

PHYSICS OF SOUND AND MUSIC - PHYS 1406, Spring 2009

Lecture: Tuesday, Thursday 11:00-12:20 a.m., Science Room 10

Laboratory: Science Room 302

PHYS 1406-501 M 4-6 p.m., PHYS 1406-502 W 4-6 p.m., PHYS 1406-503 Tu 2-4 p.m.

Instructor: Professor Walter L. Borst

Office hours: MWF 9:45-11:15 p.m., SC 11, Tel. 742-3864, e-mail: Walter.Borst@ttu.edu

Textbook:

Richard E. Berg and David G. Stork, *The Physics of Sound*, 3rd ed., Pearson/Prentice Hall 2005

Laboratory Manual:

John N. Como and Walter L. Borst, "The Physics of Sound and Music – Laboratory Manual", January 2009. Please purchase at The Copy Outlet, 2402 Broadway Street, Lubbock

Highly recommended in addition to the textbook:

Donald E. Hall, *Musical Acoustics*, 3rd ed., may be available "inexpensively" online

Course Topics

Physics concepts for acoustics and sound

Waves, sound, music, harmonic motion

Analysis and synthesis of waves

Human ear and voice

Sound recording, reproduction

Sound intensities, db-scale

Room acoustics

Musical temperament, pitch

Musical instruments

Course Materials: Your own lecture notes, class demonstrations, textbook, laboratory reports

Grades

3 Examinations 15% each; homework/quizzes 15%; laboratory 20%; final examination 20%.

Grade Scale: 100-A-86-B-72-C-58-D-44-F-0

Laboratory: A minimum laboratory score of 70% is required for passing the course.

Examinations are closed books. They cover concepts from class, your lecture notes, lecture demonstrations, laboratory, homework, and the textbook to the extent discussed. You may bring a formula sheet with up to 20 formulas to the examinations. Also bring a simple calculator and ruler. No make-up examinations will be given. In case of a serious emergency, please contact the instructor to find out how the missing grade will be determined.

Attendance is required. Always sign in at the beginning of class and be there a few minutes early. Please excuse yourself for any absence; otherwise -1% off course total per absence.

Homework: Do the homework yourself (of course).

Important: Spend 6 to 8 hours on this course outside of class each week.

Examination, Laboratory, and other Dates: See Calendar

Examination Security: The examinations are composed uniquely for this semester and include a copyright notice reserving all rights of reproduction and distribution.

Disability

Any student with a disabling condition, who may require some special arrangements in order to meet course requirements, should contact the instructor as soon as possible so that necessary accommodations can be made. Proper documentation about the disability must be presented from the Dean of Student's office.

Academic honesty is assumed and violations will be pursued according to the Student Handbook.

Course objectives and expected learning outcomes:

Know physical principles of sound, acoustics, and music.

Be able to apply these in other courses and everyday life whenever possible

Methods for assessing the expected learning outcomes:

1. Examinations and grades.
2. Class discussions.
3. Feedback from students about the usefulness of the course.

CALENDAR Physics 1406, Spring 2009, including **laboratory schedule**. Further details to be announced. The homework schedule is approximate; see dates in assignment sheets.

Please note the new lab schedule!

M	T	W	Th	F	S
No labs	1/6		1/8 First day of class		
No labs	1/13		1/15		
No labs	1/20 Hwk 1		1/22		
Lab 1.	1/27 Examination 1		1/29 Labs start at the <i>beginning</i> of this week		
Lab 2.	2/3 Hwk 2		2/5		
No labs	2/10		2/12		
Lab 3.	2/17 Hwk 3		2/19		
Lab 4.	2/24 Examination 2		2/26		
Lab 5.	3/3 Hwk 4		3/5		
Lab 6.	3/10		3/12		
No labs	3/17 Spring vacation		3/19 Spring vacation		
Lab 7.	3/24 Hwk 5		3/26		
No labs	3/31 Examination 3		4/2		
Lab 8.	4/7 Hwk 6		4/9		
No labs	4/14		4/16		
Lab 9.	4/21 Hwk 7		4/23		
	4/28 Last day of class		Final examination Monday, May 4, 1:30-4:30 p.m		
