

## **CMSD 4120 / 6120**

# **FUNDAMENTALS OF SPEECH AND VOICE SCIENCE - I**

(Soon to be formally known as: **Speech Anatomy & Physiology and Speech Science**)

**FALL 2003. M,W,F 9:05 – 9:55 AM MILLER PLANT SCIENCES, RM. 2401 (3 HRS)**

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**Office Hours:** Monday, 1 pm – 3 pm and Wednesday, 2:30 pm – 4:30 pm

### **COURSE OVERVIEW**

Fundamentals of Speech and Voice Science - I is a lecture-style course designed to provide the student with a fundamental and thorough understanding of the basic scientific principles and related anatomical substrates associated with speech production, perception, and physiology. Specific topics covered during the course include the structural organization (anatomy), function (physiology), biomechanical, acoustical, and mathematical properties of the human vocal tract. Select non-speech behaviours will also be discussed, including gestures, chewing, and swallow. There are no pre-requisites for this course, although a good working knowledge of human biology, physics, and mathematics is always useful. CMSD 4120 is also cross-listed with LING 4120, through the linguistics department.

### **COURSE OBJECTIVES**

- Enjoy what you are learning and become an active participant in the learning process.
- Understand and use the scientific method to analyze, synthesize and evaluate the operation of the human vocal tract and appreciate the relevance of these scientific principles to functional vocalization and speech in clinical practice.
- Ability to comprehend the basic underlying principles of anatomy and physiology along with the use of standard terminology.
- Demonstrate the ability to memorize, visually identify, and verbally describe the location and function of all anatomical structures and systems, along with their substructures, deemed important for speech and vocalization.
- Appreciate the 3-D structure of the human vocal tract and how different areas of the system are related to one another during normal speech and vocalization.
- Be able to analyze and describe the selection, sequencing, and timing of articulatory systems to produce intelligible speech.
- Be able to describe the selection and sequencing of systems involved in non-speech behaviours such as chewing, swallowing, and facial gestures.

- Intuitively understand and synthesize together the mathematical and physical principles of vocalization with knowledge of the structural components of the human vocal tract.
- Appreciate the comparative diversity of human vocal tract physiology as it pertains to vocalization in different age group populations, across gender, and within select disordered subject groups.
- Understand and demonstrate the ability to analyze, synthesize, and evaluate the importance of relations that exist between vocal tract muscular systems, and vocal tract structural tissues (cartilage, bone, connective).
- Be able to analyze and evaluate the importance and relation between muscular subsystems of the human vocal tract that work to produce changes in vocal tract shape, sound pressure, and airflow during speech
- Be able to describe and evaluate a constellation of tools and techniques that are used today to investigate normal and disordered speech.
- Be able to synthesize your knowledge of (1) normal anatomy and physiology of the human vocal tract and (2) your understanding of quantitative analyses methods to appreciate more fully the pathophysiology of speech and non-speech disorders.

Please feel free to drop-in and visit with me or the GA during posted office hours in order to ask questions, seek tutoring, or discuss any concerns regarding the class. Questions via e-mail are also very much welcomed. If you cannot attend any of the posted office hours, other meeting times may be scheduled with the instructor by appointment only.

### **WebCT & LISTSERVS**

- WWW: Open your preferred web browser and go to the following URL: <https://webct.uga.edu/> . You must have the new “**UGA MyID**” to access WebCT. For those students who do not have a “UGA MyID” you can quickly create one at <http://www.uga.edu/myid> .
- Listserv: Check your e-mail frequently for class announcements from our course listserv. ([speechphys-L@listserv.uga.edu](mailto:speechphys-L@listserv.uga.edu)). I use this form of communication A LOT!!!

### **REQUIRED TEXTBOOKS & SUPPLIES**

1. Ferrand (2001). **Speech Science: An Integrated Approach to Theory & Clinical Practice**, Allyn & Bacon Publishing.
2. Zemlin, W.R. (1998). **Speech and Hearing Science: Anatomy and Physiology, (4<sup>th</sup> edition)**. Allyn & Bacon Publishing. (Same book from CMSD 4120)
3. Selected readings on reserve in OIT (2nd Floor Aderhold). Copies of these readings will also be posted on the door of my office. Please copy these readings and return the masters to their point of origin (OIT or my office door). Please be courteous and return all originals to their point of origin so that your classmates can use them too.
4. Internet connectivity and access.

