

San José State University  
College of Education/Communicative Disorders and Sciences  
EDAU 115/170, Hearing Science and Audiology I

### ***Course and Contact Information***

Instructor:	June McCullough
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Office Hours:	Before and After class [ <i>See University <a href="http://www.sjsu.edu/senate/docs/S12-1.pdf">Policy S12-1</a> at <a href="http://www.sjsu.edu/senate/docs/S12-1.pdf">http://www.sjsu.edu/senate/docs/S12-1.pdf</a> for guidelines</i> ]
Class Days/Time:	Monday 9 – 11:30 AM
Classroom:	SH 435

#### The MISSION of San Jose State University:

In collaboration with nearby industries and communities, SJSU faculty and staff are dedicated to achieving the university's mission as a responsive institution of the state of California: To enrich the lives of its students, to transmit knowledge to its students along with the necessary skills for applying it in the service of our society, and to expand the base of knowledge through research and scholarship.

#### Learning Outcomes:

San José State University graduates will have developed:

- Specialized Knowledge
  - Depth of knowledge required for a degree, as identified by its program learning outcomes.
- Broad Integrative Knowledge
  - Mastery in each step of an investigative, creative or practical project (e.g. brainstorming, planning, formulating hypotheses or complex questions, designing, creating, completing, and communicating).
  - An understanding of the implications of results or findings from a particular work in a societal context (e.g. social or economic implications of a scientific finding).
  - Students graduating with a baccalaureate degree will have demonstrated an understanding of critical components of broad academic areas, the arts, humanities, social sciences, and sciences and their integration.
- Intellectual Skills
  - Fluency in the use of specific theories, tools, technology and graphical representation.
  - Skills and abilities necessary for life long learning: critical and creative thinking, effective communication, conscientious information gathering and processing, mastery of quantitative methodologies, and the ability to engage effectively in collaborative activities.

- Applied Knowledge
  - The ability to integrate theory, practice, and problem solving to address practical issues.
  - The ability to apply their knowledge and skills to new settings or in addressing complex problems.
  - The ability to work productively as individuals and in groups
- Social and Global Responsibilities
  - The ability to act intentionally and ethically to address a global or local problem in an informed manner with a multicultural and historical perspective and a clear understanding of societal and civic responsibilities.
  - Diverse and global perspectives through engagement with the multidimensional SJSU community.

### **Character and Commitment**

San José State University is a major, comprehensive public university located in the center of San José and in the heart of Silicon Valley. SJSU is the oldest state university in California. Its distinctive character has been forged by its long history, by its location, and by its vision -- a blend of the old and the new, of the traditional and the innovative. Among its most prized traditions is an uncompromising commitment to offer access to higher education to all persons who meet the criteria for admission, yielding a stimulating mix of age groups, cultures, and economic backgrounds for teaching, learning and research. SJSU takes pride in and is firmly committed to teaching and learning, with a faculty that is active in scholarship, research, technological innovation, community service and the arts.

### Mission of the College of Education, SJSU:

The mission...is to prepare educators who have the knowledge, skills, dispositions and ethics that ensure equity and excellence for all students in a culturally diverse, technologically complex, global community.

### Mission of the Department of Communicative Disorders and Sciences, SJSU:

The mission of CD&S is to provide a high quality program for speech-language pathologists to meet the communicative needs of our increasingly diverse multilingual/multicultural population. The program follows an academic and clinical curriculum, based on a sound theoretical framework and research findings that promote competent practitioners who participate in lifelong learning experiences. The program is enhanced through faculty, academic, and clinical expertise, trans-disciplinary and family collaboration and technological advancements in assessment and intervention.

### COURSE DESCRIPTION:

This course is a hybrid that will include basic principles of hearing science, hearing disorders, and hearing evaluation. Topics include: acoustics; anatomy and physiology of the ear; psychoacoustics; audiologic evaluation to include case history; calibration of audiometers; screening versus diagnostic tests; procedures for pure tone thresholds and tympanometry; and interpretation of audiograms.

## KNOWLEDGE BASE:

ASHA recommended guidelines for manual pure-tone threshold audiometry; ASHA recommended procedures for Speech Recognition Threshold; ANSI standards for Calibration of Audiometers; ASHA guidelines for screening for middle-ear disorders.

## ASHA STANDARDS:

### **Standard IV-B**

The applicant must have demonstrated knowledge of basic human communication and swallowing processes, including the appropriate biological, neurological, acoustic, psychological, developmental, and linguistic and cultural bases. The applicant must have demonstrated the ability to integrate information pertaining to normal and abnormal human development across the life span.

## CALIFORNIA COMMISSION ON TEACHER CREDENTIALING STANDARDS CLINICAL REHABILITATIVE SERVICES CREDENTIAL IN SPEECH AND LANGUAGE WITH SPECIAL CLASS AUTHORIZATION

### Standard 19 Speech, Language and Hearing Mechanism

Knowledge of the underlying mechanisms of speech, language, and hearing is a prerequisite for providing effective speech-language-hearing services and is consistent with current practices within the profession.

Standard 19.1 Each candidate demonstrates knowledge of the anatomy, physiology, and neurology of the speech, language, and hearing mechanism.

Standard 19.3 Each candidate demonstrates comprehension of the acoustics or physics of sound, physiological and acoustic phonetics, perceptual processes, and psychoacoustics involved in speech and hearing.

### Standard 22 Speech and Language Disorders.

Each candidate demonstrates understanding of speech, language and hearing disorders.

The candidate demonstrates understanding of speech, language, and hearing disorders, including but not limited to disorders of language, articulation, fluency, voice, and hearing.

