

SLHS 1301W The Physics and Biology of the Spoken Language

Spring Semester 2010

Lectures: MWF 10:10 am – 11:00 am (20 Shevlin)		
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Phone: (612) 624-7818 Office Hours: WF 11:00-12:00 and by appointment (49 Shevlin Hall)		
Teaching Assistants	Labs Sections (17 Shevlin)	Office Hours (43 Shevlin Hall)

COURSE DESCRIPTION

This is a 4-credit course, which satisfies two liberal education requirements: (1) the Diversified Core Curriculum as a physical science course with laboratory, and (2) a writing intensive course.

The objectives are:

- a) to provide students who have a limited physics and biology background with an introduction to the physics and biology of spoken language, a field that is not only extremely interesting, but of considerable social importance because of the dominant role that speech, language, and hearing play in society;
- b) to introduce students to the traditional and emerging modes of inquiry in the discipline of speech-language-hearing sciences;
- c) to inform students of the recent technological advances associated with spoken language such as digital processing systems and speech-recognition systems.

ORGANIZATION OF COURSE

Class Time: 60% lecture, 40% discussion

Work Load: 15 pages of reading per week, 30 pages of writing per semester. Papers are typically 3 pages each

Grade: 50% mid-semester exam(s), 25% final exam(s), 25% lab work

Exam format: multiple choice

Class sessions will be devoted primarily to lectures and demonstrations (See LABORATORY ASSIGNMENTS for additional information). *Students are expected to attend all lectures and to participate actively in discussion. Each student is responsible for information presented in class and for any announcements that are made in class and by Email regarding examinations, laboratory assignments, and so forth.*

Course Materials

1. Denes, P.B. and Pinson, E.N. (1993, Second Edition). *The Speech Chain: The Physics and Biology of Spoken Language*. New York: W.H. Freeman and Company. (See daily reading assignments on Page 5.)
2. Laboratory Manual. Available at Alpha Prints, located on 4th St. SE between 14th Ave and 15th Ave in Dinky town.
3. Course packet. Available at Alpha Prints, which includes lecture slides, study guides and practice tests.
4. WebVista and Email. All course materials, including study guides, practice test answers, multimedia files, grades, and discussion board will be accessible on WebVista. There will also be Email announcements for the course.

Examinations will be heavily weighted on materials presented in class.

EXPECTATIONS FOR STUDENTS

University of Minnesota Senate Policy states that for undergraduate students, the average student in an average week should expect to devote 3 hours per week for each credit hour of registration. This is a four-credit course. Thus, the average student in an average week should expect to devote 12 hours per week, including the three lecture hours and the two laboratory hours per week. Students who then devote the balance of 7 hour per week to quality studying should expect to do well in the course.

GRADING

A	93 -100	Achievement that is outstanding relative to the level necessary to meet course requirements
A-	90 - 92	
B+	87 - 89	
B	83 - 86	Achievement that is significantly above the level necessary to meet course requirements
B-	80 - 82	
C+	74 - 79	
C	66 - 73	Achievement that meets the course requirements in every respect
C-	60 - 65	
D+	57 - 59	
D	50 - 56	Achievement that is worthy of credit even though it fails to meet fully the course requirements
F	<50	Represents failure and signifies that the work was either 1) Completed, but at a level of achievement that is not worthy of credit, or 2) Not completed and there was no agreement between the instructor and the student for the student to be awarded an I
S		Achievement that is satisfactory, which is equivalent to a C- or higher
N	<60	No credit
I		Assigned at the discretion of the instructor when, <i>due to extraordinary circumstances, e.g., hospitalization or family emergency, a student is prevented from completing the work of the course on time. The awarding of an "I" requires a written agreement between the instructor and the student.</i> Failure to complete assignments or examinations that is not attributable to "extraordinary circumstances" does not justify the assignment of an "I" grade.

Academic Misconduct

Academic dishonesty in any portion of the academic work for a course shall be grounds for awarding a grade of F or N for the entire course.

POLICY CONCERNING LABORATORIES

Laboratory Sessions will be held in Room 17, Shevlin Hall.

Students are required to attend Laboratory Sessions. Failure to attend a laboratory and/or to submit a satisfactory laboratory report will result in a score of 0% for that laboratory assignment.

