Instructor: Edward L. Goshorn, Ph.D.
Office: Room 207 SRS
Email: edward.goshorn@usm.edu
Phone: 266-5218
Fax: 601-266-5224

Office Hours: 2:00-3:00 M-F
My office is located in room 207; students may contact me by email, telephone, or in person prior to/following class meetings to arrange appointments.

Prerequisites: Permission of Instructor.
Credit Hours: 1-16 Hours. 3 SCH each semester (taken for two consecutive semesters, spring 3rd year and summer prior to 4th year)

Catalog Course Description
Teaches advanced research procedures.

Course Overview
This course is intended to:
1) Develop the AuD student as a qualified consumer of published research by developing their ability to evaluate research articles published in peer reviewed journals;
2) develop the student’s ability to incorporate evidenced based practice into their work environment;
3) Develop the student’s ability to summarize and integrate information from research articles.

The course is taken for two consecutive semesters. In the first course (spring), basic statistical and research design concepts will be reviewed, practiced, and applied to articles specifically selected by the instructor to meet the learning objectives. In the second course (summer), basic statistical and research design concepts will be reviewed, practiced, and applied to articles from a specific area of audiology chosen by each student but approved by the instructor. Specific articles directly related to the topic are selected by the student to increase and/or enhance their knowledge in a particular area of audiology. The number of articles reviewed will vary with the content area but will be sufficient to meet course objectives.

Course Outcomes
Upon successful completion of the first course (spring semester) each student will have a collection of research articles (selected by the instructor), statistical procedures, and statistical concepts that they have read, reviewed, identified essential statistical and design elements,
scrutinized for reliability and validity, written a summary evaluation of each article, a detailed research plan, and received critical feedback from the instructor on their work.

Upon successful completion of the second course (summer semester) each student will have an annotated bibliography of research articles (approved by the instructor) in a format designated by the instructor in a content area of their choosing.

**Student Learning Outcomes**
Learning outcomes are behaviors that are observable and measurable. Students successfully meeting class requirements will be able to:
- Orally describe the essential components of a journal research article
- Identify the important elements of a published research project
- Identify essential statistical and design components of a research project.
- Identify outcomes and conclusions offered by published research articles.
- Critically evaluate outcomes and conclusions offered by research articles
- Develop alternative conclusions, where applicable, to those offered by authors of research articles.
- Identify and describe the major entities of evidenced based practice.
- Implement new clinical protocols discovered during the research literature review process.

**Instructional Strategies**
Meeting the instructional objectives will be determined on the basis of any or all of the following:
- Formal examinations on text and related material
- Laboratory and internet assignments
- Presentation of research articles in class
- Instructor’s evaluation of a compiled notebook containing critical reviews of published research articles (spring semester)
- Instructor’s evaluation of an annotated bibliography of research articles in a content area chosen by the student (approved by instructor).

**Course Communication**
My office is located in the JB George Building, room 207. Students may contact me by email (preferred method) edward.goshorn@usm.edu or telephone (266-5218), or in person prior to/following class meetings to arrange appointments.

**Textbook/Course Materials**
2. Articles/reading assignments may be given by the instructor as deemed necessary. Students are expected to refer to the text to obtain information about statistical procedures or research designs that may be applied to the articles assigned for presentation. The instructor may present topics from the text that are pertinent to the learning objectives to be derived from assigned articles.
3. Other readings/internet searches to be assigned as needed.

Class Procedures and Requirements

I. Spring Semester:
1. At selected class meetings the instructor will review assigned material from the text.
2. At selected class meetings each student will present and discuss:
   A. A journal article in adherence to the attached format.
   B. A statistical procedure selected from the attached list.
   C. A statistical concept selected from the attached list.

The instructor and students will participate in a discussion of the assigned article(s), statistical procedures, and concepts. The instructor will guide the students by means of a traditional seminar type experience in the classroom. Each article review, statistical procedure, and concept will be assigned a grade of Satisfactory, or Unsatisfactory. A grade of Satisfactory carries a numerical value of 91% and Unsatisfactory a numerical value of 59%. Only exemplary presentations that are deemed to be exceptional by a doctoral level student will be awarded a grade of excellent (99%). The average grade for article reviews will be averaged with other grades to determine the final grade.
3. Maintain a notebook of articles and statistical procedures reviewed consisting of a paper copy of the article and a copy of the article/procedure reviewed.
4. Develop a research plan for a tentative research project. Students will be given a formal guide to use in developing this research plan. The research project will be graded on a pass/fail basis with pass earning a grade of 91% and fail a grade of 59%, and if no plan is submitted to the instructor, a grade of 0 will be averaged with other course grades.
5. In a seminar type course, class participation is essential to optimize learning. Each student will be encouraged to engage in positive constructive critical analysis of the articles that are reviewed as well as editorial stances taken by presenters. Class participation will be graded by the instructor after each class meeting. The instructor may assign a value ranging from -1 to +1 for each class meeting. A zero would represent appropriate graduate level participation in class discussions, questions asked, etc, for a doctoral level graduate student. At the end of the semester, the total number of points for class participation is added to the student’s final numerical grade. The instructor will inform students each time a -1 grade is awarded for class participation and the reason.
6. ABSENCES: Each unexcused absence will count as -5 % points from the final average.
7. TARDINESS: Each unexcused late arrival (> 5 minutes) will count as -2% points from the final average.

