

# **CMSD 4120 (3010)**

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

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

**FALL 2004      M,W,F    9:05 – 9:55 AM      ADERHOLD 119      (3 HRS)**

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### **COURSE OVERVIEW**

Fundamentals of Speech and Voice Science - I is a lecture-style course designed to provide the student with a fundamental, integrative and thorough understanding of the basic scientific principles and related anatomical structures associated with speech and vocalization. Specific topics covered during this course include the structural organization (anatomy), function (physiology), biomechanical, acoustical, and mathematical properties of vocal tract systems, up through and including the laryngeal system. 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** (ASHA Standard met in parentheses)

- First and foremost...Enjoy what you are learning and become an active participant in the learning process.
- Demonstrate the ability to comprehend, conceptualize, and integrate the basic underlying principles of anatomy and physiology. (III-A)
- Demonstrate comprehension and correct use of standard anatomical terminology. (III-A)
- 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. (III-B; III-D)
- 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. (III-B)
- 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. (III-B)

- Be able to analyze and describe the selection, sequencing, and timing of articulatory systems to produce intelligible speech. (III-C)
- Be able to describe the selection and sequencing of systems involved in non-speech behaviours such as chewing and facial gestures. (III-C)
- Intuitively understand & synthesize together the mathematical & physical principles of vocalization with knowledge of the structural components of the human vocal tract. (III-B)
- 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. (III-D)
- 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). (III-B; III-C)
- 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. (III-B; III-C)
- Be able to describe and evaluate a constellation of tools and techniques that are used today to investigate normal and disordered speech. (III-F)
- 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. (III-D)

### **WebCT & LISTSERVS**

- WWW: Open your preferred web browser and go to the following URL: <https://webct.uga.edu/> . You must have the “**UGA MyID**” to access WebCT. For those students who do not have a “UGA MyID” yet, 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.
3. Selected readings will be on reserve in the Office of Instructional Technology [OIT] (2<sup>nd</sup> Floor Aderhold).
4. Internet connectivity and access.

- Lecture outlines will be available for you to download from our course website on WebCT.
  - 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 generally be available the evening before a scheduled lecture or lecture series.
  - I will announce when they are posted too, usually through the class listserv.
- **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 anywhere near all of the material (lecture or graphics) presented in class.**
  - I’m a big advocate of physically writing notes during class.
  - I’ve always found that those who physically write notes tend to do better than average.

## **GRADING & ASSESSMENT PROCEDURES**

### **Exams**

- A total of **five 50 point exams** will be administered. 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 my lectures, outlines, textbook readings, and any outside readings that are assigned. You will have the full class period to complete an exam.
  - BTW, My general answer to the most often asked question, “*What’s on the exam?*” ...is usually, ... “*Everything*”.
    - Because speech is so interactive and complex, all the information we do in class is equally important, but in different ways and to differing degrees.
    - This course is VERY additive in that your understanding of new concepts depends strongly on your understanding and retention of past material.
    - You have to know it all to be able to understand the dynamics of the system.
- As for 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 15, 2004 8:00 - 11:00 am) so it technically constitutes your final, BUT the test will be exactly like the previous 4 and not cumulative (Every one can breathe now...”*Whew, that was close*”).

<b>Exam 1</b> (50 pts)	September 10 <sup>th</sup>
<b>Exam 2</b> (50 pts)	October 1 <sup>st</sup>
<b>Exam 3</b> (50 pts)	October 22 <sup>nd</sup>
<b>Exam 4</b> (50 pts)	November 19 <sup>th</sup>
<b>Exam 5</b> (50 pts)	December 15 <sup>th</sup> – 8 am – 11 am

*\* Exam dates are subject to change at the discretion of the instructor.*

### 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 generally be due the next class meeting after it is assigned, but this is flexible and we can negotiate this point between all of us.
- Late assignments (after we have set a due date) 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 for class participation** are available for you to earn.
- 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 & reviewing your notes.
  - Attending any scheduled labs.

