

**University of Texas at El Paso  
College of Health Sciences  
Rehabilitation Sciences Department  
Speech Language Pathology Program**

**SPLP 2320 – Fall 2020 (CRN 11615)  
Hearing Sciences**

**Location: Remote Teaching - Blackboard  
Days/Times: Asynchronous with Adapted Weekly Release**

**Instructor:** Amelia Rau, Ph.D./M.S., CCC-SLP  
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**Email:** [amrau@utep.edu](mailto:amrau@utep.edu)  
**Office Hours:** Thursdays 10:30 am – 12:00 pm and by appointment  
(<https://us02web.zoom.us/j/3815103061>)

### **I. Course Description**

Hearing Science (3-0) Anatomy and physiology of the auditory mechanism and the nature, measurement and psychoacoustics of sound. Classification restrictions: SPLP Majors. Prerequisites: SPLP 1312 w/letter grades of C or better.

*This course will address the scientific principles that underlie all areas of hearing science: how sound is generated, properties and interpretation of the acoustic waveform, instrumentation, anatomy/physiology, and theories of perception. Some discussion of the application of concepts to various clinical correlates will also be included.*

### **II. Course Objectives**

*In completion of this course, students will demonstrate clinical knowledge and skills in the following areas in accordance with the American Speech-Language Hearing Association (ASHA) 2014 Standards and Implementation Procedures for the Certificate of Clinical Competence in Speech-Language Pathology, the Council on Academic Accreditation (CAA) in Audiology and Speech-Language Pathology, UTEP Speech Language Pathology Knowledge and Clinical Competencies, and the UTEP EDGE Experiences. Specifically, students will:*

1. Understand the physical property of sound, and how sound is propagated.
2. Differentiate between simple and complex auditory signals.
3. Compute the intensity and sound pressure level of sounds
4. Describe the basic mechanisms for how sound is processed by the auditory system.
5. Understand the basic psychological aspects of sound (e.g., binaural hearing, sound localization, pitch perception, loudness perception and masking)

#### **A. ASHA Standards**

Standard IV-B. *The student must demonstrate knowledge of **basic human communication** and swallowing processes, including their biological, neurological, **acoustic, psychological**, developmental, and linguistic and cultural basis. Please visit,*



<http://www.asha.org/Certification/2014-Speech-Language-Pathology-Certification-Standards/> for detailed information on ASHA's 2014 Standards.

## **B. CAA Standards**

Standard 3.1A Academic and Clinical Education. See <http://caa.asha.org/wp-content/uploads/Accreditation-Standards-for-Graduate-Programs.pdf> for related details.

## **C. UTEP Speech-Language Pathology Knowledge and Clinical Competencies**

### **D. UTEP EDGE**

Community Engagement. For detailed information, visit: <https://www.utep.edu/edge/edge-experiences/Community-Engagement.html>

## **III. Requirements**

CHS Academic Advising approval and prerequisite courses outlined in the course catalog required.

### **A. Required Text:**

The Hearing Sciences, Third Edition. Teri A. Hamill and Lloyd L. Price  
**(and/or)**

**The Fundamentals of Hearing, Third to Fifth Edition. William Yost**

### **B. Technology**

Access to a reliable computer and/or tablet with:

- Internet access
- Word Processing software
- Adobe Reader (latest version) or pdf reader
- Microsoft OneDrive (The only UTEP approved cloud storage system)
- Zoom with microphone and camera for office hours as needed
- Active UTEP email address and access to Blackboard shell:

**\*\*Students will need a scientific calculator for this course. Students are permitted to use the scientific calculator on their phone (or an app) if they choose.**

## **IV. Class Format: Asynchronous**

- A. Textbook readings
- B. Blackboard Modular via adaptive release
- C. Pre-recorded lecturettes, supplemental readings, study guides, websites, YouTube, quizzes, exams.