Laboratory reports must be turned in **to your TA** by no later than the start time of your scheduled laboratory the following week. **The percentage grade for each late laboratory report will be decreased by 20 percentage points for every 24 hour period** — exclusive of Saturdays, Sundays, and official University holidays. Reports received more than 5 days late will receive a grade of 0%.

Auditory Assessment Lab (Lab 12):

Please note the special requirements for the laboratory entitled, "Auditory Assessment." This is a laboratory arranged separately for each student. You will have an opportunity to register for the day and time of this laboratory. Students are encouraged to turn this laboratory report in **to your TA** as soon as possible after you have attended the laboratory. Specific instructions regarding how to complete the lab will be given during lab hours.

There will be 12 required laboratory sessions, which are scheduled on Page 5 of the syllabus. All the 12 laboratories will be graded. Optional sessions will not be graded. Failure to attend and to turn in a report will result in a grade of 0% for

that laboratory. In total, laboratories and reports constitute 25% of your course grade. The two lowest scores for the labs will be dropped in the calculation for your final grade.

CALCULATORS

Students are urged to bring a calculator to class, particularly for lectures associated with 1) The Physics of Sound, 2) Hearing, and 3) Acoustic Characteristics of Speech. The calculator should have the following functions, at minimum: Log ; 10^x ; and X^2 . Students will be permitted, and are encouraged, to use calculators during examinations and during laboratories.

EXAMINATIONS

1. Examinations will cover material in the textbook *and additional material that is presented in class, with particular emphasis on material presented in class.*
2. There will be two midterm examinations and one final examination.
3. Each examination will focus *principally* on material covered from the time of the last examination.

GRADING:

1. The final course grade will be weighted as follows:

1 st Midterm	25%	Chapters 1,2,3
2 nd Midterm	25%	Chapters 9,4,5
Final Examination	25%	Chapters 6,7,8,10, 11
Laboratories and Reports	25%	
2. Grading problems should be resolved with the TA for your lab section.
3. This course will use the +/- grading system. For students who register S/N, letter grades of C- or higher will be recorded as an S. Letter grades lower than C- will be recorded as an N.
4. *Incompletes:* To receive an incomplete, the two midterm examinations must have been completed with an average passing grade prior to the scheduled time for the final examination, all laboratories and laboratory reports must have been completed with a composite passing grade prior to the scheduled time for the final examination, the reason for missing the final examination must have been explained to the Instructor, *not the TAs*, by the scheduled time for the final examination, and the student and the Instructor must have signed an agreement. To remove an **I** from your transcript, a make-up final must have been completed *before the end of the fourth week of the subsequent semester*. *Please see the special notes about qualifications for receiving an I on page 2 of this syllabus.*
5. *Make-up Examinations:* Make-up examinations will be administered only under extremely compelling circumstances. If you must miss the examination, you must contact the Instructor, not the TAs, prior to the examination and present a satisfactory documented explanation for your intended absence to avoid penalty. The percentage grade for each makeup exam will be decreased by 20 percentage points for every 24 hour period — exclusive of Saturdays, Sundays, and official University holidays— that the exam is late.
6. Students shall not be penalized for absence due to unavoidable or legitimate circumstances. However, students are responsible for providing documentation to the TA or the instructor to verify the reason for their absence. For example, if you represent the university in intercollegiate sports, you can get an authorized letter from your sports program to prove your legitimacy for missing an exam or lab on a given day. The documentation should provide the specific number of dates on which a student cannot attend the class/lab. A grace period for the maximum of three days after the justified absence period (exclusive of Saturdays, Sundays, and official University holidays) will be permitted. After the grace period, the 20% deduction rule will apply.

LABORATORY ASSIGNMENTS

1. Twelve required laboratory sessions have been scheduled. A Laboratory Manual has been prepared and it must be purchased at Alpha Prints. It is imperative that you bring your copy of the Manual to each laboratory session.
2. It is essential that you report to your laboratory session on time.

3. Laboratory reports will be graded with respect to both *content and style*. The report should reflect carefully crafted prose with special attention to proper grammar, correct spelling, and a careful, logical progression of thought. The report should be textual, not just a listing of thoughts, ideas, and observations. In almost all cases, it is unwise to submit the first draft of your laboratory report. Draft the report, edit it, and modify it until your submission reflects your best possible exposition. You should feel free to ask a friend or fellow student to read your draft and make suggestions for preparing an improved final draft. All labs as well as exams will be graded by your TA. Grading questions or problems should be addressed to TA first.
4. All laboratory reports must be typed. If that requirement presents a hardship, please see the TA in advance of the first scheduled laboratory.
5. Laboratory reports/revisions are to be turned in to your TA at the next scheduled laboratory session.
6. Electronic submissions (emails) of laboratory reports will not be accepted.

