

Course Syllabus

COMD 7430 | Electrophysiology

Course Information

Meets

Mondays & Thursdays at 4:30-7:20 in EEJECERC 162

Instructor

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Office hours: by appointment; however, you are welcome to stop by my office at any time. I am also available through e-mail and will strive to respond to you the same day, Monday through Friday.

Course Description

The purpose of this course is to provide you with comprehensive working knowledge of early, middle and late latency evoked potentials. Upon completion of this class, you should be capable of completing and interpreting evoked potentials and knowing the clinical implications of the results you obtain.

This course is designed to build on information gained throughout the semester to provide you with practice in integrating concepts and synthesizing information. Lab assignments as well as exams will be used to assess your ability to understand and explain concepts, and critically analyze information.

This is a flipped class, meaning you will be responsible for all the readings and watching the lectures prior to coming to class. Class time will be dedicated to discussing questions and thoughts from readings and lectures, looking at case studies, practicing marking waves, hands-on practice, and lab work. Completing labs creating a notebook ([Electrophysiology Clinical Notebook.docx \(https://usu.instructure.com/courses/364860/files/56708829/download?wrap=1\)](https://usu.instructure.com/courses/364860/files/56708829/download?wrap=1)  [\(https://usu.instructure.com/courses/364860/files/56708829/download?wrap=1\)](https://usu.instructure.com/courses/364860/files/56708829/download?wrap=1)  [\(https://usu.instructure.com/courses/364860/files/56708829/download?wrap=1\)](https://usu.instructure.com/courses/364860/files/56708829/download?wrap=1)), 3 written exams, and a practical exam make up the largest portion of your final grade. You will also be graded on your lecture & reading discussion threads. In depth descriptions of these assignments are imbedded in each assignment.

Learning Outcomes

Outcomes & KASA Competencies

KASA Standard	IDEA Objectives	Assessment Measures
A3. Normal aspects of auditory physiology and behavior over the life span	Gain factual knowledge	Exams
A14. Physical characteristics and measurement of electric and other non acoustic stimuli	Learning to apply course material	Quizzes from readings
A24. The use of instrumentation according to manufacturer's specifications and recommendations		Discussions in class
B1. Implement activities that prevent and identify dysfunction in hearing and communication, balance, and other auditory-related systems		
C1. Measuring and interpreting sensory and motor evoked potentials, electromyography, and other electrodiagnostic tests for purposes of neurophysiologic intraoperative monitoring and cranial nerve assessment		
C2. Assessing individuals with suspected disorders of hearing, communications, balance, and related systems		
C5. Conducting and interpreting behavioral and/or electrophysiologic methods to assess hearing thresholds and auditory neural function		
C6. Conducting and interpreting behavioral and/or electrophysiologic methods to assess balance and related systems		
C7. Conducting and interpreting otoacoustic emissions and acoustic immittance (reflexes)		
C11. Referring to other professions, agencies, and/or consumer organizations		

F2. Applying research findings in the provision of patient care (evidence-based practice)		
F3. Critically evaluating and appropriately implementing new techniques and technologies supported by research-based evidence		
A14. Physical characteristics and measurement of electric and other nonacoustic stimuli	Developing specific skills, competencies, & points of view needed by professionals in the field most closely related to this course	Practical assignments/Labs
C1. Measuring and interpreting sensory and motor evoked potentials, electromyography, and other electrodiagnostic tests for purposes of neurophysiologic intraoperative monitoring and cranial nerve assessment		
C5. Conducting and interpreting behavioral and/or electrophysiologic methods to assess hearing thresholds and auditory neural function		
C6. Conducting and interpreting behavioral and/or electrophysiologic methods to assess balance and related systems		
C7. Conducting and interpreting otoacoustic emissions and acoustic immitance (reflexes)		
F2. Applying research findings in the provision of patient care (evidence-based practice)		
F3. Critically evaluating and appropriately implementing new techniques and technologies supported by research-based evidence		

Knowledge and Skills Assessment (KASA)

In this course each student will be provided with an opportunity to demonstrate required knowledge and/or skill development. These knowledge and skills will be assessed as delineated in the syllabus (by examination, paper, presentation, project, etc.). ASHA has specified that in order to be competent, you must achieve a level of 80% or better on each KASA item. If the student does not attain this level in this course, he/she will be provided with ONE additional opportunity (in the current class) to demonstrate this knowledge or skill. If the student does not pass the competency a second time, no action will be taken if another opportunity (course or clinic) remains available in which the skill can be acquired. However, if no such opportunity is available, the student will be asked to complete an exam/demonstration of the knowledge and/or skill as defined by the department. For students failing to attain the set criteria on a required competency assessment, the department head is not able to sign the KASA form required for ASHA certification, even though the student may receive an acceptable course/clinic grade or exceed the minimum GPA.