- Lecture outlines will be available for you to download from our course website. The purpose of these outlines is to provide you some help in following the lecture and improving your real-time comprehension of the material. Outlines will be available the afternoon before a scheduled lecture. I will announce when they are posted too.
- **A word of advice:** The lecture outlines constitute a useful aide (hopefully) for lectures and are not a substitute for your class attendance. The outlines are just that, “outlines”. They do not contain all of the material presented during a given lecture.

## **GRADING & ASSESSMENT PROCEDURES**

### **Exams**

- A total of 5 exams will be administered, each worth 50 points. All exams will typically include the following types of questions; multiple choice, fill-ins, matching, brief essays, true-false, labeling figures, some simple figure or flowchart drawing, etc. Exam questions will be derived from lectures, outlines, textbook readings, and any outside readings that are assigned. You will have the full class period to complete an exam.
- As for you're your final exam, there is none (YaHoo!). BUT (Oh no, here it comes...), Exam 5 will be administered during your “official” final exam time (December 12, 2003 8:00 - 11:00 am) so it technically constitutes your final, BUT the test will be exactly like the previous 5 and not cumulative (Every one can breathe now...Whew).

### **Homework Assignments**

- Five 15 point homework assignments will be administered throughout the semester. You will be allowed to drop your lowest 2 HW assignment grades. The final HW grade will be the total points of your three best HW's. HW assignments will consist of computational problem sets, written responses to questions, applied experiments and various other assignments that fit with the topic currently under discussion
  - The assignments are designed to help you practice and review important concepts and information. They are an important pedagogical tool and help prepare you for the exams. Please take them seriously.
  - Homework assignments are to be completed individually and only using your lecture notes, WebCT outlines and assigned readings (see **\*Note** below).
  - Homework assignments will be due the next class meeting after each is assigned, but this is flexible.
  - Late assignments will not be accepted.
- ❖ **Note:** Submission of your completed homework to me signifies that the academic work presented in your responses represents your individual effort and thought with no assistance from any out-of-bounds sources.

### **Class Participation**

- Up to **5** points are available based on your level and degree of class participation.
- By participation I mean the following:

- Regular class attendance and being on time.
- Keeping focused for the full 55 minutes of class.
- Asking good questions in class that further the topic we are talking about,
- Being prepared for class each day by doing your readings and reviewing your notes.
- Attending any scheduled labs.
- Turning stuff in on time.
- Etc, etc...

## EXAM DATES

<b>Exam 1</b> (50 pts)	September 8 <sup>th</sup>
<b>Exam 2</b> (50 pts)	September 29 <sup>th</sup>
<b>Exam 3</b> (50 pts)	October 17 <sup>th</sup>
<b>Exam 4</b> (50 pts)	November 10 <sup>th</sup>
<b>Exam 5</b> (50 pts)	December 12 <sup>th</sup> - 8 am -11 am

## FINAL

## GRADES

- The course is graded on an linear, whole-number point scale rather than on percentages. Please do not translate your point score into a percentage. The main reason I use a point scale is to avoid the dreaded “*rounding up or down*” issue associated with percentages and decimals.
- As such, your final grade for this course will be based on a grand total of **300 points** summed across all of your exam scores, the research paper, your participation score, pop quiz score, and the final exam. Point totals will be translated into letter grades as follows:
  - ❖ 270-300 pts = A
  - ❖ 240-269 pts = B
  - ❖ 210-239 pts = C
  - ❖ 180-209 pts = D
  - ❖ 000-179 pts = F

### **A Special Note for 6120 Students**

- Graduate students and/or anyone enrolled in the graduate section of this course should plan to meet with me the first or second week of classes to discuss your “extra” project required by the University Graduate School and how the project will be evaluated.

### **COURSE POLICIES SPECIFIC TO THIS CLASS**

- Those students with documented special needs (such as cognitive, learning or physical handicaps), please see me during the first few days of class so that we may discuss your case and plan any modifications to the course that may be necessary.
- A grade of C or better is required in order for this course to count toward your completion of an undergraduate degree in Communication Sciences and Disorders.
- Midpoint withdrawal deadline is Tuesday, October 14, 2003.
- There are no extra-credit assignments provided, even if your final course score is 1 point away from a breakpoint on the grading scale.
- Attendance at all lectures is expected and will benefit you greatly come exam time.
- You are responsible for obtaining copies of any class notes or handouts, etc, that were presented and distributed on a day you were absent. Typically extra copies of handouts can be found in one of the plastic file holders on my office door.
- College level organization, grammar, punctuation, syntax, etc. are expected from all students on any form of writing assignment.
- Finally, please be sure to turn off the ringers on your cell phones. Instead, program your cells for vibration mode.

