

**SYLLABUS**  
**COMD 334 - Basic Hearing Science**  
**Fall Semester - 2006 (3 credit hours)**  
**MWF 10:00 – 10:50**  
**177 TLRB**

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**Syllabus web site:** <http://aslp.byu.edu/rh/334.htm>  
**Syllabus MS Word file:** [Syllabus Word File](#)  
**Decibel web site:** <http://aslp.byu.edu/rh/berlinB2.htm>  
**Decibel MS Word File:** [Decibel File](#)  
**Decibel Calculator (Excel):** [Decibel Calculator](#)  
**Sample Decibel problems:** [Sample Decibel Problems](#)  
**Link to slides used in the course:** [Slides](#)

[Normal Middle Ear](#)

**Sound Wave Program** [Add Waves](#)  
**Area Advantage, Lever Ratio & Acoustic Reflex** [PowerPoint presentation](#)  
**Cochlear Electrophysiology Word Document** [Electrophysiology Document](#)  
**Cochlea & Hair Cells Powerpoint File** [Hair Cells Powerpoint](#)  
**More Hair Cells Powerpoint file** [More Hair Cells Powerpoint](#)  
**Cochlear Electrophysiology Powerpoint** [Cochlear Electrophysiology Powerpoint](#)  
**Audiogram Powerpoint** [Audiogram Powerpoint](#)

**And inasmuch as they sought wisdom they might be instructed.**

**Doctrine & Covenants 1:26**

**Important notice for all students:** I will utilize e-mail regularly to the entire class. I also will respond to any e-mail I receive from any member of the class. This is a very easy way for you to reach me. I realize that there may be a number of students in this class that utilize e-mail addresses other than your assigned BYU e-mail address. However, you need to regularly check your BYU e-mail address for e-mail that I will send to the entire class. I will not send e-mail to the entire class using addresses other than your BYU assigned e-mail address. This is primarily because the class roll e-mail list maintained on Route Y is the mechanism I use to send e-mail to the entire class. It is possible for you to register your personal e-mail address with BYU but this is entirely your responsibility. You can create an alias e-mail account with BYU to have email sent to you at BYU reach your personal e-mail account. This is accomplished through "Route-Y" by editing the default e-mail address contained in the "Update Personal Information" link after you

connect to Route-Y. Please make every effort to update your BYU e-mail address to reflect where you actually want your email sent.

### **Honor Code**

*We believe in being honest, true, chaste, benevolent, virtuous, and in doing good to all men....If there is anything virtuous, lovely, or of good report or praiseworthy, we seek after these things (Thirteenth Article of Faith).*

*Brigham Young University exists to provide a university education in an atmosphere consistent with the ideals and principles of The Church of Jesus Christ of Latter-day Saints. That atmosphere can be preserved through commitment to conduct that reflects those ideals and principles.*

*As a matter of personal commitment, students, staff, and faculty of Brigham Young University seek to demonstrate in daily living those moral virtues encompassed in the gospel of Jesus Christ, and will*

*Be honest*

*Live a chaste and virtuous life*

*Obey the law*

*Use clean language*

*Respect others*

*Abstain from alcoholic beverages, tobacco, tea, coffee, and drug abuse.*

As your professor I would like you to know that I wholeheartedly support and am committed to the BYU Honor Code. I highly recommend this code to you as a beacon that you can rely on throughout your life and encourage you to always live up to this commitment. While you are a student at Brigham Young University I urge you to take advantage of the wonderful opportunities that abound in the university environment. Do all you can to gain a broad general education. However, in addition to the secular knowledge you will gain here I encourage you to seek after spiritual growth also. You are capable of great successes in all that you do or you would not have been admitted to Brigham Young University. Do the very best you can. Continue to search after knowledge and spiritual growth in all forms throughout your life. If there is ever anything that I can do to help you I hope that you will take the opportunity to visit with me. My door is always open.