Required Materials

Required Text Book/Readings

- Atcherson, S.R., Stody, T.M. (2012). Auditory Electrophysiology: A Clinical Guide. New York: Thieme Medical Publishers, Inc.
- Additional Readings may be provided

Course Fee

\$20

COURSE REQUIREMENTS

Evaluation/Grading/Assignments

Assignment		
	AuD Students	
Discussion/Readings	20%	
Labs	40%	
Exams/Notebook	40%	

Grading Scale

A = 93-100 B+ = 87-89 C+ = 77-79 D = 60-69 F = <60%

A- = 90-92 B = 83-86 C = 73-76

Assignments/Readings

Assignments are to be turned in on the due date for full credit consideration.

- Acceptance of late assignments must be approved by the professor and are eligible for a maximum of 50% credit.

Reading assignments will be a combination of chapters from the required textbook and primary research articles that will be available.

- It is critical that you keep up with the reading so that you may be a vital participant in threaded discussions and class lecture.

CALENDAR

Prior to Week 1

Reading

- Chapter 1 - just skim this chapter, shouldn't spend more than 15 minutes looking over this
- Chapter 2 - This is very important information and is a big part of the foundation for this testing so read through. There is also a lecture that will cover much of this information.
- Chapter 3 - important chapter, this will help you understand how to analyze waveforms you'll be doing during the class
- Chapter 4 - important but will go over some of it in class so spend a little more time than just scanning (this should be review from anatomy)
- Chapter 20 - skim over this chapter as well, we'll go over some of this when going over your lab

Lectures

- Auditory System
- Electrophysiology Measures

Assignments - Lecture & Reading Log / Discussion

Week 1

Day 1 - Anatomy (generator sites) & Intro to Electrophysiology

- Lab - Familiarizing yourself with equipment and patient prep
- Readings & Lectures
 - Provided OAE chapter
 - Chapter 5 - skim through, short chapter and will go over most of this in class
 - Chapter 12 - important chapter but will cover much of it in class
 - OAE & Electrocochleography Lectures
 - Lecture & Reading Log / Discussion

Day 2 - OAEs & Electrocochleography

- Lab 2 - OAE lab & ECoChG lab
- Readings & Lectures
 - Chapter 6 - we will go over much of what is in the chapter but not everything, so be somewhat familiar
 - Chapter 16 - we will go over less of this chapter in class, so be familiar, this is important
 - Click ABR & ANSD Lectures
 - Lecture & Reading Log / Discussion

Week 2

Day 1 – ABR

- Lab 3 - ABR lab
- Readings & Lecture
 - Chapter 14 - important information and we will not cover all of this in class
 - Toneburst ABR Lecture
 - Lecture & Reading Log / Discussion

Day 2 – Toneburst ABR

- Lab 4 - Toneburst ABR lab

Week 3

Day 1 – HOLIDAY

Day 2 – Exam 1

- Readings & Lecture
 - Chapter 8 - skim through to be familiar with the test but will discuss most of this in class in more depth
 - Chapter 15 - won't talk through all of this chapter but important for clinical use
 - ASSR Lecture
 - Lecture & Reading Log / Discussion

Week 4

Day 1 - Auditory Steady State Responses

- Lab 5 - ASSR Lab
- Readings & Lectures
 - Chapter 9 - important information but will be mostly covered in class as well
 - Middle Latency Response Lecture
 - Lecture & Reading Log / Discussion

Day 2 - Middle-Latency Responses

- Lab 6 - MLR lab
- Readings & Lecture
 - Chapter 10 - important chapter but will go over much of it in class as well
 - Late Auditory Evoked Potentials Lecture
 - Lecture & Reading Log / Discussion

Week 5

Day 1 – Late Auditory Evoked Potentials

- Lab 7 - Late latency response

Day 2 - Exam 2

- Readings & Lectures
 - Chapter 17 - important, won't cover all of this in class but need to know
 - P300 & MMN Lectures
 - Lecture & Reading Log / Discussion

Week 6

Day 1 - Cortical Responses

- Lab 8 - P300 & MMN
- Readings & Lectures
 - Chapter 11 - will go over much of this in class but read so you are familiar with the test
 - Chapter 19 - important for clinic use and completing lab
 - Vestibular Evoked Myogenic Potential Lecture
 - Lecture & Reading Log / Discussion

