Electrophysiologic Techniques I

**Course Title**

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**Instructor**

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**E-mail Address / Phone**

By appointment

**Office Hours**

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### I. Course Description:

This course is designed to introduce basic concepts in the administration and interpretation of physiologic and electrophysiologic measures of the auditory system. The main focus of the course will be on auditory evoked potentials. Instrumentation, parameters, variables affecting recordings and interpretation of test results will be covered. Auditory brainstem response (ABR), electrocochleography (ECochG), middle (AMLR) and late (ALR) evoked potentials, auditory steady state response (ASSR) and otoacoustic emissions (OAE) will be included.

### II. Learning Outcomes:

Involvement in this course will enable students to:

- Critically evaluate and understand the basic operational principles and state-of- the-art technology in the electrophysiological and physiologic assessment and interpretation of AEP and OAE test results.
- Complete basic AEP and OAE test procedures on normal subjects and accurately report results obtained.

### III. Evaluation:

Grades will be based on an average of: two exams (30%) each, AEP lab reports (10%), class presentation (10%)/two written reviews of articles from peer reviewed professional journals (20%).

### IV. Schedule:

#### Tentative Course Outline

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Aug. 27</td>
<td>Introduction/overview of the class and class requirements. Evoked potential overview</td>
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<tr>
<td>Aug. 29</td>
<td>Overview of the auditory system and AEP’s (Chap. 1 and 2 Hall AEP)</td>
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<td>History of AEP’s</td>
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<td>Sept. 3</td>
<td>Basic AEP instrumentation and variables affecting AEP’s (Chap. 3 Hall AEP)</td>
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<td>Sept. 5</td>
<td>Auditory brainstem response (ABR) introduction (Chap. 6 and 7 Hall AEP)</td>
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<td>Sept. 10</td>
<td>ABR continued (Chap. 6 and 7 Hall AEP)</td>
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<tr>
<td>Sept. 12</td>
<td>ABR continued (Chap. 6 and 7 Hall AEP)</td>
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Sept. 17  ABR continued including case studies
Sept. 19  ABR lab
Sept. 24  Electrocochleography (ECochG) (Chap. 4 and 5 Hall AEP)
Sept. 26  ECochG Lab
Oct.  1  Stacked ABR/CHAMP (Don Articles)
Oct.  3  Stacked ABR/CHAMP (Don Articles)
Oct.  8  SABR/CHAMP lab
Oct. 10  Middle AEP’s (AMLR)/Summary/Review for Midterm (Chap. 11 Hall AEP) - ABR Lab assignment due
Oct. 15  Midterm - exam 1
Oct. 17  Late AEP’s (Chap. 12 Hall AEP)
Oct. 22  Steady state AEP’s (Chap. 8 Hall AEP)
Oct. 24  ASSR/Introduction to OAE’s (Chap. 1 and 4 Hall OAE)
Oct. 29  OAE’s (Chap. 5 and 6 Hall OAE)
Oct. 31  OAE Lab
Nov.  5  AEP’s – Pediatric applications – guest lecture – readings TBA
Nov.  7  AEP’s – Pediatric applications – guest lecture – readings TBA
Nov. 12  Electrically Evoked AEP’s or another TBA topic
Nov. 14  Wrap up pediatric AEP applications and other class topics
Nov. 19  Class presentations
Nov. 21  Class presentations
Nov. 26  Class presentations - OAE Lab assignment due
Nov. 28  No Class - Thanksgiving
Dec.  3  Class presentations
Dec.  5  Final thoughts/questions/review for final – Term Paper Due
TBA     Final Exam
(lectures, required readings, assignments, discussions, student presentations, out-of-class assignments, and exams)

Each student is required to complete a term paper and to present a 25 to 30 minute power point presentation in class. Topics will be discussed and assigned the first week of class.

Two laboratory assignments will be required:

ABR lab - Complete otoneurologic ABR testing with standard test parameters (to be discussed) at both a slow and fast stimulus repetition rate. Analyze and plot waveforms. Complete wave V latency/intensity testing on both sides. Analyze and plot waveforms. Provide a clinical ABR report.

OAE lab - Complete DPOAE testing with f1 equal to 65 dB(SPL) and f2 equal to 55 dB(SPL). Plot test results and provide a clinical DPOAE report.

V. Resources

a. Required text(s):


b. Recommended Supplemental text(s):


c. Additional resources:

Journal Articles:

ABR


ECoG


Stacked ABR (SABR) and CHAMP


ASSR


Middle and Late AEP's


This syllabus is subject to change.

Washington University is committed to providing accommodations and/or services to students with documented disabilities. Students who are seeking support for a disability or a suspected disability should contact the PACS Program Director or WUSM Dean for Student Affairs. The School encourages students with disabilities to identify themselves as early as possible in order to optimize the mobilization of resources and available accommodations.

All students are expected to adhere to the highest standards of academic integrity. No form of academic dishonesty will be tolerated. Academic dishonesty includes, but is not limited to, cheating on tests, fabricating information or citations, facilitating acts of academic dishonesty by others, having unauthorized possession of examinations, submitting the thoughts and/or words of another person or work previously used as your own, missing or improper citing of sources, tampering with the academic work of other students, and plagiarism. You must always provide adequate citation of other people's work and the source of your ideas when they are not your own in written work, PowerPoint presentations, and supplemental materials. If you have questions about what might constitute academic dishonesty, please refer to the PACS Student Handbook or speak with a member of the PACS Committee on Academic Evaluation of Students (CAES). Additional information can be found in the University Student Judicial Code (http://www.wustl.edu/policies/judicial.html).