- Turning stuff in on time.
- Cheering for the Yankees, and making nasty, disparaging remarks about the Mets, etc, etc... (just kidding - ☺)

## **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 try and avoid the dreaded “*rounding up or down*” issue associated with percentages.
- 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**

- Anyone enrolled in the graduate section of this course (6120) should plan to meet with me the first or second week of classes to discuss the details of an “extra” project required by the University Graduate School and how the project will be evaluated. Project selection will be negotiated between us.
- The project will be worth a maximum of 50 pts. Your project grade will be added to your other course grades. Your final course grade will be calculated out of 350 points. Please see me for an exact breakdown of point levels.

## **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 a degree in Communication Sciences and Disorders.
- Midpoint withdrawal deadline is Friday, October 15<sup>th</sup>.
- There are no extra-credit assignments provided, even if your final course score is 1 point away from a breakpoint on the grading scale.
  - I recognize that it is difficult to be 1 point shy of the next highest grade, but please do not ask for any final grade adjustments. In all fairness to everyone enrolled, ...what I do for one person, I must do for all.
- Attendance at all lectures is expected from everyone.

- You are responsible for obtaining copies of any class notes or handouts that were presented and distributed on a day you were absent. Typically, extra copies of handouts can be found in one of the plastic bins on my office door.
- Finally, please be sure to turn off the ringers on your cell phones. Instead, program your cells for vibration mode.

### **ILLNESS AND ABSENCE POLICY FOR EXAMS**

- At the discretion of the instructor, make up exams will be given in cases of documented illnesses and/or emergencies. Documentation must be in the form of an excuse slip or written note from the Health Center or your personal physician, respectively.
- In case you are ill or have an emergency, please let me know your status within 48 hours after the missed exam date by e-mail or in person. Please, do not leave a voice message on my phone. I'm really bad about checking voice mail.
- Any notification after the 48 hour period will not be accepted and you will not be able to make up the missed exam. Please don't let this happen.
- Make up exams will also 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 religious 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 and providing a makeup exam is up to the discretion of the instructor.

### **ACADEMIC HONESTY & INFORMATION**

- Let me start off by saying that 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:

- Using references or detailed information from the internet without properly crediting or citing original authorship, or passing information off as your own original work.
- Working collaboratively with other students to develop and complete a homework. In other words, two or more students working together to come up with a single argument that each person then uses for their own assignment.
- Knowingly ignoring someone else's dishonesty by not reporting the transgression.
- Please refer to your current student bulletin and the Fall 2004 Schedule of Classes for details about drop/add, course withdrawal policies and procedures, and any other general UGA academic policies.

## **EXPECTATIONS**

- Always remember
  - "Don't study harder,...*Study smarter!*".
- Take responsibility for your own learning. Be proactive by:
  - Seeking out help early when something is not clicking,
  - Introducing yourself to me and being sure to come to office hours,
  - Seeking out study partners,
  - Brainstorming different ways for you to take notes in class or study for assignments,
  - Challenging yourselves to integrate information as much as possible across **ALL** of your CMSD classes.
- I will be expecting you to:
  - Think about and integrate the information we are working on, not simply memorize it.
  - Evaluate the context in which that information was presented to you,
  - Be able to explain clearly how information fits together with other things we are learning.
- 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 really silly) and I won't yell at you or sic my Uncle Vinnie from New Jersey on you for asking questions.
- You will be expected to have mastery of anatomical sites, labels, terminology, and basic principles of those topics we have previously covered.
  - This course is VERY additive in that your understanding of new concepts depends strongly on your understanding and retention of past material.
- College level organization, grammar, punctuation, syntax, etc. are expected from all students on any form of writing assignment.
- I hope that when you finish this course you are,
  - Reading differently,
  - Writing differently,

- Thinking differently,
- Organizing your time differently, and
- Acting differently.

