

**Principles of Hearing Science
(SPLH 663)
Spring 2010 Syllabus**

Class Meetings:

Lecture: Tuesdays & Thursdays, 1:00-2:15; 2092 Dole

Instructors:

Instructor: Tiffany A. Johnson, Ph.D. CCC-A; tiffany-johnson@ku.edu; 864-4467

Office Hours: Tuesdays, 9-11am, Dole 3017

Additional times available by appointment

GTA: Megan Halter; email: mhalter@kumc.edu; 864-0630 (SPLH Dept. Phone)

Office Hours: Fridays, 9-11am, Dole 3000

Additional times available by appointment

Prerequisite/Co-requisite:

SPLH 120 Physics of Speech

SPLH 320 Introduction to the Neuroscience of Human Communication

Course Description

In this course, we will discuss concepts and principles relevant to normal hearing processes: gross anatomy, psychophysical methods, and basic subjective correlates of the auditory system.

Course Objectives

During this course, students will

1. Learn anatomy and physiology of the peripheral auditory system.
2. Learn basic psychophysical approaches to evaluating the auditory system
3. Learn fundamental aspects of auditory sensation and perception.

Course Materials

Required Readings:

1. Yost, W.A. (2007). *Fundamentals of Hearing: An Introduction (5th Edition)* New York: Academic Press.

On-line Resources:

1. Blackboard course website at <http://courseware.ku.edu>
 - Blackboard will be used extensively in this course. Students should check the course site frequently for announcements. In addition, all email from the instructor to students will be sent through Blackboard. Please be sure to check the email account associated with your Blackboard account. See the instructor if you have any questions about or problems with Blackboard.
 - When possible, lecture notes will be posted to Blackboard no later than 5 p.m. on the day before class. If this cannot be accomplished, a note to that effect will be posted and handouts will be brought to class.

Additional Resources:

1. Two additional textbooks have been placed on reserve in Anschutz Library. These textbooks will provide additional written material to supplement the material covered in

lecture and the Yost textbook. Reading these books is not required, but may be useful for providing additional explanation of the topics covered in this course. The textbooks are as follows:

- a. Gelfand, S.A. (2004). *Hearing: An Introduction to Psychological and Physiological Acoustics (4th Ed.)*. New York: Marcel Dekker.
- b. Hamill, T. & Price L.L. (2008). *The Hearing Sciences*. San Diego: Plural Publishing.

Requirements

1. Lecture Attendance

- Although attendance will not be taken in lecture, due to the large volume of material that will be covered, students are expected to attend each scheduled class period. If absent from lectures, the individual student is responsible for getting materials and information provided during the class.

2. Practice Problems (20 points; \approx 4% of course grade)

- Practice problems will be posted on Blackboard each Monday. Students will be required to complete these problems and bring their answers to class each Thursday.
- Students will be assigned to one of 6 groups. Each Thursday, 2 groups will be randomly chosen to hand in their assignments for grading. These assignments will be collected at the beginning of class and late assignments will not be accepted. *Late submission of the practice problems will only be allowed for extreme circumstances (e.g., excused absence for H1N1) and only by **prior** arrangement with the GTA (Megan Halter).*
- Group assignment will be posted in the Blackboard grade book. Students are responsible for checking (and remembering) their group assignment.
- Each set of practice problems will be worth a maximum of 5 points and each student will have the opportunity to earn a maximum of 20 points. Note: only submissions when your group is called will be counted toward your 20 points; it will not be possible to earn extra points for submitting additional problems.
- Graded assignments will be placed in a folder in the main SPLH office (Room 3001 Dole). Students can visit the folder anytime during normal business hours to pick up their assignments. In order to maintain confidentiality, students are encouraged to list their student ID number, but not their name, when turning in the assignment.
- Answers to the practice problems will be posted the week after they are due. Students are encouraged to consult these answers to check their work and to ask questions during lecture or office hours to clarify difficult topics.

3. Online Quizzes (100 points; \approx 22% of course grade)

- Twelve 10-point quizzes will be administered through Blackboard (see schedule for dates). These quizzes will provide students with sample questions that may be asked on exams, will help students identify key concepts covered in readings and lecture, and will provide extra practice applying course concepts.
- The scores on the lowest **2** quizzes will be dropped. In other words, only the best **10** quizzes will be included in the computation of your grade for this class.
- Quizzes will be posted by 6pm on Thursdays and must be completed by noon on the following Monday. Students should attempt to answer each question without referring to class notes or the textbook and then verify their answers before

submitting the answer. Once a quiz is started, it must be completed in the same session.