Day 2 – Vestibular Evoked Myogenic Potential

- Lab 9 - VEMP lab
- Reading & Lecture
 - Electroneurography article (provided in files) - important
 - Electroneurography Lecture
 - Lecture & Reading Log / Discussion

Week 7

Day 1 - Electroneurography

- Lab 10 - EnoG

UNIVERSITY POLICIES & PROCEDURES

Academic Freedom and Professional Responsibilities

Academic freedom is the right to teach, study, discuss, investigate, discover, create, and publish freely. Academic freedom protects the rights of faculty members in teaching and of students in learning. Freedom in research is fundamental to the advancement of truth. Faculty members are entitled to full freedom in teaching, research, and creative activities, subject to the limitations imposed by professional responsibility. [Faculty Code Policy #403](#) <http://www.usu.edu/hr/files/uploads/Policies/403.pdf> further defines academic freedom and professional responsibilities.

Academic Integrity – "The Honor System"

Each student has the right and duty to pursue his or her academic experience free of dishonesty. The Honor System is designed to establish the higher level of conduct expected and required of all Utah State University students.

[The Honor Pledge](#) <http://www.usu.edu/studentervices/studentcode/article5.cfm>: To enhance the learning environment at Utah State University and to develop student academic integrity, each student agrees to the following Honor Pledge:

"I pledge, on my honor, to conduct myself with the foremost level of academic integrity."

A student who lives by the Honor Pledge is a student who does more than not cheat, falsify, or plagiarize. A student who lives by the Honor Pledge:

- Espouses academic integrity as an underlying and essential principle of the Utah State University community;
- Understands that each act of academic dishonesty devalues every degree that is awarded by this institution; and
- Is a welcomed and valued member of Utah State University.

Academic Dishonesty

The instructor of this course will take appropriate actions in response to Academic Dishonesty, as defined the University's Student Code. Acts of academic dishonesty include but are not limited to:

- **Cheating:** using, attempting to use, or providing others with any unauthorized assistance in taking quizzes, tests, examinations, or in any other academic exercise or activity. Unauthorized assistance includes:
 - Working in a group when the instructor has designated that the quiz, test, examination, or any other academic exercise or activity be done "individually;"
 - Depending on the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments;
 - Substituting for another student, or permitting another student to substitute for oneself, in taking an examination or preparing academic work;
 - Acquiring tests or other academic material belonging to a faculty member, staff member, or another student without express permission;
 - Continuing to write after time has been called on a quiz, test, examination, or any other academic exercise or activity;
 - Submitting substantially the same work for credit in more than one class, except with prior approval of the instructor; or engaging in any form of research fraud.
- **Falsification:** altering or fabricating any information or citation in an academic exercise or activity.
- **Plagiarism:** representing, by paraphrase or direct quotation, the published or unpublished work of another person as one's own in any academic exercise or activity without full and clear acknowledgment. It also includes using materials prepared by another person or by an agency engaged in the sale of term papers or other academic materials.

Sexual Harassment

Sexual harassment is defined by the Affirmative Action/Equal Employment Opportunity Commission as any "unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature." If you feel you are a victim of sexual harassment, you may talk to or file a complaint with the Affirmative Action/Equal Employment Opportunity Office located in Old Main, Room 161, or call the AA/EEO Office at (435) 797-1266.

Withdrawal Policy and "I" Grade Policy

Students are required to complete all courses for which they are registered by the end of the semester. In some cases, a student may be unable to complete all of the coursework because of extenuating circumstances, but not due to poor performance or to retain financial aid. The term 'extenuating' circumstances includes: (1) incapacitating illness which prevents a student from attending classes for a minimum period of two weeks, (2) a death in the immediate family, (3) financial responsibilities requiring a student to alter a work schedule to secure employment, (4) change in work schedule as required by an employer, or (5) other emergencies deemed appropriate by the instructor.

Students with Disabilities

Students with ADA-documented physical, sensory, emotional or medical impairments may be eligible for reasonable accommodations. Veterans may also be eligible for services. All accommodations are coordinated through the Disability Resource Center (DRC). Please contact the DRC prior to or as early in the semester as possible. Alternate formats for course content are available with advanced notice.

