**University of Florida**

**College of Public Health & Health Professions Syllabus**

**SPA 3011: Speech Acoustics (3 credits)**

Semester: Fall 2019

Delivery Format: Campus Section 133E

Mondays, 3:00 pm to 4:55 pm in HPNP G210

Wednesdays, 3:00 pm to 3:50 pm in HPNP G210

Instructor:

Sharon M. DiFino, PhD, CCC-SLP   
Office Number: HPNP 2129

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Office Hours: Tuesdays Periods 5 & 6 and by appointment

Preferred course communication method: E-mail as listed above

Teaching Assistant:

Zoe Xu, Doctoral student

Email Address: jcxu@ufl.edu

Office Hours: by appointment

Preferred course communication method: E-mail

Course Information

Course web site can be found from the UF E-Learning (Canvas) page: http://elearning.ufl.edu

## Course Overview/Purpose

The purpose of this course is to provide students with an understanding of the basic principles underlying the production of the speech acoustic signal. It introduces scientific methodologies, physics of sound, acoustics and elementary instrumentation related to human speech communication.

## Relation to Program Outcomes and Clinical Certification Standards: *This course addresses program outcomes that pertain to the following Clinical Certification:*

## Standard IV-A: Knowledge of physical science and social/behavioral science as they relate to acoustics of speech production and perception.

## Standard IV-B: Knowledge of acoustic phonetic aspects of basic human communication processes.

## Course Objectives/Goals

### Skills Objectives and/or Goals: *Students will be able to:*

1. (Analysis) Analyze the acoustics of speech production and perception using the appropriate physical science and social/behavioral science frameworks.
   1. (Application) Connect the characteristics of speech production and perception to the appropriate physical laws
      1. (Comprehension) Illustrate Newton's 3 laws of motion.
      2. (Comprehension) Explain Boyle's law
      3. (Comprehension) Summarize the role of the Bernoulli effect in the myoelastic aerodynamic theory
      4. (Comprehension) Give examples of the principles of basic acoustics
   2. (Application) Calculate the period, frequency and wavelength of a sound wave
      1. (Comprehension) Give examples of periodic and nonperiodic sounds
   3. (Application) Correlate the anatomy and physiology of the human body to the physical production of sound.
      1. (Comprehension) Summarize the concept of respiratory control
      2. (Comprehension) Illustrate the larynx and vocal tract
      3. (Comprehension) Summarize the functions of the vocal tract as relates to speech production and perception
2. (Analysis) Break down the acoustic phonetic aspects of basic human communication processes

## (Application) Classify commonly used techniques to describe and quantify speech

* + 1. (Comprehension) Use appropriate units and measures to describe sound
    2. (Comprehension) Use appropriate units and measures to describe air pressure and flow

## (Application) Measure the acoustic properties of vowels and consonants.

* 1. (Application) Summarize some of the primary theoretical categories of production and perception
     1. (Comprehension) Explain the source-filter theory of speech in terms of filters, vibration, resonance, and spectra

### Skills Objectives and/or Goals: *Students will be able to:*

* 1. Plot waveforms of acoustic and vibrational quantities.
  2. Calculate the period, frequency and wavelength of a sound wave.
  3. Measure the acoustic properties of vowels and consonants.
  4. Identify the principles of basic acoustics, including wave motion and resonance.

## Instructional Methods

Readings, lecture, videos and multimedia materials, provide learning materials. Quizzes and assignments provide practice and knowledge and skills development checks. Exams provide final assessment of knowledge and skills.

## Weekly Organization

* Please complete the readings and other materials posted in Canvas before class.
* Ongoing assessment items (alternating weeks):
  + Quizzes will be open from Thursday 5:00 pm ET to Saturday 11:55 pm ET as assigned
  + Assignments will be due at by 11:55 pm ET on Saturdays as assigned
  + Exam 1 will be open 5:00 pm on Wednesday 10/2 to 11:55 pm on Thursday 10/3
  + Exam 2 will be open 5:00 pm on Tuesday 12/3 to 11:55 pm on Wednesday 12/4

