



**Course Syllabus**  
**Psychoacoustics and Theories of Hearing**  
**AUD 813**  
Fall 2011 Semester  
R 1:25 PM - 4:05 PM, Room: DHDC (Dole) 3049

**Contact Information**

Instructor: Dr. Kostas Kokkinakis  
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Office Hours: F 2:00 PM – 5:00 PM or by appointment

**Course pre-requisites, co-requisites and other restrictions**

Pre-requisites: AUD 697 and AUD 829

**Course Description**

This course offers an introduction to the basic concepts and theories of hearing. Principles of acoustics are introduced as they relate to human hearing. Basic perceptual hearing effects such as loudness, masking, and binaural localization are described in simple terms. The anatomy of the ear and the most important hearing functions are also explained.

**Learning Objectives and Outcomes**

- Understand how physics, anatomy and physiology, and psychology interact to produce auditory perception.
- Become familiar with basic human auditory capabilities including thresholds of audibility, frequency discrimination, intensity discrimination, and temporal acuity.
- Understand phenomena such as frequency selectivity, masking, localization, and the perception of complex sounds.
- Learn how hearing loss, age, and other disorders affect auditory capabilities

**Required Textbooks and Materials**

Moore, B.C.J. (2004). *An Introduction to the Psychology of Hearing*, 5th edition. London: Elsevier.  
Plack, C.J. (2005). *The Sense of Hearing*. Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

A few chapters from other books or other readings from the web. Chapters will be made available online and a more complete list of readings, including bibliographic information will be posted on Blackboard at a later date.

## Grading Policy

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

1. The grade of A will be reported for achievement of outstanding quality
2. The grade of B will be reported for achievement of high quality
3. The grade of C will be reported for achievement of acceptable quality
4. The grade of D will be reported for achievement that is minimally passing but at less than acceptable quality

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

A	(94-100%)
A-	(90-93%)
B+	(87-89%)
B	(84-86%)
B-	(80-83%)
C+	(77-79%)
C	(74-76%)
C-	(70-73%)
D+	(67-69%)
D	(64-66%)
D-	(60-63%)
F	(<60%)

## Assignments

4 lab reports	40%
2 section exams	30%
1 cumulative final exam	30%

## 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.”

## Labs

There will be 4 lab sessions in this course. The labs in this course are interdisciplinary and are designed to let students put to use the theory learned in class. Over the course of this class, you will complete hands-on exercises illustrating various psychoacoustic phenomena. All lab reports will be due at the

next lab session. All the lab sessions will use a software package called called Auditory Interactivities. This is installed in 3049 Dole as well as in 3008 Miller on the KUMC campus and you are not required to buy it. However, if you'd like your own copy, it is available at <http://sens.com/ai/>. A lab report based on these exercises will be due at the beginning of the following class period.

### **Section exams**

There will be 2 section exams and these will include multiple-choice and short-answer questions assessing your knowledge of course content and ability to apply formulas learned in class. Questions will include material covered in the readings and in class lectures and discussions. For each of these exams, you will be allowed to bring your calculator as well as one sheet of formulas. Each of the section exams is worth 15% of your grade. If you miss an exam for any reason, you will receive a 0 for the exam, and it will be dropped from your final grade. There will be no make-up exams.

### **Final exam**

The final cumulative exam takes place during finals week. The exact date for the final exam will be given at a later date. The final exam is cumulative and is worth 30% of your grade. For the final exam, you will be allowed to bring one sheet of formulas.

### **Blackboard**

Blackboard will be used extensively in this course. Students should check the course site frequently for any announcements. In addition, all email from instructors 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.

### **Lecture notes**

When possible, lecture notes will be posted to Blackboard no later than 6:00 pm on the day before class. When this is not feasible handouts will be brought to class.

### **Computer support**

This course assumes basic computer skills, such as creating and saving files. Students who are not confident about their computer skills are urged to seek out workshops offered by Academic Computing Services. See the instructor for more details.

### **Students with disabilities**

The staff of Services for Students with Disabilities (SSD), 135 Strong Hall, (785) 864-2620 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 as soon as possible. Please also see the instructor privately in regard to this course.

## **Academic integrity**

Academic dishonesty is a serious ethical violation and will not be tolerated. Cheating on any exam or plagiarism on any written assignment will be rewarded with a zero grade on that exam. Any exam or assignment that earns a zero due to academic dishonesty will not be dropped from final grade calculations. The College of Liberal Arts and Sciences Academic Misconduct policy may be found at <http://clas.ku.edu/documents/policy/clas-student-academic-misconduct-2009-04.pdf>. Note that for a grade change to be carried out (i.e., changing a grade to zero), paperwork must be filed with the College.

## **Attendance**

Since this is a graduate course, all students are expected to attend every class meeting. In the event of severe weather, a decision will be made by the instructor no later than 11:00 AM on the day of the class meeting. You will be contacted via email with the decision. If a class is cancelled due to weather, a make-up session will be held as soon as is feasible

## **Cell phones**

All cell phones and other wireless devices should be turned off before class.

## **Lab computers**

The computers in 3049 Dole are for academic use only. Any unauthorized computer usage during lab time will result in expulsion from the lab and a zero for that lab assignment.

## **Recording of lectures or labs**

All 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 record lectures, on the condition that these recordings are only used as a study aid by the individual making the recording. Also, 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. All 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 strictly prohibited.

<b>AUD 813 SCHEDULE</b>		
<b>SESSION</b>	<b>TOPIC</b>	<b>READINGS</b>
TH – 8/25	1. Psychoacoustics: definitions and scope	
TH – 9/1	2. Introduction to the auditory system	Plack Ch4
TH – 9/8	3. Frequency selectivity, masking and the critical band.	Moore Ch3, Plack Ch5
TH – 9/15	Lab Session 1: Signals and physical acoustics of hearing	
TH – 9/22	4. Loudness and intensity coding	Moore Ch4, Plack Ch6
TH – 9/29	5. Temporal resolution and discrimination	Moore Ch5
TH – 10/6	<b>EXAM 1</b>	
TH – 10/13	Lab Session 2: Monaural perception and masking	
TH – 10/20	6. Room acoustics and the Haas effect	
TH – 10/27	7. Binaural hearing, spatial hearing and localization	Plack Ch9
TH – 11/3	Lab Session 3: Binaural hearing	
TH – 11/10	8. Object perception and auditory scene analysis	Moore Ch8
TH – 11/17	<b>EXAM 2</b>	
TH – 12/1	Lab Session 4: Pattern perception	
TH – 12/8	Review Class	