

The University of Texas at Tyler
Communication Sciences & Disorders Program
COMD 3313 Hearing Science
Fall 2022

Instructor: Hunter Wesley Holcomb, Au.D.

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Class Meeting Time: Monday and Wednesday 19:15-20:40

Office Hours: Thursday 18:00-20:00 via Zoom

Please make sure to download and save a copy of this syllabus and all course materials. Please refer to the syllabus regularly to keep up with assignments.

Course Description:

This course focuses on the acoustic, physiological, and psychological bases of human hearing and sound perception. It will present an in-depth exploration of the properties and physics of sound. It will discuss the processes involved in the transmission, reception, recognition, and analysis of sound, with a special focus on speech. Students will also study the specific physiological contributions of the inner ear, auditory nerve, ascending auditory pathways, and the auditory central nervous system in sound localization and processing. Another major component of the course is analysis of various sound waves and the applications of the instrumentation for analyzing and interpreting sound.

Required Text:

Lass, N. J. & Donai, J. J. (2021). *Hearing Science Fundamentals* (2nd ed). Plural Publishing.

The instructor reserves the right to assign any additional readings as deemed necessary to meet the course's learning outcomes.

Learning Outcomes:

Upon completion of this course, and consistent with the 2020 ASHA Certification Standards, students will:

- Explain the basic concepts pertaining to sound propagation, transmission, and perception; and nature of impedance, energy transfer, and resonance (ASHA CS# IV-B "...knowledge of basic human communication Including the appropriate ... Acoustic ... bases")
- Analyze the physical properties of sound and sound measurements (ASHA CS# IV-B)
- Identify the various types of sound waves and conduct the necessary measurements and calculations involved in determining pure tones, harmonics, basic speech formants (esp. F1, F2, & F3), and aperiodic tones (ASHA CS# IV-B).
- Compare types of filters, calculate harmonic frequencies, and explain their implications for normal and disorders functioning (ASHA CS# IV-B; IV-D)

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- Analyze the acoustic properties of speech sounds and the biological and environmental factors required for normal functioning (*ASHA CS# IV-D "...current knowledge of the principles and methods of prevention, assessment, and intervention for persons with communication and swallowing disorders, including consideration of anatomical/physiological, psychological, developmental, and linguistic and cultural correlates?"*)
- Read audiograms, analyze results of pure tone and bone conduction assessments, and identify their implications for patients (*ASHA CS# IV-D*)
- *Explain frequency and intensity encoding and factors required for optimal functioning (ASHA CS# IV-C "...knowledge of communication and swallowing disorders and differences, including the appropriate etiologies, characteristics, and anatomical/physiological, acoustic ..., developmental, and linguistic and cultural correlates in ...-Hearing, including the impact on speech and language"*)
- Course Policies:
 - All students are expected to demonstrate professional behavior in class and in school environments. Professional behavior in class includes preparedness, punctuality, and active participation in all course activities.
- Assignment Submission:
 - It is expected that each assignment is submitted prior to the beginning of each class. Assignments will be deducted 5% for each day late, up to one week. Assignments will not be accepted after one week.
 - If you have an extenuating circumstance and are unable to complete an assignment on time, to the best of your ability please contact the professor in advance to discuss your options for an adapted assignment submission timeline.
- Exams:
 - Multiple-choice, fill-in-the-blank, and short answer
 - 1st exam: 09/28
 - 2nd exam: 11/02
 - Final exam: TBD 12/06-12/10
- Assignments:
 - Two-page or more report on a hearing science research article of your choice. Must include clear description of: research question, methods, results, and conclusions. Due 10/19
 - Two-page or more report on an auditory system pathology of your choice. Must include at least three references appropriately cited using APA formatting. Due 11/30

Grade Distribution and Grading Key

<i>Final Grade Itemization</i>	<i>Grading Scale</i>	
Exam 1: 20%	A	100-90%
Exam 2: 20%	B	89.99-80%
Final Exam: 40%	C	79.99-70%
Assignment 1: 10%	D	69.99-60%
Assignment 2: 10%	F	<60%
Total = 100%		

Class Schedule

Date	Topics	Reading
Week 1	➤ Acoustics	Chapter 1
Week 2	➤ Review of Speech Acoustics	Chapter 2
Week 3	➤ Digital Signal Processing (DSP)	Chapter 3
Week 4	➤ Anatomy & Physiology of the Conductive Auditory Mechanism	Chapter 4
Week 5	➤ Anatomy & Physiology of the Sensory Auditory Mechanism	Chapter 5
Week 6	➤ Anatomy & Physiology of the Central Auditory Mechanism <i>Exam 1</i>	Chapter 6
Week 7	➤ Normal Hearing	Chapter 7
Week 8	➤ Binaural Processing	Chapter 8

