

Brigham Young University  
Department of Audiology & Speech-Language Pathology  
ASLP 321 Speech Science – Winter 2006

**Instructor**

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Office hours: Tuesday 9-10:30 or by appointment

**Blackboard**

Blackboard will be a required component of the course. It will allow you to review lecture materials, take quizzes, submit assignments, post information about yourself, learn about other students in the class, and more.

**Prerequisites**

A good understanding of the material from ASLP 320 (speech anatomy and physiology) and Physics 167 (acoustics of music and speech) is absolutely necessary to your success in this course. If you did not take these prerequisites, please drop this class and take them before registering for this course next year. This semester's work will build on the foundation provided by the prerequisite courses and will not involve re-teaching of what you should already know.

**Course Objectives**

The goal of this course is to familiarize you with ways of objectively measuring clinically relevant parameters of speech and voice. Speech-language pathologists can serve their clients better and provide quantitative evidence of the effectiveness of their treatment if they are competent in applying modern technology in a clinical setting. The material in this course will cover more advanced research instrumentation as well as the basic clinical tools so that you will be better able to understand the papers published in our professional journals.

**Specific Objectives**

By the end of the course, you will be expected to demonstrate knowledge and competence in areas corresponding to ASHA's CAA standards in the Knowledge and Skills Acquisition (KASA) guidelines:

- Basic principles of speech production, including acoustic and physiological aspects and their measurement (standard III-B)
- Principles and methods of quantifying a variety of speech disorders, based on a sound grasp of the physiologic basis of normal function, with a goal of documenting treatment outcomes (standard III-D)
- The application of principles from the current research literature in measuring speech performance in preparation for participating in evidence-based practice (standard III-F)

## **Required Text**

Clinical Measurement of Speech and Voice. Second Edition (2000) R.J. Baken & R.F. Orlikoff. Singular – Thomson Learning.

### **Do not be alarmed by the size and complexity of this text!**

We will focus in class on the most salient sections. Please be aware that the winter 2006 semester is the last time we will be using this text, and its sell-back value in April will be very limited at the bookstore. You might consider sharing a text with someone else to minimize the cost.

## **Examinations**

The two mid-term exams will cover material presented in the first and second parts of the semester respectively. Exam 1 is available at the Testing Center on February 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> (ending at noon on the 8<sup>th</sup>). Exam 2 will be March 13<sup>th</sup>, 14<sup>th</sup>, and 15<sup>th</sup> (ending at noon on the 15<sup>th</sup>). The final will be cumulative. All examinations will be taken in the Testing Center.

## **Text Quizzes (on Blackboard)**

Ten open-book quizzes on the text will be given throughout the semester. They will cover material from the textbook that we will not have time to cover in detail in class. If you fail to take one by the due date, it will no longer be available, and you will have missed the credit for that quiz. If your web connection crashes while you are taking the quiz, please email me so that I can re-set the quiz to let you try again.

Text quiz deadlines (note the odd sequence of chapters):

Chapter Number	Take before midnight on:
1	Jan 13
2	Jan 20
4	Jan 27
3	Feb 3
6	Feb 10
7	Feb 24
5	Mar 10
8	Mar 17
9	Mar 24
10	Mar 31

## **Instructional DVDs in the LRC**

You will be required to watch 2 DVDs in the Lee Library's Learning Resource Center (LRC). There will be an on-line quiz for each DVD. I will provide the questions on Blackboard ahead of time so that you will know what to watch for in the DVDs. Please take the on-line quiz for each DVD by the due date in parentheses.

36R Human Speech Acoustics (end of February)  
35R Human Speech Source-Filter (end of March)

## **Software Projects**

Freeware programs will be provided for you to use on your own or another computer. There will be seven separate projects. Detailed instructions for each will be posted on Blackboard. Please submit these electronically via Blackboard's digital dropbox in either Word or Excel files as appropriate, by the due dates shown in parentheses.

1. Audacity – basic sound recording and editing (1/23/06)
2. TF32 F0 – extract fundamental frequency manually/automatically (2/6/06)
3. ESynth – create harmonic and non-harmonic series, analyze voices (2/20/06)
4. ESystem – experiment with synthetic source and filter components (3/6/06)
5. TF32 Spectral – analyze spectrograms for formants and timing (3/20/06)
6. Normal Aerodynamics – measure pressure and flow for soft/loud voice (4/3/06)
7. Pre/Post Treatment – analysis of voice patient data (4/17/06)

## **Learning your names**

I am going to try to learn all of your names, although with a big class, this may take a while. 5% of your grade will be dependent on the following three things. 1) either I or my assistant will video record you saying your name, where you are from, and one interesting thing about you. 2) you will need to post some information about yourself on Blackboard. Be creative here, but consider such things as where you come from, what motivated you to get into this field, what your career ambitions are, your family, your hobbies and interests, a favorite joke or story, etc. 3) you will need to look at the information posted by the 5 students who follow you alphabetically and send me an email describing something you learned about them. If the person who follows you on the list has not posted anything, just go on until you find the next 5 after you who have information available. The deadline for completing this assignment is the end of January.

