

# COMD 421 - Speech Science

Winter 2019

Section 001: 110 JSB on M W from 3:30 pm - 4:50 pm

## Instructor/TA Info

### Instructor Information

**Name:** Christopher Dromey

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### TA Information

**Name:** Mendy Peacock

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## Course Information

### Description

What am I hoping you will learn this semester? The goal is that you will come to understand more about how speech works. You have already learned about the characteristics of sound, and also about anatomy and basic physiology. In this class we will bring these themes together by applying acoustic analysis techniques to normal and disordered speech. You will gain experience with recording speech into a computer and extracting meaningful measures of production from those recordings. As a communication disorders professional, you will need to know how to use technology in your clinical work. The profession's emphasis on evidence-based practice underlines the need for you to know how to gather your own treatment outcome evidence and evaluate that of others. By the end of this semester you should feel confident in using readily available software tools to document speech performance. You will also learn

about the tools used by speech researchers so that you can get more out of the journal articles you read in our professional literature.

### Learning Outcomes

#### Principles of Speech Production

Demonstrate knowledge and competence in basic principles of speech production, including acoustic and physiological aspects and their measurement.

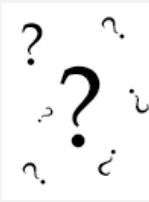
#### Quantifying Speech Disorders for Treatment Outcomes

Explain 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.

#### Applying Principles for Practice

Show understanding of the application of principles from the current research literature in measuring speech performance in preparation for participating in evidence-based practice.

### Materials

| Item  | Price<br>(new)   | Price<br>(used) |
|---|--|-----------------|
|  | SPEECH & VOICE SCIENCE 3E <i>Required</i><br>by BEHRMAN, A |                 |

### Prerequisites

A good understanding of the introductory acoustics component of ComD 334 (hearing science) or Physics 167 is essential for you to be able to succeed in this class. We have a strong focus on acoustic phonetics this semester, so if you have not already had ComD 331 (phonetics), you will have problems in this class. It is also helpful if you have already taken ComD 320 (speech anatomy),

but this is not essential. This semester's work will build on the foundation provided by the prerequisite courses and will not involve re-teaching things you should already know.

### **Grading Scale**

| <b>Grades</b> | <b>Percent</b> |
|---------------|----------------|
| A             | 94.5%          |
| A-            | 91.5%          |
| B+            | 88.5%          |
| B             | 85.5%          |
| B-            | 82.5%          |
| C+            | 79.5%          |
| C             | 76.5%          |
| C-            | 73.5%          |
| D+            | 69.5%          |
| D             | 64.5%          |
| D-            | 59.5%          |
| E             | 0%             |

### **Attendance Policy**

The classroom activities will result in projects which you submit for a grade. I will not be taking attendance, but if you miss a class, you will need to get the information you missed from someone else so that you can submit the projects by the deadline. Most of the projects can be completed in the classroom, with only minimal subsequent editing before online submission.

### **Classroom Procedures**

If you need to arrive late or leave early, please do so quietly. You are adults, and don't need to provide reasons for missing class. I don't take attendance, but you are responsible for turning in all assignments on time.

### **Study Habits**

Speech science is a little different from some of the other classes you have taken. Memorizing bullet points from the slides will only take you so far. You need a thorough understanding of the concepts and their application in order to

do well on the exams. Please read carefully the study tips in the textbook on pages 5-8. The author gives excellent advice, and I encourage you to review it carefully.

### **Learning Suite**

We will use Learning Suite extensively this semester. The lecture content will all be delivered online, and we will use the class periods for learning activities.

### **HBLL Course Reserve Readings**

Please go to the Home tab (top left) for this course, and click on Library Resources. There you'll find a link to the e-reserve PDF. Thanks.

### **Examinations**

There will be two midterm exams in the testing center and a comprehensive final in class on the date specified by the university. They will be based on the material covered in the audiovisual online lectures and the concepts we cover in the activities in the classroom.

### **Assignments**

#### **Assignment Description**

**reading quiz 1 sound waves (ch 3 plus pages 400-406)**

Due: Monday, Jan 14 at 11:59 pm

This is an open book quiz. You may refer to the text and your notes as you answer the questions. The time limit is 90 minutes.

**project 1 - pitch and loudness**

Due: Wednesday, Jan 16 at 11:59 pm

Please download the template from the project page, type in your answers, and upload it for grading.