- If you have a computer problem that prevents you from completing the quiz, email Dr. Johnson at the time the problem occurs. If the computer problem is considered valid and verified by the time stamp on the email, you may be permitted to take the quiz after the deadline.
- *Beyond valid computer problems, there will be no opportunities to make-up or postpone weekly quizzes. Quizzes must represent a student's own independent work.*

4. Exams (330 points; ≈ 73% of course grade)

- Three exams are scheduled, **two unit exams** and a **cumulative final exam**. The exams will include primarily objective-style (multiple-choice, matching, labeling, true-false) exam questions, although some short answer questions may be included. Questions will include material covered in the readings and in class lectures and discussions. The two unit exams are each worth 100 points (≈ 22% of course grade). The **cumulative final exam** is worth 130 points (≈ 29% of course grade).
- Makeup examinations will only be allowed for extreme circumstances and only if arrangements have been made with the instructor **prior** to the examination.

Audio or Video Taping Lecture

Course materials prepared by the instructor, together with the content of all lectures and review sessions presented by the instructor are the property of the instructor. Video and audio recording of lectures and review sessions without the consent of the instructor is prohibited. On request, the instructor will usually grant permission for students to audio tape lectures, on the condition that these audio tapes are only used as a study aid by the individual making the recording. Unless explicit permission is obtained from the instructor, recordings of lectures and review sessions may not be modified and must not be transferred or transmitted to any other person, whether or not that individual is enrolled in the course.

Studying

Significant learning may start in the classroom but it should continue to grow outside the classroom when students become actively engaged with the material. In this course, you will be actively engaged with the material outside of class through completion of readings, quizzes, and study guides. As stated in the Faculty Senate Rules and Regulations (5.1.1) "One semester hour means course work normally represented by an hour of class instruction and two hours of study a week for one semester, or an equivalent amount of work. The concept may vary according to the level at which instruction is offered."

Academic Misconduct

Students are expected to observe all University guidelines pertaining to academic misconduct. As stated in the University Senate Rules and Regulations (2.6.1):

"Academic misconduct by a student shall include, but not be limited to, disruption of classes; threatening an instructor or fellow student in an academic setting; giving or receiving of unauthorized aid on examinations or in the preparation of notebooks, themes, reports or other assignments; knowingly misrepresenting the source of any academic work; unauthorized changing of grades; unauthorized use of University approvals or forging of signatures; falsification of research results; plagiarizing of another's work; violation of regulations or ethical

codes for treatment of human and animal subjects; or otherwise acting dishonestly in research.” Academic misconduct will not be tolerated and will be dealt with in accordance with all University rules and regulations.

Non-Academic Misconduct

The scope and content of the material included in this course are defined by the instructor in consultation with the responsible academic unit. While the orderly exchange of ideas, including questions and discussions prompted by lectures, discussion sessions and laboratories, is viewed as a normal part of the educational environment, the instructor has the right to limit the scope and duration of these interactions. Students who engage in disruptive behavior, including persistent refusal to observe boundaries defined by the instructor regarding inappropriate talking, discussions, and questions in the classroom or laboratory may be subject to discipline for non-academic misconduct for disruption of teaching or academic misconduct, as defined in the Code of Student Rights and Responsibilities (CSRR), Article 22, Section C, and the University Senate Rules and Regulations, Section 2.4.6. Article 22 of CSRR also defines potential sanctions for these types of infractions.

Accommodations

The staff of Services for Students with Disabilities (SSD), 135 Strong, 785-864-2620 (v/tty), coordinates accommodations and services for KU courses. If you have a disability for which you may request accommodation in KU classes and have not contacted them, please do so as soon as possible. Please also notify the instructor in writing (e-mail is acceptable) within one week of receiving this syllabus so that appropriate accommodations for this course can be discussed.

If a scheduled exam, lab exercise, or quiz is in conflict with a mandated religious observance, you must notify the instructor in writing (e-mail is acceptable) within one week of receiving this syllabus so that an alternative arrangement can be made in advance of the scheduled requirement.

Grading

The University has prescribed definitions for grades. The University Senate Rules and Regulations define grades in the following way:

- 1..1.2 The grade of A will be reported for achievement of outstanding quality
- 1..1.3 The grade of B will be reported for achievement of high quality
- 1..1.4 The grade of C will be reported for achievement of acceptable quality
- 1..1.5 The grade of D will be reported for achievement that is minimally passing but at less than acceptable quality

In this course, quality of achievement will be evaluated through online quizzes and exams. Grades will be based on the following:

Unit Exam 1:	100 points	
Unit Exam 2:	100 points	
Final Exam:	130 points	
Quizzes:	100 points	(10 points each, drop the lowest 2 quiz scores)
Practice Problems:	20 points	

The final grade for the course will be based on the following:

421-430	A	(94-100%)
403-420	A-	(90-93%)
390-402	B+	(87-89%)
376-389	B	(84-86%)
358-375	B-	(80-83%)
345-357	C+	(77-79%)
331-344	C	(74-76%)
313-330	C-	(70-73%)
300-312	D+	(67-69%)
286-299	D	(64-66%)
268-285	D-	(60-63%)
≤ 267	F	(<60%)

If your level of achievement during this course is falling short of your goal, you are **strongly encouraged** to consult with the instructor during office hours or by appointment to improve the quality of your learning of course material.

