

Subject to Modification – Aug. 17, 2026
PHYS 1270.002 – The Science and Technology of Musical Sound
SYLLABUS FALL 2026

Dr. David Shiner (shiner@unt.edu)
Office: Physics 326 Phone: 565-3874.
Office Hours: MW 11:00-12:00 or by appointment

Class time: MWF 1:25 pm - 2:15 pm
Class location: Physics Room 102

Prerequisites:	Math 1100 (Algebra) or above.		
Core Curriculum:	This course satisfies part of the University Natural Science Core Curriculum Requirement. This course is required of all Bachelor of Music Students.		
Text:	<i>Musical Acoustics, 3rd Edition</i> by Donald E. Hall (Cengage Learning: Mason, Ohio 2004) ISBN-13: 978-0-534-50993-4 or ISBN-10: 0-534-50993-2		
Material:	“Scientific” calculator with square root ($\sqrt{}$), log and y^x functions.		
Course Content:	This course is an introduction to the physics of sound as it relates to the production, propagation and perception of music. We will explore the properties of sound and the physical characteristics of various musical instruments (including the human voice) to understand how they speak and how we perceive them.		
Laboratory:	Labs make 25 points out of 100 points of your overall grade. You must complete 10 labs and 2 reports to get full credit for labs. The Lab section of this course has its own instructor, Canvas page and syllabus. I have no role in the grading or requirements of the lab section. Please email Matthew Abbott (matthew.abbott@unt.edu) if you have any question about labs sessions, lab grades and other lab related requirements. At the end of semester, your lab grades will be reported to me by Matthew Abbott to be added to the rest of your grades in this course.		
Exams:	Examinations are given during the scheduled times with no make-ups, and questions are from class lectures, homework and the textbook. This means that coverage of in-class discussions is crucial to passing your exams. There will be three tests and a comprehensive final as scheduled below.		
Homework:	Homework will be assigned weekly in class with due dates (generally the following week).		
Attendance/ Quiz	Required. Your attendance will be reflected in your quiz/participation grades, which will be Participation/ given usually at the beginning of class over the reading material. Please bring a calculator to each class , as it will often be needed for these quizzes.		
Devices:	Bring a laptop to class with Respondus LockDown Browser installed so that you can take canvas quizzes which will require Respondus LockDown Browser.		
TA:	Gabriel Rodriguez Guijarro gabrielrodriguezguijarro@my.unt.edu		
Other resources:	Course information can be found on the course Canvas web site.		
Grading:	3 Tests	24%	A: 90-100
	Lab	25%	B: 80-89
	Home Work	10%	C: 70-79
	Quiz Grade	20%	D: 60-69
	<u>Comprehensive Final</u>	<u>21%</u>	F: < 60
	Total	100%	

You are responsible for modifications to this syllabus and any other information presented in class.

Unauthorized Aids During Examinations and Assessments: Students may use only those materials and resources that are expressly authorized by the instructor for a particular examination or assessment. Touching, holding, or accessing any unauthorized aid during the examination period constitutes a violation of the Student Code of Conduct, regardless of whether the aid is used. Any item that may be considered an unauthorized aid must be kept out of view and in a closed container (e.g. zipped backpack, buttoned purse, etc.) during the entirety of the examination or assessment. Unless specifically authorized in writing by the instructor, prohibited aids include, but are not limited to: 1) Mobile phones and smartphones; 2) Smartwatches and fitness trackers with communication, recording, or internet capabilities; 3) Tablets, laptops, and other computing devices; 4) Earbuds, headphones, and other audio devices; 5) Smart glasses, cameras, recording devices, and wearable technology; 6) Artificial intelligence (AI) tools, chatbots, and other generative AI technologies; 7) Notes, textbooks, study guides, formula sheets, or reference materials; 8) Any other device, material, or resource not expressly permitted by the instructor. Students are responsible for clarifying any questions about permitted materials before the examination begins.