### **ILLNESS AND ABSENSE POLICY**

- At the discretion of the instructor, make up exams will be given in cases of documented illnesses and/or emergencies.
  1. In case you are suddenly ill or have an emergency, please let me know your status within 48 hours of the missed quiz or exam date by e-mail or in person. Do not leave a voice message on my phone, please.
  2. Any notification after the 48 hour period will not be accepted and you will not be able to make up the missed exam.
- Make up exams will be provided for students who observe religious holidays.
  - To make up an exam, you must inform me of your absence 48 hours prior to the exam date. We can arrange a mutually agreeable time for your make up.
  - If you inform me of your observance after the exam though, you will not be allowed to make up the exam unless you have a tremendously good excuse. Accepting this excuse is up to the discretion of the instructor.

### **ACADEMIC HONESTY & INFORMATION**

- The following information is not meant to scare you but rather to inform you, so you and I can avoid misunderstandings that pertain to your work.
- Part of your training in CSD involves understanding ethics and ethical behaviour in practice and research. Information on academic honesty is the first step toward this goal.
- As a member of this class and a student at UGA, you are honor bound to observe and demand academic honesty and integrity from yourself and those around you.
- The University of Georgia's Policy on Academic Honesty will be STRICTLY followed for this course. In summary, all students are responsible for maintaining the highest standards of honesty and integrity in every phase of their academics. The penalties for academic dishonesty are severe and *ignorance is not an acceptable defense*. All students are responsible for informing themselves about UGA's academic honesty standards before performing any academic work. You can familiarize yourself with the UGA Academic Honesty Policy by referring to the following web page for details:  
[http://www.uga.edu/ovpi/academic\\_honesty/academic\\_honesty.htm](http://www.uga.edu/ovpi/academic_honesty/academic_honesty.htm)
- As recommended by UGA's Office of Vice President for Instruction, a few examples of academic dishonesty specific to this course are offered:
  - Copying another person's answers during a written exam.
  - Flagrant plagiarism of material or ideas for submitted written assignments.
  - Knowingly ignoring someone else's dishonesty by not reporting the transgression.
- **If you are unclear if something you are doing is proper or not, please ask me rather than guessing.**
- Please refer to your current student bulletin and the Fall 2003 Schedule of Classes for details about drop/add, course withdrawal policies and procedures, and any other general UGA academic policies.

### **MY EXPECTATIONS OF YOU**

- Always remember: "Learning is fun" and "Knowledge is good".
- I will be expecting you to
  - think about the information that is presented to you,
  - think about the context in which that information was presented to you,
  - discover for yourself and
  - be able to explain clearly how that information fits together with other things we are learning.
- I am not just expecting you to memorize facts; I am expecting you to learn to
  - read differently,
  - write differently,
  - think differently,
  - organize your time differently, and
  - act differently
- Challenge yourselves to integrate information as much as possible across **ALL** of your CMSD classes.

- ASK QUESTIONS IN CLASS. I cannot emphasize this suggestion enough. There is NO such thing as a stupid or silly question, so..... Please ask if something related to the lecture is not clear in your mind. I'm a pretty nice fellow (although my kids think I'm wacky) and I won't yell at you or tear your head off for asking questions.
- Ask “questioning” types of questions not just of your instructors but of everything.
  - Be a five year old again...Always ask, “Why? & How?”
  - Written information is not true or good simply because it's been written down.
  - Ask yourself questions like
    - What connections does my instructor want me to see between this material and what other material?
    - How could I explain the importance of this material to a friend?
    - What questions would I ask the researcher or author if I could talk to her/him directly?”

