new +/– grading system will not be used in this course.

REGRADE POLICY

You may ask to have an assignment, project or exam re-graded, the result of which may be an increase or a decrease in your grade. To initiate a regrade, you must submit a written request (e-mail preferred) to the instructor, along with the work to be regarded **within three working days** after receiving the graded material.

COURSE PREREQUISITES BY TOPIC

Probability, random variables, Gaussian distribution, regression, matrix algebra.

Suggested book for review: Alvin W. Drake, *Fundamentals of Applied Probability Theory*, McGraw-Hill Inc., 1967/1988.

COURSE WEB PAGE

Check the course webpage **http://shay.ecn.purdue.edu/~ece511/** regularly for lecture notes, homework assignments, and other information related to this course.

CAMPUS EMERGENCY

In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes. In such an event, information will be provided via email to the students.