Contacting the Disability Resource Center (DRC):

- On Campus: Room 101 of the University Inn
- Phone: 435-797-2444

- Website: <http://www.usu.edu/drc/> ↗ [\(http://www.usu.edu/drc/\)](http://www.usu.edu/drc/)

Disability related resources for current students:

- [DRC Student Handbook](http://www.usu.edu/drc/currentstudents/handbook/) ↗ [\(http://www.usu.edu/drc/currentstudents/handbook/\)](http://www.usu.edu/drc/currentstudents/handbook/)
- [Deaf and Hard of Hearing Student Handbook](http://www.usu.edu/drc/currentstudents/DHHHandbook/) ↗ [\(http://www.usu.edu/drc/currentstudents/DHHHandbook/\)](http://www.usu.edu/drc/currentstudents/DHHHandbook/)
- [Disability Related Scholarships](http://www.usu.edu/drc/currentstudents/scholarships/) ↗ [\(http://www.usu.edu/drc/currentstudents/scholarships/\)](http://www.usu.edu/drc/currentstudents/scholarships/)
- [Campus Resources](http://www.usu.edu/drc/currentstudents/campusresources/) ↗ [\(http://www.usu.edu/drc/currentstudents/campusresources/\)](http://www.usu.edu/drc/currentstudents/campusresources/)
- [Documentation Guidelines](http://www.usu.edu/drc/prospectivestudents/docguide/) ↗ [\(http://www.usu.edu/drc/prospectivestudents/docguide/\)](http://www.usu.edu/drc/prospectivestudents/docguide/)
- [Online Resources for Students with Disabilities](http://www.usu.edu/drc/currentstudents/onlineresources/) ↗ [\(http://www.usu.edu/drc/currentstudents/onlineresources/\)](http://www.usu.edu/drc/currentstudents/onlineresources/)

Diversity Statement

Regardless of intent, careless or ill-informed remarks can be offensive and hurtful to others and detract from the learning climate. If you feel uncomfortable in a classroom due to offensive language or actions by an instructor or student(s) regarding ethnicity, gender, or sexual orientation, contact:

- Student Services: <http://www.usu.edu/studentervices/> ↗ [\(http://www.usu.edu/studentervices/\)](http://www.usu.edu/studentervices/), 435.797.1712, studentservices@usu.edu (<mailto:studentservices@usu.edu>), TSC 220
- Student Advocates: <http://www.usu.edu/ususa/legal/> ↗ [\(http://www.usu.edu/ususa/legal/\)](http://www.usu.edu/ususa/legal/), 435.797.2912, TSC 340,
- Access and Diversity: <http://www.usu.edu/accesscenter/> ↗ [\(http://www.usu.edu/accesscenter/\)](http://www.usu.edu/accesscenter/), 435.797.1728, <mailto:access@usu.edu> (<mailto:access@usu.edu>); TSC 315
- Multicultural Programs: <http://www.usu.edu/accesscenter/multiculture/> ↗ [\(http://www.usu.edu/accesscenter/multiculture/\)](http://www.usu.edu/accesscenter/multiculture/), 435-797-1728, TSC 315
- LGBTQA Programs: <http://www.usu.edu/accesscenter/lgbtqa/> ↗ [\(http://www.usu.edu/accesscenter/lgbtqa/\)](http://www.usu.edu/accesscenter/lgbtqa/), 435-797-GAYS, TSC 314
- Provost's Office Diversity Resources: <http://www.usu.edu/provost/faculty/diversity/> ↗ [\(http://www.usu.edu/provost/faculty/diversity/\)](http://www.usu.edu/provost/faculty/diversity/), (435) 797-8176

You can learn about your student rights by visiting:

The Code of Policies and Procedures for Students at Utah State University: <http://www.usu.edu/studentervices/studentcode/> ↗ [\(http://www.usu.edu/studentervices/studentcode\)](http://www.usu.edu/studentervices/studentcode/)

Grievance Process

Students who feel they have been unfairly treated may file a grievance through the channels and procedures described in the Student Code: [Article VII. Grievances](http://www.usu.edu/studentervices/studentcode/article7.cfm) ↗ <http://www.usu.edu/studentervices/studentcode/article7.cfm>.

