Seminar on Cognitive Electrophysiology (P657)

Instructor: Brian F. O'Donnell, Ph.D.
Indiana University
Fall Semester 1999
MW 11:15 to 1:10 PM, PY 130
Office: Rm 150, Psychology Building
Office hours:  1 to 2:30 PM Thursday
            9 AM to 10 AM, Friday
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Syllabus

Course objectives. This seminar will focus on the application of event-related potential (ERP) technology to questions in psychology and neuroscience. Four areas will be reviewed: 1) Neural substrates of event related potentials and techniques for source localization, 2) Experimental methodology, 3) Event-related potentials studies of sensory and cognitive processes, and 4) Event-related potential paradigms in psychopathology and neuropsychology. ERP findings will be reviewed for aging, neurodegenerative disorders, schizophrenia, depression, bipolar disorder, stroke, attention deficit disorder, and autism. There will also be laboratory demonstrations so that students who are not doing a project can get hands-on experience using the technology. Grades will be based on participation, presentations on topics, and one review or research paper.

Course format. The class will focus on a specific discussion topic each week, which will be associated with a set of assigned readings. All required readings must be completed prior to each class, since the discussions will be a major component of what is learned in the seminar. In addition to open discussion, each student will do a brief (5 to 10 minute) summary and critique of one of the readings assigned for that week.

Course requirements and grading. Grades will be based on participation in the seminar (20%), presentations on topics (50%), and one paper (30%). The paper can be a scholarly review of a topic, or a paper based on a pilot study carried out during the semester (15 to 25 pages, double spaced, excluding references). The review paper should review the literature relevant to one current topic or issue in cognitive electrophysiology, and provide a summary and critique of the major viewpoints in the field. The student should discuss the topic of the paper with me prior to October 5th, and have an abstract with a minimum of ten readings completed by November 5th. The student will do a 20 minute presentation of the paper topic during the weeks of November 29th and December 6th. Papers are due on the day of your presentation. The lab paper will be focused on the issues addressed in the study, with a Results and Discussion section on Preliminary data and methodological issues that arose in devising and running the experiment.


Change. In the event changes are required in the course schedule or requirements, you will be notified by an announcement in class.
Weekly Topics and Readings

August 30: ERPs as measures of neural and cognitive processes

Coles GH and Rugg MD. Event-Related Brain Potentials: an Introduction (In Rugg and Coles)
Rugg MD and Coles GH. The ERP and Cognitive Psychology: Conceptual Issues (In Rugg and Coles)

Sept 6: Time, Amplitude, and Topography I

Coles MGH, Henderikus GOM Smid, Scheffers MK, Otten LJ. Mental chronometry and the study of human information processing (In Rugg and Coles).

Sept 13: Time, Amplitude, and Topography II


Sept 20: Neural Circuits and the event-related potential.

Allison T, Ginter H, mCArthur G, Nobre AC, Puce A, Luby M, Spencer DD. Face recognition in the


Sept 27: Gamma range activity and information processing


Oct 4: Attention I


Mangun GR & Hillyard SA. Mechanisms and models of selective attention. (In Rugg and Coles).


Oct 11: Attention II


Oct 18: Language


Osterhout L & Holcomb P.J. Event-related potentials and language comprehension. (In Rugg and Coles).

Oct 25: Memory

Rugg M.D. ERP studies of memory. (In Rugg and Coles).


Nov 1: Development and Developmental Disorders

TBA

Nov 8: Aging and Neurologic Disorders


**Nov 15: Psychopathology**


**Nov 22: Individual differences**


**Nov 24 - 28:** Happy Thanksgiving!

**Nov 29:** Presentations


**Dec 6** Presentations

**Dec 13 Final Exam Week**