

# Hearing and Speech Sciences 600: Instrumentation

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**Wednesdays**  
**3:30-6 pm**  
**KEY 0119**



## COURSE DESCRIPTION AND OBJECTIVES

Students will acquire knowledge of physics of sound, signals, and systems. This will provide a foundation for audiology practice, fundamentals of acoustic signals and calibration, and evaluation of hearing.

As a result of knowledge obtained in this course, students will be able to:

1. Understand the physical characteristics and measurement of acoustic stimuli.
2. Apply principles and methods of psychoacoustics to hearing evaluations.
3. Apply knowledge of calibration procedures for acoustic stimuli.
4. Analyze the electric properties of stimuli and utilize electric calibration devices.
5. Utilize the principles of research design and laboratory methods in clinical evaluation and research.
6. Conduct an electroacoustics calibration of standard audiometric equipment according to accepted standards.
7. Identify normal and abnormal results of routine audiometric evaluations.
8. Troubleshoot sources of malfunction in audiometric equipment.

## COURSE REQUIREMENTS AND POLICIES

### Materials Needed:

#### *Texts:*

Rosen and Howell, "Signals and Systems for Speech and Hearing." Second Edition.  
Moser, "Electronics and Instrumentation for Audiologists."

*Calculator:* A scientific calculator (one that calculates logarithms, sines, cosines, powers, etc.) will be necessary for this course and should be brought to every class.

## Quizzes and Exams:

- Exercises (~25 pts each): Four-five exercises will be provided each week, and due the following week.
- Exams (300 pts each): A midterm and a final will be given. The final is cumulative.

## Grading:

Your course grade will depend upon homework, quizzes, a midterm exam, and final exam. Students will be able to drop their lowest three weekly quiz scores. Grades will be on an absolute scale for the follow percentages:

A+:  $\geq 100$       A: 93-99      A-: 90-92  
 B+: 90-87      B: 83-86      B-: 80-82

And so on...

# COURSE SCHEDULE

Date	Lecture Number		Topics Covered	Readings
September 2, 2015	1	Sound 1	Nature of Sound, Signals, and Sine Waves	Rosen pp 1-30
September 9, 2015	2	Sound 2	Nature of Sound, Signals, and Sine Waves	Rosen pp 1-30, Moser Ch 13
September 16, 2015	3	Sound 3	Logs, Intensity, and Pressure	TBA
September 23, 2015	4	Sound 4	Complex Waves and Fourier Transform	TBA
September 30, 2015	5	Sound 5	Resonance and Filtering	TBA
October 7, 2015	6	Sound 6	Distortion	TBA
<b>October 14, 2015</b>	<b>7</b>		<b>Exam 1</b>	
October 21, 2015	8	Electricity 1	AC/DC	TBA
October 28, 2015	9	Electricity 2	AC/DC	TBA
November 4, 2015	10	Electricity 3	Filtering 2	TBA
November 11, 2015	11	Electricity 4	Comm Systems, Immittance, Reflectance	TBA
November 18, 2015	12	Electricity 5	DSP	TBA
<b>November 25, 2015</b>			<b>No Class - Thanksgiving</b>	TBA
December 2, 2015	13	Electricity 6	Test & Calibration Equipment	TBA
December 9, 2015	14	Electricity 7	Catch up & Review	TBA
<b>December 16, 2015</b>	<b>15</b>		<b>Final Exam</b>	