Anatomy and Physiology of Hearing and Language

COMD 2358 Syllabus

Spring 2024: Tuesday & Thursday 2:00-3:20pm, HPR 262

Instructor	Course Overview		
Tina Melamed, PhD,	Why should you care about A&P of hearing and language? We need develop an		
CCC-SLP	understanding of the anatomical and physiological processes that support language and hearing to understand typical development. This typical understanding provides us with a basis for comparison for when these processes develop atypically or		
Email	something goes wrong.		
tmelamed@uttyler.edu	Required Text (the same text you used last semester in A&P of Speech & Swallowing)		
Office Location	Seikel, J. A., Drumright, D. G., & Hudock, D. J. (2021). Anatomy & Physiology for		
HPR 113	Speech, Language, and Hearing (6 th edition). Plural Publishing. ISBN 9781635502794.		
Office Hours	Course Materials		

T/R 11-12:30

And by appointment on request

Course Materials

UT Tyler Canvas

o All of your assignments and quizzes will be hosted within Canvas

ANAQUEST study software provided with your textbook. Your *access code* is on the first page after the inside cover of your textbook.

• https://www.pluralpublishing.com/publication/apslh6e

Resources

https://asha.org/students

Dr. Melamed! If you are having trouble with any course content, please contact me ASAP. ACT FAST! Once you get behind, it is very difficult to catch up.

Why are you here?

Course Learning Objectives

This course is designed to familiarize you, a communication sciences and disorders student, with the anatomy and physiology of the organs and brain systems dedicated to hearing and language. We will begin by focusing on auditory anatomy and auditory physiology. Then, we will focus on brain regions and networks responsible for the integration of sensory perception, cognition, emotion, memory, and language functions.

By the end of this course, you will be able to...

- 1. Define basic scientific terminology pertaining to the anatomy of hearing and language
- 2. Identify anatomical structures and responsible for hearing, auditory perception, and central auditory processing
- 3. Explain the various functions of the peripheral and auditory central nervous system and the processes involved in auditory transduction and auditory processing
- 4. Identify brain structures involved in the processing (receptive language) and production (expressive language), including verbal and written language
- 5. Analyze the functions of brain structures responsible for language planning, programming, and expression
- 6. Describe the neurocognitive and neuro-emotional processes involved in social communication

ASHA Standards for Knowledge Outcomes

If you are hoping to become a speech-language pathologist or SLP-assistant, you will be required to meet these minimum standards to demonstrate your knowledge. We will address parts of each of these standards in our class:

Standard IV-B: The [student] 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 lifespan.

Standard IV-C: The [student] must have demonstrated knowledge of **communication** and swallowing disorders and differences, including the appropriate etiologies, characteristics, and **anatomical/physiological**, **acoustic**, **psychological**, developmental, and linguistic and cultural **correlates** in the following areas:

- Speech sound production, to encompass articulation, **motor planning and execution**, phonology, and accent modification
- Fluency and fluency disorders
- Voice and resonance, including respiration and phonation
- Receptive and expressive language, including phonology, morphology, syntax, semantics, pragmatics (language use and social aspects of communication), prelinguistic communication (e.g. gestures, signs, body language), and literacy in speaking, listening, reading, and writing'
- Hearing, including the impact on speech and language
- Swallowing/feeding, including (a) structure and function of orofacial myology and (b) oral, pharyngeal, laryngeal, pulmonary, esophageal, gastrointestinal, and related functions across the lifespan
- Cognitive aspects of communication, including attention, memory, sequencing, problem solving, and executive functioning
- Social aspects of communication, including challenging behavior, ineffective social skills, and lack of communication opportunities
- Augmentative and alternative communication modalities

How This Course Works

Each week you will

- Complete the assigned reading BEFORE CLASS
- Complete your assigned ANAQUEST lesson(s) & homework assignments AFTER CLASS

Please budget your time accordingly. The due dates are there to help you stay on track.