## Class Schedule (Please note class schedule is subject to change. Changes will be announced.)

| Week: | Topic: | Readings: (Behrman) | Complete Readings & Modules by Mon: | Assignment/ Quiz |
| --- | --- | --- | --- | --- |
| 1 | Introduction and Overview | Ch. 1 and 2 | 8/26 |  |
| 2 | Motion & Sound Waves Part 1 | Ch. 2 and 3 | 8/26 |  |
| 3 | Sound Waves Part 2 | Ch. 3 | 9/2\* | Quiz 1 |
| 4 | Sound Waves Part 3 & Breathing Part 1 | Ch. 3 and 4 | 9/9 | Assignment 1 |
| 5 | Breathing Part 2 & Phonation Part 1 | Ch. 4 and 5 | 9/16 | Quiz 2 |
| 6 | Phonation Part 2 & Phonation Part 3 | Ch. 5 and 6 | 9/23 | Assignment 2 |
| 7 | Phonation Part 4 & Vowels Part 1 | Ch. 6 and 7 | 9/30 | Exam 1 |
| 8 | Vowels Part 2 | Ch. 7 | 10/7 | Assignment 3 |
| 9 | Vowels Part 3 | Ch. 7 | 10/14 | Quiz 3 |
| 10 | Consonants Part 1 | Ch. 8 | 10/21 | Assignment 4 |
| 11 | Consonants Part 2 | Ch. 8 | 10/28 |  |
| 12 | Theories and Models of Speech Production & Theories of Speech Perception Part 1 | Ch. 10 and 11 | 11/4 | Quiz4 |
| 13 | Theories and Models of Speech Production & Theories of Speech Perception Part 2 | Ch. 10 and 11 | 11/11\* |  |
| 14 | Instrumentation Part 1 | Ch. 12 | 11/18 |  |
| 15 | Instrumentation Part 2 | Ch. 12 | 11/25 | (Thanksgiving week) |
| 16 | Exam 2 |  | 12/2 | Exam 2 |

\*Holiday on Academic Calendar – No class – complete readings before coming to class on Wednesday

# Course Materials and Technology

*Recommended Text:* Behrman, A. *Speech and Voice Science*, 3nd edition. Plural Publishing, 2018.

*Course Website*: canvas course accessible through [UF E-learning](https://elearning.ufl.edu/)

For technical support for this class, please contact the UF Help Desk at:

* (352) 392-HELP (4357) or [helpdesk@ufl.edu](mailto:helpdesk@ufl.edu)
* <http://helpdesk.ufl.edu/>

## Grading Policy

### Exams:

There will be 2 exams that will test knowledge of presented information as well as synthesis and application of this information in novel situations. These will also be administered through Canvas and equal 30% of your grade.

* + Exam 1 will be open 5:00 pm on Wednesday 10/2 to 11:55 pm on Thursday 10/3
  + Exam 2 will be open 5:00 pm on Tuesday 12/3 to 11:55 pm on Wednesday 12/4

### Quizzes:

There will be 4 quizzes throughout the semester. All quizzes will be administered through Canvas and they equal 40% of the total grade.

* + Quizzes will be open from Thursday 5:00 pm ET to Saturday 11:55 pm ET as assigned

### Assignments:

There will be 4 assignments during the semester. All assignments will be posted via Canvas and they equal 20% of the total grade.

* + Assignments will be due at by 11:55 pm ET on Saturdays as assigned

### Professionalism

At the end of the semester you will receive up to 10% of your grade based on your conduct and effort in the course.

**For this course, professionalism is defined as a scholarly curiosity that drives you to prepare yourself thoroughly before coming to class, attend and participate in class as scheduled, submit work timely as scheduled, cooperate and collaborate with your peers in a scholarly and professional manner, and cooperate and collaborate with faculty and teaching assistants in a professional manner.**

|  |  |
| --- | --- |
| ***Requirement*** | ***Percentage of Overall Grade*** |
| *2 Exams* | *30%* |
| *4 Quizzes* | *40%* |
| *4 Assignments* | *20%* |
| *Professionalism* | *10%* |
| ***Total:*** | ***100%*** |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Letter Grade | A | A- | B+ | B | B- | C+ | C | D+ | D | D- | E |
| Percentage | 93-100 | 90-93 | 87-90 | 83-87 | 80-82 | 77-80 | 70-77 | 67-69.9 | 63-67 | 60-62 | <60 |
| Grade points | 4.0 | 3.67 | 3.33 | 3.0 | 2.67 | 2.33 | 2.0 | 1.33 | 1.0 | 0.67 | 0.0 |

For detail on the meaning of letter grades and university policies related to them, see the Registrar’s Grade Policy regulations:

<http://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

# Exam Policy

# Policy Related to Make up Exams or Other Work

Please note: Any requests for make-ups due to technical issues MUST be accompanied by the ticket number received from LSS when the problem was reported to them. The ticket number will document the time and date of the problem. You MUST e-mail me within 24 hours of the technical difficulty if you wish to request a make-up.

# Policy Related to Required Class Attendance

Students are expected to attend all class periods. Exam questions are taken mainly from the material from class and students will be responsible for this material.

