

Last name of instructor (Semester Year)

California State University, Sacramento

AMPLIFICATION I

CSAD622 - 3 units

Spring 2020 (AUD-1)

COURSE FACULTY

Course Instructor:

Folsom Hall office #:

Office Phone:

Office Hours:

E-mail address:

REQUIRED CLASS MEETINGS TIMES

Days and times:

Building: Folsom Room #:

REQUIRED TEXTS

Dillon, H. (2012). *Hearing aids*. Thieme.

OPTIONAL TEXTS

COURSE WEBSITE

<https://sacct.csus.edu>

SacCT will be used as the learning management site for dissemination of course readings, handouts, slides, assignments, announcements, and tests/quizzes. The course faculty will have materials posted to SacCT at least 48 hours before class.

Instructor Communication and Response Time

Faculty strive to have open communication with students both within and outside of the classroom. Students are encouraged to contact faculty to discuss questions about the course. Responses to telephone or e-mail messages will usually be transmitted within 48 hours during regular working hours. If you do not have a response within this time period, please check your contact methods and resend the message. Faculty will generally respond to student questions received during evenings and weekends once they are back in the office during regular business hours.

***Please be aware that all content for this course is the property of the course faculty who have created it and can only be used for this course. Those wishing to use the materials outside of this course must receive written permission from the author/creator.**

GENERAL COURSE INFORMATION

PRE-REQUISITES

Admission to Doctor of Audiology program; CSAD611, CSAD612, CSAD613, CSAD614

CO-REQUISITES

CSAD622L

COURSE DESCRIPTION

Overview

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This course is designed to provide first-year Doctor of Audiology students with an understanding of the theoretical basis for the clinical use of hearing aids. The classes will progress through the various stages of hearing aid selection, evaluation, and validation. The cross-listed laboratory course will provide students with hands-on experiences for the concepts presented in class.

Approved Course Description (from CSUS Course Catalog)

Introduction to electroacoustic analysis and characteristics of hearing aids. Includes components of hearing aids, hearing aid gain and fitting formulae, and basic signal processing.

WHY IS THIS COURSE IMPORTANT?

This course introduces students to the hearing aid fitting, evaluation, and validation process. This class is part of a two-course sequence; the second course will focus on more advanced topics than the introductory concepts presented in this course. This course will provide students with a working knowledge of hearing aids in preparation for clinical practicum sites that involve hearing aid fittings.

UNIVERSITY LEARNING GOALS

	1 Disciplinary knowledge	2 Communication	3 Critical thinking/analysis	4 Information literacy	5 Professionalism	6 Intercultural/global perspectives	7 Research
Addressed by this course	X		X	X	X		X

GRADUATE LEARNER OUTCOMES

Mastery of each student-learning outcome listed below is indicated by a grade of B or better on each component of the corresponding measures listed in the table. Students are required to track their progress towards meeting each learning outcome and must make an appointment with the instructor for any grade equal to or less than a B. The instructor will suggest strategies to help you establish competence and knowledge in these areas.

Students should track their progress towards meeting each learning outcome by listing their grades on the table below over the course of the semester.

Upon completion of this course, students will be able to:

1. Describe the development of hearing aids and hearing aid technology from a historical perspective
2. Explain circuitry and signal-processing strategies used in hearing aids
3. State operational features used by major manufacturers of hearing aids
4. Apply standardized methods of electroacoustic analysis to hearing aids
5. Describe current clinical procedures used to determine candidacy for amplification in children and adults
6. Describe how earmolds can be modified for the patient and how these modifications affect the electroacoustic characteristics of the hearing aid
7. Explain troubleshooting procedures used in clinical settings to repair and/or modify hearing aids

Graduate Learner Outcome	Components Indicating Competence	Grade(s) Received
1-7	Exam (100%)	

COURSE/CLASS POLICIES

Course Format

Lecture

Class Preparation:

All required readings are for the date listed in the course schedule, not the following class period. Students are responsible for all assigned readings, whether discussed in class or not.

Class Participation:

Students are expected to actively participate in class discussions and are required to have read the assigned material prior to class meetings.

Class Attendance:

Classroom attendance is necessary for this course. No more than three unexcused absences are allowed. Students are expected to arrive on time as class begins at X:XX am/pm.

Class Assignments

Course grades will be based on ten quizzes, two exams, and one final exam.

