

**FYSE-18 Science and Music
Fall, 2009**

Instructors:

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Text

The Science of Sound, 3rd Ed., Rossing, Moore and Wheeler (Addison-Wesley, 2002). Available at Amherst Books.

Other reading materials will be put on reserve in the Music Library (located in ARMS) and on an electronic reserve webpage (your Amherst username and password will allow you access).

Course organization

The course will consist of both lectures and labs. For lectures we will meet in either ARMS 212 or Merrill 211. For labs, we will split into two sections, one of which will initially meet with Prof. Friedman in Merrill 217 or 215, the other with Prof. Sawyer in the Mac Lab in the basement of Seeley Mudd (room# ???). At the next class meeting, the sections will switch professors/locations.

Attendance in lectures is expected. You will be permitted two absences throughout the semester. Further absences will result in a 2% (??) reduction in your final grade for the course per absence. Exceptions for illness, family emergency, etc. will be considered upon a recommendation from the Dean of Students' office. Completion of all of the labs is required. Labs missed because of exigent circumstances (again, recommendation from DoS's office required) will need to be made up. Missing a lab without a valid excuse will result in a failing grade for the class.

Assignments and Course requirements

You will be given regular reading assignments in the textbook and through the electronic reserve web page. You are expected to read the assigned material before the relevant lecture. You will be asked to turn in short assignments relating to readings or labs on a regular basis.

In addition, there will be a midterm paper and a final project/paper. The midterm paper will be assigned during fifth week of class and due during the seventh week of class. The final project, which will include a short presentation to the class and a final paper about your project, will be assigned later in the semester. The last three class meetings will be devoted to final project presentations. The final paper will be due during finals week.

Grading

Your final grade for the course will depend on your performance on regular assignments, the midterm paper and the final project, as well as class participation. These will be weighted as follows.

Midterm paper	15%
Final project	25%
Labs/assignments	50%
Class Participation	10%

Your final letter grade may also depend on a variety of subjective criteria such as overall increase (or decline!) in performance over the course of the semester, etc.

Statement of Intellectual Responsibility

You are encouraged to work with your lab partner and classmates on your assignments, papers and projects. But, what you turn in must be written entirely by you and must represent your own understanding of the work you have done. You cannot simply copy what others have told you. Be sure to cite all sources of information, even web pages for which you should give the URL, the author, and the host institution. It costs you nothing to cite a source. Using someone else's work without attribution is intellectually dishonest and will result in a severe penalty, possibly even a failing grade for the entire course.

Intellectual integrity is the cornerstone of experimental science. When you work in the lab, you should treat the data you collect as sacred. It should never be fabricated or massaged to fit with preconceived notions. No data should be left out of a graph or analysis without a strong justification that is clearly stated.

Preliminary Syllabus

Week starting	Tuesday Lecture/Lab	Room	Thursday Lecture/Lab	Room	Readings
Sept. 7	None	n/a	Introduction	ARMS 212	Rossing p. 1-35
Sept. 14	Forces and Vibrations	Merrill 211	Harmonic Series/Scales	ARMS 212	
Sept. 21	Lab 1	Merrill 217 or Seeley Mudd Mac Lab	Lab 1	Merrill 217 or Seeley Mudd Mac Lab	Rossing p. 39-71
Sept. 28	Waves and resonance	Merrill 211	Music Theory	ARMS 212	
Oct. 5	Lab 2	Merrill 217 or Seeley Mudd Mac Lab	Lab 2	Merrill 217 or Seeley Mudd Mac Lab	Rossing p. 136-140, 150-156, 165-167
Oct. 12	Fourier Analysis and Synthesis	Merrill 211	Instruments, timbre	ARMS 212	
Oct. 19	Lab 3	Merrill 215 or Seeley Mudd Mac Lab	Lab 3	Merrill 215 or Seeley Mudd Mac Lab	Rossing p. 399-412
Oct. 26	Electronics and filters	Merrill 211	Voice, vowel formants	ARMS 212	
Nov. 2	Lab 4	Merrill 217 or Seeley Mudd Mac Lab	Lab 4	Merrill 217 or Seeley Mudd Mac Lab	Rossing p. 79-116, 121-136
Nov. 9	Perception	Merrill 211	Harmony, form	ARMS 212	
Nov. 16	Lab 5	Merrill 215 or Seeley Mudd Mac Lab	Lab 5	Merrill 215 or Seeley Mudd Mac Lab	
Nov. 23	Thanksgiving	Break	
Nov. 30	The science of music	Merrill 211	Composition, analysis	ARMS 212	

Dec. 7	Final presentations		Final presentations		
Dec. 14	Final presentations				