For information regarding the UF Attendance Policy see the Registrar website for additional details: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

**STUDENT EXPECTATIONS, ROLES, AND OPPORTUNITIES FOR INPUT**

**Expectations Regarding Course Behavior**

***Etiquette and Professionalism***

All members of the class are expected to follow rules of common courtesy in all email messages, class discussions and activities. You are expected to arrive to be on time and to participate any time you attend. Your engagement in class activities will be factored into the appraisal of your professionalism.

**Academic Integrity**

Students are expected to act in accordance with the University of Florida policy on academic integrity.  As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge:

***“We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.”***

You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied:

***“On my honor, I have neither given nor received unauthorized aid in doing this assignment.”***

It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code.  Violations of the Honor Code at the University of Florida will not be tolerated.  Violations will be reported to the Dean of Students Office for consideration of disciplinary action.  For additional information regarding Academic Integrity, please see [Student Conduct and Honor Codes](https://sccr.dso.ufl.edu/) information at the Dean of Students Office website or the [Academic Expectations](http://graduateschool.ufl.edu/admissions/orientation/academic-expectations/) information at the Graduate School website for additional details.

Please remember cheating, lying, misrepresentation, or plagiarism in any form is unacceptable and inexcusable behavior.

**Online Faculty Course Evaluation Process**

Students are expected to provide feedback on the quality of instruction in this course by completing online [Faculty Course Evaluations](https://evaluations.ufl.edu/). Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. [Summary Results](https://evaluations.ufl.edu/results/) of these assessments are available to students.

**Guests attending class:** Only registered students are permitted to attend class. However, we recognize that students who are caretakers may face occasional unexpected challenges creating attendance barriers. Therefore, by exception, a department chair or his or her designee (e.g., instructors) may grant a student permission to bring a guest(s) for a total of two class sessions per semester. This is two sessions total across all courses. No further extensions will be granted. Please note that guests are **not** permitted to attend either cadaver or wet labs. Students are responsible for course material regardless of attendance. For additional information, please request the Classroom Guests of Students policy in its entirety.

**SUPPORT SERVICES**

**Accommodations for Students with Disabilities**

If you require classroom accommodation because of a disability, you must register with the [Dean of Students Office Disability Resource Center](https://drc.dso.ufl.edu/) (DRC) within the first week of class. The DRC will provide documentation of accommodations to you, which you then give to me as the instructor of the course to receive accommodations. Please make sure you provide this letter to me by the end of the second week of the course. The College is committed to providing reasonable accommodations to assist students in their coursework.

**Counseling and Student Health**

Students sometimes experience stress from academic expectations and/or personal and interpersonal issues that may interfere with their academic performance. If you find yourself facing issues that have the potential to or are already negatively affecting your coursework, you are encouraged to talk with an instructor and/or seek help through University resources available to you.

[The Counseling and Wellness Center](http://www.counseling.ufl.edu) (352-392-1575) offers a variety of support services such as psychological assessment and intervention and assistance for math and test anxiety. Online and in person assistance is available.

If you are feeling overwhelmed or stressed, you can reach out for help through the [You Matter We Care](http://www.umatter.ufl.edu/) website, which is staffed by Dean of Students and Counseling Center personnel.

The Student Health Care Center at Shands is a satellite clinic of the main Student Health Care Center located on Fletcher Drive on campus. Student Health at Shands offers a variety of clinical services. The clinic is located on the second floor of the Dental Tower in the Health Science Center. For more information, contact the clinic at 392-0627 or check out the [Student Health Care Center](https://shcc.ufl.edu/) website.

Crisis intervention is always available 24/7 from the [Alachua County Crisis Center](http://www.alachuacounty.us/DEPTS/CSS/CRISISCENTER/Pages/CrisisCenter.aspx) at (352) 264-6789.

Do not wait until you reach a crisis to come in and talk with us. We have helped many students through stressful situations impacting their academic performance. You are not alone so do not be afraid to ask for assistance.

**INCLUSIVE LEARNING ENVIRONMENT**

Public health and health professions are based on belief in human dignity and on respect for the individual. As we share our personal beliefs inside or outside of the classroom, it is always with the understanding that we value and respect diversity of background, experience, and opinion, where every individual feels valued. We believe in, and promote, openness and tolerance of differences in ethnicity and culture, and we respect differing personal, spiritual, religious and political values. We further believe that celebrating such diversity enriches the quality of the educational experiences we provide our students and enhances our own personal and professional relationships. We embrace the University of Florida’s Non-Discrimination Policy, which reads:

***“The University shall actively promote equal opportunity policies and practices conforming to laws against discrimination. The University is committed to non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information and veteran status as protected under the Vietnam Era Veterans’ Readjustment Assistance Act.”***

If you have questions or concerns about your rights and responsibilities for inclusive learning environment, please see your instructor or refer to the [Office of Multicultural & Diversity Affairs](http://www.multicultural.ufl.edu) website.