## **V. Student Responsibilities**

*You are expected to complete all readings, assignments, assessments, and access all available resources.*

### **A. Reading:**

Readings are assigned from the required textbook and should be read concurrently to the module. This is the reading content that you will be responsible for on quizzes and exams, along with all lecture content. You may wish to read additional portions of each chapter of the textbook to help you understand a given topic.



## **B. Due Dates**

1. All assignments within a module are due as directed on Blackboard as per the course schedule.
2. Late assignments or projects **will not** be accepted without a physician's note or documentation of an emergency.
3. Late assignments of projects due to issues with technology (laptop, computer, tablet, software, internet access failure) **will not** be accepted. Please refer to the "Resources" section of the syllabus.

## **C. Netiquette**

*When communicating electronically, many of the feelings or impressions that are transmitted via body language in face-to-face communications, are lost. Consequently, interpreting emotions and innuendos is much more difficult. Excitement using all caps, for example, may be misinterpreted as anger, insulting, or shouting. It is important that we all keep this in mind as we communicate. It is important that we are conscious of how we communicate while working at a distance. The following are Netiquette guidelines:*

1. You are required to check the Blackboard course daily for messages, updates and assignments.
2. Respect and courtesy must be provided to fellow classmates and the instructor at all times, in all contexts. Harassment or inappropriate postings will not be tolerated.
3. Be professional and careful in what you say about others. When reacting to someone else's message, address and focus on the ideas, not the person who posted them.
4. Be careful when using sarcasm and humor. Without face-to-face communications your joke may be viewed as criticism.

## **VI. Course Content**

**A. Class Outline/Calendar:** You are **required** to check **weekly emails and Blackboard** for detailed instruction regarding weekly readings, assignments, discussions, and projects.

1. **The course syllabus and outline of assignments is subject to change or modification at the instructors' discretion.**
2. The material for this course is divided into five modules:
  - a. Physical Attributes of Sound
  - b. Complex Waveforms and Measurements



Module and Topics	Associated Assignments	Availability
<p><b>Course Overview</b></p>	<p><b>Engagement activities:</b> Threaded Discussion Syllabus Quiz</p>	<p>August 24- August 28, 11:59 pm</p>
<p><b>1. Physical Attributes of Sound</b></p> <p>Sound propagation Newton's three laws of motion Sinusoid (frequency, amplitude, phase) Amplitude measures Acoustic impedance Damping Admittance/impedance Measurement, dBIL, dB SPL Combining equal sources of dB Harmonics and octaves Periodic complex sounds (square, sawtooth, and triangular) Aperiodic complex sounds (Gaussian noise)</p>	<p><b>Read:</b> Hamill &amp; Price Chapters 1-5, 30 <b>Yost Chapters 1-5, Appendix B</b> with engagement activities TBD</p> <p><b>Summative Assessment:</b> Quiz 1 and 2 Exam 1</p>	<p>August 31- October 2, 11:59 pm</p>
<p><b>2. Complex Waveforms and Measurements</b></p> <p>Transfer function Resonant/natural frequency Broadly vs. narrowly tuned systems Filters (low-pass, high-pass, band-pass, band-reject) Filter parameters Pressure spectrum level, distortion (frequency, transient, amplitude), Linear vs. nonlinear systems Sound reflection Reverberation time Inverse square law Beats Doppler Effect Outer ear Transfer function of outer ear</p>	<p><b>Read:</b> Hamill &amp; Price Chapters 6-8, 31-33 <b>Yost Chapters 4-6</b> with engagement activities TBD</p> <p><b>Formative Assessment:</b> Quiz 3 and 4 Exam 2</p>	<p>October 5- November 6, 11:59 pm</p>



Tympanic membrane Middle ear Impedance mismatch Auditory pathways		
<b>3. Psychophysics</b>  Anatomy and physiology Threshold of audibility Psychophysical procedures MAF and MAP Psychometric function dBSPL, dBHL, dBSL Differential sensitivity Frequency discrimination Intensity discrimination Temporal Discrimination Pitch, binaural hearing/sound localization, HRTFs Noise induced hearing loss (NIHL) OSHA regulations Damage Risk Criteria (DRC)	<b>Read:</b> Hamill & Price Chapters 15-19, 24, 25, 27, 38 <b>Yost Chapters 10-13, 16, Appendix D</b> with engagement activities TBD  <b>Formative Assessment:</b> Quiz 5 and 6 Exam 3	November 9- December 4, 11:59 pm

