



**College of Public Health & Health Professions Syllabus**  
**SPA 3032 Fundamentals of Hearing (3 hours)**  
**Section Fall Semester 2024**  
Delivery Format: Blended Learning  
Date created: 08/24/2024

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Office Hours: Tuesday 1:00 to 4:00; to be arranged in Canvas

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### **Course Purpose and Overview**

This course is designed to introduce students interested in careers in fields related to human communication to sound, anatomy and physiology of the auditory system, basic auditory principles, and psychophysical methods. The course is organized around three major topic areas:

- 1) Sound: How it is generated, propagated, and analyzed
- 2) Structure and function of the human auditory system
- 3) Perceptual processes and how to measure them

### **Course Objectives:**

At the end of this course, students will be able to:

- Explain how nonspeech and speech signals are generated and propagated
- Interpret acoustic waveforms, spectra, and spectrograms
- Compute or derive measurements of amplitude, frequency, phase, and time for acoustic signals
- Summarize the major structures and functions of the human auditory system from the pinna to the cortex
- Interpret the major psychophysical methods that have been used to assess human performance in the hearing and speech sciences
- Review suprathreshold auditory functions, how they develop, and the role they play in the development of language
- Define and give examples of categorical speech perception
- Evaluate research reports and critically assess quality of the science presented in those reports

### **Instructional Method: Lectures, readings**

This course will use **blended learning**, which is a composite of face-to-face meetings and recorded lectures. The recorded lectures provide the student with the opportunity to review the material at the rate and with the repetition that matches individual learning needs. It allows the instructor to include demonstrations that would be difficult to provide in class. Each student is responsible for interacting with the course content to the extent required to reach mastery. Instructional staff are available to support student learning, as requested.

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## **DESCRIPTION OF COURSE CONTENT**

### **Required Textbook:**

Fundamentals of Hearing: An Introduction, 5<sup>th</sup> Edition. William A. Yost. Publisher: Brill.

Required App:  
**iClicker**

### #1 Why study sound and hearing

*Assignments: Read Chapters 1 and 2; get calculator with logs; watch AT HOME lecture on why we study hearing*

F 8/23: Review course syllabus; Meet your classmates



### #2 Sound generation; logs & decibels

*Assignments: Read Chapter 3; do log/decibel exercises on Canvas*

M 8/26: Introduction to logs; Practice with logs

W 8/28: Introduction to decibels and simple harmonic motion; More log practice

F 8/30: AT HOME Recorded lecture on Simple Harmonic Motion; Advanced log practice

### #3 Sound propagation and impedance

*Assignments: Prepare for first assessment*

M 9/02: LABOR DAY HOLIDAY – NO CLASS

W 9/04: AT HOME Recorded lecture on Sound Propagation

**F 9/06: Sound Propagation and Impedance; Assessment #1 on logs and decibels (50 points)**

### #4 Sound propagation and complex sounds 1

*Assignments: Study for second assessment*

M 9/09: AT HOME Recorded lecture on More on Sound Propagation

W 9/11: In class review

F 9/13: AT HOME Recorded lecture on Complex Sounds 1

### #5 Complex sounds 2

*Assignments: Read Chapters 4 and 5*

**M 9/16: Review of Writing Assignment #1; Assessment #2 on sound generation, propagation, impedance (100 points)**

W 9/18: Lecture on Complex Sounds

F 9/20: AT HOME Recorded lecture on Complex Sounds 2

### #6 Noise and filters

*Assignments: Study for third assessment; prepare essay on sound in the environment*

M 9/23: AT HOME Lecture about Noise and Filters

W 9/25: In class review

**F 9/27: More on Writing Assignment #1; Assessment #3 on complex sounds, noise and filters (100 points)**

### #7 Structures of outer to inner ear

*Assignments: Read Chapter 6; complete writing assignment*

**M 9/30: AT HOME Lecture on outer and middle ear; Writing assignment #1 due: Essay on sound in the environment (100 points)**