## **Grading**

The two mid-term exams will be worth 15% each. The final will be worth 25%. The open-book quizzes (text chapters and DVDs) will contribute 15%. The seven software projects will contribute 25% in total. The final 5% will be given for the "*Learning your names*" exercise.

I do not grade on a curve. The following grid will determine your letter grade for this course.

95	A	77	C
92	A-	74	C-
89	B+	70	D+
86	B	65	D
83	B-	60	D-
80	C+		

### **The Honor Code**

As a student at Brigham Young University, you are expected to uphold the highest standards of integrity. With regard to exams and quizzes, this means that you work entirely alone, and agree not to disclose to others any information about the exam or quiz you may have already taken, which they are about to take.

### **Students With Disabilities**

Brigham Young University is committed to providing a working and learning atmosphere that reasonably accommodates qualified persons with disabilities. If you have any disability, which may impair your ability to complete this course successfully, please contact the Services for Students with Disabilities Office (422-2767). Reasonable academic accommodations are reviewed for all students who have qualified documented disabilities. Services are coordinated with the student and instructor by the SSD Office. If you need assistance or if you feel you have been unlawfully discriminated against on the basis of disability, you may seek resolution through established grievance policy and procedures. You should contact the Equal Employment Office at 422-5895. D-382 ASB.

### **Preventing Sexual Harassment**

Title IX of the Education Amendments of 1972 prohibits sex discrimination against any participant in an educational program or activity receiving federal funds. The act is intended to eliminate sex discrimination in education. Title IX covers discrimination in programs, admissions, activities, and student-to-student sexual harassment. BYU's policy against sexual harassment extends not only to employees of the university but to students as well. If you encounter unlawful sexual harassment or gender based discrimination, please talk to your professor; contact the Equal Employment Office at 422-5895 or 367-5689 (24-hours); or contact the Honor Code Office at 422-2847.

### **Course Alignment with the Aims of the College**

The Conceptual Framework Aims of the David O. McKay School of Education (MSOE) are, 1) Embrace and Apply the Moral Dimensions of Teaching, 2) Demonstrate

Academic Excellence, 3) Model Collaboration, and 4) Act with Social Competence. As part of the School of Education, the Department of Audiology and Speech-Language Pathology provides coursework that is consistent with the conceptual framework of the college. This course addresses the issue of academic excellence by providing a thorough grounding in both theory and application of technology in the assessment of normal and disordered speech production. As a future professional in the field of speech-language pathology or audiology, you will need to collaborate with other professionals, often interpreting for them the data that you collect with the instrumentation discussed in this course. Such collaboration, in order to be effective, demands a high level of social competence.

## Class Schedule

(subject to change... this is just the plan ☺)

		<b>Topic</b>	<b>Text</b>	<b>Read</b>	<b>Skip</b>
Jan	9	introduction to speech measurement	Ch1	all	none
	11	analog electronics	Ch2	6-10; 31-34	11-30
	16	holiday - no class			
	18	basic instruments	Ch4	54-81	82-91
	23	basic instruments	Ch4		
	25	digital systems	Ch3	36-40;50	41-49
	30	digital systems	Ch3		
Feb	1	fundamental frequency	Ch6	all	none
	6	exam 1 (take by noon on 8 <sup>th</sup> )			
	8	fundamental frequency	Ch6		
	13	fundamental frequency	Ch6		
	15	speech acoustics	Ch7	all	none
	20	holiday - no class			
Tue	21	speech acoustics	Ch7		
	22	speech acoustics	Ch7		
	27	speech acoustics	Ch7		
Mar	1	speech intensity	Ch5	all	none
	6	speech intensity	Ch5		
	8	air pressure	Ch8	all	none
	13	exam 2 (take by noon on 15 <sup>th</sup> )			
	15	air pressure	Ch8		
	20	air flow and volume	Ch9	all	none
	22	air flow and volume	Ch9		
	27	laryngeal function	Ch10	all	none
29	laryngeal function	Ch10			
Apr	3	laryngeal function	Ch10		
	5	velopharyngeal function	Ch11	all	none
	10	electromyography	Ch12	all	none
	12	palatometry, articulatory kinematics	Ch12		
	17	respiratory measurements	Ch12		