

*Department of Physics
Eastern Illinois University
Charleston, IL 61920*

PHY 1072-001: FALL 2008

PHYSICS OF SOUND AND MUSIC LABORATORY

Class type: Lab **Meeting Time:** W 8:00-9:50 am **Location:** PHYS 2167

Instructor: Dr. Jie Zou **Office:** PHYS 1114 **Tel:** 581-6346

Email: jzou@eiu.edu **Office Hours:** M W F (11:00 am-noon; 3:00-4:00 pm)
Web: <http://www.ux1.eiu.edu/~jzou/> or by appointment

Course Objective and Content

This is an introductory laboratory course in physics. In this course, you will be asked to do experimental work demonstrating physical and acoustical principles and their applications. This laboratory course must be taken concurrently with PHY 1071. However, it is a separate course from PHY 1071 and has a separate grade.

I will give an introduction before each lab. You should finish all data measurements and collection during the lab. Also, data should be analyzed and calculations should be performed DURING the lab period as much as possible so that any false set of data can be re-measured.

Laboratory Manual

Please always bring your lab manual to the class and read the lab manual for each lab assignment before the lab period. Good preparation before the lab is essential for finishing each lab smoothly.

Course Grading

Grading of this course will be based on your lab performance and lab reports, and will use the following method (grades may be curved if necessary). ***There will be no final exam for this laboratory course.***

A: 90%-100% B: 80%-89% C: 70%-79% D: 60%-69% F: below 60%

Policy on Missing Labs

If you have to miss a lab due to a student field trip in another class, a personal or family emergency, *please let me know as soon as possible*. Missing labs may be excused based on *acceptable* reasons. However, *no more than three missing labs* in total will be allowed. *No make-up labs will be given.*

Lab Reports

Full-content lab reports are required for selected labs only, as indicated in the class schedule. Also, please check the due date for each report. *No late lab reports will be accepted.* Grading of the lab reports will be based on the guidelines for the physics lab reports (see the lab manual) and the lab contents, which include six essential elements: Cover Page, Statement of Purpose, Procedures, Presentation of Data, Analysis of Data, and Conclusion. *Each student must submit a separate and independent lab report. Copying other students' reports is not allowed.*

The content and format of the laboratory report should follow the basic guidelines stated at the beginning of your lab manual: Laboratory Report Guide and Layout for a Typical Lab Report. *Each lab report must be typed in 12-font size and single-spaced.* All information and original data should be included in this report. A sample of a typical lab report is attached at the end of this syllabus.

For labs where a full-content lab report is not required, students must check the experimental results with the instructor before leaving each lab. They will be graded according to lab performance and the experimental results obtained.

Information for Students with Disabilities

If you have a documented disability and wish to receive academic accommodations, please contact the coordinator of the Office of Disability Services at 581-6583 as soon as possible. Appropriate academic support is available for students with a documented disability. Please notify your professor and contact the Office of Disability Services for further information. Contact the Office of Disability Services for answers regarding accommodations, auxiliary learning aids and physical accessibility. Diagnostic information regarding the disability must be submitted so the most appropriate accommodations can be arranged. Refer to the Undergraduate Catalog for more information.

A tentative semester schedule for this laboratory course is given on the next page. Changes may be made when necessary.

HAVE A GOOD SEMESTER!

**TENTATIVE SCHEDULE FOR PHY 1072-001: FALL 2008
PHYSICS OF SOUND AND MUSIC LABORATORY**

*Note: You must write a full-content lab report for each of the following selected labs indicated in Bold and with a * in the table below. The selected labs are 50 points each and the others are 20 points each.*

Dates (Wednesdays)	Labs
08/27	1. Graphical Analysis *
09/03 Lab Report #1 Due	2. Uniformly Accelerated Motion: Free Fall
09/10	3. Newton's Second Law *
09/17	No Lab
09/24 Lab Report #3 Due	4. Conservation of Momentum (Air Track)
10/01	5. Work and Energy *
10/08	No Lab
10/15 Lab Report #5 Due	6. Simple Harmonic Motion: Spring
10/22	7. Simple Harmonic Motion: Simple Pendulum *
10/29 Lab Report #7 Due	8. Wave Properties (Ripple Tank)
11/05	9. Speed of Sound in Air *
11/12 Lab Report #9 Due¹	10. Take-Home Lab: Sound Intensity Level (Group 1) ²
11/19	No Lab
11/26	Thanksgiving Break
12/03	11. Analyzing Sound *
12/10 Lab Report #11 Due	12. Formants (optional)

¹You can turn in Lab Report #9 during the lecture on Wednesday.

² Lab #10 is a take-home lab. I will hand out the sound level meters to you in the lecture on Wednesday. You should return the sound level meters by the following Monday.

A Sample of a Typical Lab Report

PHY 1072-001: Physics of Sound and Music Laboratory Report
Lab 1: Graphical Analysis

Name: _____

Lab Partner(s): _____

Date: _____

Statement of Purpose

Explain the goals of the experiment.

Procedures

Briefly explain how each type of data were measured.

Presentation of Data

Include all original data in this section.

List all the data that were taken during the experiment.

If there is a data table, include it in this section.

Include any other tables or forms that contain other data.

Calculated data should be included here also.

Analysis of Data

Graphs take place here.

If the graphs are on separate pages, give a distinct title to each graph and refer to it.

The graphs should appear in the order as they appear in the text.

Explain why you decide on your function fit (why not the other ones?).

Compare the coefficients from graphs to that of fundamental equations (if applicable).

Percent errors are helpful.

Conclusion

Were the goals of the experiment achieved?

If there were significant discrepancy, it should be addressed here.

What parts of the experiment went well? What parts didn't?

List and explain some points that were overlooked.

Explain what can be done to achieve better results.

Add anything else you want to comment about the experiment.

Conclusions such as "We got good results" and "I learned a lot from this lab" are NOT acceptable, and comments such as "human error" are NOT acceptable. The conclusion should provide some connection to the Purpose.