**reading quiz 2 digital signals (reserve PDF)**

Due: Wednesday, Jan 23 at 11:59 pm

This is an open book quiz. You may refer to the text and your notes as you answer the questions. The time limit is 90 minutes.

**project 2 - digital recordings**

Due: Monday, Jan 28 at 11:59 pm

Please download the template from the project page, type in your answers, and upload it for grading.

**project 3 - acoustic analysis**

Due: Monday, Feb 04 at 11:59 pm

Please download the template from the project page, type in your answers, and upload it for grading.

**reading quiz 3 laryngeal measures (ch 6)**

Due: Wednesday, Feb 06 at 11:59 pm

This is an open book quiz. You may refer to the text and your notes as you answer the questions. The time limit is 90 minutes.

**project 4 - voicing measures**

Due: Monday, Feb 11 at 11:59 pm

Please download the template from the project page, type in your answers, and upload it for grading.

**first midterm exam**

Due: Wednesday, Feb 13 at 8:59 pm

This is a closed-book, multiple-choice exam in the Testing Center.

**extra credit 2: human speech source filter DVD**

Due: Tuesday, Feb 19 at 11:59 pm

For 0.5 extra percentage points on the course grade, you may watch this DVD in the Lee Library's Media Center (on level 4 at the south end). There will be an

online quiz for this DVD. I will provide the questions on Learning Suite (Content area) ahead of time so that you will know what to watch for in the DVD. The call number for this disc is DVD 7-R c.1 or c.3.

**extra credit 1: human speech acoustics DVD**

Due: Tuesday, Feb 19 at 11:59 pm

For 0.5 extra percentage points on the course grade, you may watch this DVD in the Lee Library's Media Center (on level 4 at the south end). There will be an online quiz for this DVD. I will provide the questions on Learning Suite (Content area) ahead of time so that you will know what to watch for in the DVD. The call number for this disc is DVD 6-R c.1 or c.2 or c.3.

**reading quiz 4 vowels (ch 7)**

Due: Wednesday, Feb 27 at 11:59 pm

This is an open book quiz. You may refer to the text and your notes as you answer the questions. The time limit is 90 minutes.

**project 5 - vowels and diphthongs**

Due: Monday, Mar 04 at 11:59 pm

Please download the template from the project page, type in your answers, and upload it for grading.

**reading quiz 5 consonants & prosody (ch 8 & ch 9)**

Due: Wednesday, Mar 06 at 11:59 pm

This is an open book quiz. You may refer to the text and your notes as you answer the questions. The time limit is 90 minutes.

**project 6 - consonant articulation**

Due: Monday, Mar 11 at 11:59 pm

Please download the template from the project page, type in your answers, and upload it for grading.

**second midterm exam**

Due: Wednesday, Mar 13 at 8:59 pm

**project 7 - suprasegmentals**

Due: Monday, Apr 01 at 11:59 pm

Please download the template from the project page, type in your answers, and upload it for grading.

**reading quiz 6 speech production theories (ch 10)**

Due: Monday, Apr 08 at 11:59 pm

This is an open book quiz. You may refer to the text and your notes as you answer the questions. The time limit is 90 minutes.

**reading quiz 7 speech perception (ch 11)**

Due: Wednesday, Apr 10 at 11:59 pm

This is an open book quiz. You may refer to the text and your notes as you answer the questions. The time limit is 90 minutes.

**project 8 - speech perception**

Due: Monday, Apr 15 at 11:59 pm

Please download the template from the project page, type in your answers, and upload it for grading.

**online lecture log**

Due: Wednesday, Apr 17 at 11:59 pm

Please report here that you have watched the lectures assigned for the week by Saturday evening at midnight.

**Cumulative Final Exam on Wednesday 24 April from 3:00 to 6:00 pm**

Due: Wednesday, Apr 24 at 3:00 pm

**Schedule**

| Date               | Online Lecture | Reading | Classroom Activity      | Assessment   |
|--------------------|----------------|---------|-------------------------|--|
| M Jan 07<br>Monday | none           | Ch 1    | intro to speech science | <b>extra credit 1:</b><br>human speech acoustics DVD<br>Opens<br><b>extra credit 2:</b><br>human speech source filter DVD<br>Opens<br>online lecture log<br>Opens<br>reading quiz 1<br>sound waves (ch 3 plus pages 400-406) Opens<br>reading quiz 2<br>digital signals (reserve PDF)<br>Opens<br>reading quiz 3<br>laryngeal measures (ch 6)<br>Opens<br>reading quiz 4<br>vowels (ch 7)<br>Opens<br>reading quiz 5<br>consonants & prosody (ch 8 & ch 9) Opens<br>reading quiz 6 |



