

Psychophysiology Lecture and Lab (804/711)

Fall, 2002

Course Name:	Psychophysiology (804) and Psychophysiology lab (711)
Instructors:	John Curtin & Eddie Harmon-Jones
Class Meetings:	Monday, 1:30 – 4:50pm
Office Hours:	by appointment
Contact info:	Curtin: PSY 326; 262-0387; jjcurtin@wisc.edu Harmon-Jones: PSY 217; 265-5504; eharmonj@facstaff.wisc.edu
Course Website:	http://dionysus.psych.wisc.edu/courses/psy804/psy804.htm
Required Readings:	Cacioppo, J. T., Tassinari, L. G., & Berntson, G.G (Eds.). <i>Handbook of Psychophysiology</i> (2nd Ed.) Cambridge, UK: Cambridge University Press.
Available from: Amazon.com (4 used copies currently available) and Underground Textbooks (3 used copies currently available)	

Course Description & Structure

This course will provide an overview of the principles, theory, and applications of psychophysiological assessment. The course has two main goals: a) to provide an introduction to theory and research in major areas of human psychophysiology with a particular emphasis on psychophysiological correlates and physiological substrates of cognition, affect, and psychopathology; and b) to provide an introduction to laboratory techniques and methodological principles in human psychophysiology.

The course will involve a combination of lecture, discussion, demonstrations, and laboratory exercises. We will bring in samples of physiological signals for us to examine, and if you have psychophysiological data you are interested in examining, please let me know. You will get more out of the course if you ask questions as they arise. We will be covering technical material, and you should feel quite free to interject your questions as they arise.

Course Requirements and Grades

Course requirements include regular attendance, active participation in class discussion, and completion of all assignments and the course project.

At **Week 11**, you will be required to turn in a 5-10 page paper (typed, double-spaced) that proposes an experiment that would test a novel hypothesis using psychophysiological measure(s). The paper should include a short introduction that justifies your hypothesis and a full method section.

On **Week 12**, you should be prepared to give a 15-20 min oral presentation of your written proposal, which was turned in on Week 11. In addition, you will also turn in a stimulus control program (for DMDX or other software) that demonstrates your experimental paradigm. Your program will be graded S/U based on whether it executes with error and captures the main features of your experimental task/paradigm.

After the oral presentations, the class will vote for which 2 proposals should be conducted in class. Two groups of students will be formed. You will be expected to participate in data collection (3 participants should be run), processing, and analysis of your group project.

A final group paper that summarizes the results of your group project will be due: **December 18, 2002.**

At various points during the semester, we will ask you to complete anonymous course evaluations. This will allow you an opportunity to provide us with feedback on how the course is meeting your needs and allow us to make online changes to accommodate your needs.

COURSE SCHEDULE

The schedule is provisional. We may adjust our rate of progress as necessary to ensure maximal mastery of the material. Any changes in dates/content will be announced in class and accompanied by a revised schedule.

Introduction [Week #1: 9/9/02]

Cacioppo, J.T., Tassinary, L.G. & Berntson, G.G. (2000). Psychophysiological science. In J.T. Cacioppo, L.G. Tassinary, & G.G. Berntson, G.G (Eds.). *Handbook of Psychophysiology (2nd Ed.)* (pp. 3-23). Cambridge, UK: Cambridge University Press.

Electricity [Week #2: 9/16/02]

Gratton, G. (2000). Biosignal processing. In J.T. Cacioppo, L.G. Tassinary, & G.G. Berntson, G.G (Eds.). i (pp. 900-923). Cambridge, UK: Cambridge University Press.

Skin conductance [Week #3: 9/23/02]

Dawson, M.E., Schell, A.M., & Filion, D.L. (2000). The electrodermal system. In J.T. Cacioppo, L.G. Tassinary, & G.G. Berntson, G.G (Eds.). *Handbook of Psychophysiology (2nd Ed.)* (pp. 200-223). Cambridge, UK: Cambridge University Press.

Pennebaker, J.W. and Chew, C.H. (1985). Behavioral inhibition and electrodermal activity during deception. *Journal of Personality and Social Psychology*, 49, 1427-1433.

Gross (1998). Antecedent- and Response-Focused Emotion Regulation: Divergent Consequences for Experience, Expression, and Physiology. *Journal of Personality and Social Psychology*, 74, 224–237.

Electromyography [Week #4: 9/30/02]

Tassinary, L. G., & Cacioppo, J. T. (2000). The skeletomotor system: Surface electromyography. In J. T. Cacioppo, L. G. Tassinary, & G. G. Berntson (Eds.), *Handbook of psychophysiology (2nd Ed.)* (pp. 163-199). New York: Cambridge University Press.