## B. Grading

- Summative Assessment:** 3 Exams (one on each of the three general class sections) and 5 Quizzes. Questions on each will consist of a mixture of multiple choice, short answer and true/false items. Students will be able to drop their **lowest** quiz grade. If you do not take a quiz by its due date you will be given a grade of 0 for that quiz without a makeup.
- Formative Assessment:** Based on course materials and assigned chapter readings, mini-practice quizzes or assignments will be available for study support and as engagement points, akin to attendance/participation checks for 0 vs. 1 point each opportunity.
- Weighting:** Course grades will be based on the average of three equally weighted exam scores that will contribute to 80% of your course grade. Then 10% of your grade will be based on the average of your five highest quiz grades. The last 10% of your grade will consist of your engagement points.

Average of 3 Exams	80%
Best 5 out of 6 Quizzes	10%
Engagement Activities	10%

## VII. Other Policies and Information

### Communications

Please allow 48 hours for faculty to respond to discussion board postings and/or e-mail.

## **Drop Policy**

Please refer to <http://catalog.utep.edu/undergrad/academic-regulations/general-academic-information/> for policies regarding dropping a course. Please refer to [www.utep.edu/calendar](http://www.utep.edu/calendar) to identify the dates during which drops may occur.

See “Class Attendance” section of this syllabus.

## **Americans with Disability Act (ADA)**

If you have a disability or suspect a disability, you will need to contact the Center for Accommodations and Special services (CASS) if you require specific accommodations. Please schedule an appointment to see me **within the first two weeks of class** to discuss your accommodations.

Center for Accommodations and Special services (CASS)

East Union Bld., Room 106

<https://www.utep.edu/student-affairs/cass>

Phone: (915) 747-5148

Fax: (915) 7478712

[cass@utep.edu](mailto:cass@utep.edu)

## **Equity Statement**

In this course, all persons, regardless of race, sex, national origin, religion, sexual orientation, gender identity, class, disability, etc., shall have equal opportunity without harassment.

## **Academic Dishonesty**

“Any student who commits an act of academic dishonesty is subject to discipline. Academic dishonesty includes, and is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, and any act designed to give unfair advantage to a student or the attempt to commit such acts.” Please refer to <http://catalog.utep.edu/undergrad/academic-regulations/curriculum-and-classroom-policies/>.

## **Regarding COVID-19 Accommodations:**

Students are not permitted on campus when they have a positive COVID-19 test, exposure or symptoms. If you are not permitted on campus, you should contact me as soon as possible so we can arrange necessary and appropriate accommodations. Students who are considered high risk according to CDC guidelines and/or those who live with individuals who are considered high risk may contact [Center for Accommodations and Support Services](#) (CASS) to discuss temporary accommodations for on-campus courses and activities.

**NOTE:** Students are to adhere to the ASHA Code of Ethics. Any code violations will be reported to the Office of Student Conduct and Conflict Resolution (OSCCR).

## **VIII. Resources**

### **Research**

Please visit the UTEP library on main campus. <https://www.utep.edu/library/>

### **Academic Writing**

Please visit the University Writing Center located in the UTEP library, Room 227, <http://academic.utep.edu/writingcenter>, (915) 747-5486.

### **Computer labs**



Please visit the Technology Support Help Desk <https://admin.utep.edu/Default.aspx?tabid=74319>  
or call the main number at  
(915) 747-5000 for information on locations of computer labs.

**University Counseling Center**

<http://sa.utep.edu/counsel/>

**American Speech Language Hearing Association**

<http://www.asha.org/>

**Texas Department of Licensing and Regulation**

<https://www.tdlr.texas.gov/slpa/slpa.htm>

