

Last name of instructor (Semester Year)

California State University, Sacramento

ANATOMY AND PHYSIOLOGY OF THE AUDITORY AND VESTIBULAR SYSTEMS

CSAD611 - 3 units

Fall 2019 (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

Musiek, F.E., & Baran, J.A. (2016). *The auditory system anatomy, physiology, and clinical correlates*. Plural Publishing.

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

COURSE DESCRIPTION

Overview

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This course is designed to provide first-year Doctor of Audiology students with an understanding of the anatomy and physiology of the peripheral and central auditory and vestibular systems. The focus of this course will be on the structure and function of normal auditory and vestibular systems. Basic neuroscience, including the biochemistry of hearing and balance, will also be discussed.

Approved Course Description (from CSUS Course Catalog)

Anatomical, physiological, and neurological bases of the auditory system and central nervous system. Covers embryologic development, including genetic factors, and normal structure and function. Anatomical and physiological bases of the vestibular system, including congenital, peripheral and central, and neurologic factors will also be introduced.

WHY IS THIS COURSE IMPORTANT?

This course serves as the foundation for understanding the structures and functions of the auditory and vestibular systems. Information learned in this course is necessary for understanding impaired auditory and vestibular systems, as well as the pathophysiology of disorders.

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. Identify key structures of the peripheral and central auditory system and vestibular system
2. Describe the normal developmental anatomy of the various structures in the auditory and vestibular systems
3. Explain the physiology of key anatomical structures
4. Explain the role and interaction of various structures in the transduction and perception of sound

Graduate Learner Outcomes	Components Indicating Competence	Grade(s) Received
1-4	Exams (100%)	
1-4	Quizzes (100%)	
1-4	Class participation (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, three 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 [\(916\) 273-7239](tel:9162737239) (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
Exam (date and material covered)	200
Final exam (date and material covered)	300
<u>TOTAL COURSE POINTS AVAILABLE</u>	1000

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.

<u>Grade</u>	<u>Percentage</u>
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%

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D	63-66%
D-	60-62%
F	< 60%

COURSE SCHEDULE OF LECTURE TOPICS AND EXAMS

Date	Topic and Activity or Exam	Readings/ Assignment
8/26	Introduction to class; anatomical direction and planes; overview of anatomy of auditory system embryology	Musiek & Baran- Ch. 1
8/28	Temporal bone Outer ear: Pinna Embryology	Musiek & Baran- Ch. 2
9/2	Outer ear: External auditory canal Resonance	Musiek & Baran- Ch. 2 Liu, T.C., & Chen, Y.S. (2000). Aging and external ear resonance. <i>Audiology</i> , 39(5), 235-237.
9/4	Middle ear: Tympanic membrane	Quiz on outer ear due
9/9	Middle ear: Tympanic cavity and muscles	Musiek & Baran- Ch. 3
9/11	Middle ear: Impedance matching, nervous innervation, acoustic reflex	Quiz on middle ear muscles and tympanic membrane due Musiek & Baran- Ch. 3 Arslan, H.H., Cebeci, S., Yildizoglu, U., Pusat, S., & Yavuz, F. (2017). Effects of thicolchicoside, a commonly used myorelaxant, on the acoustic reflex. <i>Journal of Laryngology and Otology</i> , 131(6), 497-500.
9/16	Middle ear: Ossicular chain	Musiek & Baran- Ch. 3
9/18	Middle ear: Eustachian tube	Quiz on ossicular chain due Musiek & Baran- Ch. 3
9/23	Review for Exam 1	
9/25	Exam 1	
9/30	Inner ear: Cochlear anatomy and fluids	Musiek & Baran- Ch. 4
10/2	Inner ear: Organ of Corti	Musiek & Baran- Ch. 4
10/7	Inner ear: Cochlear mechanics	Quiz on cochlear anatomy due Musiek & Baran- Ch. 5
10/9	Inner ear: Afferent and efferent innervation	Musiek & Baran- Ch. 6

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10/14	Inner ear: Physiology and cochlear electrical potentials	Quiz on cochlear physiology due Musiek & Baran- Ch. 6
10/16	Inner ear: Cochlear physiology and auditory nerve	Quiz on auditory nerve due Musiek & Baran- Ch. 7 Hopkins, K. (2015). Deafness in cochlear and auditory nerve disorders. <i>Handbook of Clinical Neurology</i> , 129, 479-494.
10/21	Review for Exam 2	
10/23	Exam 2	
10/28	Auditory brainstem: VIIIth cranial nerve and brainstem divisions	Musiek & Baran- Ch. 7
10/30	CANS: cells and response types, coding, cochlear nucleus	Quiz on brainstem anatomy due Musiek & Baran- Ch. 8
11/4	CANS: Superior olivary complex	Musiek & Baran- Ch. 9
11/6	CANS: Lateral lemniscus/inferior colliculus	Quiz on neural responses due Musiek & Baran- Ch. 10
11/11	CANS: Medial geniculate body, auditory cortex	Musiek & Baran- Ch. 11-13 Cardon, G., Campbell, J., & Sharma, A. (2012). Plasticity in the developing auditory cortex: Evidence from children with sensorineural hearing loss and auditory neuropathy. <i>Journal of the American Academy of Audiology</i> , 23(6), 396-411.
11/13	Review for Exam 3	
11/18	Exam 3	
11/20	Semicircular canals, utricle, and saccule	Khan, S., & Chang, R. (2013). Anatomy of the vestibular system: A review. <i>NeuroRehabilitation</i> , 32(3), 437-443.
11/27	Vestibular physiology: Acceleration, vestibulospinal reflex	Quiz on vestibular anatomy due Kingma, H., & van de Berg, R. (2016). Anatomy, physiology, and physics of

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		the peripheral vestibular system. <i>Handbook of Clinical Neurology</i> , 137, 1-16.
12/2	Vestibulo-ocular reflex In-class course evaluation	Quiz on vestibular physiology due
12/4	Review for final exam	
12/12	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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