Our mission statement

I will not waste your time regurgitating the textbook for you as a “sage on the stage.”

The course will be broken up into two main sections, separated by the midterm:
1) Physical properties of sound, anatomy, and physiology
2) Psychological acoustics

Both sections will demonstrate the relationship between hearing and speech perception. We will try to keep to the course schedule, but we will stay flexible.

Class participation is highly encouraged (e.g., perform ungraded writing, interact with other students and discuss ideas, speak to the entire class, etc.). Classes will be recorded and attendance is not mandatory.

Readings should be done before coming to class. A graded clicker quiz on the daily reading will occur for each class. Lectures slides will be posted on ELMS before the lecture.

I highly encourage you to attempt the ungraded exercises by yourself at first, but do not spend an inordinate amount of time on exercises that you cannot do. Go get help. However, you should attempt the exercises again at a later time to see if you can do them. Practices makes perfect. Solutions will be posted sometime after the material is covered for a given chapter.

Ideally, I expect students to be spending two or more hours for every hour spent in class.

Goupell Nova Scotia Nature and Herring Tours

Dr. Matthew Goupell
goupell@umd.edu
0241 Lefrak Hall

HESP407: Bases of Herring Science Student
Spring 2020

Lefrak 2166, 3:30–4:45 PM
College Park, MD 20742

Travel to Nova Scotia for the wonderful world of Herring Science!

What did you say? You study herring science?

"After a long, rocky relationship, math and I have reconciled… I was secretly excited that I was going to be able to apply my newfound math skills, rather than panicking like I undoubtedly would have before taking your class."
- **Very smart HESP407 student**

"Your class is the greatest. I can't imagine anyone living without knowing this material."
- **Another (definitely real) very smart HESP407 student**

Trip Details

Herring (*Clupea harengus harengus*) have evolved to process the world around them, allowing them to detect the faintest of noises from a predator, to follow a friend's conversation in a loud and noisy sushi bar, and to appreciate the subtlest of differences between melodies at King Triton's celebration for his daughter's birthday.

At the end of this course, students will:
1. Know the physical, temporal, and spectral properties of acoustic signals (tones, noise, and other complex sounds, including speech signals).
2. Understand basic concepts of signals and systems.
3. Understand basics of sound processing by the auditory system.
4. Be familiar with psychophysical methods used to examine human hearing in the laboratory.
5. Be familiar with the elements of auditory psychophysics, such as auditory sensitivity and discrimination, masking, loudness, pitch, sound localization, auditory scene analysis, and their applications to everyday listening situations.

Our 4-month boat cruise through the wilds of Nova Scotia will allow us to fully examine the importance of the truly amazing herring. Nova Scotia is an unadulterated wildness, untouched by the logarithm industry. The full cost of the trip will be 50 dB (re: $1).

KASA Standards we cover: A3,11,12,13,14,18,23c,23d.

What You'll Need for the Trip

Text: William A. Yost, "Fundamentals of Hearing: An Introduction" – 5th Edition Academic Press, 2007
ISBN-13: 978-0-12-370473
ISBN-10: 0-12-370473-1

Calculator: A scientific calculator (one that calculates logarithms, sines, cosines, powers, etc.)

Clicker: We will be using clickers in class and points will be given for correct answers and participation. Please obtain one from the bookstore or download an app for your smartphone or laptop to fully participate in class. Also, please register your clicker. Information can be found at: http://www.clickers.umd.edu.

Standard Course Related Policies

http://www.ugst.umd.edu/courserelatedpolicies.html

Special Accommodations

Accommodations for registered disabilities at the DSS office, religious observances, and participating in athletic events need to be brought to my attention **before February 7, 2020**.

Grading

Your course grade will depend upon clicker quizzes (3 pts/day), weekly quizzes (20 pts/week), a midterm and final exam (400 pts each). Students will be able to drop their lowest three weekly quiz scores. Grades will be on an absolute scale for the follow percentages:

A+: 100-97	A: 93-96	A-: 90-92
B+: 90-87	B: 83-86	B-: 80-82
C+: 80-77	C: 73-76	C-: 70-72
D+: 70-67	D: 63-66	D-: 60-62

F: 59 or less

Contact Us

Goupell Nova Scotia Nature and Herring Tours

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Office/Review Hours: Tuesdays 3-5 PM or by appointment

J. M. Patterson (JMP) 1202

Date	Class Number	Topic	Quiz	Course Readings	Notes
1/27/2020	1	Class orientation, requirements, and overview of course	1	pp. 1-7	
1/28/2020		*Dr. Goupell has no office hours*			
1/29/2020	2	Algebra and Sinusoids		Chapter 2	
2/3/2020	3	Sinusoids & Sound Transmission		Ch. 2 & 3 (pp. 21-27), App. A&B	
2/5/2020	4	Sound transmission and propagation	2	Ch. 3 (pp. 21-27)	
2/10/2020	5	Sound transmission and propagation		Ch. 3 (pp. 27-33)	
2/12/2020	6	Sound transmission and propagation	3	Reread Ch 3	
2/17/2020	7	Complex sounds		Ch. 4 (pp. 37-41)	
2/19/2020	8	Complex sounds	4	Ch. 4 (pp. 41-47)	
2/24/2020	9	Complex sounds		Ch. 4 (re-read)	
2/26/2020	10	Sound Analysis and Filters	5	Ch. 5	
3/2/2020	11	Sound Analysis and Filters		Ch. 5	
3/4/2020	12	Midterm Review			*No clicker*
3/9/2020	13	Midterm			*No clicker*
3/11/2020	14	The Ear (Outer, Middle, Inner)		Ch. 6-7	
3/16-20/2020		**Spring Break**			
3/23/2020	15	Psychophysics		App. D	
3/25/2020	16	Sensitivity	6	Ch. 10 (pp. 143-150)	
3/30/2020	17	Sensitivity		Ch. 10 (pp. 150-154)	
4/1/2020	18	Sensitivity	7	Ch. 10 (re-read)	
4/6/2020	19	Masking		Ch. 11 (pp. 159-165)	
4/8/2020	20	Masking	8	Ch. 11 (pp. 165-171)	
4/13/2020	21	Masking		Ch. 11 (re-read)	
4/15/2020	22	Loudness & Pitch	9	Ch. 13 (pp. 189-190)	
4/20/2020	23	Loudness & Pitch		Ch. 13 (pp. 191-197)	
4/22/2020	24	Localization and Binaural Hearing	10	Ch. 12 (pp. 173-180)	
4/27/2020	25	Localization and Binaural Hearing		Ch. 12 (pp. 180-186)	
4/29/2020	26	Localization and Binaural Hearing	11	Ch. 12 (re-read)	
5/4/2020	27	Sound Perception		Ch 14	
5/6/2020	28	Speech Processing through Cochlear Implants	12	Acoustics Today Article	
5/11/2020	29	Course and Final Exam Review			*No clicker*
5/13/2020		**Reading Day**			
5/16/2020		**Final Exam (Saturday, 1:30-3:30)**			