### Standard 23 Evaluation of Speech and Language Disorders

Each candidate demonstrates proficiency in screening for and evaluation of speech and language disorders and in screening for hearing disorders.

The candidate exhibits knowledge of hearing screening procedures.

### Standard 24 Management of Speech and Language Disorders

Each candidate demonstrates proficiency in the management of speech, language, and hearing disorders.

The candidate demonstrates knowledge of management procedures, including remediation principles used in habilitation and rehabilitation for children and adults with various disorders of communication in their primary languages.

## TEXTS:

Anatomy and Physiology for Speech, Language, and Hearing. (2016) J. Seikel, Douglas King, David Drumright. Cengage Learning, ISBN 1111802920. For purchasing a digital copy, you can go to Amazon, Google books, Cengage, etc.

[Audiology Primer](#), VAMC, Mountain Home, Tennessee – from Richard H. Wilson, Ph.D. Required. Posted on Canvas.

**COURSE SLIDES AND OUTLINES:** All lectures will have either slides or outlines that are designed to assist students in organizing and learning lecture material. They are posted in the “Modules” section on Canvas.

**COURSE LEARNING OBJECTIVES:** The following competencies will be developed this semester:

- A. Knowledge of acoustics of sound and stimulus parameters in hearing science.
- B. Knowledge of anatomy and physiology of the outer ear, middle ear, inner ear, auditory nerve, and ascending auditory pathways.
- C. Knowledge of the psychological correlates of auditory stimuli.
- D. Knowledge of the profession of Audiology and clinical applications of hearing science..
- E. Students will understand and interpret screening and diagnostic tests that are used for the purpose of evaluating hearing loss, including pure tone air and bone conduction thresholds, speech recognition thresholds, word recognition performance, tympanometry, and otoacoustic emissions.
- F. Students will make appropriate recommendations for medical or audiological follow up based upon audiometric screening test results.
- G. Students will understand the pathology underlying common hearing losses and will be able to differentiate pathology through audiometric interpretation. This objective will be evaluated by performance on two examinations.
- H. Students will understand the scope of practice for speech-language pathologists and audiologists as regards to screening for, and diagnosing, hearing loss. Students will also understand the ASHA recommended guidelines for screening for hearing loss and middle-ear pathology.

#### COURSE REQUIREMENTS:

SJSU classes are designed such that in order to be successful, it is expected that students will spend a minimum of forty-five hours for each unit of credit (normally three hours per unit per week), including preparing for class, participating in course activities, completing assignments, and so on. More details about student workload can be found in University Policy S12-3 at <http://www.sjsu.edu/senate/docs/S12-3.pdf>.

- 1. Complete all readings as assigned.
- 2. Participate in class discussions.

3. Completion of three homework assignments:
  - A. Lab 1. Pure-tone audiograms: Using the portable audiometers, obtain five audiograms from friends, family, or classmates. Specifics of the assignment will be given during Week 3.
  - B. Lab 2. Tympanometry and Otoscopy: Using the portable tympanometer and clinic otoscopes, obtain two tympanograms from classmates. Specifics of the assignment will be given during Week 14.
  - C. Complete Audiologic Evaluation Observation: Go to this YouTube video: <https://www.youtube.com/watch?v=8Zy1OYrtDOE&list=PLGW2rRmdGBtJsZP8KfSmFWw1-3HIFrBeT&index=16>  
Watch the video and reflect on the session: what tests were given? what instructions/explanations were provided for each test? how were the results explained? your thoughts on the session, i.e., what seemed particularly good, and what might be improved, about the session? Two-three page paper. Due: last day of class.
  
4. Completion of two written exams. Make up exams are not given.

#### GRADING POLICY:

Lab 1: 10 points

Lab 2: 10 points

Audiologic Evaluation Observation: 10 points

Exam 1: 50 points

Exam 2: 50 points

Grades will be assigned on a statistical distribution of total points.

#### GRIEVANCE PROCEDURES:

Information regarding grievance procedures is available in SH 115.

#### ACADEMIC INTEGRITY:

“Your own commitment to learning, as evidenced by your enrollment at SJSU, and the University’s Academic Integrity Policy requires you to be honest in your academic course work. Faculty are required to report all infractions to the Office of Judicial Affairs. The policy on [academic integrity](#) can be found at [www.sjsu.edu](http://www.sjsu.edu).”

#### AMERICANS WITH DISABILITIES ACT:

“If you need course adaptations or accommodations because of a disability, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities register with DRC to establish a record of their disability.”

#### COURSE CALENDAR: Schedule to be changed with fair notice!

Week 1:	Intro to Audiology; Acoustics of sound	Pages TBD
Week 2:	Acoustics	
Week 3:	Anatomy of the outer ear; anatomy and physiology of the middle ear	
Week 4:	Anatomy of the inner ear	

Week 5:	Physiology of the inner ear	
Week 6:	CANS; Psychoacoustics	
Week 7:	Midterm; Continue with Psychoacoustics	
Week 8:	Audiologic Evaluation: Test battery, equipment, and calibration	Pages 1 – 8 in primer
Week 9:	Case History	
Week 10:	Pure-tone Audiometrics	
Week 11:	Bone conduction and interpretation of audiograms	
Week 12:	Speech tests	Pages 9 – 17 in primer
Week 13:	Tympanometry	Pages 13-18 in primer.
Week 14:	Screening tests (OAEs and ABRs)	Pages 19- 23 in primer
Week 15:	Case Studies and Summary	Pages 45-62 in primer
Exam 2: Final Exam Week (Date TBD)		