Full details for USU Academic Policies and Procedures can be found at:

- [Student Conduct](http://www.usu.edu/studentconduct) ↗ <http://www.usu.edu/studentconduct>
- [Student Code](http://www.usu.edu/studentervices/studentcode/) ↗ <http://www.usu.edu/studentervices/studentcode/>
- [Academic Integrity](https://usu.instructure.com/courses/172956) (<https://usu.instructure.com/courses/172956>)
- [USU Selected Academic Policies and Procedures](http://www.usu.edu/provost/faculty/teaching/doc/Syllabus_resources_USU_policies.pdf) ↗ http://www.usu.edu/provost/faculty/teaching/doc/Syllabus_resources_USU_policies.pdf
- [USU Academic Policies and Procedures](http://catalog.usu.edu/content.php?catoid=4&navoid=546) ↗ <http://catalog.usu.edu/content.php?catoid=4&navoid=546>
- [Academic Freedom and Professional Responsibility Policy](http://www.usu.edu/hr/files/uploads/Policies/403.pdf) ↗ <http://www.usu.edu/hr/files/uploads/Policies/403.pdf>

Emergency Procedures

In the case of a drill or real emergency, classes will be notified to evacuate the building by the sound of the fire/emergency alarm system or by a building representative. In the event of a disaster that may interfere with either notification, evacuate as the situation dictates (i.e., in an earthquake when shaking ceases or immediately when a fire is discovered). Turn off computers and take any personal items with you. Elevators should not be used; instead, use the closest stairs.

Date	Details	
Fri May 8, 2015	Lecture and Reading Log - Background & Patient Prep (https://usu.instructure.com/courses/364860/assignments/1865421)	11:59pm
Wed May 13, 2015	Lecture and Reading Log - OAE & ECoChG (https://usu.instructure.com/courses/364860/assignments/1865418)	6pm
Thu May 14, 2015	Lab 1 - Equipment & Patient Prep (https://usu.instructure.com/courses/364860/assignments/1865422)	4:30pm
Sun May 17, 2015	Lecture & Reading Log - Click ABR & ANSD (https://usu.instructure.com/courses/364860/assignments/1865420)	6pm
Mon May 18, 2015	Lab 2 - ECoChG (https://usu.instructure.com/courses/364860/assignments/1865434)	4:30pm
	Lab 2 - OAE (https://usu.instructure.com/courses/364860/assignments/1865425)	4:30pm
Wed May 20, 2015	Lecture & Reading Log - Toneburst ABR (https://usu.instructure.com/courses/364860/assignments/1865419)	6pm

Thu May 21, 2015	Lab 3 - Click ABR (https://usu.instructure.com/courses/364860/assignments/1865423)	4:30pm
Tue May 26, 2015	Lab 4 - Toneburst ABR (https://usu.instructure.com/courses/364860/assignments/1865424)	4:30pm
Thu May 28, 2015	Exam 1 (https://usu.instructure.com/courses/364860/assignments/1865431)	6:30pm
Sun May 31, 2015	Lecture & Reading Log - ASSR (https://usu.instructure.com/courses/364860/assignments/1865417)	6pm
Wed Jun 3, 2015	Lecture & Reading Log - MLR (https://usu.instructure.com/courses/364860/assignments/1865416)	6pm
Thu Jun 4, 2015	Lab 5 - ASSR (https://usu.instructure.com/courses/364860/assignments/1865426)	4:30pm
Sun Jun 7, 2015	Lecture & Reading Log - LAEP (https://usu.instructure.com/courses/364860/assignments/1865415)	6pm
Mon Jun 8, 2015	Lab 6 - MLR (https://usu.instructure.com/courses/364860/assignments/1865427)	4:30pm
Thu Jun 11, 2015	Lab 7 - Late Latency (LAEP) (https://usu.instructure.com/courses/364860/assignments/1865561)	4:30pm
	Exam 2 (https://usu.instructure.com/courses/364860/assignments/1865410)	6pm
Sun Jun 14, 2015	Lecture & Reading Log - Cortical Responses (https://usu.instructure.com/courses/364860/assignments/1865414)	6pm
Wed Jun 17, 2015	Lecture & Reading Log - VEMP (https://usu.instructure.com/courses/364860/assignments/1865413)	6pm
Thu Jun 18, 2015	Lab 8 - MMN & P300 (https://usu.instructure.com/courses/364860/assignments/1865428)	4:30pm
Sun Jun 21, 2015	Lecture & Reading Log - ENOG (https://usu.instructure.com/courses/364860/assignments/1865412)	6pm
Mon Jun 22, 2015	Lab 9 - VEMP (https://usu.instructure.com/courses/364860/assignments/1865429)	4:30pm
Wed Jun 24, 2015	Clinical Notebook (https://usu.instructure.com/courses/364860/assignments/1865433)	5pm
Thu Jun 25, 2015	Lab 10 - ENoG (https://usu.instructure.com/courses/364860/assignments/1865430)	4:30pm
	Exam 3 (https://usu.instructure.com/courses/364860/assignments/1865411)	6:30pm
Fri Jun 26, 2015	Practical Exam (https://usu.instructure.com/courses/364860/assignments/1865432)	5pm