SPLH 663: <i>Tentative</i> Schedule		
Session	Topic	Readings
TH 1/14	Introduction to Course	• Ch. 1
*****Review of Acoustics*****		
TU 1/19	Review of Acoustics	• Ch. 2, 3, Appendices A & B
TH 1/21	Review of Acoustics (cont.) <i>Practice Problems #1 Due</i> <i>Quiz 1 posted by 6pm</i>	• Ch. 4, 5
QUIZ 1 DUE NOON, MONDAY 1/25		
TU 1/26	Anatomy and Physiology of the External/Middle Ear	• Ch. 6
*****Anatomy and Physiology of the Auditory System*****		
TH 1/28	Anatomy and Physiology of the External/Middle Ear (cont.) <i>Practice Problems #2 Due</i> <i>Quiz 2 posted by 6pm</i>	
QUIZ 2 DUE NOON, MONDAY 2/1		
TU 2/2	Anatomy and Physiology of the Inner Ear	• Ch. 7, Appendix F, Ch. 8
TH 2/4	Inner Ear (cont.) <i>Practice Problems #3 Due</i> <i>Quiz 3 posted by 6pm</i>	
QUIZ 3 DUE NOON, MONDAY 2/8		
TU 2/9	Inner Ear (cont.)	
TH 2/11	Inner Ear (cont.) <i>Practice Problems #4 Due</i> <i>Quiz 4 posted by 6pm</i>	
QUIZ 4 DUE NOON, MONDAY 2/15		
TU 2/16	Inner Ear (cont.)	

TH 2/18	EXAM 1	
NO QUIZ DUE 2/22		
TU 2/23	Auditory Nerve Physiology	Appendix E, Ch. 9
TH 2/25	Auditory Nerve (cont.) Practice Problems #5 Due Quiz 5 posted by 6pm	
QUIZ 5 DUE NOON, MONDAY 3/01		
TU 3/2	Auditory Nerve (cont.)	
TH 3/4	NO Class – Dr. Johnson at AAS Quiz 6 posted by 6pm	
QUIZ 6 DUE NOON, MONDAY 3/08		
*****Fundamentals of Psychoacoustics*****		
TU 3/9	Psychophysical Methods	• Appendix D
TH 3/11	Auditory Sensitivity: Absolute and Differential Thresholds Practice Problems #6 Due Quiz 7 posted by 6pm	• Ch. 10
TU 3/16	No Class – SPRING BREAK	
TH 3/18	No Class – SPRING BREAK	
QUIZ 7 DUE NOON, MONDAY 3/22		
TU 3/23	Auditory Sensitivity: Absolute and Differential Thresholds (cont.)	
TH 3/25	Auditory Sensitivity: Temporal Resolution Practice Problems #7 Due Quiz 8 posted by 6pm	
QUIZ 8 DUE NOON, MONDAY 3/29		
TU 3/30	Auditory Sensitivity: Temporal Resolution (cont.)	

TH 4/01	Masking & Combination Tones & Beats Practice Problems #8 Due Quiz 9 posted by 6pm	• Ch. 11; pp. 41-43, 59-61, 196-199
QUIZ 9 DUE NOON, MONDAY 4/05		
TU 4/06	Masking (cont.)	
TH 4/08	EXAM 2	
TU 4/13	Masking and Frequency Resolution	• Ch. 11 (cont).
TH 4/15	Masking and Frequency Resolution (cont.) Practice Problems #9 Due Quiz 10 posted by 6pm	
QUIZ 10 DUE NOON, MONDAY 4/19		
TU 4/20	Loudness and Pitch	• Ch. 13
TH 4/22	Loudness and Pitch (cont.) Practice Problems #10 Due Quiz 11 posted by 6pm	
QUIZ 11 DUE NOON, MONDAY 4/26		
TU 4/27	Localization and Binaural Hearing	• Ch. 12
TH 4/29	Localization and Binaural Hearing (cont.) Practice Problems #11 Due Quiz 12 posted by 6 pm	
QUIZ 12 DUE NOON, MONDAY 5/3		
TU 5/04	Abnormal Auditory System	• Ch. 16
TH 5/06	Practice Problems #12 Due Review	
<u>Friday</u> 5/14/10 FINAL EXAM 1:30 - 4:00 PM		