### **Preventing Sexual Harassment**

Title IX of the Education Amendments of 1972 prohibits sex discrimination against any participant in an educational program or activity receiving federal funds. The act is intended to eliminate sex discrimination in education. Title IX covers discrimination in programs, admissions, activities, and student-to-student sexual harassment. BYU's policy against sexual harassment extends not only to employees of the university but to students as well. If you encounter unlawful sexual harassment or gender based discrimination, please talk to your professor; contact the Equal Opportunity Office at 422-5895 or 367-5689 (24-hours); or contact the Honor Code Office at 422-2847 (4440 WSC).

### **Students With Disabilities**

Brigham Young University is committed to providing working and learning atmospheres that reasonably accommodates qualified persons with disabilities. If you have any disability, which may impair your ability to complete this course successfully, please contact the University

Accessibility Center (1520 WSC) at 422-2767 for assistance. Reasonable academic accommodations are reviewed for all students who have qualified documented disabilities. Services are coordinated with the student and instructor the University Accessibility Center. If you need assistance or if you feel you have been unlawfully discriminated against on the basis of disability, you may seek resolution through established grievance policy and procedures. You should contact the Equal Opportunity Office at 422-5895, D-282 ASB.

### **Course Description**

This 3-credit course is required for undergraduate students majoring in Audiology or Speech-Language Pathology. This course will present in the form of lecture, graphic slides, and laboratory demonstrations, an introduction to hearing science and the anatomy of the auditory system from the outer ear to the auditory cortex. You will learn the anatomy and physiology of the major portions of the outer, middle, inner, and retrocochlear portions of the auditory pathway. In addition, students will be presented with an introduction to acoustics, which will prepare you for future courses offered in both Audiology and Speech-Language Pathology.

### **Clinical Sciences Model**

This course is primarily a basic science foundation course. It serves as a foundation course for numerous courses that are required for state and national certification/licensure.

### **Calculators:**

You will use calculators extensively during exam 1 and the final examination. These calculators need to be able to perform log and inverse-log functions. Having your own calculator during class is essential as we will be solving many problems during class lectures which will help you during the examinations.

### **Texts:**

Musiek, F. E., & Baran, J. A. (2007). The auditory system: Anatomy, physiology, and clinical correlates. Allyn & Bacon

### **Resources:**

AUDIOLOGY FORUM: VIDEO OTOSCOPY web pages by Roy F. Sullivan, Ph.D.

<http://www.rcsullivan.com/www/ears.htm>

This web site is exceptional and I expect each of you to become very familiar with this site and the information on *normal* anatomy of the auditory system. This is probably one of the better sites on this topic.

### **Course Requirements and Grading:**

- 1) Four examinations (including the final examination). The first three examinations will be approximately one hour in length and the final examination will be approximately two hours in length. The first hour of the final examination will be concerned with new material covered since the previous examination. The second hour of the final examination will be comprehensive in nature covering material from the first three examinations. Each “hour” of examination will contribute 20% towards the final grade. All examinations will be administered at the testing center. I will adjust the scores for each examination as follows: The high score obtained for each examination will become 100%. The number of points I need to add to the high test score to achieve a score of 100% will then be added to each student’s score for that particular examination.

**NOTE:** I am allowing 2 days in the testing center for each examination (3 days for exam 1).

You are expected to take the examination during the allotted period. In the event that you forget to take the examination you will receive a score of 0% for that examination. I will not allow students to take the examination at times other than those indicated in the syllabus. If you are unable to take the examination, due to medical emergencies, during the scheduled time you are expected to contact the instructor **prior to** the examination to make other arrangements. You must contact me personally to make other arrangements and this contact must be made prior to the end of the two day examination period. I can be reached at either of the two telephone numbers listed at the top of this syllabus. If I am not available you must leave a message on my phone mail at my BYU telephone number and I will get back with you as soon as possible. An unexcused absence from any examination will result in a score of 0% for that exam. Make sure you allow sufficient time to arrive at the testing center to take each examination. It is your responsibility to become aware of all testing center hours and regulations.

