

TO: The Engineering Faculty
FROM: The Faculty of the School of Electrical and Computer Engineering
RE: New Graduate-Level Course

The faculty of the School of Electrical and Computer Engineering has approved the following new course. This action is now submitted to the Engineering Faculty with a recommendation for approval.

ECE/PSY 511 Psychophysics

Sem. 1. Class 2, Lab 2, cr. 3. (Offered in alternate years.)

Prerequisite: Permission of Instructor.

An examination of the relationship between physical stimuli and perception (visual, auditory, haptics, etc.). Includes a review of various methods for studying this relationship and of the mathematical and computational tools used in modeling perceptual mechanisms.

Reason:

It is becoming increasingly important for engineers to be able to design systems and products that work well with human operators in terms of ergonomics, safety and performance. There is currently no course on psychophysics that an undergraduate student at ECE can take to learn the basics of studies involving human observers. Courses exist in Psychophysical Sciences and Industrial Engineering at Purdue that touch upon psychophysical issues, but none is specifically designed to prepare engineering students with the theory and practice of psychophysical experimentation with regard to engineering systems. It is believed that this experimental course will fill such a void and better prepare our graduates for a career in human-centered engineering.

Leah H. Jamieson
Professor and Interim Head

Supporting Documentation:

1. Level: Graduate Level
2. Course Instructor: Hong Z. Tan
3. Course Outline:

<i>Topics</i>	<i>Lectures</i>
1. Introduction: Psychophysics in a Nutshell	1.5
2. Fechnerian Psychophysics	7.5
3. Signal Detection Theory	1.5
4. One-Interval Paradigms	4.5
5. Rating Experiment	1.5
6. Two-Interval Paradigms	1.5
7. Adaptive Methods	2.5
8. Introduction to Information Theory	1.5
9. Absolute Identification Paradigm	7.5
10. Speed-Accuracy Tradeoff	1.5
11. Perception as Inverse Problems	7.0
12. Multidimensional Scaling	3.0
13. Student Project Presentations	<u>3.0</u>
Total	44

4. Text: Detection Theory: A User's Guide; 2nd edition, N. A. Macmillan & C. D. Creelman, Cambridge University Press.