



**MARQUETTE**  
UNIVERSITY

SPEECH PATHOLOGY AND AUDIOLOGY

## **SPPA 172 – Introduction to Audiology**

**Instructor:** Edward W. Korabic, Ph.D., CCC-A, FAAA

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**Class Meeting Time:** Tuesday and Thursday, 11:00 a.m. to 12:15 p.m.

**Lab Meeting Times:** Tuesdays, 8:00 to 9:00 a.m. or 9:00 to 10:00 a.m.

**Office Hours:** By Appointment

### **Textbook:**

Martin, F.N. (2003). *Introduction to Audiology*. Ninth Edition, Needham Heights, MA: Allyn & Bacon

### **Reference:**

Silverstein, H., Wolfson, R. And Rosenberg, S. (1992). *Diagnosis and Management of Hearing Loss*. Clinical Symposia, 44(3).

### **Websites:**

<http://audiology.org/students/>

Information students should know and look for when seeking to become an audiologist.

<http://audiology.org/consumer/>

Frequently asked questions about hearing, hearing loss, (re)habilitation of hearing loss and audiologists.

### **ASHA Certification Standards:**

Satisfactory completion of this course is intended to assist students in meeting the following knowledge and skills required for the American Speech-Language-Hearing Association (ASHA) Standards for the Certificate of Clinical Competence in Speech-Language Pathology as they apply to hearing and hearing disorders:

- Standard III-B: Demonstrate knowledge of basic human communication and swallowing processes, including their biological, neurological, acoustic, psychological, developmental, and linguistic and cultural bases.
- Standard III-C: Demonstrate knowledge of the nature of speech, language, hearing, and communication disorders and differences and swallowing disorders, including their etiologies, characteristics, anatomical/physiological, acoustic, psychological, developmental, and linguistic and cultural correlates.
- Standard III-D: Knowledge of the principles and methods of prevention, assessment, and intervention for people with communication disorders, including consideration of anatomical/physiological, psychological, developmental, and linguistic and cultural correlates of the disorder.

**WI-DPI Standards:**

Satisfactory completion of this course is intended to assist students in meeting the following requirement for WI-DPI Licensure as they apply to hearing and hearing disorders:

- Standard 1: Typical and atypical speech, language and hearing.
- Standard 2: Learning theory and application of theory.
- Standard 5: Conducting formal and informal evaluation.
- Standard 6: Professional communication.
- Standard 8: Cultural diversity, individual differences, and all areas of disability in the identification of children with speech and language disabilities.
- Standard 9: The development of collaborative relationships using a variety of resources.

**Outcome Objectives:**

At the end of this course, students will:

- Demonstrate knowledge of the anatomy and physiology of the hearing mechanism, aural pathology and hearing impairments, hearing conservation, and aural rehabilitation.
- Demonstrate knowledge in the physical measurement of sound and psychoacoustics.
- Show competency in administering Pure Tone Air Conduction Threshold and Screening Tests.
- Demonstrate working knowledge of Pure Tone Bone Conduction Testing, Masking, Speech Audiometry, and Site-of-Lesion Testing.
- Demonstrate competency in interpreting conventional audiological test results.
- Be able to make recommendations/referrals based on audiometric test results.

**Course Requirements:**

Examinations (Formative and Summative Assessment): There will be two (2) exams given during the semester. Each exam will cover the lecture material and **reading assignments**. The final exam is cumulative with emphasis on the material covered since the second semester exam.

Quizzes (Formative Assessment): Since it is imperative to keep up with the course material on a daily basis, there will be four (4) quizzes given during the course of the semester (Formative).

Assignment (Formative Assessment): Each student will complete the following two (2) assignments.

1. Draw a cross-section of the middle ear and the cochlea and be sure to label *at least* the following parts: Middle Ear - Tympanic Membrane, Epitympanic Space, Malleus, Incus, Stapes, Eustachian Tube. Cochlea - Scala Vestibuli, Scala Tympani, Scala Media, Reissner's Membrane, Basilar Membrane, Spiral Ligament, Stria Vascularis, Tectorial Membrane, Limbus, Osseous Spiral Lamina, Outer Hair Cells, Inner Hair Cell, Rods (Arch) of Corti, Tunnel of Corti. (10 points)
2. Ten (10) audiograms. Five (5) will be completed using Human Subjects and Five (5) will be completed using paper patients. See Page 6 of Course Outline for important instructions pertaining to this assignment. All audiograms must be completed and submitted to the instructor by the Friday before the last day of class. (10 points) Assignments:

**Grading Policy:**

Semester Exams (2)	50 points each
Final Exam	100 points
Quizzes (4)	10 points each
Assignments (2)	10 points each
<b>TOTAL</b>	<b>260 points</b>

Failure to complete the audiogram assignment will result in an incomplete grade for the course.

