

# Speech Anatomy

## Audiology and Speech-Language Pathology 320

### Fall 2005

Instructor: Shawn Nissen  
 Class Hours: 3:00 - 4:20 M, W  
 Location: 115 MCKB  
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#### Course Description and Objectives:

This course is designed to present specialized knowledge relevant to the understanding of speech communication. Through text, lecture, and a variety of multi-media sources, students will be introduced to the anatomical structures and physiological mechanisms essential for speech production. Specifically, the anatomy and physiology of respiration, phonation, articulation, and resonance will be covered in depth. It will also contain an overview of the neuroanatomy and neurophysiology essential to human communication.

To reinforce material presented in lecture, this course will incorporate a series of CD-ROM tutorials. These software labs will provide students the opportunity to review course material in the convenient environment of a personal computer. Furthermore, three-dimensional images and animations based on the Visible Human Project, as well as a variety of on-line neuroimaging sources will be used to enhance student understanding of anatomy and physiology.

By satisfactorily completing the formative and summative evaluations of this course, the student will make progress toward ASHA's 2005 standards for the Certificate of Clinical Competence in Speech-Language Pathology. These standards are also closely aligned with the conceptual framework (CF) of the David O McKay College of education, which aims to (1) embrace and apply the moral dimensions of teaching, (2) demonstrate academic excellence, (3) engage in meaningful collaboration, and (4) act with social competence.

#### CAA Standards addressed in this course are as follows:

**Standard III-B:** The applicant must demonstrate knowledge of the nature of basic human communication and swallowing process, including their biological, neurological, acoustic, psychological, developmental, linguistic and cultural bases

**Standard III-C:** The applicant must demonstrate knowledge of the nature of speech, language, hearing, and communication disorders and differences and swallowing disorders, including the etiologies, characteristics, anatomical/physiological, acoustic, psychological, developmental, and linguistic and cultural correlates.

**Standard III- G:** The applicant must demonstrate knowledge of contemporary professional issues.

#### Goal #1 Students will demonstrate competent knowledge of the basic elements of anatomy.

Specific Objectives	Method of Evaluation	Feedback Mechanism	CAA Standard	College CF
Students will gain a knowledge of: <ul style="list-style-type: none"> <li>◆ the subdivisions of anatomy</li> <li>◆ the subdivisions of physiology</li> <li>◆ anatomical orientation and planes</li> <li>◆ general body systems</li> <li>◆ the four general tissue types</li> <li>◆ nomenclature and naming conventions of anatomical structures</li> </ul>	<ul style="list-style-type: none"> <li>◆ Quiz 1</li> <li>◆ Midterms (F)</li> <li>◆ Final (S)</li> </ul>	<ul style="list-style-type: none"> <li>◆ Objective scores</li> </ul>	III-B	CF-2

**Goal #2 Students will demonstrate competent knowledge of the anatomy and physiology of respiration.**

Specific Objectives	Method of Evaluation	Feedback Mechanism	CAA Standard	College CF
Students will gain a knowledge of: <ul style="list-style-type: none"> <li>◆ the support structure for respiration</li> <li>◆ the muscles of inspiration</li> <li>◆ the muscles of expiration</li> <li>◆ the physics of respiration</li> <li>◆ the physiology of respiration</li> <li>◆ the measurement of respiration</li> <li>◆ the respiratory cycle</li> <li>◆ volumes and capacities</li> <li>◆ the pressure curves of speech</li> <li>◆ the effects of posture on speech</li> <li>◆ muscular activity during respiration</li> </ul>	<ul style="list-style-type: none"> <li>◆ Quiz 2</li> <li>◆ Midterms (F)</li> <li>◆ Final (S)</li> </ul>	<ul style="list-style-type: none"> <li>◆ Objective scores</li> </ul>	III-B III-C III-G	CF-2