DESCRIPTION OF ACTIVITIES

ANAQUEST ACTIVITIES (10%)

Each week, I want you to log in to your ANAQUEST portal and complete the assigned activities. These activities give you *immediate feedback* on what you get right and wrong, and you can re-try them as many times as you want. This immediate feedback provided is one of the cognitive principles of successful learning. You can correct mistakes early and often! This allows you to encode and reinforce only *correct* information.

Assignments (40%)

You will have homework assignments in the form of reading activities, lab activities, worksheets, and/or labeling assignments that will help you develop and understand the content. If you do your ANAQUEST activity beforehand as suggested and attend class regularly, you should find you are set up for success on these activities.

Tests (50%)

Your tests make up the bulk of your grade. Why? You will already have had <u>multiple</u> to solidify your knowledge from the lectures and text through your online ANAQUEST activities, your homework assignments, and lab activities.

The goal is that by test time, you aren't cramming and memorizing. This style of "learning" results in almost immediately forgetting information. I want you to truly understand and interact with the content so much that you *more than memorize* the information. Rather, you will have an understanding for how these systems work together that will stay with you throughout the course and enable you to succeed on each test, which builds upon the one before.

You will use your tests to "prove" your knowledge that you've worked so hard to accumulate. There will not be any "surprises" on the tests.

A note about grades

The reason you have so many small assignments is because I don't want your focus of your studies to be a grade. I want your focus to be on learning and mastering content. If you are learning and mastering content, you should find yourself in the position to earn a high grade.

I will provide you everything you need to make an A in this class. If you do your assignments and activities on time and dedicate yourself to success, you should find yourself to be very successful in this course and actually *enjoy* learning about anatomy and physiology of hearing and language.

BUT! It is up to you to do the work to earn the A I am setting you up for. It's a two-way relationship.

Tips for success

I find the most success in studying anatomy comes from using the following tools:

- Colored pencils or highlighters
 - o For color coding & differentiating structures on black & white pictures
- Solid gel or crayon-type highlighters
 - o So that your highlights don't bleed through your thin textbook pages
- Flashcards
 - o For key concepts, definitions, and functions
- Transparent sticky notes or tracing paper
 - o For tracing and/or labeling key structures directly from your book
 - o And then color each structure with a different colored pencil/crayon/highlighter
- VIDEOS
 - These structures are rarely stagnant
 - o Look up videos to visualize the movements or relationships between structures

Attendance

I understand that life happens and sometimes this prevents attendance. Please note, I do not need you to provide personal details to account for these absences, but I do need you to take responsibility for any work you miss.

- Obtain notes from a peer, check out the slides I have posted, and read the chapter thoroughly.
- Please don't ask me, "what did I miss?" the syllabus already answers this question!

If an extreme circumstance prevents you from attending multiple classes, these will be dealt with on a case-by-case basis.

Cell Phone and Other Electronics Policy

Please avoid using cell phones in class. It can prevent you and others from learning. In the case of an emergency, please take your phone outside.

For in-class tests, you will need to use a computer with internet access.

You are free to use your computer to take notes if that is easier for you. However, please refrain from doing anything *other* than taking notes in class. It prevents you from learning, and it can distract the students sitting around you.

Course Schedule

As with all plans, the calendar below is subject to change depending upon how we are progressing in class. Any changes or modifications will be discussed in class and sent in writing to students.

