

SPLH 462 Principles of Speech Science: Anatomy & Physiology

Fall 2015 Dole 2092 9:00-9:50 (MWF)

University of Kansas

Instructor Information

Instructor	Email	Office Location & Hours
Jonathan Brumberg, Ph.D. Assistant Professor	brumberg@ku.edu	3047 Dole, 4-1061, MW 10-11AM & by appt.
Shadi Pir Hosseinloo, M.S. Doctoral Student GTA	s571p882@ku.edu	3025 Dole, 4-6483, by appt.
Jeremy Burnison, M.A. Doctoral Student GRC	jburnison@ku.edu	3021 Dole, by appt.

General Information

Description

This course will provide a comprehensive overview of the skeletal, muscular, and neurological mechanisms underlying speech motor control. These systems enable vocal human communication by coordinating respiration, phonation and upper vocal tract movements through nervous system control. Both healthy and disordered speech function will be discussed. Students will be introduced to current topics in speech motor control, kinematics and neuroscience research and associated methodological techniques.

Objectives

This course is designed to meet the requirement of ASHA Knowledge Standards (2014) IV-B Normal Processes and IV-C Communication Disorders. After completing this course, students will obtain a basic understanding in:

- The structure (anatomy) and function (physiology) important for respiration, phonation, articulation and swallowing
- The roles of the peripheral and central nervous system in coordinating speech movements
- Distinguishing healthy from disordered speech characteristics in the five categories: respiration, phonation, articulation, swallowing and nervous system.
- By the end of the semester, you will be able to describe all of the motor processes involved in speech production

Course Materials

Recommended Text

Hixon, TJ, Weismer, G, Hoit, JD. (2013). *Preclinical Speech Science*. Second Edition. Plural Publishing Inc., San Diego, CA.

Requirements

Assessments

This course will be based on 10 weekly at-home post-reading assignments, 3 Blackboard quizzes, three topic exams, a research project and an optional cumulative final exam.

- **Weekly post-reading assignments** are worth five points each, and are designed to help introduce and / or identify key concepts from the readings and lectures as well as prepare students for lecture discussions. Assignments will be available by 9 AM on Monday and are due by the following Sunday at 8 PM. There

will be no opportunities to make-up weekly assignments for unexcused absences. Only 9 assignments will count toward your final grade (i.e., one exercise may be dropped). Weekly assignments will be provided through Blackboard and must represent students' own work (i.e. completed individually). The use of a university-supported browser (Firefox) is recommended for all Blackboard assignments.

- **Quizzes** will assess student knowledge of key concepts using a mixture of objective (multiple-choice, matching, true/false) and short-answer questions and administered online via Blackboard. Each quiz is worth 20 points and will be announced at least one week in advance (e.g., a quiz on a Wednesday will be announced the previous Wednesday) and must be completed in 25 minutes.
- **Exams** will be administered in class and will be completed in in a single class period. There will be three topic exams for each of the main areas: respiration, phonation and orofacial (articulation / swallowing). Each exam is worth 100 points will consist of 40 questions in objective format (multiple-choice, true/false, matching) and short answer.
 - **An optional final exam** will be given on Wednesday, December 16, 2015 from 7:30 AM – 10:00 AM. The cumulative final exam will also be worth 100 points and will consist of questions in objective format. If taken, the optional final exam may be used to replace one of your other exam grades. For instance, if you earn a higher score on the final exam than on one of the three topic exams, the final exam will replace your previous lower exam score. This exam is optional, and is not required if you are satisfied with your prior exam scores.

Grading

Reading assignments are worth 5 points each ([10 assignments – 1 dropped] x 5 points = 45 points total)

Quizzes are worth 20 points each (4 quizzes x 20 points = 80 points total)

Exams are worth 100 points (3 exams x 100 points = 300 points total)

Research Project is worth 100 points (25 for collecting data, 20 for draft report, 10 for peer review, 20 for final report, 25 for group presentation)

Final grade is out of 525 points

Plus/minus grading will be used according to the following:

Letter Grade	Percentage Range
A	92.5-100%
A-	90.0-92.5%
B+	87.5-90.0%
B	82.5-87.5%
B-	80.0-82.5%
C+	77.5-80.0%
C	72.5-77.5%
C-	70.0-72.5%
D+	67.5-70.0%
D	62.5-67.5%
D-	60.0-62.5%
F	below 60.0

Additional Information and Resources

Academic Misconduct

Students are expected to observe all University guidelines pertaining to academic misconduct. As stated in the University Senate Rules and Regulations (2.6.1):

“Academic misconduct by a student shall include, but not be limited to, disruption of classes; threatening an instructor or fellow student in an academic setting; giving or receiving of unauthorized aid on examinations or in

the preparation of notebooks, themes, reports or other assignments; knowingly misrepresenting the source of any academic work; unauthorized changing of grades; unauthorized use of University approvals or forging of signatures; falsification of research results; plagiarizing of another's work; violation of regulations or ethical codes for treatment of human and animal subjects; or otherwise acting dishonestly in research." Academic misconduct will not be tolerated and will be dealt with in accordance with all University rules and regulations.