W 10/02: Lecture on inner ear structures

F 10/04: Lecture on inner ear functions

**#8 Inner ear to brainstem**

*Assignments: Read Chapters 7 and 8, study for fourth assessment*

**M 10/07:** Lecture on the auditory brainstem **Assessment #4 on outer to inner ear (50 pts)**

W 10/09: AT HOME Lecture on the auditory nerve

F 10/11: AT HOME Lecture on the Cortical Representation of Sound

**#9 Sound processing in the nervous system**

*Assignments: Read Chapter 9, and study for fifth assessment*

M 10/14: AT HOME Lecture on sound processing and representation

W 10/16: In-class review

F 10/18: HOME COMING HOLIDAY – NO CLASS

**#10 Introduction to reading research and psychophysical methods**

*Assignments: Review psychophysical methods and work on the research paper*

**M 10/21: Assessment #5 on the cochlea to cortex (150 points)**

W 10/23: Lecture on how to review a research paper

F 10/25: AT HOME Lecture on psychophysical methods

**#11 Loudness and pitch perception; research paper**

*Assignments: Read Chapters 10 and 13, and the research paper*

M 10/28: AT HOME Lecture on loudness perception

W 10/30: In-class review of possible research papers for reviewing

F 11/01: AT HOME Lecture on pitch perception

**#12 Binaural processes, localization, and categorical perception**

*Assignments: Read Chapter 12, at-home assessment, and work on research paper*

M 11/04: AT HOME Lecture on binaural processes and localization

W 11/06: **Writing assignment #2: AT HOME short essay responses to four questions on psychophysical procedures and sound processing (100 points) due Friday**

F 11/08: AT HOME Lecture on categorical speech perception

**#13 More on categorical perception, sound analysis**

*Assignments: Work on research paper*

M 11/11: VETERANS'S DAY – NO CLASS

W 11/13: More on categorical speech perception

F 11/15: AT HOME Lecture on sound analysis for speech

**#14 Developmental speech perception and speech perception by deaf listeners**

*Assignments: Study for sixth assessment*

M 11/18: Lecture on infant speech perception; **Writing assignment #3 due: Research paper (150 points)**

W 11/20: Lecture on developmental speech perception

F 11/22: AT HOME Lecture on speech processing by deaf listeners

**#15 Final week***Assignment: Study for sixth assessment*

M 12/02: In-class review

W 12/04: Assessment #6 on psychophysical methods and auditory/speech perception (150 points)

W 12/11: Writing assignment #4: Reflection paper due (50 points)

**ACADEMIC REQUIREMENTS AND GRADING****Assignments**

1. Lectures: This is a hybrid course. Some lectures will be in person and some will be recorded. The student is responsible for watching all lectures and taking notes. The student is responsible for communicating with the instructor if there is a problem with comprehension.
2. Reading: The student is responsible for reading all assigned material. Although all material for assessments will be covered in class, the reading material supplements class lectures.
3. Computational practice: The student is responsible for completing all assigned practices and checking answers against answer sheets provided. Similar problems will be found on exams.
4. Multiple-choice assessments: Six in-class assessments worth varying numbers of points will count for 60% of the student's grade. There are no makeup assessments, so students should ensure attendance in class on days when an assessment is scheduled. If you know you will not be able to attend a class in which there will be an assessment, let the instructor know at least a week ahead of time; you may take it before the scheduled date. If an unforeseen circumstance prevents you from attending a class with an assessment, you will be able to take a final comprehensive assessment for the same number of points to substitute for the missed assessment during finals' week.

Assessments will be taken on your personal laptops with Lockdown browser. Please be sure you know how to use this utility before the first assessment.

5. Written Papers: Four writing assignments will count for 40% of the grade. Rubrics will be provided online in plenty of time for the student to use. Due dates for these assignments are strictly enforced, so start preparing early. Ten points will be deducted for every day one of these assignments is late. You will be required to use Turnitin. Evidence of plagiarism, including the use of AI, will result in a grade of zero for that assignment. All papers will be submitted through Canvas in PDF format.

Thus, grades will consist of:

60%: Six assessments worth varying numbers of points

10%: Paper on sound in the environment

10%: Short answer essays on four questions related to psychophysical methods and perception

15%: Review Paper

05%: Reflection Paper

**Grading**

Letter Grade	A	A-	B+	B	B-	C+	C	D+	D	D-	F
Percentage	93-100%	90-92%	87-89%	83-86%	80-82%	77-79%	70-76%	67-69%	63-66%	60-62%	<60%
Grade points	4.0	3.67	3.33	3.0	2.67	2.33	2.0	1.33	1.0	0.67	0.0

Grades of *WF*, *I*, *NG*, and *S-U* each correspond with 0.0 grade points. For greater detail on the meaning of letter grades and university policies related to them, see the Registrar's Grade Policy regulations at:

<http://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

#### Policy Related to Required Class Attendance

Attendance is strongly encouraged. If you are unable to attend class you need to let the instructor know ahead of time. Under special circumstances attendance via zoom will be permitted. Students are responsible for accessing any information presented during a missed class.