Week		Course calendar & content guide	Homework (due after lecture)	
1 T	1/16	Assigned Reading (due before lecture): Chapter 9 (p515-530) Lecture topic: Structures of the outer ear & middle ear	(due 1/18) ANAQUEST lessons: 9-01, 9-02, 9-03 Upload your screenshot in the corresponding assignment on Canvas	
R	1/18	Assigned reading (due before lecture): Chapter 9 (p530-537) Lecture topic: Finish up structures of the middle ear (if needed) Begin structures of the inner ear- osseous labyrinth, semicircular canals, cochlea	(due 1/23) ANAQUEST lessons: 9-04, 9-05 Upload your screenshot in the corresponding assignment on Canvas Homework assignment: Outer ear & middle ear structures	
2 T	1/23	Assigned reading (due before lecture): Chapter 9 (538-543) Lecture topic: Inner ear- organ of corti & innervation	(due 1/25) ANAQUEST 9-06, test of auditory anatomy Upload your screenshot in the corresponding assignment on Canvas Homework assignment: auditory anatomy terminology worksheet	
R	1/25	Assigned reading (due before lecture): Chapter 9 (any pages you may have missed or want to review) Lecture topic: Hearing Lab 1! Structures, models, and key terms discussion Catch up on any material we haven't covered	(due 1/30) <u>Homework</u> <u>assignment:</u> Structures of the inner ear	
3 T	1/30	Test 1: Chapter 9, auditory anatomy	STUDY TOOLS: ANAQUEST 9-06, test of auditory anatomy, Online chapter 9 study quiz (in your book resources website) Terminology worksheet	
R	2/1	Assigned reading (due before lecture): Chapter 10 (p549 -560) Lecture topic: Auditory physiology: outer ear, middle ear, and inner ear function Auditory mechanism: mechanical events	(due 2/6) ANAQUEST lessons: 10-01, 10-02 Upload your screenshot in the corresponding assignment on Canvas	
4 T	2/6	Assigned reading (due before lecture): Chapter 10 (p560-573) Lecture topic: Auditory mechanism: Electrical events Neural responses: frequency specificity & frequency_selectivity	(due 2/8) ANAQUEST lessons: 10-03 Upload your screenshot in the corresponding assignment on Canvas	

R	2/8	Assigned reading (due before lecture): Chapter 10 (p573-589) Lecture topic: Auditory pathway	(due 2/13) <u>Homework</u> <u>assignment:</u> auditory physiology terminology worksheet
5 T	2/13	Assigned reading (due before lecture): Chapter 10 (p589-593) Lecture topic: Auditory pathology- If we don't get through the above material, we will continue it on this day and auditory pathology will be a topic for independent study	(due 2/15) ANAQUEST lesson: 10-4 Upload your screenshot in the corresponding assignment on Canvas
R	2/15	Assigned reading (due before lecture): Any parts of chapter 10 you may have missed or need to review Lecture topic: Hearing lab 2 & Round robin discussion	
6 T	2/20	Test 2: Chapter 10, auditory physiology	STUDY TOOLS: ANQUEST lesson: 10-04, Terminology worksheet, Online in your book resources website: Chapter 10 study quiz
R	2/22	Assigned reading (due before lecture): Chapter 11 (p601-610) Lecture topic: Neuroanatomy overview, views, divisions, & landmarks	(due 2/27) ANAQUEST lessons: 11-00, 11-01 Upload your screenshot in the corresponding assignment on Canvas
7 T	2/27	Assigned reading (due before lecture): Chapter 11 (p611-632) Lecture topic: Newsons system & neuronal structures maniness ventriales	(due 2/29) <u>Homework</u> <u>assignment:</u> Neuro labeling worksheet 1
R	2/29	Nervous system & neuronal structures, meninges, ventricles Assigned reading (due before lecture): Chapter 11 (p632-652) Lecture topic: Layers of the cerebrum, landmarks of the cerebrum (lobes, sulci, gyri)	(due 3/5) ANAQUEST lesson: 11-05 Upload your screenshot in the corresponding assignment on Canvas
8 T	3/5	Assigned reading (due before lecture): Chapter 11 (p652-663) Lecture topic: Landmarks of the cerebrum (insula, limbic system, fibrous tracts), Medial & interior surfaces of the cortex, subcortex	(due 3/7) ANAQUEST lesson: 11-06 Upload your screenshot in the corresponding assignment on Canvas Homework assignment: Neuro labeling worksheet 2
R	3/7	Assigned reading (due before lecture): Chapter 11 (p663-673) Lecture topic: Cerebrovascular system, cerebellum, & midbrain	(due 3/19) ANAQUEST lesson: 11-03 Upload your screenshot in the corresponding assignment on Canvas
9	3/12	NO CLASS! SPRING BREAK!	

