

Subject to Modification – Jan. 12, 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 1:00-2:00 or by appointment

Class time: MWF 12:00 pm - 12:50 pm
Class location: Physics Room 104

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: *Musical Acoustics, 3rd Edition* 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/ Participation/ Quiz Required. Your attendance will be reflected in your quiz/participation grades, which will be given at various times during the class. **Please bring a calculator to each class**, as it will often be needed for these quizzes.

Devices: Bring a laptop to class so that you can take canvas quizzes.

TA: Gabriel Rodriguez Guijarro gabrielrodriguezguijarro@my.unt.edu

Other resources: Course information can be found on the course Canvas web site.

Grading:	3 Tests	30%	A: 90-100
	Lab	25%	B: 80-89
	Home Work	10%	C: 70-79
	Quiz Grade	10%	D: 60-69
	<u>Comprehensive Final</u>	25%	F: < 60
	Total	100%	

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

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.

Physics 1270.001

SCHEDULE

Spring 2026

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

Final Exam Week - Comprehensive Final Exam

Sat May 2 7:30AM-12:30PM or Mon May 4 12:00PM-5:PM or Thur May 7 7:30AM-3:30PM