Failure to take any test will result in 0 points. There are no make-up exams in this course unless an official excuse is presented (see below).

An approximate letter grade will be assigned for each test. Final grade will be based on the number of points accumulated out of a possible 260 points and overall class performance.

**Attendance Policy:**

Attendance at all class meetings is expected. Any absence, regardless of reason, will prevent the student from getting the full benefit of the course and render the student liable to University censure. It is assumed that no student will be absent from class without reason. Therefore, the instructor does not differentiate officially between "excused" and "unexcused" absences. Four (4) absences will result in a warning and six (6) absences may result in being dropped from the course.

Tests missed because of absence may not be made up unless an official excuse is presented.

Acceptable anticipated absences:

- The student is away from campus representing an official university function, e.g., participating in a professional meeting, as part of a judging team, or athletic team.
- Required court attendance as certified by the Clerk of Court.
- Religious observances when certified by a letter from the student's parent(s) or religious leader.
- Required military duty as certified by the student's commanding officer.

Acceptable emergency absences:

- Illness or injury when certified by an attending physician, dentist, or nurse. The certification should show the date service was provided to the student but should not describe the nature of that service.
- Death or serious illness in the immediate family (parents, step-parents, siblings, spouse, children, step-children, foster children, in-laws, sibling in-laws, grandparents, great grandparents, step-great grandparents, grandchildren, aunts, uncles, nieces, and nephews) when certified by a letter from the student's parent(s) or spouse.

**Semester Dates:**Labs

Lab #1	TBA
Lab #2	TBA
Lab #3	TBA
Lab #4	Tuesday, April 1
Lab #5	Tuesday, April 8
Lab #6	Tuesday, April 15
Lab #7	Tuesday, April 22
Lab #8	Tuesday, April 29

No Class Days

Thursday, March 13 (Spring Break)

Tuesday, March 18 (Spring Break)

Thursday, March 20 (Spring Break)

Thursday April 3 (American Academy of Audiology)

Exams and Due Dates

First Semester Exam	February 21
Second Semester Exam	March 27
Audiogram Assignment due	April 24
Final Exam	Wednesday May 7 from 8:00 a.m. to 10:00 a.m.

## AUDIOGRAM ASSIGNMENT INSTRUCTIONS

### For Paper Patients:

1. Plot the results on an audiogram form.
2. Determine for each ear:
  - a. Pure Tone Average (PTA)
  - b. Degree of Loss using PTA and Hearing Loss chart.
  - c. Type of Loss (i.e., normal, conductive, sensorineural or mixed).
3. Record PTA in proper place on audiogram form.
4. Record Degree and Type of Loss under "COMMENTS."
5. Hand in completed audiogram form to instructor for approval before continuing assignment.

### For Human Subjects:

1. Check out an audiometer from the reading room.
2. Do an Audiometer and Biological Calibration Check.
3. Find air conduction thresholds for the following frequencies: 250, 500, 1000, 2000, 4000 and 8000 Hz.
4. Record and plot the results on an audiogram form.
5. Determine for each ear:
  - a. Pure Tone Average (PTA)
  - b. Degree of Loss using PTA and Hearing Loss chart.
6. Record PTA in proper place on audiogram form.
7. Record Degree of Loss under "COMMENTS."
8. Hand in first completed audiogram form to instructor for approval before continuing assignment.

### Important notes:

1. Failure to follow all of the above instructions will result in lowering assignment grade. Therefore, carefully review these instructions before turning in assignment.
2. **Audiograms should be neat and adhere to professional, medical documentation standards.**
3. For human subjects:
  - a. Be sure to completely fill-in all identifying information on the audiogram form including the patient's **full** name, sex, age and ID# (MU ID# or 0000-0000 if not an MU student) and the audiometer's make, model and serial number.
  - b. You may test more than one person during a session after the completion and approval of first human subject audiogram.
4. **IMPORTANT !!!** This assignment has been designed to help you understand audiometric testing procedures. Therefore, do all the work on your own so that your instructor can determine, and help you, if you are having problems.

**COURSE OUTLINE**

## I. Course Introduction

## A. Course Packet

Syllabus

Introduction to Decibel Notation

## B. D2L

Syllabus

PowerPoint Presentation

## C. Textbook Readings

## D. On Reserve

## E. Web Sites

## II. Audiology and the Audiologist

## A. Course Packet

29 different ways to say AUDIOLOGY

## B. D2L

PowerPoint Presentation

Common Questions About Audiologists

## C. Textbook Readings

Martin, Chapter 1

## D. On Reserve

AAA (2004). "Audiology: Scope of Practice." *Audiology Today*, 16 (3), 44-45.

## E. Web Sites

<http://audiology.org/students/>

Information students should know and look for when seeking to become an audiologist.

<http://audiology.org/consumer/>

Frequently asked questions about hearing, hearing loss, (re)habilitation of hearing loss and audiologists.

