

## Week 11: Reading & Homework Assignment # 8

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**Lab TAs:** Matt Ziemann [mrziema2@illinois.edu](mailto:mrziema2@illinois.edu)  
Office Hours: Mondays, 10-11 am 6105 Eng. Sci. Bldg. (or by appt.)  
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**Course Textbook(s):** Physics 406 Lecture Notes (posted on P406 website – see below)  
“The Science of Sound”, 3<sup>rd</sup> Ed. Rossing, Moore & Wheeler, Addison-Wesley

**Another good book:** “The Acoustical Foundations of Music” 2<sup>nd</sup> Ed., John Backus, Norton

**Course Website:** <http://courses.physics.illinois.edu/phys406/>  
<http://courses.physics.illinois.edu/phys193/> ←

Freshman “Discovery” POM Course (less technical)

All lecture notes, lab handouts, additional references, previous student final project reports (and much more) are available on the P406 (and P193) website(s). Please check these out!

### **Course Organization:**

**A. Lectures:** Tuesdays & Thursdays, 12:30-1:50 pm, in the POM Lab (6105 ESB).  
We will also have various demos using equipment in the POM Lab (6105 ESB).

**B. Friday Labs:** Lab1 @ 11:00 am -1:50 pm, Lab2 @ 2:00-4:50 pm in the POM Lab (6105 ESB)

First part of the semester will consist of doing various simple/short experiments using equipment and/or software in the lab. Will discuss this in the 1<sup>st</sup> lab session(s) this coming Friday. Second part of semester, labs will be focused on student project(s) – more on this below.

**C. Weekly Reading and Homework Assignments:** HW due *following* week on Thursday, in class.

**D. Take-Home Midterm Exam:** Tuesday, March 7, 2017, **Due:** Thursday, March 16, 2017

**E. Midterm Project Oral Presentations:** Brief! In class – Tues & Thurs, March 7 & 9, 2017

**F. Final Project Oral Presentations:** Brief! In class – Thurs, April 27 & Tues, May 2, 2017

**G. Take-Home Final Exam:** Tuesday, April 25, 2017, **Due:** Friday, May 5, 2017

**H. Final Project Written Report:** **Due:** Friday, May 12, 2017

*i.e.* 9  
days  
later

**Reading Assignment For Week 11:** Please read Physics 406 Lect. Notes XI – Parts I & II, and Physics 406 Lect. Notes on Time Domain vs. Frequency Domain Quantities.

**Homework Assignment For Week 11:** As you do this week's reading assignment: See Below.....

### **Final grade based on:**

$\Sigma$ HW's: 20%

MT: 15%

FE: 30%

FP: 35% (=  $\Sigma$  mid-term & final oral presentations, final written report).

**Homework Assignment For Week 11: n.b. this is HW # 8 !!!**

- 1.) Work through the derivation of the linear superposition of two complex periodic signals in P406 Lect. Notes 11, p. 5-10
- 2.) Work through the derivation of complex standing waves, P406 Lect. Notes 11, p. 20-21,
- 3.) Turn in your above derivations as **HW # 8**.

⇒ If you have not done this type of studying before, it is a very useful/helpful/powerful technique for deeper learning of any subject - anything...