**Course Description**

**PHY 152: The Physics of Sound and Music (Fall 2011); Course reference number: 15304; Credits: 4**

Schedule: M, W, F 1:00-1:50, Room 100 Willamette Hall

**Instructor:** Michael Raymer  
Office: 276 Willamette (at front of building), phone: 346-4785  
email: raymer@uoregon.edu  
Office hours (Tentative): W 3:00-4:00, F 2:30-3:30, and by appointment (best to email first)

**Co-Instructors:**
Anthony Clark  
Office: Klamath 135 (coming from Onyx building, take the first left after crossing the bridge into Klamath). email: aclark@uoregon.edu  
Office hours (Tentative): M 11:0-12:00, Tu 11:0-12:00, and by appointment (best to email first)

Matt Harrison  
Location: Undergraduate Physics Reading Room (Willamette atrium) email: harriso2@uoregon.edu  
Office hours (Tentative): M 2:00-3:00, W 2:00-3:30, and by appointment (best to email first)

**Grader:** Dylan Mead  
Office: TBA; email: dmead@uoregon.edu  
Office hours (Tentative): Tu 3:30-4:30, W 11:00-12:00, and by appointment (best to email first)

**Physics Drop-In Help Center** WIL 147. Help with any standard math or physics question can be obtained here, and is staffed 5 days a week (Most times it is open. Hours are posted on the door.) Note: Some of the music-related topics in this course may be outside the expertise of the tutors there.

**Course Home Page:** Blackboard system, [https://blackboard.uoregon.edu/webapps/login/](https://blackboard.uoregon.edu/webapps/login/)  
Course Announcements, Lecture Supplements, Homework assignments, and other materials will be posted, usually as pdf files.

**Course Description:** A non-major's science course to introduce the physical concepts necessary to understand musical sound. Basic concepts of physics will be introduced as needed, using only elementary math and simple algebra.

**Prerequisites:** no formal requirements, but see below.

**Schedule of Lectures and Readings:** The schedule of topics we will cover in this course, with reading assignments for you to complete before each class is given in a separate document, titled “Schedule of Lectures and Readings.”

**Required Materials:**

- **Calculator:** You will need a scientific calculator for this course, and you must bring it to all exams, and we encourage you to bring it to class. At minimum, it should be able to calculate using scientific notation for large and small numbers. There should be plenty of choices at the UO bookstore.

- **i>clicker:** You need to purchase an i>clicker from the UO bookstore (about $35 new, with good resale value). You will use this to respond to class polls and to take in-class reading quizzes (see the grades section below). You must bring your clicker to every class, and I expect you to **obtain and register one prior to Monday of the second week of classes.** You will need to register your clicker following instructions on Blackboard in the Course Information section for this course.

- **Text:** The required textbook for this course is *Musical Instrument Design* by Bart Hopkin. It will be available at the UO bookstore.
We will post lecture notes for the course (the slides we show in class) on the course Blackboard site. In general, these notes will be available within a couple of days after the material is covered in class. You should still plan to take your own notes during class.

Use of Math: You will need to employ some basic math skills—fractions, simple algebra (solve 2 \(x = 5\)), square roots, exponents and scientific notation, how to use a calculator, and how to draw and interpret graphs.

Grades: Grades for the course will be based on:
* Daily Classroom Participation (i>clicker-based Polls and Reading Quizzes): 10%
* Portfolio: 10%
* Homework: 30%
* Quiz 2%
* Midterm exam: 20%
* Final exam: 28%

Grading scale: The expected grading scale for this course is: 100-85 = A, 84.9-72 = B, 71.9-65 = C, 64.9-50 = D, <50: in danger of F. If necessary, I may apply a curve to achieve a higher average final grade. However, you are guaranteed at least the grade listed here based on your course average. Pass/fail grading option: A passing grade requires at least the equivalent of a C-grade.

Clicker Reading Quizzes: Most of the classes will begin with a short reading quiz, using your clicker. The questions are designed to be easy if you've done the assigned reading (they won't test mastery of the material). Your responses are known only to you and the Instructors. Bring pencil, paper, and calculator to every class for these.

Clicker Polls: Classes will involve poll questions which will be answered with your clicker. It doesn’t matter whether or not you get these questions right, as long as you give some answer. Your responses are known only to you and the Instructors.

We understand you may need to miss an occasional class; therefore in computing your final grade, we will drop your two lowest class days of Poll and Reading Quiz scores, including any missed or "forgot-my-clicker" days.

Attendance: You will need to show up promptly at the beginning of each class to take each clicker reading quiz, and to participate in class. Some of your lowest scores are dropped, as mentioned above, in computing your final grade, so this allows you to miss a couple of classes without penalty if necessary.

Homework: Bi-weekly homework sets will be assigned on Blackboard, usually on Wednesdays. We encourage you to work together in solving homework problems, but you must write up the solutions on your own, in your own words. See the document How to Study for Science and Math Courses provided on Blackboard. Homework is due at 4:30 pm on the due date; put into the designated In-Box (location: basement of Willamette - below our classroom). We will accept late homework no more than 24 hours late (4:30 pm the day after the due date in the Homework In-Box). Up to 24-hour-late homework will have 20% deducted. We will try to post solutions to each homework assignment within one day after it is due.

Makeup exams (NONE): The exams are pre-scheduled so you can avoid scheduling conflicts. Thus, there will be no makeup exams for this course, so please check the dates now. If you have a serious and documented reason for missing an exam (death in the family, serious illness), your final-exam score will count in place of the missed midterm exam score. That is, your final-exam score will count for more than it would otherwise.

Final exam: The final exam will be held from 3:15-5:15 pm on Thursday, Dec. 8. You must take the exam at this time. (No exceptions.) You must bring a calculator to the final.