Quizzes

Weekly quizzes will be available on SacCT one week prior to the due date. Students are expected to complete the quiz before the scheduled due date. Quizzes are based on assigned reading. Students will have 60 minutes to take the quiz; late submissions will receive a 0.

Exams

- **Exam absences:** No make-up examinations will be given unless there is a documented emergency for which you have written proof. Any approved make-up exams will be scheduled at the end of the semester (during finals week) and may be administered in a different format from the original exam.
- **Exam procedures:**

Test arrival/start

Test duration and completion

Commitment to Integrity

As a student in this course (and at this university) you are expected to maintain high degrees of professionalism, commitment to active learning and participation in this class and also integrity in your behavior in and out of the classroom.

Sac State's Academic Honesty Policy & Procedures

"The principles of truth and honesty are recognized as fundamental to a community of scholars and teachers. California State University, Sacramento expects that both faculty and students will honor these principles, and in so doing, will protect the integrity of academic work and student grades." Read more about Sac State's Academic Honesty Policy & Procedures at the following website: <http://www.csus.edu/umannual/AcademicHonestyPolicyandProcedures.htm>

Definitions: At Sac State, "cheating is the act of obtaining or attempting to obtain credit for academic work through the use of any dishonest, deceptive, or fraudulent means."

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“Plagiarism is a form of cheating. At Sac State, “plagiarism is the use of distinctive ideas or works belonging to another person without providing adequate acknowledgement of that person’s contribution.” *Source:* Sacramento State University Library

Note: Any form of academic dishonesty, including cheating and plagiarism, shall be reported to the office of student affairs.

Understand When You May Drop This Course

It is the student’s responsibility to understand when he/she need to consider disenrolling from a course. Refer to the Sac State Course Schedule for dates and deadlines for registration. After this period, a serious and compelling reason is required to drop from the course. Serious and compelling reasons include: (a) documented and significant change in work hours, leaving student unable to attend class, or (b) documented and severe physical/mental illness/injury to the student or student’s family. Under emergency/special circumstances, students may petition for an incomplete grade. An incomplete will only be assigned if there is a compelling extenuating circumstance. All incomplete course assignments must be completed in accordance with the department’s policy.

Accommodations

Inform your instructor of any accommodations needed. If you have a documented disability and verification from the Office of Services to Students with Disabilities (SSWD), and wish to discuss academic accommodations, please contact your instructor as soon as possible. It is the student’s responsibility to provide documentation of disability to SSWD and meet with a SSWD counselor to request special accommodation before classes start. SSWD is located in Lassen Hall 1008 and can be contacted by phone at [\(916\) 278-6955](tel:9162786955) (Voice) or [\(916\) 278-7239](tel:9162787239) (TDD only) or via email at sswd@csus.edu

Course Requirement Grading

<u>Activity</u>	<u>Points Available</u>
Quizzes (10 points x 10)	100
Exam (date and material covered)	200
Exam (date and material covered)	200
Final exam (date and material covered)	300
<u>TOTAL COURSE POINTS AVAILABLE</u>	800

Overall Percentage Needed

Note: A grade of “B” or higher is required to count toward the minimum number of units needed to advance to candidacy.

Grade	Percentage
A	93-100%
A-	90-92%
B+	87-89%
B	83-86%
B-	80-82%
C+	77-79%
C	73-76%
C-	70-72%
D+	67-69%
D	63-66%

