

Course Syllabus for ME 424/BME 424, Engineering Acoustics, Winter 2007

Prerequisites: Math 216 (linear differential equations), Physics 240 (basic E&M, traveling waves)

Room/Time: 2233 GGBL; Mondays, Wednesdays, and Fridays; 9:30 – 10:30 AM

Instructor: David R. Dowling, Professor e-mail: drd@umich.edu
2212 G.G. Brown Laboratory Ph: (734) 936-0423,
Office Hours: Wednesdays & Thursdays 3-5 PM

Objective: Introduce the participants to the fundamentals of acoustics and a variety of applications of acoustics in engineering.

Textbook: Kinsler et al., Fundamentals of Acoustics 4th Ed. (Wiley, New York, 2000).

Grading: HW (20%) assigned weekly, *due at lecture on Fridays*, 11 assignments
Midterm #1 (20%) Friday, February 16, 2007, during normal lecture time
Midterm #2 (20%) Friday, March 30, 2007, during normal lecture time
Final (40%) Wednesday, April 25, 2007, 10:30 AM – 12:30 PM

Rules:

- Make-up exams will not be given.
- Exam materials: textbook, dictionary, calculator, class notes, HW, HW solutions, and crib sheet. Extra books or other materials not allowed.
- Bluebooks are required for all exams.
- The honor code will be in effect for this course; no collaboration on exams.
- Written regrading requests are accepted up to a week after exams are returned.
- Lecture notes will not be provided to individual students, but may be provided to the entire class at the discretion of the instructor.
- Intellectual collaboration on the HW is encouraged. Outright copying is not.
- One HW assignment may be dropped (10 assignments form a complete set).

Website: Available to class participants at: <https://ctools.umich.edu/portal>

<u>Schedule:</u>	<u>Dates</u>	<u>Topics</u>	<u>Reading</u>	<u>HW No.</u>	<u>Due</u>
	1/5	introduction & background	Ch. 1	1	1/12
	1/8,10,12	vibration & vibration waves	Ch. 2,5	2	1/19
	1/15	MLK Holiday	–	–	–
	1/17,19	plane and spherical waves	Ch. 5	3	1/26
	1/22,24,26	decibels, fluid interfaces	Ch. 5,6	4	2/2
	1/29,31,2/2	reflection & transmission	Ch. 6	5	2/9
	2/5,7,9	images, absorption & attenuation	Ch. 8	6	2/23
	2/12,14	real fluid effects, review for 1 st MT	Ch. 8	–	–
	2/16	FIRST MIDTERM EXAM	[Ch. 1,2,5,6]	–	–
	2/19,21,23	pipe resonances, muffler elements	Ch. 10	7	3/9
	2/26,28,3/2	Winter Recess	–	–	–
	3/5,7,9	networks, muffler systems	Ch. 10	8	3/16
	3/12,14,16	point & extended sound sources	Ch. 7	9	3/23
	3/19,21,23	acoustic radiation, beam patterns	Ch. 7	10	4/6
	3/26,28	directivity, review for 2 nd MT	Ch. 7	–	–
	3/30	SECOND MIDTERM EXAM	[Ch. 7,8,10]	–	–
	4/2,4,6	cabinets, enclosures, waveguides	Ch. 9	11	4/13
	4/9,11,13	hearing & speaking, room reverb.	Ch. 11,12	–	–
	4/16	review for final exam	–	–	–
	4/25	FINAL EXAM	[Ch. 1,2,5-10]	–	–