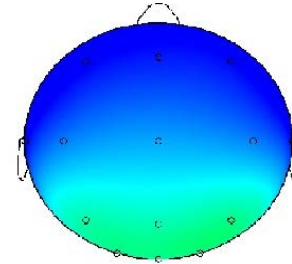
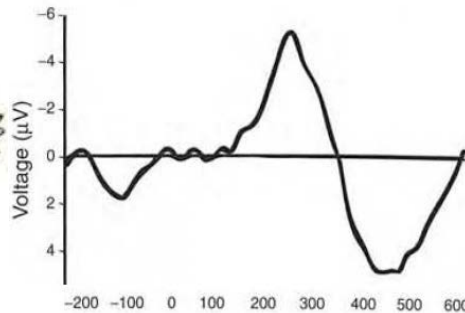




Employing the Event-Related Potential Technique in Your Research



- Instructor:** Matthew W. Miller, Ph. D.
- Email:** mwm0024@auburn.edu
- Office Hours:** Wednesday 9:00 AM – 12:00 PM and by appointment
- Office Location:** Kinesiology, Room 164
- Course Number:** KINE 8970-002
- Class Meeting:** Tuesday and Thursday 2:00 – 3:15 PM, Memorial Coliseum 2043
- Credit Hours:** 3.000
- Prerequisites:** None
- Texts/Resources:** Required Text: Luck, S. J. (2014). *An introduction to the event-related potential technique* (2nd ed.). Cambridge, MA: The MIT Press.
- Other readings will be made available on Canvas.



Course Description: Examination of the neurophysiological basis of event-related potentials (ERPs), how to record electroencephalography (EEG), how to extract ERPs, and ERP components relevant for kinesiology research.

Learning Outcomes: Students will be able to critically analyze and design ERP studies.

Course Content (SUBJECT TO CHANGE)

| Week | Topic | Readings |
|-------------------------------|---|--|
| 01/12 – 16 No Class | | |
| 01/19 – 23 | Origins of ERPs | Text: Chapters 1 – 2 Jackson & Bolger (2014) |
| 01/26 – 30 | Overview of Common ERP Components | Text: Chapter 3 |
| 02/02 – 06 | Designing and Conducting ERP Studies | Text: Chapters 4 – 5 |
| 02/09 – 13 | Signal Processing in ERP Studies | Text: Chapters 6 – 8 |
| 02/16 – 18 | Quantifying and Statistically Analyzing ERP Components | Text: Chapters 9 – 10 |
| 02/23 – 27 | Sensory ERP Components | Pratt (2012) Journal Article Presentations |
| 03/02 – 06 | Negative Slow Waves and the Lateralized Readiness Potential | Brunia, van Boxtel, & Böcker (2012) Smulders & Miller (2012) Journal Article Presentations |
| 03/09 – 13 | P300 | Polich (2012) Journal Article Presentations |
| 03/16 – 20 | Error-Related Negativity and Feedback-Related Negativity | Gehring, Liu, Orr, & Carp (2012) Journal Article Presentations |
| 03/23 – 27 No Class | | |
| | | |



| | | |
|---------------|---|--|
| 04/02 | ERPs at the Cognitive Neuroscience Society Meeting | 'Journal Article' Presentations |
| 04/06 – 10 | ERPs in Selective Attention and Focusing of Attention Studies | Luck & Kappenman (2012) Luck (2012) |
| 04/13 – 17 | ERPs in Working Memory Studies | Perez & Vogel (2012) |
| 04/20 – 24 | Student Experiment Presentations | |
| 04/27 – 05/01 | Student Experiment Presentations | |
| 05/04 | Class Reflections Due by 12 PM | |

Assignments:Journal Article Presentations

Students will find a studies published between 2012 – 2015 that are related to the week's topic, and present the studies to the class. Particular emphasis will be placed on research design and how results fit in with the extant literature.

Student Experiment Presentations

Students will design an ERP study and present it to the class. The presentation will include an Introduction, *Detailed* Methods, and Hypotheses.

Class Reflection

The class reflection assignment will be given during the final week of class and must be turned in by 12 PM May 4. This assignment requires the response to a few overarching questions about the class. This assignment does not require research or studying; it only requires reflection. In other words, do not stress about this assignment; just complete it in a thoughtful manner.

Grading:

Assignments contribute as follows to final class grade:



| | |
|-----------------------------------|-----|
| Journal Article Presentations- | 45% |
| Student Experiment Presentations- | 45% |
| Class Reflection- | 10% |

Percentages will be associated with the following letter grades:

| | |
|----|--------------|
| A: | 90.0% \leq |
| B: | 80.0% \leq |
| C: | 70.0% \leq |
| D: | 60.0% \leq |
| F: | 60.0% $>$ |

Class Policies:

Attendance: Although attendance is not required, students are expected to attend all classes, and will be held responsible for any content covered in the event of an absence.

Excused Absences: Students are granted excused absences from class for the following reasons: illness of the student or serious illness of a member of the student's immediate family, the death of a member of the student's immediate family, trips for student organizations sponsored by an academic unit, trips for university classes, trips for participation in intercollegiate athletic events, subpoena for a court appearance, and religious holidays. Students who wish to have an excused absence from class for any other reason must contact Dr. Miller in advance of the absence to request permission. Dr. Miller will weigh the merits of the request and render a decision. When feasible, the student must notify Dr. Miller prior to the occurrence of any excused absences, but in no case shall such notification occur more than one week after the absence. Appropriate documentation for all excused absences is required. Please see the *Tiger Cub* for more information on excused absences.

Make-Up Policy: Students are only guaranteed the opportunity to make up assignments due to excused absences (i.e., students are not guaranteed the opportunity to make up assignments due to unexcused absences). Arrangement to make up assignments due to properly authorized excused absences must be initiated by the student within one week of the end of the period of the excused absences(s). Except in unusual circumstances, such



as the continued absence of the student or the advent of university holidays, a make-up assignment will take place within two weeks of the date that the student initiates arrangements for it.

Academic Honesty Policy: All portions of the Auburn University student academic honesty code (Title XII) found in the *Tiger Cub* will apply to KINS 7750. All academic honesty violations or alleged violations of the SGA Code of Laws will be reported to the Office of the Provost, which will then refer the case to the Academic Honesty Committee.

Disability Accommodations: Students who need special accommodations in class, as provided by the Americans with Disabilities Act, should arrange for a confidential meeting with Dr. Miller during office hours in the first week of classes (or as soon as possible if accommodations are needed immediately). The student must bring a copy of their Accommodations Letter and an Instructor Verification Form to the meeting. If the student does not have these forms, they should make an appointment with the Program for Students with Disabilities, 1288 Haley Center, 844-2096 (V/TT).

Course Contingency: If normal class is disrupted due to illness, emergency, or crisis situation, the syllabus and other course plans and assignments may be modified to allow completion of the course.

Professionalism: As faculty, staff, and students interact in professional settings, we are expected to demonstrate professional behaviors as defined in the College's conceptual framework. These professional commitments or dispositions are listed below:

- Engage in responsible and ethical professional practices
- Contribute to collaborative learning communities
- Demonstrate a commitment to diversity
- Model and nurture intellectual vitality