|                       |                                  |   |                               |   |
|-----------------------|----------------------------------|---|-------------------------------|---|
|                       |                                  |   |                               | speech production theories (ch 10)<br>Opens reading quiz 7<br>speech perception (ch 11) Opens |
| W Jan 09<br>Wednesday | frequency and pitch              | Ch 3 plus pages 400-406   | project 1: pitch and loudness |   |
| M Jan 14<br>Monday    | intensity and loudness 1, 2      | Ch 3 plus pages 400-406   | content review                | reading quiz 1<br>sound waves (ch 3 plus pages 400-406) Closes                                |
| W Jan 16<br>Wednesday | digital systems 1, 2             | Rosen and Howell chapter - please click on the Home tab for this course and go to Library Resources to access this PDF. | project 2: digital recordings | project 1 - pitch and loudness  |
| M Jan 21<br>Monday    | <b>Martin Luther King Jr Day</b> | no class today  |                               |   |

|                       |   |                               |   |  |
|-----------------------|---|-------------------------------|---|--|
| W Jan 23<br>Wednesday | acoustic analysis<br>1, 2                                       | Ch 3 plus<br>pages<br>400-406 | content review                                  | <b>reading quiz 2</b><br><b>digital signals</b><br><b>(reserve PDF)</b><br><b>Closes</b>   |
| M Jan 28<br>Monday    | acoustic analysis<br>3  | Ch 3 plus<br>pages<br>400-406 | project 3:<br>acoustic analysis                 | <b>project 2 - digital</b><br><b>recordings</b>  |
| W Jan 30<br>Wednesday | measuring<br>laryngeal<br>function 1, 2                         | Ch 6                          | content review                                  |  |
| M Feb 04<br>Monday    | measuring<br>laryngeal<br>function 3, 4                         | Ch 6                          | project 4: voicing<br>measures                  | <b>project 3 -</b><br><b>acoustic analysis</b>   |
| W Feb 06<br>Wednesday | speech<br>aerodynamics 1,<br>2                                  | Ch 6                          | no class today                                  | <b>reading quiz 3</b><br><b>laryngeal</b><br><b>measures (ch 6)</b><br><b>Closes</b>   |
| M Feb 11<br>Monday    | speech<br>aerodynamics 3  |                               | exam 1 prep,<br>Q&A                             | <b>project 4 -</b><br><b>voicing</b><br><b>measures</b>  |
| W Feb 13<br>Wednesday | fundamental<br>frequency 1, 2<br><br>fundamental<br>frequency 3 | Ch 6                          | no class today<br>exam in the<br>testing center | <b>exam 1 opens in</b><br><b>the Testing</b><br><b>Center and runs</b><br><b>Wed, Thu, Fri,</b><br><b>Sat</b><br><br><b>first midterm</b><br><b>exam</b> |
| M Feb 18<br>Monday    | <b>Presidents Day</b>   |                               | no class today                                  |  |

|                       |  |      |  |  |
|-----------------------|--|------|--|--|
| T Feb 19<br>Tuesday   | <b>Monday<br/>Instruction</b><br><br>source-filter<br>theory 1 | Ch 6 | no class today   | <b>extra credit 1:<br/>human speech<br/>acoustics DVD<br/>Closes<br/>extra credit 2:<br/>human speech<br/>source filter DVD<br/>Closes</b> |
| W Feb 20<br>Wednesday | source-filter<br>theory 2                                      | Ch 6 | review exam 1<br>answers<br>lecture content<br>review      |  |
| M Feb 25<br>Monday    | vowels and<br>diphthongs 1                                     | Ch 7 | project 5: vowels<br>and diphthongs                        |  |
| W Feb 27<br>Wednesday | vowels and<br>diphthongs 2                                     | Ch 7 | content review   | <b>reading quiz 4<br/>vowels (ch 7)<br/>Closes</b>   |
| M Mar 04<br>Monday    | consonants 1, 2  | Ch 8 | project 6:<br>consonant<br>articulation                    | <b>project 5 -<br/>vowels and<br/>diphthongs</b>   |
| W Mar 06<br>Wednesday | consonants 3, 4  | Ch 8 | content review   | <b>reading quiz 5<br/>consonants &amp;<br/>prosody (ch 8 &amp;<br/>ch 9) Closes</b>  |
| M Mar 11<br>Monday    |  |      | exam 2 prep,<br>Q&A  | <b>project 6 -<br/>consonant<br/>articulation</b>  |
| W Mar 13<br>Wednesday | suprasegmentals  | Ch 9 | no class today<br>exam 2 opens in<br>the Testing<br>Center | <b>exam 2 opens in<br/>the Testing<br/>Center and runs</b>   |