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## STUDENT EXPECTATIONS, ROLES, AND OPPORTUNITIES FOR INPUT

### Expectations Regarding Course Behavior and Communication Guidelines

You are expected to attend class and participate. Each class member has a different perspective and sharing provides a more meaningful exchange of ideas and interest. As a professional you will often be required to voice your opinion and perspective. Be respectful to the ideas of peers or the instructor if they differ from your own beliefs or experiences.

### Academic Integrity

Students are expected to act in accordance with the University of Florida policy on academic integrity. As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge:

**“We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.”**

You are expected to exhibit behavior consistent with this commitment to the UF academic community. On all work submitted for credit at the University of Florida, the following pledge is either required or implied:

**“On my honor, I have neither given nor received unauthorized aid in doing this assignment.”**

It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For additional information regarding Academic Integrity, please see Student Conduct and Honor Code or the Graduate Student Website for additional details: <https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>  
<http://gradschool.ufl.edu/students/introduction.html>

Please remember cheating, lying, misrepresentation, or plagiarism in any form is unacceptable and inexcusable behavior

### Online Faculty Course Evaluation Process

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

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## Accommodations for Students with Disabilities

If you require classroom accommodation because of a disability, you must register with the [Disability Resource Center](#) within the first week of class or as soon as you believe you might be eligible for accommodations. The Disability Resource Center will provide documentation of accommodations to you, which you must then give to me as the

instructor of the course to receive accommodations. Please do this as soon as possible after you receive the letter. Students with disabilities should follow this procedure as early as possible in the semester. The College is committed to providing reasonable accommodations to assist students in their coursework.

#### Counseling and Student Health

Students sometimes experience stress from academic expectations and/or personal and interpersonal issues that may interfere with their academic performance. If you find yourself facing issues that have the potential to or are already negatively affecting your coursework, you are encouraged to talk with me and/or seek help through University resources available to you.

- The Counseling and Wellness Center 352-392-1575 offers a variety of support services such as psychological assessment and intervention and assistance for math and test anxiety. Visit their web site for more information: <http://www.counseling.ufl.edu>. On line and in person assistance is available.
- If you are feeling overwhelmed or stressed, you can reach out for help through the You Matter We Care website, which is staffed by Dean of Students and Counseling Center personnel. You Matter We Care website: <http://www.umatter.ufl.edu>.
- The Student Health Care Center at Shands is a satellite clinic of the main Student Health Care Center located on Fletcher Drive on campus. Student Health at Shands offers a variety of clinical services. The clinic is located on the second floor of the Dental Tower in the Health Science Center. For more information, contact the clinic at 392-0627 or check out the web site at: <https://shcc.ufl.edu/>
- Crisis intervention is always available 24/7 from:  
Alachua County Crisis Center:  
(352) 264-6789  
<http://www.alachuacounty.us/DEPTS/CSS/CRISISCENTER/Pages/CrisisCenter.aspx>

Do not wait until you reach a crisis to come in and talk with us. We have helped many students through stressful situations impacting their academic performance. You are not alone so do not be afraid to ask for assistance.

#### Inclusive Learning Environment

Public health and health professions are based on the belief in human dignity and on respect for the individual. As we share our personal beliefs inside or outside of the classroom, it is always with the understanding that we value and respect diversity of background, experience, and opinion, where every individual feels valued. We believe in, and promote, openness and tolerance of differences in ethnicity and culture, and we respect differing personal, spiritual, religious and political values. We further believe that celebrating such diversity enriches the quality of the educational experiences we provide our students and enhances our own personal and professional relationships. We embrace The University of Florida's NonDiscrimination Policy, which reads, "The University shall actively promote equal opportunity policies and practices conforming to laws against discrimination. The University is committed to non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information and veteran status as protected under the Vietnam Era Veterans' Readjustment Assistance Act." If you have questions or concerns about your rights and responsibilities for inclusive learning environment, please see your instructor or refer to the Office of Multicultural & Diversity Affairs website: [www.multicultural.ufl.edu](http://www.multicultural.ufl.edu)

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Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture **does not** include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.