Schwartz, G.E., Fair, P.L., Salt, P, Mandel, M.R. & Klerman, G.L. (1976). Facial muscle patterning to affective imagery in depressed and nondepressed subjects. *Science*, 192, 489-491.

Dimberg, U., Thunberg, M., & Elmehe, K. (2000). Unconscious facial reactions to emotional facial expressions. *Psychological Science*, 11, 86-89.

Startle response [Week #5: 10/7/02]

Curtin, J. J., Lang, A. R., Patrick, C. J., & Stritzke, W. G. K. (1998). Alcohol and fear-potentiated startle: The role of competing cognitive demands in the stress-reducing effects of intoxication. *Journal of Abnormal Psychology*, 107, 547-565.

Lang, P. J. (1995). The emotion probe: Studies of motivation and attention. *American Psychologist*, 50, 372-385.

Patrick, C.J., Bradley, M.M., & Lang, P.J. (1993). Emotion in the criminal psychopath: Startle Reflex Modulation. *Journal of Abnormal Psychology*, 102, 82-92.

Startle Response (continued) and Cardiovascular [Week #6: 10/14/02]

Blumenthal, T. (1999). Short lead interval startle modification. In M. E. Dawson, A. M Schell, & A. H. Bohmelt (Eds.). *Startle Modification: Implications for Neuroscience, Cognitive Science, and Clinical Science*. (pp. 51-71) Cambridge, UK: Cambridge University Press.

Brownley, K.A., Hurwitz, B.E., & Schneiderman, N. (2000). Cardiovascular psychophysiology. In J.T. Cacioppo, L.G. Tassinari, & G.G. Berntson, G.G (Eds.). *Handbook of Psychophysiology (2nd Ed.)* (pp. 224-263). Cambridge, UK: Cambridge University Press.

Kagan, J., Reznick, J.S. and Snidman, N. (1988). Biological bases of childhood shyness. *Science*, 240, 167-171.

fMRI and brain imaging [Week #7: 10/21/02]

Davidson, R. J. & Irwin, W. (1999). The functional neuroanatomy of emotion and affective style. *Trends in Cognitive Sciences*, 3, 11-21.

Electroencephalography [Week #8: 10/28/02]

Davidson, R.J., Jackson, D.C., & Larson, C.L. (2000). Human Electroencephalography. In J.T. Cacioppo, L.G. Tassinari, & G.G. Berntson, G.G (Eds.). *Handbook of Psychophysiology (2nd Ed.)* (pp. 27-52). Cambridge, UK: Cambridge University Press.

Davidson, R. J. (1998). Anterior electrophysiological asymmetries, emotion, and depression: Conceptual and methodological conundrums. *Psychophysiology*, 35, 607-614.

Harmon-Jones, E., & Sigelman, J. (2001). State anger and prefrontal brain activity: Evidence that insult-related relative left prefrontal activation is associated with experienced anger and aggression. *Journal of Personality and Social Psychology*, 80, 797-803.

EEG (continued) [Week #9: 11/04/02]

Allen, J. J. B., Harmon-Jones, E., & Cavender, J. (2001). Manipulation of frontal EEG asymmetry through biofeedback alters self-reported emotional responses and facial EMG. *Psychophysiology*, 38, 685-693.

Additional readings to be announced.

Event related potentials [Week #10: 11/11/02]

Fabiani, M., Gratton, G., and Coles, M.G.H. (2000). Event-related brain potentials: Methods, theory, and applications. In J.T. Cacioppo, L.G. Tassinari, & G.G. Berntson, G.G (Eds.). *Handbook of Psychophysiology (2nd Ed.)* (pp. 53-84). Cambridge, UK: Cambridge University Press.

Curtin, J. J., Lang, A. R., Patrick, C. J., Cacioppo, J. T., & Birbaumer, N. (2001). Alcohol affects emotion through cognition. *Psychological Science*, 12, 527-531.

Iacono, W. G., Carlson, S. R., Malone, S. M., & McGue, M. (2002). P300 Event-related potential amplitude as an indicator of risk for disinhibitory psychopathology: An epidemiological study of adolescent boys. *Archives of General Psychiatry*. Manuscript in press.

ERP (continued) [Week #11: 11/18/02]

Kutas, M. & Hillyard, S.A. (1980). Event-related potentials to semantically inappropriate and surprisingly large words. *Biological Psychology*, 11, 99-116.

Gehring, W. J., Goss, B., Coles, M. G. H., Meyer, D. E., & Donchin, E. (1993). A neural system for error detection and compensation. *Psychological Science*, 4, 385-390.

Weeks 12 – 14 [11/25 – 12/9] reserved for presentations, and data acquisition, processing and reduction for course project