



Master Course Syllabus

For additional course information, including prerequisites, corequisites, and course fees, please refer to the Catalog: <https://catalog.uvu.edu/>

Semester: Spring

Course Prefix: PHYS

Course Title: Descriptive Acoustics

Year: 2025

Course and Section #: 1700-001

Credits: 3

Course Description

This course introduces energy propagation in fluids through oscillatory motion, or waves. Covering the fundamental quantitative understanding of sound as well as a practical qualitative conceptual and applied understanding. Students will develop practical mathematical and applied skills related to wave mechanics, vibration, and sound. They will apply this learning to the understanding of the human physiology of speech and hearing, and then to common western orchestral instruments. Live and studio sound and structure will also be covered throughout the semester as it fits each topic.

Course Attributes

This course has the following attributes:

- General Education Requirements
- Global/Intercultural Graduation Requirements
- Writing Enriched Graduation Requirements
- Discipline Core Requirements in Program
- Elective Core Requirements in Program
- Open Elective

Other: *Click here to enter text.*

Instructor Information

Instructor Name: Dr. Brian Patchett

Student Learning Outcomes

After completion, the successful student will have the ability to:

- Describe the source of sound waves in the air at the molecular level.
 - Calculate frequency, period, wavelength, and amplitude of measured sound.
 - Find the resonance modes for an enclosed space
 - Describe the physiology and function of the Human ear in great detail.
 - Describe the physiology and function of the Human vocal tract in great detail.
 - Use analytical software to detect changes in speech patterns.
 - Explain the differences in common western stringed instruments and how each create sound.
 - Explain the differences in common western wind instruments and how each create sound.
 - Explain the differences in common western percussion instruments and how each create sound.
-

Course Materials and Texts

- Text Book: Music, Speech, and Audio, 4th ed., by W. J. Strong and G. R. Plitnik
- Calculator: A scientific calculator is sufficient. Graphing calculators are not needed.
- Online Homework System Access: Access to class Canvas website
- Smart Device: Any device that can connect to the internet via wifi or cellular network such as a smartphone, tablet/iPod, iTouch, laptop, etc.

Course Requirements

Course Assignments, Assessments, and Grading Policy

Homework assignments covering lecture and textbook reading materials comprise 50% of the grade. Exams covering all lecture and reading materials from select subjects will comprise 35% of the grade. The final Exam is comprehensive of the entire semester and will comprise 15% of the grade.

Grading Scale

A	93-100%	C	73-76%
A-	90-92%	C-	70-72%
B+	87-89%	D+	67-69%
B	83-86%	D	63-66%
B-	80-82%	D-	60-62%
C+	77-79%	E	Below 60%

Required or Recommended Reading Assignments

Music, Speech, and Audio, 4th ed., by W. J. Strong and G. R. Plitnik
Lecture slides provided to students through Canvas.

General Description of the Subject Matter of Each Lecture or Discussion

Week	Class Dates	Monday	T	Wednesday	Th	Friday	Saturday
1	1/6 – 1/10	Unit 1 Physical Laws		Simple Vibrators		Compound Vibrators	HW 1 due 11:59 PM
2	1/13 – 1/17	Waves in Matter		Wave Phenomena		Standing Waves	HW 2 due 11:59 PM
3	1/20 – 1/24	NO CLASS		Complex Waves		Radiated Sound	HW 3 due 11:59 PM
4	1/27 – 1/31	Transducers		Room Acoustics I		Room Acoustics II	HW 4 due 11:59 PM
5	2/3 – 2/7	Sound Reinforcement		Exam 1 Review		EXAM 1	HW 5 due 11:59 PM
6	2/10 – 2/14	Unit 2 Hearing		Sound Perception I		Sound Perception II	HW 6 due 11:59 PM
7	2/17 – 2/21	NO CLASS		Hearing Impairment		Noise	HW 7 due 11:59 PM
8	2/24 – 2/28	Speech Production		Vocal Tract Effects		Speech Sound Prosodics	HW 8 due 11:59 PM
9	3/3 – 3/7	Speech Defects		Speech Transmission		Digital Sound	HW 9 due 11:59 PM
-	3/10 – 3/14	Spring		Break		No Class	-
10	3/17 – 3/21	Exam 2 Review		EXAM 2		UNIT 3 Musical Scales	HW 10 due 11:59 PM
11	3/24 – 3/28	Singing Voice		Musical Instruments		Reed Instruments	HW 11 due 11:59 PM
12	3/31 – 4/4	Lip Reed Instruments		Air Jet Instruments		Bowed String Instruments	HW 12 due 11:59 PM
13	4/7 – 4/11	Struck String Instruments		Percussion Instruments		Electromechanical Instruments	HW 13 due 11:59 PM
14	4/14 – 4/18	Electronic Synthesizers		Exam 3 Review		EXAM 3	HW 14 due 11:59 PM
15	4/21 – 4/25	FINAL EXAM Review		Semester End			
Finals Week	4/28 – 5/2	FINAL EXAM April 28 th 9:00 am - 10:50 pm					