Student absences (including tardiness) will be treated in accordance with UNT policy, [Student Attendance and Authorized Absences](#)

The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking reasonable accommodation must first register with the Office of Disability Access (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with a reasonable accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request reasonable accommodations at any time; however, ODA notices of reasonable accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of reasonable accommodation for every semester and must meet with each faculty member prior to implementation in each class. Students are strongly encouraged to deliver letters of reasonable accommodation during faculty office hours or by appointment. Faculty members have the authority to ask students to discuss such letters during their designated office hours to protect the privacy of the student. For additional information, refer to the [Office of Disability Access](#) website (<http://www.unt.edu/oda>). You may also contact ODA by phone at (940) 565-4323.

UNT's policy on Academic Dishonesty can be found at: <http://www.vpaa.unt.edu/academic-integrity.htm>

Drop information is available in the schedule of classes at: <http://essc.unt.edu/registrar/schedule/scheduleclass.html>

The Student Perceptions of Teaching (SPOT) is a requirement for all organized classes at UNT. This short survey will be made available to you on-line at the end of the semester and will provide you with an opportunity to provide feedback to your course instructor. SPOT is considered to be an important part of your participation in this class

<u>Date</u>	<u>Day</u>	<u>Subject (Chapter)</u>	<u>Assignment</u>	<u>Due</u>
<u>Date</u>	<u>Day</u>	<u>Subject (Chapter)</u>	<u>Assignment</u>	<u>Due</u>
Aug. 17	M	The Nature of Sound (Ch. 1)	Ch. 1: 2, 3, 4, 6, 8, 12	
19	W			
21	F	Waves and Vibrations (Ch. 2)	Ch. 2: 1, 3, 5, 6, 8, 10, 11, 16, 17, 18	
		No lab this week		
24	M			Ch. 1
26	W	Sources of Sound (Ch. 3)	Ch. 3: 2, 3, 7, 8, 9, 10	
28	F			Ch. 2
		Lab Orientation		
31	M	Sound Propagation (Ch. 4)		
Sept. 2	W	"		Ch. 3
4	F	Sound Intensity and Its Measurement (Ch. 5)		
		Lab # 1 Elements of Sound Waves		
7	M	Labor Day		
9	W			
11	F	The Human Ear and Its Response (Ch. 6)		
		Lab # 2 – Simple Harmonic Oscillator		
14	M			
16	W	Elemental Ingredients of Music (Ch.7)		
18	F			
		Lab # 3 – Loudness, Freq. and Human Hearing		
21	M	Sound Spectra (Ch. 8)		
23	W			
25	F	EXAM 1: Ch 1-7 Friday Sept. 25 8:00 AM-5:00 PM		
		Lab # 4 – Vibration Recipes		
28	M	Percussion Instruments and Natural Modes (Ch. 9)		
30	W			
Oct. 2	F			
		Lab # 5– Synthesizers, Computers and MIDI madness		
5	M	Piano and Guitar Strings (Ch. 10)		
7	W	"		
9	F			
		Lab Make-up for #1 – #5		
12	M	The Bowed String (Ch. 11)		
14	W			
16	F			
		Lab # 6 – Vibration Modes		
19	M	Blown Pipes and Flutes (Ch. 12)		
21	W			
23	F			
		Lab # 7 – Strings		
26	M	Blown Reed Instruments (Ch. 13)		
28	W			
30	F	EXAM 2: 8-12 Friday, Oct 30 8:00 AM-5:00 PM		
		Lab # 8 – Pipes and Air Columns		
Nov. 2	M	The Human Voice (Ch. 14)		
4	W			
6	F			
		Lab # 9 – The Human Voice		
9	M	Room Acoustics (Ch.15)		
11	W			
13	F			
		Lab # 10 – Reverberation Time		
16	M	Sound Reproduction (Ch. 16)		
18	W			
20	F			
		Lab Make-up for #6 – #10		
30	M			
Dec. 2	W	EXAM 3: Ch 13-16 Wed. 10:10 AM-11:00 AM or		
4	F	or Friday Dec. 4 8:00 AM-5:00 PM		
		Lab – No Lab last week		

Final Exam Week - Comprehensive Final Exam

Mon Dec. 7 7:30 AM-3:30 PM or Wed. Dec. 9 10:30 AM-12:30 PM