|                       |                                    |       |   |  |
|-----------------------|------------------------------------|-------|---|--|
|                       |                                    |       |   | Wed, Thu, 8 am<br>to 1 pm Mon.         |
|                       |                                    |       |   | <b>second midterm<br/>exam</b>         |
| M Mar 18<br>Monday    | velopharyngeal<br>function         | Ch 8  | review exam 2<br>answers<br>lecture content<br>review |  |
| W Mar 20<br>Wednesday | speech<br>movements 1              |       | no class today  |  |
|                       | speech<br>movements 2              |       |   |  |
| F Mar 22<br>Friday    |                                    |       |   |  |
| M Mar 25<br>Monday    | speech<br>movements 3              |       | project 7<br>suprasegmentals                          |  |
| W Mar 27<br>Wednesday | speech<br>production<br>theories 2 | Ch 10 | no class today  |  |
|                       | speech<br>production<br>theories 1 |       |   |  |
| M Apr 01<br>Monday    | speech<br>perception 1, 2          |       | content review  | <b>project 7 -<br/>suprasegmentals</b> |
| W Apr 03<br>Wednesday | speech<br>perception 3, 4          | Ch 11 | no class today  |  |

|                       |  |   |   |
|-----------------------|--|---|---|
| M Apr 08<br>Monday    | Ch 11  | project 8: speech perception                      | reading quiz 6<br>speech production theories (ch 10)<br>Closes          |
| W Apr 10<br>Wednesday |  | content review                                    | reading quiz 7<br>speech perception (ch 11)<br>Closes                   |
| M Apr 15<br>Monday    |  | semester wrap-up: in-class lecture and discussion | project 8 - speech perception   |
| W Apr 17<br>Wednesday |  | in class review for final                         | online lecture log<br>Closes  |
| W Apr 24<br>Wednesday | in-class comprehensive final exam on Wednesday, April 24 from 3:00 to 6:00 pm. |   | <b>Cumulative Final Exam on Wednesday 24 April from 3:00 to 6:00 pm</b> |

## University Policies

### Honor Code

In keeping with the principles of the BYU Honor Code, students are expected to be honest in all of their academic work. Academic honesty means, most fundamentally, that any work you present as your own must in fact be your own work and not that of another. Violations of this principle may result in a failing grade in the course and additional disciplinary action by the university. Students are also expected to adhere to the Dress and Grooming Standards. Adherence demonstrates respect for yourself and others and ensures an effective learning

and working environment. It is the university's expectation, and every instructor's expectation in class, that each student will abide by all Honor Code standards. Please call the Honor Code Office at 422-2847 if you have questions about those standards.

### **Sexual Misconduct**

In accordance with Title IX of the Education Amendments of 1972, Brigham Young University prohibits unlawful sex discrimination against any participant in its education programs or activities. The university also prohibits sexual harassment-including sexual violence-committed by or against students, university employees, and visitors to campus. As outlined in university policy, sexual harassment, dating violence, domestic violence, sexual assault, and stalking are considered forms of "Sexual Misconduct" prohibited by the university.

University policy requires all university employees in a teaching, managerial, or supervisory role to report all incidents of Sexual Misconduct that come to their attention in any way, including but not limited to face-to-face conversations, a written class assignment or paper, class discussion, email, text, or social media post. Incidents of Sexual Misconduct should be reported to the Title IX Coordinator at [t9coordinator@byu.edu](mailto:t9coordinator@byu.edu) or (801) 422-8692. Reports may also be submitted through EthicsPoint at <https://titleix.byu.edu/report> or 1-888-238-1062 (24-hours a day).

BYU offers confidential resources for those affected by Sexual Misconduct, including the university's Victim Advocate, as well as a number of non-confidential resources and services that may be helpful. Additional information about Title IX, the university's Sexual Misconduct Policy, reporting requirements, and resources can be found at <http://titleix.byu.edu> or by contacting the university's Title IX Coordinator.

