



Course Syllabus

Physics 103

Physics of Music

PHYS 103

Fall 2019

Learning Outcomes

This is a laboratory on the nature sound and music and its interpretations. It complements the lecture course of Physics 102. No mathematical skills are assumed beyond simple algebra and some knowledge of simple trigonometry and its functions.

The course is intended primarily for students who are not majoring in the physical sciences and who need to fulfill a General Education Natural Science Lab requirement. It may not fulfill general physical science course requirements

In this course you will explore:

- The properties of sound that we can quantify and measure
- What is the speed of sound. Measure the speed of sound
- Instrumentation to measure sound and reproduce music
- Measure your own hearing profile
- Introduction to Psychoacoustics

Required Resources

Course website: www.elms.umd.edu

Required Text

Physics 103 Laboratory Manual and Instruction Sheets

You will have to purchase online access to the Lab manual.

More details are provided below.

Additional Instruction Sheets may be provided on ELMS as needed

You will have to prepare a lab report online while you are performing your experiments. You must answer the pre-lab questions online before coming to class.

Course Overview:

PHYS 103 PHYSICS OF MUSIC LABORATORY is a one (1) credit hour course that should be taken concurrently with PHYSICS 102 PHYSICS OF MUSIC to receive credit, and may not be taken for credit by Physics Majors. The lab meets for two hours weekly, giving students hands-on in-depth

Prof. Andris Skuja

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Office Hours

PSC 3103 by appointment

Class Sections

Section 101 Thursday
11:00am to 12:50pm

Section 301 Thursday
3:30pm to 5:20pm

Section 401 Friday 10:00am
to 11:50am

Section 501 Friday
12:00noon to 1:50pm

Section 601 Friday 2:00pm
to 3:50pm

Section 701 Wednesday
3:00pm to 4:50pm

Section 801 Wednesday
1.00pm to 2:50pm

All sections meet in
3220 Toll Physics Building

Teaching Assistants

Clayton Ristow (sections
101, 301, 401, 601, 801)

ristow@terpmail.umd.edu

Gaurav Agrawal (sections
501, 701)

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Graders

Logan Wood

experience with some of the topics covered in the Physics of Music lecture class. The Teaching Assistants will be the laboratory instructors. The lab reports will be graded by the TA's and the graders.

The lab is a **participatory** activity, it is **mandatory** that you attend all labs. It is also important that you prepare for your lab period by carefully reading the lab instruction sheets and doing the pre-lab questions. Pre-lab questions serve both as a review of important ideas and preparation for lab activities. If you do not do the pre-lab questions online before you come to the lab, you will receive no credit for them. If you do not understand the questions or have difficulty completing the assignment you may ask for clarification. Lab reports are completed online in the lab. You can access the lab report template online in the Lab or download it to your laptop in advance.

You will carry out the lab with one lab partners. Discussion and cooperation with other students while doing the labs is encouraged. However, entry of observations and conclusions in the online Lab Report should be done by each student independently. Pre-lab questions should also be answered independently (after discussion when necessary). They pre-lab questions should be done online before coming to class. The grade for the pre-lab will be included in the total lab report grade.

Once you have completed your Lab Report you should post it on ELMS.

You will do each lab only once. **Additional credit** will **not** be given for repeating a lab.

If you **miss a lab**, your absence must be for a valid reason known as an excused absence. Please consult the following University website about missed classes:

<http://www.ugst.umd.edu/courserelatedpolicies.html>

If your absence is an excused absence you will be permitted to make up the missed lab without any loss of credit. You are encouraged to make up the missed lab by attending another lab session that week (at the discretion of the instructor) (see the lab schedule below). You may also make up the missed lab(s) by attending one or more of the lab sessions during make-up week as designated in the lab schedule. However, you shall get only half credit for any make-up labs which you missed during your regular lab sessions for unacceptable excuses. If you have to miss labs for religious reasons, you are encouraged to arrange for a make-up session before you miss the lab.

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Prerequisites

N/A

Course Communication

Time-sensitive information regarding the course will be sent via an ELMS announcement. To discuss questions, appointments, absences, or accommodations, please contact your TA via ELMS.