Week 9	➤ Masking	Chapter 9
	<i>Assignment 1 Due</i>	
Week 10	➤ Temporal Processing	Chapter 10
Week 11	➤ Loudness & Pitch ➤ Differential Sensitivity	Chapter 11 Chapter 12
	<i>Exam 2</i>	
Week 12	➤ Signal Detection Theory	Chapter 13
Week 13	➤ Auditory Perception & Hearing Impairment ➤ Pathologies of the Conductive Auditory Mechanism	Chapter 14-15
Week 14	➤ Pathologies of the Sensory Auditory Mechanism ➤ Pathologies of the Central Auditory System <i>Assignment 2 Due</i>	Chapter 16-17
Week 15	➤ Final exam	

UNIVERSITY POLICIES

A. UT Tyler Honor Code: 1. Every member of the UT Tyler community joins together to embrace: Honor and integrity that will not allow me to lie, cheat, or steal, nor to accept the actions of those who do. Students Rights and Responsibilities To know and understand the policies that affect your rights and responsibilities as a student at UT Tyler, please follow this link:

<http://www.uttyler.edu/wellness/rightsresponsibilities.php>

B. Campus Carry: 1. We respect the right and privacy of students 21 and over who are duly licensed to carry concealed weapons in this class. License holders are expected to behave responsibly and keep a handgun secure and concealed. More information is available at

<http://www.uttyler.edu/about/campus-carry/index.php>

C. UT Tyler a Tobacco-Free University: 1. All forms of tobacco will not be permitted on the UT Tyler main campus, branch campuses, and any property owned by UT Tyler. This applies to all

members of the University community, including students, faculty, staff, University affiliates, contractors, and visitors. Forms of tobacco not permitted include cigarettes, cigars, pipes, water pipes (hookah), bidis, kreteks, electronic cigarettes, smokeless tobacco, snuff, chewing tobacco, and all other tobacco products. There are several cessation programs available to students looking to quit smoking, including counseling, quitlines, and group support. For more information on cessation programs please visit www.uttyler.edu/tobacco-free.

D. Academic Honesty Policy: Students will adhere to the highest standards of academic honesty. Anyone caught cheating will earn a “0” for that assignment and will be subject to academic and disciplinary action. Plagiarism (the use of written and oral words or ideas of another person, including another student, without the expressed acknowledgment of the speaker’s or writer’s indebtedness to that person) will not be tolerated. This includes the use of papers or other materials previously submitted to instructors in other classes, as well as video and audio recordings. Students caught plagiarizing will fail this class and be subject to academic and disciplinary action.

E. Student Standards of Academic Conduct 1. Disciplinary proceedings may be initiated against any student who engages in scholastic dishonesty, including, but 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, any act designed to give unfair advantage to a student or the attempt to commit such acts.

a. “Cheating” includes, but is not limited to:

- i copying from another student’s test paper;
- ii using, during a test, materials not authorized by the person giving the test;
- iii failure to comply with instructions given by the person administering the test;
- iv possession during a test of materials which are not authorized by the person giving the test, such as class notes or specifically designed “crib notes.” The presence of textbooks constitutes a violation if they have been specifically prohibited by the person administering the test;
- v using, buying, stealing, transporting, or soliciting in whole or part the contents of an unadministered test, test key, homework solution, or computer program;
- vi collaborating with or seeking aid from another student during a test or other assignment without authority;
- vii discussing the contents of an examination with another student who will take the examination; viii divulging the contents of an examination, for the purpose of preserving questions for use by another, when the instructors has designated that the examination is not to be removed from the examination room or not to be returned or to be kept by the student; ix substituting for another person, or permitting another person to substitute for oneself to take a course, a test, or any course-related assignment;
- x paying or offering money or other valuable thing to, or coercing another person to obtain an unadministered test, test key, homework solution, or computer program or information about an unadministered test, test key, home solution or computer program;
- xi falsifying research data, laboratory reports, and/or other academic work offered for credit; xii taking, keeping, misplacing, or damaging the property of the University of Texas at Tyler, or of another, if the student knows or reasonably should know that an unfair academic advantage would be gained by such conduct; and
- xiii misrepresenting facts, including providing false grades or resumes, for the purpose of obtaining an academic or financial benefit or injuring another student academically or

financially.

b. "Plagiarism" includes, but is not limited to, the appropriation, buying, receiving as a gift, or obtaining by any means another's work and the submission of it as one's own academic work offered for credit.

c. "Collusion" includes, but is not limited to, the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any section of the rules on scholastic dishonesty. d. All written work that is submitted will be subject to review by plagiarism software.

Additional Examples of academic dishonesty and plagiarism:

-Copying part or all of a colleague's assignment and submitting it as if it were your own work. In this situation both students will be penalized.

-Putting information from a book, article, etc. into a written assignment without clearly attributing the information to the source and documenting the source in the body of the assignment.

-Copying, printing or sharing online quizzes

-Submitting assignments that were previously used for another course.

-Sharing information about exams and/or quizzes with other students

These are just examples of acts of dishonesty that lead to failing the course and further disciplinary action.

Assignments will be submitted via the Safe Assign anti-plagiarism online system, which will immediately trace any words a student plagiarizes from any source out there. Any violations will be taken very seriously.