### **Student Disability**

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 University Accessibility Center (UAC), 2170 WSC or 422-2767. Reasonable academic accommodations are reviewed for all students who have qualified, documented disabilities. The UAC can also assess students for learning, attention, and emotional concerns. Services are coordinated with the student and instructor by the UAC. 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 by contacting the Equal Employment Office at 422-5895, D-285 ASB.

### **Academic Honesty**

The first injunction of the Honor Code is the call to "be honest." Students come to the university not only to improve their minds, gain knowledge, and develop skills that will assist them in their life's work, but also to build character.

"President David O. McKay taught that character is the highest aim of education" (The Aims of a BYU Education, p.6). It is the purpose of the BYU Academic Honesty Policy to assist in fulfilling that aim. BYU students should seek to be totally honest in their dealings with others. They should complete their own work and be evaluated based upon that work. They should avoid academic dishonesty and misconduct in all its forms, including but not limited to plagiarism, fabrication or falsification, cheating, and other academic misconduct.

### **Plagiarism**

Intentional plagiarism is a form of intellectual theft that violates widely recognized principles of academic integrity as well as the Honor Code. Such plagiarism may subject the student to appropriate disciplinary action administered through the university Honor Code Office, in addition to academic sanctions that may be applied by an instructor. Inadvertent plagiarism, which may not be a violation of the Honor Code, is nevertheless a form of intellectual carelessness that is unacceptable in the academic community. Plagiarism of any kind is completely contrary to the established practices of higher education where all members of the university are expected to acknowledge the original intellectual work of others that is included in their own work. In some cases,

plagiarism may also involve violations of copyright law. **Intentional Plagiarism-** Intentional plagiarism is the deliberate act of representing the words, ideas, or data of another as one's own without providing proper attribution to the author through quotation, reference, or footnote. **Inadvertent Plagiarism-** Inadvertent plagiarism involves the inappropriate, but non-deliberate, use of another's words, ideas, or data without proper attribution. Inadvertent plagiarism usually results from an ignorant failure to follow established rules for documenting sources or from simply not being sufficiently careful in research and writing. Although not a violation of the Honor Code, inadvertent plagiarism is a form of academic misconduct for which an instructor can impose appropriate academic sanctions. Students who are in doubt as to whether they are providing proper attribution have the responsibility to consult with their instructor and obtain guidance. Examples of plagiarism include: **Direct Plagiarism-** The verbatim copying of an original source without acknowledging the source. **Paraphrased Plagiarism-** The paraphrasing, without acknowledgement, of ideas from another that the reader might mistake for the author's own. **Plagiarism Mosaic-** The borrowing of words, ideas, or data from an original source and blending this original material with one's own without acknowledging the source. **Insufficient Acknowledgement-** The partial or incomplete attribution of words, ideas, or data from an original source. Plagiarism may occur with respect to unpublished as well as published material. Copying another student's work and submitting it as one's own individual work without proper attribution is a serious form of plagiarism.

### **Inappropriate Use Of Course Materials**

All course materials (e.g., outlines, handouts, syllabi, exams, quizzes, PowerPoint presentations, lectures, audio and video recordings, etc.) are proprietary. Students are prohibited from posting or selling any such course materials without the express written permission of the professor teaching this course. To do so is a violation of the Brigham Young University Honor Code.

### **Respectful Environment**

"Sadly, from time to time, we do hear reports of those who are at best insensitive and at worst insulting in their comments to and about others... We



hear derogatory and sometimes even defamatory comments about those with different political, athletic, or ethnic views or experiences. Such behavior is completely out of place at BYU, and I enlist the aid of all to monitor carefully and, if necessary, correct any such that might occur here, however inadvertent or unintentional. "I worry particularly about demeaning comments made about the career or major choices of women or men either directly or about members of the BYU community generally. We must remember that personal agency is a fundamental principle and that none of us has the right or option to criticize the lawful choices of another." President Cecil O. Samuelson, Annual University Conference, August 24, 2010 "Occasionally, we ... hear reports that our female faculty feel disrespected, especially by students, for choosing to work at BYU, even though each one has been approved by the BYU Board of Trustees. Brothers and sisters, these things ought not to be. Not here. Not at a university that shares a constitution with the School of the Prophets." Vice President John S. Tanner, Annual University Conference, August 24, 2010