### **SOME FRIENDLY SUGGESTIONS TO HELP YOU SUCCEED**

- The #1 tip is.....Take advantage of my stuttering to finish writing notes or to reflect upon something I just said. Since I have built-in pauses (and some of them can be long), you might as well use them! No sense wasting a good thing.
- Use your course syllabi – read it thoroughly and refer to all parts of it often, not just the list of dates and assigned stuff.
  - The syllabus includes lots of useful and necessary information about the class, including such things as grading rubrics, hints for success, and explicit and implicit information about the instructor's assumptions and expectations.
- Download the notes from WebCT and review them prior to class.
- Always be prepared and ready to answer questions during any given class.
- Do the readings and do them before lecture. This way the stuff I lecture on isn't brand new to you. It is much easier paying attention to a lecture if you have some basic familiarity with what the professor is talking about.
- Actively take notes in class. Don't rely on the outlines as your only source of lecture information. Like I said before, the key word here is “outline”, ...these handouts are simply a skeleton of the lectures. Your job during class is to elaborate upon the outlines.
- Practice active reading strategies. By active reading, a person takes:
  - written notes while reading,
  - summarizes notes into paragraph form,
  - creates margin notes in their textbooks,
  - merges lecture notes with reading notes,
  - seeks ancillary information with other sources, etc.
- Pace yourselves by trying to study your anatomy a little everyday in order to keep it fresh in your mind (Trust me, it will be very difficult to cram all this stuff the night before an exam – like they say...‘been there, done that ☺. )

- Develop study groups to help quiz each other and fill-in pieces of information from lecture or the readings that you may have missed....plus it's a nice way to get to know others in the class.
- Review past material and notes before tackling new information. This course is VERY additive in that your understanding of new concepts depends strongly on your understanding of past material.
- Relate new information as much as possible to something you've already learned.
- Draw lots of your own pictures and flow charts.
- Make up your own analogies and real-world examples to help you remember the material as you study. (These tend to stick with you for the long haul)
- **Last, (but not least), if your having trouble with the content, get help from me, the GA or one of you classmates ASAP! Please, don't wait !**
- **Be sure to visit my office hours if you are confused, need further explanations, or simply want to chat about things** (like baseball, Indy car racing, Mahler, baby juggling, the fine art of cleaning Pop Tarts out of you VCR)

### **WEB-SITES FOR HELP AND INFORMATION**

- CMSD Home Page: <http://www.coe.uga.edu/csd/>
- Login to my WebCT: <https://webct.uga.edu/>
- Student Resources for WebCT: <https://webct.uga.edu/www/student.html>
- Browsers configuration information: <http://webct.uga.edu/www/helplets/browser/>
- WebCT Student FAQ: <http://webct.uga.edu/www/student/guide/>
- Student Electronic Services: <http://www.uga.edu/ses/>
- Division of Academic Assistance: <http://www.uga.edu/daa/>
- Important Dates for Students: <http://www.reg.uga.edu/or.nsf/public/acalendar>
- UGA Libraries: <http://www.libs.uga.edu/>
- Research Central @ UGA: <http://www.libs.uga.edu/researchcentral/>
- University Computing and Networking Services: <http://www.uga.edu/ucns/>
- Computer Lab Sites @ UGA: <http://www.uga.edu/ucns/sites/>
- Lastly, it's important to have fun and play too: <http://www.uga.edu/recsports/>

## **TOPIC SCHEDULE**

- Topic dates are flexible and strongly influenced by the pace of the class.
- The course syllabus is a general plan for the semester and deviations announced to the class by the instructor (either verbally, through listserv e-mails and/or through postings on the course website) will likely be necessary as the semester progresses, especially since I am developing a new structure for the content.
- Consult the course website frequently for updates and or announcements
- Specific pages to read for each chapter will be posted on the course website and/or announced in class.
- Outside readings (if they are assigned) can be found on reserve in OIT (2<sup>nd</sup> Floor Aderhold). Additional master copies of the readings will be posted to my office door. Please return the master copies of the readings to their place of origin after you have xeroxed them, as a courtesy to you fellow classmates.
- Spring semester topics will continue from the point that we left off during the FALL.
- Use the topic schedule on the following page to write down and note your reading assignments.

Fall Semester Topics	Write your reading assignments here.
❖ Getting to know your Vocal Tract.	
❖ The Scientific Method and How to study for this class: Ideas and Strategies	
❖ What is a model vs. a theory?	
❖ Information in the speech signal	
❖ Universality of Sound	
❖ Basic Elements of Anatomy.	
❖ Some basic neuroscience that you'll need to you need to know to understand muscle contraction. <ul style="list-style-type: none"> <li>❖ Terminology</li> <li>❖ Gross structure of the human nervous center</li> </ul>	
❖ Muscle physiology and biomechanical principles of movement	
❖ Respiratory Anatomy	
❖ Principles of Pressures & Flow	
❖ Respiratory Physiology	
❖ Basic Physics of Sound	
❖ Waves, Intensity & Simple Harmonic Motion	
❖ Laryngeal Anatomy	
❖ Laryngeal Physiology	
❖ Speech Aerodynamics	