### **SOME FRIENDLY SUGGESTIONS AND STUDY TIPS TO HELP YOU SUCCEED**

- The #1 tip I can give you 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 I always say.
- Read and use your syllabus – 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 (like this stuff in this section) about the class, including such things as grading rubrics, hints for success, and explicit and implicit information about the instructor’s assumptions and expectations.
- Read over the section in **Appendix A**, entitled, “Figuring it Out”. This is a neat reading on the nuts and bolts of figuring out your professor.
- Download the notes from WebCT and review them prior to class.
- Always be prepared and ready to answer questions during any given class.
- 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.
- During lecture and when you study, ask yourself “questioning” questions
  - What connections does my instructor want me to see between this material and other things we’ve discussed or read about?
  - How do these different facts fit together?
  - What is the “big picture” or “binding thread” that my teacher is trying to get me to see?
  - What questions would I ask a researcher or author of my reading if I could talk to her/him directly?”
  - How could I explain the importance of this material to a friend?
- Some note taking suggestions:
  - Use a binder to store your notes and papers. Binders make it easy to put in graphics at the right point in a lecture, or to reorganize your notes to make them work for you.
  - Listen, Think,..and then Write (Nist & Holschum, 2002)
  - DO NOT WRITE EVERY WORD I SAY. It’s important to be selective about what you write in your notes. Paraphrase my lecture materials.

- Check-out **Appendix A** - *“Using the Split-Page Method of Note Taking”* – This is one of the most useful ideas I’ve seen in a while to help you maximize you in-class note taking.
- Remember, that memorizing information is only the first step when you study.
  - When you prepare for an exam, go beyond simply memorizing information, and instead strive for integration, understanding, and comprehension at a deeper “gut” level.
  - Ask yourself, “How do the bits of information I’ve memorized, fit together into a way that makes sense?”
- 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.
- Practice active reading strategies. By active reading, I mean the following:
  - Taking notes while reading,
  - Summarize notes into paragraph form,
  - Create margin notes in your textbooks,
  - Merge lecture notes with reading notes,
  - Seek out ancillary information with other sources, etc.
  - Read over **Appendix A** - “Strategies for Active Reading”, for more ideas on becoming an active reader.
- Studying ideas and strategies can be found on the last few pages of **Appendix A**.
- Other studying ideas include:
  - Develop study groups to help quiz each other and fill-in pieces of information from lecture or the readings that you may have missed.
  - 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)
  - Relate new information as much as possible to something you’ve already learned.
  - 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 information the night before an exam – like they say, ‘been there, done that 😊.
  - 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.
- **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 !**

- 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 me by appointment only.
- **Again, be sure to visit my office hours if you are confused, need further explanations, or simply want to chat about things** (like baseball, “hair” bands of the 80’s, home improvement, baby juggling, the fine art of cleaning jelly out of your DVD player, etc...)

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

- CMSD Home Page: <http://www.coe.uga.edu/csd/>
- Login to 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 AND READINGS**

- Topic coverage is flexible and strongly influenced by the pace of the class. Changes in the format and pace of the course during the semester are up to the discretion of the instructor.
- The course syllabus is only 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) may be necessary as the semester progresses.
- Consult the course website frequently for updates and/or announcements.
- Specific reading assignments will be posted on the course website and/or announced in class, or via the course listserv.
- Outside readings (if assigned) may 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 copied them, as a courtesy to you fellow classmates.

- Spring semester topics will continue from the point that we leave off at the end of the Fall semester and will include coverage of the remaining vocal tract systems of speech articulation and resonance.

<b>Fall Semester Topics</b>	<b><i>Write your reading assignments here.</i></b>
❖ Syllabus, Study Tips, and Introductions to the Speech and Voice Sciences.	
❖ Getting to know your vocal tract.	
❖ What are models, theories and the Scientific Method?	
❖ Speech is a robust and complex signal.	
❖ Basic elements of anatomy.	
❖ Basic principles of neuroscience and neural signaling.	
❖ Gross structure of the human nervous center.	
❖ Muscle physiology and biomechanical principles of movement.	
❖ Respiratory anatomy.	
❖ Principles of pressure & flow.	
❖ Respiratory physiology.	
❖ Laryngeal anatomy.	
❖ Laryngeal and voice physiology.	
❖ Other:	