



Course Syllabus

Physics 103

Physics of Music Laboratory

PHYS 103

Fall 2021

Learning Outcomes

This is a laboratory on the nature sound and music and its interpretations. It complements the lecture course of Physics 102. You must be conversant with high school algebra and simple trigonometry and its functions.

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

The course will be conducted **in class**. The report templates are WORD documents, which you will complete during class and submit at the end of class.

Instructor:

Prof. Andris Skuja

skuja@umd.edu

Office Hours

PSC 3103 by appointment

Class Sections will be conducted by Teaching Assistant

Onat Arisoy

oarisoy@umd.edu

All classes meet in the Toll Physics Building

Room 3220

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

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

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

Prof. Andris Skuja

skuja@umd.edu

Office Hours

PSC 3103 by appointment

Class Sections

All classes meet in the Toll Physics Building Room 3220

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 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

Onat Arisoy

oarisoy@umd.edu

Graders

Sam Little

slittle1@terpmail.umd.edu

Lucas Bloom

lbloom12@terpmail.umd.edu

Prerequisites

N/A

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

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

Section 801 Wednesday 1.00pm to 2:50pm

Graders

Sam Little

slittle1@terpmail.umd.edu

Lucas Bloom

lbloom12@terpmail.umd.edu

Required Resources

Course website: www.elms.umd.edu

Select Physics 103

Required Text

Physics 103 Laboratory Manual and Instruction Sheets

You will have to purchase online access to the Lab manual. Details are provided below.

Additional Instruction Sheets may be provided on ELMS as needed

You will have to prepare a lab report in class while you are performing your experiments. The report must be submitted at the end of class. You must answer the pre-lab questions online at “theexpertta” web site before the start of your scheduled 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 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 important that you attend all lab classes. 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 the start of the lab, you will receive no credit for them. If you do not understand the questions or have difficulty completing the

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.

assignment you may ask for clarification. Lab reports are completed online by the end of the lab period. You can access the lab report template online and download it to your laptop in advance.

You will carry out the lab individually and on your own. 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.

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.

The Learning Experience Logistics:

At *theexpertta* website you will find a list of experiments.

By clicking on the experiment number you will open a list of options including the prelab questions. Open “Take Assignment” to complete the prelab questions.

Then open “View Printable Assignment”. Click on “Experiment Manual” for instruction sheet and links to videos and photos of measurements you are to make. Read the Introduction to the experiment before coming to class. During class you will take data and complete a lab report. You must post the report on ELMS before the end of the class.

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

theexpertta.com

You can go to the site to register. Login and read/complete the introduction to *theexpertta*.

You will have to enter an access code by your class 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

PHYS 103		
Instructor:	Andris Skuja	
email:	skuja@umd.edu	
Section	**Class Registration URL	Times
0101	http://goeta.link/USH22MD-4071AF-28E	Th 11:00am - 12:50pm
0301	http://goeta.link/USH22MD-2691E3-28D	Th 3:30pm - 5:20pm
0401	http://goeta.link/USH22MD-4FDFAB-28C	F 10:00am - 11:50am
0501	http://goeta.link/USH22MD-C8F335-28B	F 12:00pm - 1:50pm
0701	http://goeta.link/USH22MD-F854F3-28A	W 3:00pm - 5:00pm
0801	http://goeta.link/USH22MD-471977-289	W 1:00pm - 2:50pm

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

Grading will be based on the total point accumulation for the 10 labs, each lab being worth a maximum of 30 points. The lab reports will constitute 85% of your grade. Your pre-lab responses will be worth 15% of your grade.

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

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 complete all labs with a passing grade. 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. A lab not getting a passing grade is considered as a missing lab.

Schedule of Experiments:

Complete the pre-lab questions before coming to class at *theexpertta* site

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

12	Nov. 17, 18 & 19	Experiment 10: Psychoacoustics			Due at end of Session
12	Nov. 24, 25 & 26	Thanksgiving Week No Labs			
13	Dec. 2, 3 & 4	Make up week for experiments 6-10. You must get approval to do a make-up lab			Due at end of session
14	Dec. 8, 9 & 10	No Labs. Special Consideration			
15	Dec. 15, 16 & 17	Final Exam Week: No Labs			

You must finish all 10 labs with a passing grade 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:

- 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

