Course goals
In this course, we will study the physical manifestations of human speech sounds, in terms of their articulatory and acoustic properties. We will cover various types of speech sounds, emphasizing the measurement of the acoustic signal. The articulatory properties of these sounds will be mainly the focus of lectures, while acoustics will also be studied in a lab setting where you will learn how to use acoustic analysis software (Praat). Computer laboratory projects will include speech recording, analysis, experimental work, plotting vowel charts, speech synthesis and perception.

Programmatic Learning Goals for the B.S. In Cognitive Science
By the end of the Cognitive Science Major, students will...
1. Communicate scientific ideas and methods (i.e., discuss and solve scientific problems and/or provide data or arguments in support of a scientific hypothesis) clearly and effectively, both orally and in writing. (Gen Ed Goal 1)
2. Critically assess scientific research (primary source articles and/or lab reports), methods, and/or problem solving related to cognitive science, linguistics, and speech pathology. (Gen Ed Goal 2)
3. Synthesize multiple methodological or disciplinary research perspectives to analyze a scientific problem and make improvements that advance the issue, debate, or research.

Learning Goals for LING 253: Laboratory Phonetics
By the end of this course, students will be able to...
1. Communicate, clearly and effectively, key concepts and theories that are foundational to the field of Acoustic Phonetics – both orally and in writing. (Programmatic Goal 1; Gen Ed Goal 1).
2. Apply the scientific method of theory testing and analysis – i.e., related to how arguments and/or data support a scientific hypothesis or thesis (Programmatic Goal 2; Gen Ed Goal 2)
3. Integrate multiple methodological or disciplinary perspectives applied to a specific problem about cognition (Programmatic Goal 3; Gen Ed Goal 5)
4. Learn and think independently and collaboratively. (Gen Ed Goal 3)

Here are some of the topics to be covered:
- The range of sounds in human languages
- The International Phonetic Alphabet
- Anatomy of the vocal tract
- Articulatory properties of consonants and vowels
Acoustic components of speech
Acoustic properties of consonants and vowels
The source-iter model of speech production
Speech perception
Speech synthesis

Textbook and additional materials
Handouts and additional materials for lab sections and homework assignments will be distributed in class or via e-mail, or posted on the web.

Software and headset
We will be using the Praat software for acoustic analysis (free download at www.praat.org). There are versions for Windows, Mac, Linux, etc.

You will need to get a computer headset with headphones and a noise-canceling micro-phone in order to use Praat. Sennheiser and Plantronics make several good ones. They are available at Circuit City, Best Buy, and many other stores. The UD bookstore used to carry the Sennheiser PC30 for this course for around $25 - highly recommended!

Lectures
The lectures will include material not covered in the book. This means that it is very important for you to be present, pay attention, and take good notes. Feel free to ask questions during lecture whenever you do not understand something.

Course requirements and grades
You are expected to:
- attend the lectures and laboratory sections
- do all the readings and participate in class discussions
- complete 9 out of 10 lab assignments (if you complete all 10, the lowest-graded one will not be counted towards your final grade)
- pass 3 quizzes

Final grades. Your final grades will be computed as follows:
10% - attendance and participation
55% - lab assignments (9 out of 10)
35% - quizzes (3)

LETTER GRADES:
Letter Grades will be assigned as follows:
A 93-100  B+ 87-89  C+ 77-79  D+ 67-69  F below 60
A- 90-92  B  83-86  C  73-77  D  63-66
B- 80-82  C- 70-72  D- 60-62

Attendance. If you miss a class, you need to provide supporting evidence (e.g. a letter from your physician) to get full credit. Attendance is checked in every session.
Homework and Quizzes. You will always have some time during laboratory sections
to work on homework assignments on your own or as a group. However, each student will write them up and hand them in individually. These assignments will count toward 55% of your grade. Late homework will not be accepted unless some arrangement is made PRIOR to its due date. In addition to the homework assignments, there will be three quizzes distributed throughout the semester. These will count toward 35% of your final grade. If you are sick or have an emergency and have to miss class, YOU are responsible for finding out what the assignment was and handing it in on the normal due date (if you are unable to do so, verification is required from the Dean's office). No make-up quizzes will be offered unless so recommended by the Dean's office. Sending questions by e-mail also counts as participation!

**Schedule**

The attached schedule is subject to slight variation, so if you miss a class, be sure to check with me or a classmate. It is recommended that you do the readings for a given topic BEFORE the class dealing with that topic. This will make the lectures easier to follow, and you will be in a better position to ask questions about things that might not be clear to you.