**Goal #3 Students will demonstrate competent knowledge of the anatomy and physiology of phonation.**

Specific Objectives	Method of Evaluation	Feedback Mechanism	CAA Standard	College CF
Students will gain a knowledge of: <ul style="list-style-type: none"> <li>◆ the framework of the larynx</li> <li>◆ tracheostomies</li> <li>◆ laryngeal membranes</li> <li>◆ lamina propria</li> <li>◆ laryngeal musculature</li> <li>◆ theories of phonation</li> <li>◆ glottal cycle</li> <li>◆ laryngeal functions for speech</li> </ul>	<ul style="list-style-type: none"> <li>◆ Quiz 3</li> <li>◆ Midterms (F)</li> <li>◆ Final (S)</li> </ul>	<ul style="list-style-type: none"> <li>◆ Objective scores</li> </ul>	III-B III-C III-G	CF-2

**Goal #4 Students will demonstrate competent knowledge of the anatomy of articulation and resonance and the physiology of articulation.**

Specific Objectives	Method of Evaluation	Feedback Mechanism	CAA Standard	College CF
Students will gain a knowledge of: <ul style="list-style-type: none"> <li>◆ the source-filter theory of vowel production</li> <li>◆ the articulators</li> <li>◆ bones of the face and cranial skeleton</li> <li>◆ dentition &amp; the cavities of the vocal tract</li> <li>◆ muscles of the face and mouth</li> <li>◆ mastication and deglutition</li> <li>◆ speech function of the lips, mandible, tongue, &amp; velum</li> <li>◆ development of articulatory ability</li> <li>◆ coordinated articulation</li> </ul>	<ul style="list-style-type: none"> <li>◆ Quiz 4 &amp; 5</li> <li>◆ Midterms (F)</li> <li>◆ Final (S)</li> </ul>	<ul style="list-style-type: none"> <li>◆ Objective scores</li> </ul>	III-B III-C III-G	CF-2

**Goal #5 Students will demonstrate competent knowledge of the neuroanatomical and neurophysiological correlates of speech.**

Specific Objectives	Method of Evaluation	Feedback Mechanisms	CAA Standard	College CF
Students will gain a knowledge of: <ul style="list-style-type: none"> <li>◆ divisions of the nervous system</li> <li>◆ gross anatomy of the CNS</li> <li>◆ cellular elements of the CNS</li> <li>◆ neurotransmitters</li> <li>◆ neuroimaging techniques</li> <li>◆ protective elements and vulnerabilities of the CNS</li> <li>◆ higher functioning of the cerebral cortex</li> <li>◆ CVA</li> <li>◆ TBI</li> <li>◆ neuropathology associated with communication disorders</li> </ul>	<ul style="list-style-type: none"> <li>◆ Quiz 6</li> <li>◆ Midterms (F)</li> <li>◆ Final (S)</li> </ul>	<ul style="list-style-type: none"> <li>◆ Objective scores</li> </ul>	III-B III-C III-G	CF-2

**Course Requirements:**

Students are required to read all assigned chapters and reserve material prior to lecture. During lecture, class participation and questions regarding difficult material are strongly recommended. Although class lectures will have a strong basis in the assigned text, lectures will also contain additional material intended to enhance students knowledge of the relative topic. Hint: These “enhancements” will frequently resurface as exam questions, so consistent lecture attendance is a wise practice.

An evaluation (grades) of how well a student comprehends reading and lecture material will be based upon five quiz scores (the lowest quiz grade will be dropped), two midterm exams, and a final examination. All quizzes will be announced a week in advance (in other words, no “pop-quizes”). The exams will be given in the testing center during the dates designated in the course outline. Examinations will possibly contain true/false questions, multiple-choice, diagram identification, fill-in the blank, short essay, or matching. The final will be comprehensive in nature, measuring a student’s knowledge of concepts presented throughout the semester. There will be no makeup or late exams given without prior instructor permission or a valid medical excuse. Any unexcused missed exams will not contribute points toward the final grade.