2. The U-T Tyler Writing Center provides professional writing tutoring for all students in all disciplines. If you wish to use the Writing Center, you should plan for a minimum of two hour-long tutorials per assignment: the first to provide an initial consultation and drafting plan, and the second to follow up. Be prepared to take an active role in your learning, as you will be asked to discuss your work during your tutorial. While Writing Center tutors are happy to provide constructive criticism and teach effective writing techniques, under no circumstances will they fix, repair, or operate on your paper.

Location: BUS 202. Appointments: 903-565-5995.

3. Disability/Accessibility Services:

a. In accordance with Section 504 of the Rehabilitation Act, Americans with Disabilities Act (ADA) and the ADA Amendments Act (ADAAA) the University of Texas at Tyler offers accommodations to students with learning, physical and/or psychological disabilities. If you have a disability, including a non-visible diagnosis such as a learning disorder, chronic illness, TBI, PTSD, ADHD, or you have a history of modifications or accommodations in a previous educational environment, you are encouraged to visit <https://hood.accessiblelearning.com/UTTyler> and fill out the New Student application.

b. **The Student Accessibility and Resources (SAR)** office will contact you when your application has been submitted and an appointment with Cynthia Lowery, Assistant Director of Student Services/ADA Coordinator. For more information, including filling out an application for services, please visit the SAR webpage at <http://www.uttyler.edu/disabilityservices>, the SAR office located in the University Center, # 3150 or call 903.566.7079.

4. Grade Replacement/Forgiveness and Census Date Policies:

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a. Students repeating a course for grade forgiveness (grade replacement) must file a Grade Replacement Contract with the Enrollment Services Center (ADM 230) on or before the Census Date of the semester in which the course will be repeated. Grade Replacement Contracts are available in the Enrollment Services Center or at <http://www.uttyler.edu/registrar>. Each semester's Census Date can be found on the Contract itself, on the Academic Calendar, or in the information pamphlets published each semester by the Office of the Registrar.

b. Failure to file a Grade Replacement Contract will result in both the original and repeated grade being used to calculate your overall grade point average. Undergraduates are eligible to exercise grade replacement for only three course repeats during their career at UT Tyler; graduates are eligible for two grade replacements. Full policy details are printed on each Grade Replacement Contract.

c. The Census Date (Sept. 10th) is the deadline for many forms and enrollment actions of which students need to be aware. These include:

- i Submitting Grade Replacement Contracts, Transient Forms, requests to withhold directory information, approvals for taking courses as Audit, Pass/Fail or Credit/No Credit.
- ii Receiving 100% refunds for partial withdrawals. (There is no refund for these after the Census Date)
- iii Schedule adjustments (section changes, adding a new class, dropping without a "W" grade)
- iv Being reinstated or re-enrolled in classes after being dropped for non-payment v Completing the process for tuition exemptions or waivers through Financial Aid

5. State-Mandated Course Drop Policy: a. Texas law prohibits a student who began college for the first time in Fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at another 2-year or 4-year Texas public college or university. For purposes of this rule, a dropped course is any course that is dropped after the census date (See Academic Calendar for the specific date). b. Exceptions to the 6-drop rule may be found in the catalog. Petitions for exemptions must be submitted to the Enrollment Services Center and must be accompanied by documentation of the extenuating circumstance. Please contact the Enrollment Services Center if you have any questions.

6. Student Absence due to Religious Observance: a. Students who anticipate being absent from class due to a religious observance are requested to inform the instructor of such absences by the second class meeting of the semester.

7. Student Absence for University-Sponsored Events and Activities: If you intend to be absent for a university-sponsored event or activity, you (or the event sponsor) must notify the instructor at least two weeks prior to the date of the planned absence. At that time, the instructor will set a date and time when make-up assignments will be completed.

8. Social Security and FERPA Statement: It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number. The electronic transmission of grades (e.g., via e-mail) risks violation of the Family Educational Rights and Privacy Act; grades will not be transmitted electronically. 10. Emergency Exits and Evacuation: a. Everyone is required to exit the building when a fire alarm goes off. Follow your instructor's directions regarding the appropriate exit. If you require assistance during an evacuation, inform your instructor in the first

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week of class. Do not re-enter the building unless given permission by University Police, Fire department, or Fire Prevention Services.

F. UT Tyler Resources for Students:

1. UT Tyler Writing Center (903.565.5995), writingcenter@uttyler.edu
2. UT Tyler Tutoring Center (903.565.5964), tutoring@uttyler.edu
3. The Mathematics Learning Center, RBN 4021 (This is the open access computer lab for math students, with tutors on duty to assist students who are enrolled in early-career courses).
4. UT Tyler Counseling Center (903.566.7254)
 1. Demonstrates professional demeanor and a passion for their chosen profession.
 2. Receptive to constructive feedback and reflects on his/her work, behavior, and/or practice.
 3. Exhibits personal integrity and professional conduct with all members of the learning community