

Physics 406 - Spring 2017

Acoustical Physics of Music

Personnel:

- Prof. Steven Errede (Lecturer) 435 Loomis 333-0074 serrede@illinois.edu
Office Hrs: Anytime
- Matt Ziemann (HW/Lab TA) mrziema2@illinois.edu
Office Hrs: 10-11 am Mondays 6105 ESB
- Andrew Ferrante (HW/Lab TA) aferran2@illinois.edu
Office Hrs: 2-3 pm Tuesdays 6105 ESB
- Jack Boparai (UG Lab Czar) 6101 ESB 333-2208 jboparai@illinois.edu
- UIUC Physics 406 Web Site: <https://courses.physics.illinois.edu/phys406/>

Course Space-Time Info:

- Lectures: Tues & Thurs, @ 12:30-1:50 pm – 6105 ESB
- Labs L1 & L2: Fridays, @ 11-2, 2-5 pm – 6105 ESB

Course Textbook: “The Science of Sound”, 3rd Ed. Rossing, Moore & Wheeler, Addison-Wesley

Course Content/Organization:

- Lectures – will cover a broad range of acoustical physics, history & technology of music and musical instruments – all kinds, and the physics of human hearing/psychoacoustics.
- Labs – learn to use various electronic measurement equipment – digital recorders, microphones/sound transducers, oscilloscopes, function generators, digital multimeters, spectrum analyzers, lock-in amplifiers, power supplies, computer-based data acquisition systems, other electronics/electronic transducers, *etc.* to carry out physical measurements / experiments to elucidate/learn about the physics nature of how musical instruments work.
- Homework: Short weekly exercises related to lectures, and possible use *e.g.* Excel, MATLAB and/or other software, *e.g.* Comsol MultiPhysics.
- Take-Home Midterm & Final Exams.
- Students chose, and then carry out their own acoustical physics/music/musical instrument project(s) that they work on in lab during the semester – brief oral & short written presentation to class @ mid-term, and oral & written presentation(s) to class @ end of semester. Final report(s) posted on the UIUC Physics 406 POM web page.
- Final grade based on weekly homeworks, mid-term & final exams, midterm & final oral presentation(s) & final written report(s) on project(s).

Final grade based on:

- ΣHW's: 20%
- MT: 15%
- FE: 30%
- FP: 35% (*n.b.* includes mid-term & final oral presentations, & final written report).

6105 ESB Computer Logon: **Uofi domain (!)**, <your netid>, <your pw>