Accommodations

The Academic Achievement and Access Center (AAAC) coordinates academic accommodations and services for all eligible KU students with disabilities. If you have a disability for which you wish to request accommodations and have not contacted the AAAC, please do so as soon as possible. They are located in 22 Strong Hall and can be reached at 785-864-4064 (V/TTY). Information about their services can be found at <http://www.disability.ku.edu>. Please contact me privately in regard to your needs in this course within one week of receiving this syllabus so that appropriate accommodations for this course can be discussed.

If a scheduled requirement is in conflict with a mandated religious observance, you must notify the instructor in writing (e-mail is acceptable) within one week of receiving this syllabus so that an alternative arrangement can be made in advance of the scheduled requirement.

Health Policy

Health: KU Pandemic Response Plan (<http://www.pandemic.ku.edu/>) and the "Personal Guide to Protect Against Flu" (<http://www.pandemic.ku.edu/pdf/tipSheet.pdf>)

Blackboard

Blackboard will be used extensively in this course for announcements, lecture note archives and assignment administration. Students should check the course site frequently for any announcements, additional course documents and lecture notes. In addition, all email from instructors to students will be sent through Blackboard. Please be sure to check the email account associated with your Blackboard account. See the instructor if you have any questions.

Course Schedule (subject to change)

Date	Topic	Lecture	Assignments
Week 1	Syllabus & course intro	Syllabus	Journal entry: course goals
8/24-8/28	Speech Science: subsystems & levels of observation	Learning Module Week 1	Journal entry: Kansas #1

Topic 1: Breathing: Respiration, chestwall and breathing apparatus

Week 2	Respiration, skeletal structure	Learning Module Week 2	Assignment #1: Due 8/30 by 8pm
8/31-9/2	Pulmonary apparatus		
9/4	GRC: research project workshop		GRC: form groups and select project
9/7	Labor Day No Class		
Week 3			Assignment #2: Due 9/8 by 8pm
9/9	GRC: workshop	Lab Reports	
9/11	Kinematics	Learning Module Week 3	

Date	Topic	Lecture	Assignments
	Forces, pleura & disease		
Week 4 9/14-9/18	Muscles: Diaphragm, rib cage & abdomen	Learning Module Week 4	Assignment #3: Due 9/13 by 8pm Quiz #1: Due 9/16 by 11:59pm
Week 5 9/21-9/25	Respiration measurement variables Speech breathing	Learning Module Week 5	Assignment #4: Due 9/20 by 8pm
Week 6 9/28-9/30	Neural control of breathing Breathing disorders	Learning Module Week 6	Assignment #5: Due 9/27 by 8pm Journal entry: Kansas #2
10/2	Exam 1: Breathing		

Topic 2: Larynx, phonation

Week 7 10/5-10/9	Laryngeal structure	Learning Module Week 7	Vibrating Larynx & stroboscopy videos
Week 8 10/12	Fall Break No Class		
10/14-10/16	Laryngeal musculature	Learning Module Week 8	Assignment #6: Due 10/13 by 8pm Quiz #2: Due 10/15 by 11:59pm
Week 9 10/19-10/21 10/23	Laryngeal & vocal fold movements Air flow & fundamental frequency GRC: Lab Report	Learning Module Week 9	Assignment #7: Due 10/18 by 8pm Project data collection finished by 10/22
Week 10 10/26-	Larynx pathology & stroboscopy	Learning Module Week 10	Assignment #8: Due 10/25 by 8pm Journal entry: Kansas #3
10/30	Exam 2: Larynx / Phonation		

Topic 3: Orofacial, pharyngeal, swallowing

Week 11 11/2-11/6	Velopharynx & Velum structure and musculature	Learning Module Week 11	First Draft Lab Report Due, 11/4
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Date	Topic	Lecture	Assignments
Week 12 11/9-11/11	Oropharynx structure & musculature Clefts & oropharynx disorders	Learning Module Week 12	Assignment 9: Due 11/8 by 8pm Return Peer Review by 11/9 Quiz #3: Due 11/14 by 5pm
11/13	ASHA: No Class		
Week 13 11/16-	Articulation: tongue muscles, acoustic & articulatory phonetics	Learning Module Week 13	Assignment 10: Due 11/15 by 8pm Final Lab Report, Due 11/15
Week 14 11/23 11/25- 11/27	GRC: Workshop	Presentation Preparation	
Thanksgiving Break: No Class			
Week 15 11/30- 12/4	Swallowing		Journal entry: Kansas #4
Exam 3: Orofacial, pharyngeal, swallowing			

Student Research Presentations

Week 16 12/7 12/9	
12/11	Stop Day
12/16	Final Exam

Exam Schedule

Date	Subject
10/2/2015	Exam 1: Breathing
10/30/2015	Exam 2: Larynx / Phonation
12/4/2015	Exam 3: Orofacial / articulation / swallowing
12/16/2015	Final Exam: Comprehensive @ 7:30 AM