Examinations will consist of a variety machine scored multiple choice questions. You should receive your score from the testing center at the conclusion of your examination. We will review examinations in class on the day following the last day of the examination period unless there are still students needing to take the examination because of medical delay. For much of this course you will be required to memorize anatomical terminology and landmarks. The first examination will deal primarily with acoustics of sound and decibels. For this examination you will be allowed to utilize calculators. There will be numerous mathematical problems that you will need to solve. Prior to this examination you will be given a sample set of problems and answers to give you some practice with the type of questions you may expect on Exam 1. The second and third examinations and the first half of the final examination will involve anatomy and physiology of the auditory system. There will be a number of figures on each of these examinations where you will be required to label various anatomical structures. In addition, there will be short answer/essay questions where you will be expected to answer questions, which pertain to function of various portions of the auditory pathway. The second portion of the final examination will consist of comprehensive questions covering materials from the first three examinations.

- 2) Attendance for all lectures is expected. I do not keep track of attendance. However, you need to know that **each** lecture contains information that will help you on your examinations.
- 3) Each student is expected to have read the pertinent sections of the textbook **prior to** class instruction on that section. The reading assignments are specified in the course calendar and lecture outline. In addition, there are a number of links in this syllabus to materials that will be helpful to you throughout this course. Please explore each of these links and use them as a resource to help you learn.
- 4) **IMPORTANT!!!** If you are having difficulty in the course, meet immediately with the instructor and/or teaching assistant to go over your notes, reading assignments, examinations, and to obtain direction for supplemental reading. I want you to do well in this course. It is a foundation course that will be of help to you in many other courses that you will take in our program in Audiology and Speech-Language Pathology. If you need help please come in and meet with the instructor.

TA Hours are listed at the top of this syllabus. These posted TA hours are not required attendance. You may meet with the course TA during these posted hours to ask questions, review your examinations or review topics you are unsure of prior to examinations. Please

understand that these hours are fixed and that any additional hours the TA should decide to hold are at the option of the TA.

5) Grading for the course is as follows:

		B-	83-85.9	D	68-70.9
A	95-100	C+	80-82.9	D-	65-67.9
A-	92-94.9	C	77-79.9	E	<60
B+	89-91.9	C-	74-76.9		
B	86-88.9	D+	71-73.9		

### Course Calendar

Class #	Date	Lecture Topic	Reading Assignment
1	Sep 6	Introduction to COMD 334 Introduction to decibels (Nancy Blair)	Review from Physics 167 <a href="#">decibel handout!</a>
2	8	Acoustics/decibel scaling (TA-Jamie Garlick)	Review from Physics 167 Complete decibel handout Dr. Harris out of town
3	11	Acoustics/decibel scaling	Review from Physics 167 Complete decibel handout
4	13	Acoustics/decibel scaling	Review from Physics 167
5	15	Acoustics/decibel scaling	Review from Physics 167
6	18	Acoustics of sound and sound transmission	Review from Physics 167
7	20	Acoustics of sound and sound transmission	Review from Physics 167
8	22	Acoustics of sound and sound transmission	Review from Physics 167
9	25	Acoustics of sound and sound transmission	Review from Physics 167
10	27	Phon, Sone, Mel scales	Review from Physics 167
11	29	Review Q/A (TA-Jamie Garlick)	Read Chapter 1
12	<b>Oct 2-3-4</b>	<b>Examination #1 @ testing center Dr. Harris out of town-contact TA</b>	<b>Exam 1 covers lectures 1-11</b>
13	6	Overview of Auditory System (TA-Jamie Garlick)	Chapter 1 and 2 Dr. Harris out of town
14	9	Outer ear-anatomy & physiology	Chapter 2 Dr. Harris out of town
15	11	Outer ear anatomy & physiology	Chapters 2 and 3
16	13	Middle ear-anatomy	Chapter 3
17	16	Middle ear-anatomy	Chapter 3
18	18	Middle ear-function	Chapter 3
19	20	Middle ear-function	Chapter 3
20	23	Middle ear-function	Chapter 3
21	25	Temporal bone	Chapter 4
22	<b>27/28</b>	<b>Examination #2 @ testing center– in class Q/A</b>	<b>Exam 2 covers lectures 13-21</b>
23	30	Inner ear-bony labyrinth	Chapter 4
24	Nov 1	Inner ear-membranous labyrinth	Chapter 4
25	3	Inner ear-membranous labyrinth	Chapter 4
26	6	Inner ear-membranous labyrinth	Chapter 4
27	8	Inner ear-membranous labyrinth	Chapter 4
28	10	Cochlear Physiology - Mechanics	Chapter 5
29	13	Cochlear Physiology – Electrophysiology	Chapter 6
30	15	Cochlear Physiology – Electrophysiology	Chapter 6
31	<b>17/18</b>	<b>Examination #3 @ testing center in class Q/A</b>	<b>Exam 3 covers lectures 22-31</b>
32	20	Auditory Nerve	Chapter 7
33	21 (Fri)	Cochlear Nucleus	Chapter 8
34	27	Superior Olivary Complex	Chapter 9
35	29	Lateral Lemniscus & Inferior Colliculus	Chapter 10
36	Dec 1	MGB, Thalamus, Cortex	Chapters 11-12
37	4	Vascular Anatomy	Chapter 14

