



Course Syllabus
Speech-Language-Hearing 120
Physics of Speech

Spring 2017
T-R 08:00 AM - 09:15 AM, Room: Dole 2092

Contact Information

Instructor: Dr. Kostas Kokkinakis
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Office Hours: F 1:00 PM – 3:00 PM or by appointment

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Course pre-requisites, co-requisites and other restrictions

Pre-requisites: MATH 101 or 104 or equivalent.

Course Description

This course offers an introduction to the acoustic structure of speech intended for non-science majors. Emphasis will be placed on the methods and standards by which scientists measure and evaluate the physical characteristics of speech. Topics will include: simple harmonic motion, the propagation of sound waves, aerodynamic aspects of vocal fold vibration, resonance, digital speech processing, frequency analysis, and speech synthesis. Three class hours and one laboratory per week.

Learning Objectives and Outcomes

- Generation, propagation, and analysis of simple and complex sound waves
- Resonance and filtering
- The acoustic theory of speech production
- Acoustic characteristics of consonant and vowels
- The transmission of sound through the outer, middle, and inner ear

Required Textbooks and Materials

Mullin, W.J., Gerace, W.J., Mestre, J.P., and Velleman, S.L. (2003). Fundamentals of sound with applications to speech and hearing. Boston: Allyn & Bacon.

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

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|----------------------------|-----|
| 2 in-class quizzes | 30% |
| 10 lab reports | 30% |
| 1 midterm exam | 20% |
| 1 comprehensive final exam | 20% |

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.”

In-class quizzes

A total of 2 quizzes will be administered in class or through Blackboard (see schedule for dates). If it is decided that the quizzes are administered through Blackboard, they will be posted by 6:00 pm Thursdays and must be completed by 9:00 am on the following Tuesday. Obviously, the quizzes can be open-book. However, because the time to complete each quiz will be limited, it will help considerably to have learned the material well through class participation, reading, and homework. Students are expected to work independently on quizzes. In calculating final grades, each of the 2 quizzes is worth 15% of your grade. If you miss a quiz for any reason other than a computer problem, you will receive a 0 for the quiz, and it will be dropped from your final grade. **There will be no make-up quizzes.** If you miss a quiz for any reason, you will receive a 0 for the quiz, and it will be dropped from your final grade. In this case, your final grade will be calculated from the other quizzes and exams that you completed but you will lose 5% of your final grade for the quiz you missed. If you miss both quizzes you will lose 30% of your final grade. If you have a computer problem that prevents you from completing the quiz (if the quiz is online), email Dr. Kokkinakis at the time the problem occurs. If the computer problem is considered valid, and is verified by the time stamp on the email or voicemail, you may be permitted to take the quiz after the deadline.

Labs

There will be approximately 10 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. Most lab reports will be due at the next lab session. Exceptions to this are noted on the schedule below. Most lab sessions will use a software package called Multispeech. You will have access to this software during our lab meetings, during GTA office hours, and at the Eralm Garinger Academic Resource Center (EGARC) Computer Lab, which is located in 4074 Wescoe. Open hours for EGARC vary from week to week. You should call 864-4759 for availability. In calculating final grades, each of the 10 lab reports is worth 3% of your final grade. If you miss a lab for any reason, you will receive a 0 for the lab report, and it will be dropped from your final grade. There will be no make-up labs.

Midterm and Final Exams

Midterm and final exams: The exams will include (1) multiple-choice (2) short-answer numerical and (3) true-or-false questions to assess your knowledge of the course content and ability to apply concepts and 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 exam is worth 20% of your grade. There will be no make-up exams. If you miss the exam for any reason, you will receive a 0 for the exam, and it will be dropped from your final grade. In this case, your final grade will be calculated from the other quizzes and exams that you completed but you will lose 5% of your final grade for the exam you missed. If you miss both exams you will receive an automatic F.

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

The lecture notes will be posted to Blackboard no later than 6:00 pm on the day of 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.

Cell Phones

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

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.

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 the individual who is making the recording only uses these recordings as a study aid. 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.

Accommodations

The Academic Achievement and Access Center (AAAC) coordinates academic accommodations and services for all eligible KU students with disabilities. If you have a disability for which you wish to request accommodations and have not contacted the AAAC, please do so as soon as possible. They are located in 22 Strong Hall and can be reached at 785-864-4064 (V/TTY). Information about their services can be found at <http://www.access.ku.edu>. Please contact me privately in regard to your needs in this course.

Attendance

Attendance will be taken periodically throughout the semester.

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. A copy of this policy can be found here: <http://www.tinyurl.com/k92te5t>

| SPLH 120 SCHEDULE | | |
|--------------------------|---|-----------------|
| SESSION | TOPIC | READINGS |
| T – 1/17 | Getting to know each other. Course overview. | |
| R – 1/19 | Math pre-requisites. | |
| F – 1/20 | No Lab | |
| T – 1/24 | Introduction to waves (Part 1) | |
| R – 1/26 | Introduction to waves (Part 2) | |
| F – 1/27 | Intro Lab | |
| T – 1/31 | Intensity, loudness and sound pressure (Part 1) | |
| R – 2/2 | Intensity, loudness and sound pressure (Part 2) | |
| F – 2/3 | Lab 1 | |
| T – 2/7 | Intensity, loudness and sound pressure (Part 3) | |
| R – 2/9 | QUIZ 1 | |
| F – 2/10 | Lab 2 | |
| T – 2/14 | No Class | |
| R – 2/16 | | |
| F – 2/17 | Lab 3 | |
| T – 2/21 | Introduction to Hearing (Part 1) | |
| R – 2/23 | Introduction to Hearing (Part 2) | |
| F – 2/24 | Lab 4 | |
| T – 2/28 | Acoustic theory of speech production (Part 1) | |
| R – 3/2 | Acoustic theory of speech production (Part 2) | |
| F – 3/3 | Lab 5 | |
| T – 3/7 | QUIZ 2 | |
| R – 3/9 | No Class | |
| F – 3/10 | Lab 6 | |
| T – 3/14 | Noise and Hearing Loss | |
| R – 3/16 | Quiz review | |
| F – 3/17 | Lab 7 | |

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| T – 3/21 R – 3/23 | SPRING BREAK – No Classes this Week | |
| F – 3/24 | No Lab | |
| T – 3/28 R – 3/30 | MIDTERM EXAM Basics of signal processing | |
| F – 3/31 | Lab 8 | |
| T – 4/4 R – 4/6 | Midterm Exam Discussion No Class | |
| F – 4/7 | Lab 9 | |
| T – 4/11 R – 4/13 | Room Acoustics (Part 1) Room Acoustics (Part 2) | |
| F – 4/14 | Lab 10 | |
| T – 4/18 R – 4/20 | Acoustics of Vowels (Part 1) Acoustics of Vowels (Part 2) | |
| T – 4/25 R – 4/27 | Acoustics of Consonants (Part 1) Acoustics of Consonants (Part 2) | |
| T – 5/2 R – 5/4 | Review Class No Class | |
| TBD | FINAL EXAM | |