

**PHYSICS 0082**  
**Science of Musical Sounds**

**Fall, 2013**

**General Information and Schedule**

**Instructor: Professor Paul F. Shepard**

**Office: 401 Allen Hall**

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**Course website: <http://www.paulfshepard.org>**

**Textbook:** *Physics and the Sound of Music*, 2<sup>nd</sup> ed., by John S. Rigden

**Other Useful Books:** *The Physics and Psychophysics of Music*, 3<sup>rd</sup> ed., Juan G. Roederer  
*The Science of Sound*, 3<sup>rd</sup> ed., Rossing, Moore, and Wheeler

**Office Hours:** Tuesday and Thursday from 1:30 – 3:30 pm. I am available to meet with students at other times as well. Please email me to arrange a time as I can be hard to find.

**Homework Assignments:** Homework will generally be assigned on Tuesdays and will be due in lecture on the following Tuesday, although I may make assignments at alternate times. Solutions will be available on the website and your work will be at least partially evaluated. For example, I expect to choose some homework problems and grade them as short quizzes.

**Exams and Grading:** There will be three one-hour exams and a two-hour final exam. Your lowest one-hour exam grade will not be counted and the remaining two exams will count 50% of your grade. You are expected to take all three one-hour exams unless excused by the instructor. The final exam will count 40% with 10% of your grade based on your performance on homework assignments and quizzes.

**Course Schedule:**

Unit Ia – Basic math skills, waves and SHM, sound waves, simple tones, complex tones, linear superposition, pitch, two pure tones, and fundamental tracking. Aug. 27 – Sept. 12.  
Sept. 19 – Homework returned and unit review.

**Exam I**                      Tues., Sept. 24

Unit Ib – Perception of sound, loudness, the ear, the brain, and fundamental tracking revisited. Sept. 17 – Oct. 3

Unit II – Consonance and dissonance, scales. Oct. 8 – Oct. 17. Oct. 24 – Homework returned and review.

**Exam II**                      Tues., Oct. 29

Unit III – Standing waves, resonance, plucked strings, bowed strings, instruments. Oct. 22 – Nov. 7.

Unit IV – Acoustical principles and concert halls. Nov. 12 – Nov. 14. Nov. 21 –  
Homework returned and review.

**Exam III**                      Tues., Nov. 26

Unit V – Catch up and review Nov. 19 – Dec. 5.

**Final Exam**                      Sat., Dec. 14, 8:00 – 9:50 am. This date is set by the registrar and  
can't be changed!