T			
R	3/14	NO CLASS! SPRING BREAK!	
10 T	3/19	Assigned reading (due before lecture): Chapter 11 (673-686) Lecture topic: Brainstem & deep structures	(due 3/21) ANAQUEST lesson: 11-03 Upload your screenshot in the corresponding assignment on Canvas Homework assignment: Neuro labeling worksheet 3
R	3/21	Assigned reading (due before lecture): Chapter 11 (p686-711) Lecture topic: Cranial nerves	(due 3/26) ANAQUEST lesson: 11-04 Upload your screenshot in the corresponding assignment on Canvas Homework assignment: Neuro labeling worksheet 4
11 T	3/26	Assigned reading (due before lecture): Any pages in chapter 10 up to p711 that you may have missed or need to review Lecture topic: Neuro lab 1!	
R	3/28	Assigned reading (due before lecture): Chapter 11 (p711-726) Lecture topic: Spinal cord anatomy & ascending pathways	(due 4/2) ANAQUEST lesson: 11-02 Upload your screenshot in the corresponding assignment on Canvas
12 T	4/2	Assigned reading (due before lecture): Chapter 11 (p726-732) Lecture topic: Spinal cord anatomy & descending pathways	(due 4/4) ANAQUEST 11-07 test on auditory anatomy Upload your screenshot in the corresponding assignment on Canvas
R	4/4	Assigned reading (due before lecture): Any pages in chapter 11 that you missed or need to review Lecture topic: Neuro lab 2 & round robin discussion	
13 T	4/9	Test 3: Chapter 11, Neuroanatomy	STUDY TOOLS: Online in your book resources website: Chapter 11 study quiz, ANAQUEST 11-07: test on neuroanatomy
R	4/11	Assigned reading (due before lecture): Chapter 12 (p745-768) Lecture topic: Neuronal function, muscles, sensation & senses	(due 4/16) ANAQUEST: 12-01, 12-02 Upload your screenshot in the corresponding assignment on Canvas
14 T	4/16	Assigned reading (due before lecture): Chapter 12 (p769-782)	

		Lecture topic: Higher functioning, association areas, hemispheric specialization	
R	4/18	Assigned reading (due before lecture): Chapter 12 (p782-800) Lecture topic: Lecture topic:	(due 4/18) ANAQUEST: 12-03 Upload your screenshot in the corresponding assignment on Canvas
		Lesion studies, motor control for speech, neurogenic speech/language deficits	
15	4/23	Assigned reading (due before lecture): Any parts of chapter 2 you may have missed or need to review	
T		Lecture topic: Neuro lab 3 & round robin discussion	
R	4/25	Test 4: Chapter 12, neurophysiology	STUDY TOOLS: Online in your book resources website: Chapter 12 study quiz, ANAQUEST lesson 12-03: test on neurophysiology
(16) T	4/30	No class- finals week	
R	5/2	No class- finals week	

Policies and Procedures

Course Grading	
ANAQUEST activities	10%
Homework assignments	40%
Tests	50%

Note: You can check in with your grade progress any time on the canvas grades section.

Grades Assigned

A = 89.5-100	B = 79.5-89.4	C = 69.5-79.4	D = 59.5-69.4	F = < 59.4	
A = 07.5-100	D - 17.3-07.4	C - 07.3-77.4	D - 37.3-07.4	I - \3).4	

Reminder: You must receive a course grade of <u>at least a C</u> to progress to the next course in the COMD program. You can do this! You will earn the grade you work for.

I will round up to the next point for grades that end with .5 or higher.

I will not round up to the next point for grades ending in .4 or lower.

Late Work Policy

I encourage you to avoid submitting late work, as you will end up behind schedule and it will be difficult to make up for lost time.

If you submit your work fewer than three days late, you can still qualify for 80% of the original points. If you submit your work more than three days late, you can still qualify for 60% of the original points.

Each class prepares you to succeed on each assignment. Doing your assignments on time will help you learn the most efficiently and effectively. It will also prevent you from falling behind in class.

Accommodations

If you need accommodations, please let me know as soon as possible. You have the right to have your needs met in a timely manner.

Additional Information

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

xii 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.
- 2. The UT 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:

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 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 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)
- 5. For more information about grading, academic policies, and add/drop, see here: https://uttyler.smartcatalogiq.com/en/2016-2017/Catalog/Undergraduate-Academic-Policies/Grading-System