<http://www.nih.gov/nidcd/health/topics/hearin.htm> - The National Institute on Deafness and Other Communication Disorders (NIDCD) provides health information about the normal structure and function of the hearing system and the diseases, disorders, and treatments for the ear.

## III. Acoustics and Psychoacoustics

## A. Course Packet

Axis (2)

## B. D2L

PowerPoint Presentation

Units of Measure

Practice dB Problems

## C. Textbook Readings

Martin, Chapter 3, pages 25 – 51

D. On Reserve

E. Web Sites

#### IV. Anatomy and Physiology of the Hearing Mechanism

A. Course Packet

B. D2L

PowerPoint Presentation

Prefixes and Suffixes

C. Textbook Readings

Martin, Chapter 8: pp.223 - 229

Martin, Chapter 9: pp. 240-247

Martin, Chapter 10: pp. 277-290

Martin, Chapter 11: pp. 315-320

Martin, Chapter 12: pp. 347-350

D. On Reserve

E. Web Sites

#### V. Aural Pathology

A. Course Packet

B. D2L

PowerPoint Presentation

C. Textbook Readings

Martin, Chapter 8: pp.229-239

Martin, Chapter 9: pp. 247-276

Martin, Chapter 10: pp. 290-314

Martin, Chapter 11: pp. 320-333

D. On Reserve

E. Web Sites

#### VI. Development of Hearing Tests

A. Course Packet

B. D2L

PowerPoint Presentation

C. Textbook Readings

Martin, Chapter 2

Martin, Chapter 3, pp. 51-56

Martin, pp. 67-68

D. On Reserve

E. Web Sites

## VII. Pure Tone Threshold Testing

- A. Course Packet
- B. D2L
  - PowerPoint Presentation
  - The Audiogram
  - Degree of Loss Chart
  - Instructions for Audiological Test Procedures
- C. Textbook Readings
  - Martin, Chapter 4, pp. 69-95
- D. On Reserve
- E. Web Sites

## VIII. Masking

- A. Course Packet
- B. D2L
  - PowerPoint Presentation
  - Masking Rules
- C. Textbook Readings
  - Martin, Chapter 3, 95-107
- D. On Reserve
- E. Web Sites

## IX. Calibration

- A. Course Packet
  - Audiogram Assignment Paper Patients (5)
- B. D2L
  - PowerPoint Presentation
  - Biological Calibration Form
- C. Textbook Readings
  - Martin, Chapter 3, pp.57-66
- D. On Reserve
- E. Web Sites

## X. Speech Audiometry

- A. Course Packet
- B. D2L
  - PowerPoint Presentation
  - Spondee Word List
  - WRS Scores and PTA

## C. Textbook Readings

Martin, Chapter 5

## D. On Reserve

## E. Web Sites

## XI. Summary Basic Evaluation

## A. Course Packet

Adult Case History – Hearing

## B. D2L

PowerPoint Presentation

How's Your Hearing?

## C. Textbook Readings

## D. On Reserve

## E. Web Sites

## XII. Site-of-Lesions Testing

## A. Course Packet

Site-of-Lesion Chart

Case Study

## B. D2L

PowerPoint Presentation

Interpreting Audiological Test Procedures

## C. Textbook Readings

Martin, Chapter 6

## D. On Reserve

## E. Web Sites

## XIII. Special Tests Procedure

## A. Course Packet

## B. D2L

PowerPoint Presentation

## C. Textbook Readings

Martin, Chapter 7

Martin, Chapter 12, pp. 350-364

## D. On Reserve

## E. Web Site

## XIV. Noise Exposure and Hearing Conservation

## A. Course Packet

## B. D2L

PowerPoint Presentation

Kasper - “Avoiding mp3 Ear – Facts & Simple Hearing Health Tips For All Generations”

Berger – “Loud Noise During Exercise”

Jackson – “Turn It to the Left”

Fligor and Ives – “Does Earphone Type for Recreational Noise-Induced Hearing Loss?”

C. Textbook Readings

D. On Reserve

E. Web Sites

[http://nidcd.nih.gov/health/pub\\_hb/noise.htm](http://nidcd.nih.gov/health/pub_hb/noise.htm)

<http://nidcd.nih.gov/health/parents/wisears.htm> - The National Institute on Deafness and Other Communication Disorders (NIDCD) health information about noise induced hearing loss.

[www.listentoyourbuds.org](http://www.listentoyourbuds.org) – An interesting, fun, and helpful website to teach children how to use personal audio technology safely. It features an interactive game for kids ages 6 to 12, information for parents and resources for educators.

#### XV. Audiological Rehabilitation

A. Course Packet

B. D2L

PowerPoint Presentation

C. Textbook Readings

Martin, Chapter 13, pp. 367-396

Martin, Chapter 14

D. On Reserve

E. Web Sites