**Grading:**

As a general rule, exam grades will not be graded on a curve. The only exception to this policy may occur if the mean class grade falls considerably below 75%. In this circumstance I may “adjust” the grades upward. Any grade adjustment will always maintain the relative order of grades among students and will never lower an individual’s exam score. Descriptive statistics on class performance and a question review will be provided during the week of class following that particular exam period. The final grade will be assigned on a straight scale and will be computed according to the following breakdown:

Quizzes:	50 points <i>(6 quizzes, 10 points possible each – lowest score dropped)</i>
Exam 1:	100 points
Exam 2:	100 points
Final:	<u>150 points</u>
Total	400 points possible

After dividing the total number of points by 4, a final grade will be assigned according to the following scale: 94-100 A, 90-93 A-, 87-89 B+, 83-86 B, 80-82 B-, 77-79 C+, 73-76 C, 70-72 C-, 66-69 D+, 60-65 D, and 0-59 E. Final grade points containing decimals will be rounded to the closest integer.

## Required Texts:

1) Seikel, J. A., King, D. W., & Drumwright, D. G. (2005). *Anatomy and Physiology for Speech, Language, and Hearing*. San Diego: Singular Publishing Group, Inc. **This is the 3<sup>rd</sup> edition.** Your text book will come with an accompanying CD-ROM tutorial, which can be used as a supplement to class lectures.

Students might also be required to read selected articles or illustrations placed on reserve in the main library. A listing of these reading assignments will be announced in class lecture (another great reason to consistently attend lecture).

## Additional Resources (optional)

Zemlin, W. R. (1998). *Speech and Hearing Science: Anatomy and Physiology*. Allyn & Bacon: Boston.

F. H. Netter (1989). *Atlas of Human Anatomy*. Ciba Geigy Corp.

McMinn (1994). *Color Atlas of Head and Neck Anatomy*. Mosby.

John M. Palmer (1984). *Anatomy for Speech and Hearing* Harper and Row.

J.L. Hiatt & L.P. Gartner (1987). *Textbook of Head and Neck Anatomy*. Williams & Wilkins.

## Blackboard Course Management

Course lectures will be outlined on the Blackboard class management system. These notes do not serve as a substitute for attending lecture or taking personal class notes. They are meant to serve as an **outline only** and do not contain the detailed information necessary to meet the above mentioned objectives. **ALSO NOTE: THE NOTES AVAILABLE ON BLACKBOARD ARE SUBJECT TO CHANGE.** Course material may be adjusted as needed.

## 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.

## 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-282 ASB.

## Academic Misconduct

Academic misconduct is a serious matter and should be avoided. Details about what constitutes a violation of the Honor Code, Academic Honesty Policy, Academic Misconduct, and Plagiarism can be found in the Course Catalog. Any instance of academic misconduct will result in a failing grade in this course.

## Estimated Course Outline

<u>Date</u>	<u>Topic</u>	<u>Readings</u>
8/29 & 8/31	Intro / Basic Elements of Anatomy	Chapter 2
9/7	Anatomy of Respiration	Chapter 3
9/12 & 9/14	Anatomy/Physiology of Respiration	Chapter 3/4
9/19 & 9/21	Physiology of Respiration	Chapter 4
9/26 & 9/28	Anatomy of Phonation	Chapter 5
<b>10/3</b>	<b>Review for Exam 1</b>	
<b>10/4 – 10/6</b>	<b><u>EXAM 1 – testing center</u></b>	
10/5	Physiology of Phonation	Chapter 6
10/10 & 10/12	Physiology of Phonation	Chapter 6
10/17 & 10/19	Anatomy of Articulation/Resonation	Chapter 7
10/24 & 10/26	Anatomy of Articulation/Resonation	Chapter 7
10/31 & 11/2	Physiology of Articulation	Chapter 8
<b>11/7</b>	<b>Review for Exam 2</b>	
<b>11/8 – 11/10</b>	<b><u>EXAM 2 – testing center</u></b>	
11/9	Neuroanatomy	Chapter 9
11/14 & 11/16	Neuroanatomy/Neurophysiology	Chapter 10
11/28 & 11/30	Neurophysiology/Neuroimaging	Assigned Readings
12/5	Neuroimaging	Assigned Readings
<b>12/7</b>	<b>Review for Final Exam</b>	
<b>12/12 – 12/16</b>	<b><u>FINAL EXAM – testing center</u></b>	

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### Important Course Dates

Labor Day – no class	September 5
Midterm Exam 1:	October 4-6
Midterm Exam 2:	November 8-10
Thanksgiving – no class	November 21, 23
Final Exam:	December 12-16