38	6	Efferent System	Chapter 15
39	8	Vestibular Anatomy & Function	Class lecture only
40	11	Vestibular Anatomy & Function	Class lecture only
41	13	Theories of Bone Conduction	Class lecture only
	<b>15</b>	<b>Reading Day</b>	
	<b>16-21</b>	<b>Final Examination @ testing center</b>	<b>Final covers lectures 32+ and is comprehensive</b>

**COMD 334: Basic  
Hearing Science (3 credits)**

Objective	Assessment	Feedback	ASHA CAA Standard*	DOMSE Conceptual Framework*
1. The student will gain an understanding of the decibel and be able to convert among various reference systems	1a. Decibel Quiz 1b. Exam 1	Written comments on item 1a; testing center score on 1b with in-class review	III-B III-C	CF-1 CF-2
2. The student will understand the anatomy and physiology of the auditory pathway	2. Three examinations during semester	Class review of items.	III-B III-C	CF-1 CF-2

\*More detail is available regarding these standards at <http://education.byu.edu/aslp/index.html>

David O. McKay School of Education (DOMSE) Conceptual Framework (required by the DOMSE):

**CF-1** Embrace and apply the moral dimensions of teaching.

Practicing nurturing pedagogy  
Providing access to knowledge  
Enculturating for democracy

*Ensuring responsible stewardship of the schools*

**CF-2** Demonstrate academic excellence.

**CF-3** Model Collaboration.

**CF-4** Act with Social Competence.

Council on Academic Accreditation Standard (CAA):

**Standard III-B** The applicant must demonstrate knowledge of the nature of basic human communication and swallowing process, including their biological, neurological, acoustic, psychological, developmental, linguistic and cultural bases

**Standard III-C** The applicant must demonstrate knowledge of the nature of speech, language, hearing, and communication disorders and differences and swallowing disorders, including the etiologies, characteristics, anatomical/physiological, acoustic, psychological, developmental, and linguistic and cultural correlates.

**Standard III-D** The applicant must possess knowledge of the principles and methods of prevention, assessment, and intervention for people with communication and swallowing disorders, including consideration of anatomical/physiological, psychological, developmental, and linguistic and cultural correlates of the disorders.

**Standard III- E** The applicant must demonstrate knowledge of standards of ethical conduct.

**Standard III- F** The applicant must demonstrate knowledge of processes used in research and the integration of research principles into evidence-based clinical practice.

**Standard III- G** The applicant must demonstrate knowledge of contemporary professional issues.

**Standard IV-A** The applicant must complete a curriculum of academic and clinical education that follows an appropriate sequence of learning sufficient to achieve the skills outcomes in Standard IV-G.

**Standard IV-B** The applicant must possess skill in oral and written or other forms of communication sufficient for entry into professional practice.