Required Course Syllabus Statements

Generative AI

AI programs are not a replacement for your human creativity, originality, and critical thinking. Writing, thinking, and researching are crafts that you must develop over time to develop your own individual voice. At the same time, you should learn how to use AI and in what instances AI can be helpful to you. The use of generative AI tools (e.g. ChatGPT, Google Bard, etc.) is permitted in this course for the following activities:

- To help you clarify concepts and find real world applications.
- Homework support if you have attempted the problem and sought one of the following resources first: your textbook, a fellow classmate, a tutor, or the professor.
- Using AI as a tutoring system to practice problems and concepts.

The use of generative AI tools is not permitted in this course for the following activities:

- To find the final equation to plug your numbers into.
- During class, including group problems and tests.

Using Remote Testing Software

This course does not use remote testing software.

This course uses remote testing software. Remote test-takers may choose their remote testing locations. Please note, however, that the testing software used for this may conduct a brief scan of remote test-takers' immediate surroundings, may require use of a webcam while taking an exam, may require the microphone be on while taking an exam, or may require other practices to confirm academic honesty. Test-takers therefore shall have no expectation of privacy in their test-taking location during, or immediately preceding, remote testing. If a student strongly objects to using test-taking software, the student should contact the instructor at the beginning of the semester to determine whether alternative testing arrangements are feasible. Alternatives are not guaranteed.

Required University Syllabus Statements

Accommodations/Students with Disabilities

Students needing accommodations due to a permanent or temporary disability, pregnancy or pregnancy-related conditions may contact UVU [Accessibility Services](#) at accessibilityservices@uvu.edu or 801-863-8747.

Accessibility Services is located on the Orem Campus in BA 110.

Deaf/Hard of Hearing students requesting ASL interpreters or transcribers can contact Accessibility Services to set up accommodations. Deaf/Hard of Hearing services can be contacted at DHHservices@uvu.edu

DHH is located on the Orem Campus in BA 112.

Academic Integrity

At Utah Valley University, faculty and students operate in an atmosphere of mutual trust. Maintaining an atmosphere of academic integrity allows for free exchange of ideas and enables all members of the community to achieve their highest potential. Our goal is to foster an intellectual atmosphere that

produces scholars of integrity and imaginative thought. In all academic work, the ideas and contributions of others must be appropriately acknowledged and UVU students are expected to produce their own original academic work.

Faculty and students share the responsibility of ensuring the honesty and fairness of the intellectual environment at UVU. Students have a responsibility to promote academic integrity at the university by not participating in or facilitating others' participation in any act of academic dishonesty. As members of the academic community, students must become familiar with their [rights and responsibilities](#). In each course, they are responsible for knowing the requirements and restrictions regarding research and writing, assessments, collaborative work, the use of study aids, the appropriateness of assistance, and other issues. Likewise, instructors are responsible to clearly state expectations and model best practices.

Further information on what constitutes academic dishonesty is detailed in [UVU Policy 541: Student Code of Conduct](#).

Equity and Title IX

Utah Valley University does not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation, gender identity, gender expression, age (40 and over), disability, veteran status, pregnancy, childbirth, or pregnancy-related conditions, citizenship, genetic information, or other basis protected by applicable law, including Title IX and 34 C.F.R. Part 106, in employment, treatment, admission, access to educational programs and activities, or other University benefits or services. Inquiries about nondiscrimination at UVU may be directed to the U.S. Department of Education's Office for Civil Rights or UVU's Title IX Coordinator at 801-863-7999 – TitleIX@uvu.edu – 800 W University Pkwy, Orem, 84058, Suite BA 203.

Religious Accommodation

UVU values and acknowledges the array of worldviews, faiths, and religions represented in our student body, and as such provides supportive accommodations for students. Religious belief or conscience broadly includes religious, non-religious, theistic, or non-theistic moral or ethical beliefs as well as participation in religious holidays, observances, or activities. Accommodations may include scheduling or due-date modifications or make-up assignments for missed class work.

To seek a religious accommodation, a student must provide written notice to the instructor and the Director of Accessibility Services at accessibilityservices@uvu.edu. If the accommodation relates to a scheduling conflict, the notice should include the date, time, and brief description of the difficulty posed by the conflict. Such requests should be made as soon as the student is aware of the prospective scheduling conflict.

While religious expression is welcome throughout campus, UVU also has a [specially dedicated space](#) for meditation, prayer, reflection, or other forms of religious expression.