

Physics 306: Acoustics

Professor: Lyle Hoffman

Spring 2017

Month	Week of	Topic	Reading	Work Due
Jan.	23-27	Simple Oscillating Systems (review)	F&R 1.1-1.4	
	30-3	Damped and Forced Oscillations	F&R 1.5-1.12	Prob. Set 1
Feb.	6-10	1D Continuous Systems	F&R Ch. 2	Prob. Set 2
	13-17	2D Continuous Systems	F&R Ch. 3	Prob. Set 3
	20-24	Coupled Systems	F&R Ch. 4	Prob. Set 4
	27-3	Nonlinear Systems	F&R Ch. 5	Prob. Set 5
Mar.	6-10	Sound Waves	F&R Ch. 6	Prob. Set 6
	13-17	<i>Spring Break</i>		
	20-24	Sound Radiation	F&R Ch. 7	Prob. Set 7
	27-31	Pipes & Horns	F&R 8.1-8.6	Prob. Set 8
Apr.	3-7	Horns (cont.)	F&R 8.7-8.12	Prob. Set 9
	10-14	Stringed Instruments (any one chap.)	F&R Chs. 9-12	Prob. Set 10
	17-21	Wind Instruments (any one chap.)	F&R Chs. 13-17	Prob. Set 11

	24-28	Percussion Instruments (any one chap.)	F&R Chs. 18-21	Prob. Set 12
May	1-5	Room Acoustics	H Ch. 12	Prob. Set 13

Texts:

- Fletcher & Rossing, *The Physics of Musical Instruments, 2nd Ed.* (F&R)
- Hall, *Basic Acoustics* (H)

Learning goals: Upon completion of this course, each student should:

- Understand the principles of vibrating systems;
- Be able to apply advanced mathematics to determine the production of sound by musical instruments;
- Understand the essential details that differentiate stringed, woodwind, brass and percussion instruments;
- Have gained skill in problem-solving;
- Have gained an appreciation for the applicability of physics to instruments evolved for artistic expression.

Requirements:

- Weekly problem sets.
- Weekly tutorials with the instructor.
- Attendance at Phys 106 lectures.

Your grade will be based primarily on your scores on the weekly problem sets, but attendance will be taken into consideration as warranted.

Registrar's Mandatory Privacy Statement:

- Moodle contains student information that is protected by the Family Educational Right to Privacy Act (FERPA). Disclosure to unauthorized parties violates federal privacy laws. Courses using Moodle will make student information visible to other students in this class. Please remember that this information is protected by these federal privacy laws and must not be shared with anyone outside the class. Questions can be referred to the Registrar's Office.

Federal Credit Hour Compliance Statement:

- The student work in this course is in full compliance with the federal definition of a four credit hour course.

This page is maintained by [Lyle Hoffman](#)