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D-	60-62%
F	< 60%

COURSE SCHEDULE OF LECTURE TOPICS AND EXAMS

Date	Topic and Activity or Quiz and Exam	Readings/ Assignment
1/20	Introduction to course Prevalence of hearing loss	
1/22	History of hearing aids Timeline of hearing aid styles, fitting procedures, etc.	Levitt, H. (2007). A historical perspective on digital hearing aids: How digital technology has changed modern hearing aids. <i>Trends in Amplification</i> , 11(1), 7-24.
1/27	Considerations for fitting hearing aids: recruitment, resonance, etc.	Oh, S.H., & Lee, J. (2016). General framework of hearing aid fitting management. <i>Journal of Audiology and Otology</i> , 20(1), 1-7.
1/29	Hearing aid components	Dillon- Ch. 1
2/3	Hearing aid components and controls	Dillon- Ch. 2
2/5	Circuitry and signal processing	Dillon-Ch. 3
2/10	Compression: Input/output; types of compression, attack/release time	Dillon- Ch. 6 Moore, B.C.J. (2008). The choice of compression speed in hearing aids: Theoretical and practical considerations and the role of individual differences. <i>Trends in Hearing</i> , 12(2), 103-112.
2/12	Compression: Input/output; types of compression, attack/release time Distortion	Dillon- Ch. 6
2/17	Directional microphones and noise reduction	Dillon- Ch. 7 Bentler, R., & Chiou, L. (2006). Digital noise reduction: An overview. <i>Trends in Amplification</i> , 10(2), 67-82.
2/26	Review for Exam 1	
3/2	Exam 1	
3/4	Directional microphones Electroacoustic analysis	Dillon-Ch. 4 Holder, J.T., Picou, E.M> Gruenwald, J.M., & Ricketts, T.A. (2016). Do modern hearing aids meet

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		ANSI standards? <i>Journal of the American Academy of Audiology</i> , 27(8), 619-627.
3/9	Electroacoustic analysis	Dillon-Ch. 4
3/11	Hearing aid selection	Dillon-Ch. 11
3/16	Earmolds	Dillon- Ch. 5
3/18	Fitting formulae	Dillon- Ch. 10 Valente, M., & Van Vliet, D. (1997). The independent hearing aid fitting forum (IHAF) protocol. <i>Trends in Hearing</i> , 2(1). Fabry, D.A. (2003). Nonlinear hearing aids and verification of fitting targets. <i>Trends in Amplification</i> , 7(3), 99-115.
3/23	Fitting formulae	Dillon- Ch. 10 Ching, T.Y., Quar, T.K., Johnson, E.E., Newall, P., & Sharma, M. (2015). Comparing NAL-NL1 and DSL v5 in hearing aids fit to children with severe or profound hearing loss: Goodness of fit-to-targets, impacts on predicted loudness and speech intelligibility. <i>Journal of the American Academy of Audiology</i> , 26(3), 260-274.
3/25	Coupler and probe microphone verification	Dillon- Ch. 5
3/30	Real Ear measurements	Dillon- Ch. 11 Aazh, H., & Moore, B.C. (2007). The value of routine real ear measurement of the gain of digital hearing aids. <i>Journal of the American Academy of Audiology</i> , 18(8), 653-664.
4/1	Real Ear measurements	Dillon- Ch. 11 Jespersen, C.T., Møller, K.N. (2013). Reliability of real ear insertion gain in behind-the-ear hearing

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		aids with different coupling systems to the ear canal. <i>International Journal of Audiology</i> , 52(3), 169-176.
4/6	Review for Exam 2	
4/8	Exam 2	
4/13	Hearing aid fine tuning	Dillon- Ch. 11
4/15	Validation Outcome measures	Dillon- Ch. 13 Weinstein, B.E. (1997). Outcome measures in the hearing aid fitting/selection process. <i>Trends in Amplification</i> , 2(4), 117-137. McArdle, R., Chisolm, T.H., Abrams, H.B., Wilson, R.H., & Doyle, P.J. (2005). The WHO-DAS II: Measuring outcomes of hearing aid intervention for adults. <i>Trends in Amplification</i> , 9(3), 127-143.
4/20	Monaural and binaural considerations	Dillon- Ch. 15 Cox, R.M., Schwartz, K.S., Noe, C.M., & Alexander, G.C. (2011). Preference for one or two hearing aids among adult patients. <i>Ear & Hearing</i> , 32(2), 181-197.
4/22	Troubleshooting devices	Dillon- Ch. 12
4/27	Hearing aid orientation	Dillon- Ch. 13
4/29	CROS, Bone-conduction hearing aids	Dillon- Ch. 17 Badran, K., Bunstone, D., Arya, A.K., Suryanarayanan, R., & McKinnon, N. (2006). Patient satisfaction with the bone-anchored hearing aid: A 14-year experience. <i>Otology & Neurotology</i> , 27(5), 659-666. Mudry, A., & Tjellström, A. (2011). Historical background of bone conduction hearing devices and bone conduction hearing aids. <i>Advanced Otorhinolaryngology</i> , 71, 1-

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		9.
5/4	Review for final exam	
5/11	Final exam	

Please note that dates, topics, and assignments are subject to change. In the event of a change, you will be given ample notification of the change.

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