Classroom Conduct

1. Please consult with instructor regarding permission and accommodations for special needs.
2. All students are expected to behave as scholars at a leading research university. This includes arriving on time, not talking during lecture (unless addressing the instructor or in group discussions), and not leaving the classroom before the end of the lecture. Use of cell phone is generally not allowed.
3. Disruptive students will be warned and potentially dismissed from the classroom.

Use of Email and WebVista

In accordance with Academic/Administrative Policy 2.2.3, "A University assigned student email account shall be the University's official means of communication with all students on the Twin Cities campus. Students are responsible for all information sent to them via their University assigned email account.

If a student chooses to forward their University email account, he or she is responsible for all information, including attachments, sent to any other email account."

As a matter of good practice, *students are urged to check their Email at least once daily and also at least once over the weekend.*

THIS PUBLICATION/MATERIAL IS AVAILABLE IN ALTERNATIVE FORMATS ON REQUEST. PLEASE CONTACT THE INSTRUCTOR IF YOU REQUIRE AN ALTERNATIVE FORMAT.

The University of Minnesota is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, color, creed, religion, national origin, age, marital status, disability, public assistance status, veteran status, or sexual orientation.

Week	Date	Cum.	Text chapter/Topic (tentative schedule)	Reading	Lab
1	Jan 20	1	Ch 1: The Speech Chain	P 1-16	No Lab
	Jan 22	2			
2	Jan 25	3	Ch 2: Linguistic Organization	P 17-30	Lab 1: Unit Conversion
	Jan 27	4			
	Jan 29	5		P 30-40	
3	Feb 1	6	Ch 3: Physics of Sound	P 40-45	Lab 2: Unit Conversion (Continued)
	Feb 3	7			
	Feb 5	8		Final date to register for Audiological Assessment Lab (Lab 12)	
4	Feb 8	9	Ch 3: Physics of Sound		Lab 3: Logarithms & Decibels
	Feb 10	10			
	Feb 12	11			
5	Feb 15	12	Ch 9: Digital Signal Processing	P 185-202	Lab 4: A Scientific Report
	Feb 17	13			
	Feb 19	14			
6	Feb 22	15	Ch 4: Speech Production	P 47-64	Lab 5: Sound Level Measurements
	Feb 24	16			
	Feb 26	17			
7	Mar 1	18	Ch 5: Hearing	P 64-78	Lab 6: Digital Acoustic Analysis
	Mar 3	19			
	Mar 5	20			
8	Mar 8	21	Ch 5: Hearing	P 79-93	Lab 7: Digital Acoustic Analysis (Continued)
	Mar 10	22			
	Mar 12	23		P 94-110	
9	Mar 15-19		SPRING BREAK NO CLASSES	NO CLASS	NO LAB
10	Mar 22	24			Lab 8: Speech Perception & Production
	Mar 24	25			
	Mar 26	26			
11	Mar 29	27	Ch 6: Nerves, Brain, Speech Chain	P 111-128	Lab 9: BrainVoyager Brain Tutor
	Mar 31	28			
	Apr 2	29		P 128-137	
12	Apr 5	30	Ch 7: Acoustic Char. of Speech	P 139-151	Lab 10: Categorical Perception
	Apr 7	31			
	Apr 9	32			
13	Apr 12	33	Ch 8: Speech Perception	P 153-162	Lab 11: Speech Intelligibility
	Apr 14	34			
	Apr 16				
14	Apr 19	35	Ch 8: Speech Perception	P 162-183	No Lab (online video)
	Apr 21	36			
	Apr 23	37			
15	Apr 26	38	Chapter 10: Speech Synthesis	P 203-218	
	Apr 28	39			
	Apr 30	40			
16	May 3	41	Chapter 11: Auto. Speech Recogn.	P 219-239	<i>Due Date for Audiological Assessment Lab</i>
	May 5	42			No Lab
	May 7	43			
17	Exam#3 (Chapters 6, 7, 8, 10, 11) 10:30am-12:30pm Saturday, May 15 (20 Shevlin).				