

**University of Southern Mississippi
Speech and Hearing Sciences**

SHS 622: Amplification II

Class Location: SHS 206

Class Time: 10:00 to 11:15 (Monday and Wednesday)

Professor: Dr. Margaret F. Carlin

Room 242 in SHS building

266-6166 or Margaret.Carlin@usm.edu

My office hours are posted and I will make appointments with you if you wish.

Course Outline/Protocols

An outline for the two hearing aid classes follows. Many of the items will have been covered in the first class. Any areas which you wish to cover in more depth need to be brought to the attention of the professor. You should feel competent in all these areas at the end of this class. Hearing Aids (SHS 621) is a prerequisite for this class.

- I. INTRODUCTION
 - A. Types of hearing aids
 - B. National and international sales statistics
 - C. Identifying components and their functions
 - D. Electro acoustic terminology
 - E. Guidelines for medical clearance
 - F. State licensure for hearing aid dispensing

- II. HEARING AID ELECTROACOUSTICS
 - A. Measurements and standards
 1. Historical development/terminology
 2. Procedures/instrumentation
 3. Relationship among real ear, 2cc coupler, and Zwislocki measurements
 4. Kemar, Noah, Digital Hearing Aids

- III. COMPONENTS OF HEARING AIDS WITH EFFECTS AND MEASUREMENTS
 - A. Manufacturers' approaches
 - B. Output limiting
 1. Peak clipping
 - A. acoustic effects
 2. Compression
 - A. Types of microphone
 - B. Acoustic effects
 - C. Hearing aid transducers

1. Types of microphones
 2. Advantages and disadvantages
 3. Impedance matching
 - D. Hearing aid amplifier
 1. Printed circuits
 2. Integrated circuits
 3. Digital circuits
 - E. Batteries
 1. History and developments
 2. Effects of, uses of, and types of batteries
- IV. EARMOLDS
- A. Function
 - B. Types and terminology
 - C. Venting and other acoustics modifying techniques
 - D. Ergonomic considerations
- V. DIGITAL HEARING AIDS
- A. Brief comparison of non-digital, hybrid and digital aids
 - B. Differences in fitting a digital hearing aid: equipment and procedures.
- VI. THE HEARING AID EVALUATION
- A. Historical perspective
 1. Pre 1940
 2. Post 1940
 3. Prescriptive methods
- VII. ISSUES IN FITTING
- A. Real Ear Measurement as a tool in fitting
 - B. Other Issues
 1. Monaural vs. binaural
 2. Which ear do you fit? - Extension of number 1 above
 3. CROS/BiCROS
 4. Type of aid (OTE, ITE, ITC, CIC, Peritympanic hearing aid)
- VIII. IMPLANTABLE HEARING AIDS
- A. Bone implanted hearing aids for conductive hearing losses
 - B. Cochlear implants
 - C. Brain stem implants
- IX. REHABILITATION ISSUES
- A. Assistive Listening Devices
 1. Electro acoustic issues
 2. Rehabilitation issues
 - B. Troubleshooting, repairing, maintaining
 - C. Auditory training, speech reading
 - D. Tinnitus

- X Ethical and Business Issues
 - A. Ethical Practices
 - B. Starting up and staying in business
 - C. Viewpoints

TEXTBOOK

The textbook for this class is "**Hearing Aids**" by Harvey Dillon. It is the same book as used for Hearing Aids I. It is assumed that you own Katz: "**Handbook of Clinical Audiology**". Other informational sources will also be assigned during the class.

TIMELINE

A class timeline will be given during the first week of class. This will include deadlines and dates for quizzes and paper.

SEMINAR

This class will be run as a combination of a typical lecture class and a seminar in which the students present and air their knowledge. We will discuss this during the first class also.

LIGHT REPAIR CLASS

A light repair class is usually scheduled at some point in the academic year. This year we will go to the Hearing Aid Dealer's Conference in Jackson. This conference will deal with cerumen also. This is required and unfortunately I will deduct points if you do not attend. Besides, it should be fun.

GOALS AND AIMS OF THIS CLASS

These are the goals and aims of this class as I visualize them. They are similar for both Hearing Aid classes although I expect your performance to be more sophisticated in this class.

Of course I want you to be the best audiologist possible in the US, get the highest score known on the ASHA exam and to invent a hearing aid that will make us all millionaires but aside from that.....

- ★ know intimately the didactic material presented and in the text (facts, use knowledge in the clinic, feel comfortable fitting hearing aids and do so competently, know the answers to any question on hearing aids in the ASHA exam, pass the licensure exam)
- ★ apply practical experiential knowledge
- ★ use the Internet as a learning tool (this includes the evaluation of the information and its truthfulness and accuracy) while not losing the importance of primary source information
- ★ use professional sources to get information
- ★ be able to troubleshoot so that when a client is less than satisfied you have some ideas of what to do

- ★ begin to question if fitting methods should differ for the digital hearing aid
- ★ synthesize professional materials into a whole so that you develop a hearing aid fitting philosophy that is unique to you

As before, some of this is pure academic e.g. history of hearing aids; some pure practicum- fit the hearing aid onto individuals. As in life, most is a combination of both knowledge and practice.

The didactic materials will be assessed in 4 quizzes each worth 25 points (**total of 100**). One group or small group assignments will be made to use professional sources for information, to assess a fitting that has been done and evaluate it in terms of the information the client is receiving in an aural mode alone and some practical activities. This **use of practical information** will be worth **50 points**. A final paper of between **5 to 10 pages** will give your hearing aid philosophy. It does not have to agree with my philosophy but it must make sense, fit together and be backed up by something more than your gut intuition (e.g. references ☺). This is worth **50 points**. A final is also anticipated which will count for **100 points**.

Grades will be assigned as follows:

A	300-276
B	275-240
C	Below 239

Please note the following:

It is assumed that all papers and written materials are the student's own work. It is expected that appropriate documentation and references be given on paper. When this is not done- as for example when a paper is taken from the Internet and not referenced- it is plagiarism which can result in a grade of "F" for that assignment. This piracy or theft is a serious issue in scholarly works and in copyright law.

ADA

If a student has a disability that qualifies under the American with Disabilities Act (ADA) and requires accommodations, he/she should contact the Office for Disability Accommodations (ODA) for information on appropriate policies and procedures. Disabilities covered by ADA may include learning, psychiatric, physical disabilities, or chronic health disorders. Students can contact ODA if they are not certain whether a medical condition/disability qualifies.

Address:

The University of Southern Mississippi
Office for Disability Accommodations
118 College Drive # 8586
Hattiesburg, MS 39406-0001

Voice Telephone: (601) 266-5024 or (228) 214-3232 Fax: (601) 266-6035
Individuals with hearing impairments can contact ODA using the *Mississippi Relay Service* at 1-800-582-2233 (TTY) or email Suzy Hebert at [Suzanne Hebert@usm.edu](mailto:Suzanne.Hebert@usm.edu)