Grading will be based on the total point accumulation for the 11 labs, each lab being worth a maximum of 40 points. A histogram of total scores will be made, and a letter grade will be assigned approximately as follows from this distribution:

Final Grade Cutoffs									
+	97.00%	+	87.00%	+	77.00%	+	67.00%		
A	92.00%	B	82.00%	C	72.00%	D	62.00%	F	<60.0%
-	90.00%	-	80.00%	-	70.00%	-	60.00%		

To qualify for an A, you must distinguish yourself among your peers. All these grade assignments are nominal and are based on previous experience of student participation in the course. In the unexpected circumstance that all students complete the labs with reasonable grades, failing letter grades will not be given.

It is mandatory to do all labs. Missing one lab will lower your grade by one letter grade; missing two labs will result in a D grade and missing more than two labs will result in a grade of F. If you miss a lab for any reason you must make it up as explained previously if you do not want to be penalized in the manner just described. Credit for make-up labs will be given as explained previously.

Lab Manual: You must purchase electronic access to the Experimental Instructions set. Access is available at

theexpertta.com

You can go to the site and register as well as login once you have done so.

You will have to enter an access code by your section number and follow instructions

The access codes are the ones starting with USH22MD below.

If you go to the link as posted below directly you will access the correct section corresponding to the appropriate code

Section	**Class Registration URL
0101	http://goeta.link/USH22MD-E9D288-1TV
0301	http://goeta.link/USH22MD-23EDFF-1TU
0401	http://goeta.link/USH22MD-A0A30D-1TT
0501	http://goeta.link/USH22MD-B25AF8-1TS
0601	http://goeta.link/USH22MD-71D86A-1TR
0701	http://goeta.link/USH22MD-C8F604-1TQ
0801	http://goeta.link/USH22MD-0EB936-1TP

Preparation for Lab #1: (a) Obtain your access, (b) Read the Introduction and the Lab #1 write-up and come prepared to ask questions if you do not understand the material, (c) Answer the pre-lab questions before coming to class

Schedule of Experiments:

Complete the pre-lab questions before coming to class

Week	Date	Experimental Topic			Lab Rep
1	Aug. 28, 29 & 30	No Lab. First week of Classes			
2	Sept. 4, 5 & 6	Experiment 1: Simple Harmonic Motion			Due at end of session
3	Sept. 11, 12 & 13	Experiment 2: Introduction to Electronic Instruments			Due at end of session
4	Sept. 18, 19 & 20	Experiment 3: Sound Quality and Wave Shape			Due at end of session
5	Sept. 25, 26 & 27	Experiment 4: Speed of Sound in Air			Due at end of session
6	Oct. 2, 3 & 4	Experiment 5: Standing Waves in Stretched Strings			Due at end of Session
7	Oct. 9, 10 & 11	Experiment 6: Standing Waves in Air Columns			Due at end of Session
8	Oct. 16, 17 & 18	Experiment 7: Fourier Synthesis			Due at end of Session
9	Oct. 23, 24 & 25	Experiment 8: Fourier Analysis			Due at end of Session
10	Oct.30, 31 & Nov 1	Experiment 9: Our Hearing Profiles			Due at end of Session
11	Nov. 6, 7 & 8	Experiment 10: Psychoacoustics			Due at end of Session
12	Nov. 13, 14 & 15	Experiment 11: Audio Equipment			Due at end of Session
13	Nov. 20, 21 & 22	Make up week. You must get Approval to do a make-up lab			Due at end of session
14	Nov. 27, 28 & 29	Thanksgiving Week No Labs			
15	Dec. 4, 5 & 6	No Labs. Special Consideration			
15	Dec. 11, 12 & 13	Final Exam Week: No Labs			

You must finish all 11 labs and hand in the corresponding reports to successfully complete the course for full credit

Campus Policies

It is our shared responsibility to know and abide by the University of Maryland's policies that relate to all courses, which include topics like:

- Academic integrity
- Student and instructor conduct
- Accessibility and accommodations
- Attendance and excused absences
- Grades and appeals
- Copyright and intellectual property

Please visit

www.ugst.umd.edu/courserelatedpolicies.html for the Office of Undergraduate Studies' full list of campus-wide policies and follow up with me if you have questions.