II. Summer Semester:
A. The student’s final product to be evaluated will be in the form of an annotated bibliography. The instructor must approve each student’s topic (see attachment). The attached “Topic Approval Form” with the instructor’s signature will serve as the first page of the annotated bibliography.
B. The purposes of the annotated bibliography project are:
1. For the student to become more knowledgeable in a specific professional area.
2. For the student to become more proficient at critical evaluation of published research in their professional area.
3. For the student to become more competent at summarizing in a written format the research articles they review.
4. The annotated bibliography project will contain the following:
   a. A full (electronic or paper) copy of each reviewed article.
   b. A completed “Article Review” form provided by the instructor (attached to this syllabus) on each article. These article reviews are completed by the student, one per week, during the summer semester.
   c. The body of the document will consist of a summary of important findings from each article and your editorial input (i.e. compare and contrast studies, point out important or clinically useful findings or indications for further research). It is OK to cut and paste from your Article Review forms.
5. The articles chosen for review must relate to a specific topic/title of the student’s choosing but the topic/title must be approved by the instructor during the Spring Semester (see attachment).
6. No fewer than nine articles will be reviewed unless the paper is a review of a very complex topic with unusually lengthy references. Given the small number of articles to be reviewed, it will be imperative that the student select scholarly articles that fall well within the scope of the title/topic. Students are encouraged to contact the instructor and to refer to the assigned text for assistance, and to refer to other references as needed for technical assistance in evaluating articles.

B. During the summer term there will be no formal class meetings because students are typically beginning their fourth year externship at distant sites. Communications between instructor and students will be primarily by email.

C. Requirements during the Summer semester:
a. Each Wednesday of the semester each student will send to the instructor:
   i. A copy of his/her completed Article Review form. The instructor will grade this form and provide feedback to the student if the grade is less than an A. Grades will be on a letter basis A through F.
   ii. An electronic copy of the article if available.
   iii. Each student may send an email to the instructor or to any of the other students with any constructive comments/questions regarding a reviewed article. That is, discussions or questions will be conducted by electronic means. These questions and comments will be sent to all students and the instructor even though the question/comment may be directed to a specific individual.

D. Requirements at the end of the summer semester:
a. Each student will send to the instructor a full copy (electronic or paper) of the annotated bibliography project for the instructor to grade.
Evaluation Criteria: SPRING and SUMMER Semesters

1. Conventional examinations may be given during the spring or summer semesters at the instructor’s discretion to assess learning of assigned materials or of basic statistical and research design components. Exam grades will be averaged with grades on other requirements to determine the final grade.

2. The instructor may require completion of lab assignments to assist students in identifying statistical and design components and in performing critical reviews of articles. Lab assignments will be evaluated according to a rubric developed by the instructor.

3. The articles compiled by students will be evaluated throughout the semester by the instructor to determine if students are achieving the course objectives. Each student will assemble a notebook consisting of reviewed articles in the assigned format as well as a copy of the article. Grades will be assigned in accordance with a rubric developed by the instructor.

Grading Scale
The total number of points earned will be divided by the total number of possible points. That percentage will be used to determine the final grade according to the following scale:

<table>
<thead>
<tr>
<th>Percent</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>90-100</td>
<td>A</td>
</tr>
<tr>
<td>80-90</td>
<td>B</td>
</tr>
<tr>
<td>70-80</td>
<td>C</td>
</tr>
<tr>
<td>60-69</td>
<td>D</td>
</tr>
<tr>
<td>&lt;60</td>
<td>F</td>
</tr>
</tbody>
</table>

Final Exam: TBA

ACADEMIC MISCONDUCT:
1. Academic misconduct will be dealt with in the most severe actions permitted by the graduate school.

2. The use of materials such as previous-year course examinations or the use of student presentations/papers (without instructor approval and proper and appropriate reference citation) from previous courses is considered an act of academic misconduct.

Remediation:
Should formative (or the instructor’s subjective) assessments indicate that you are not meeting the objectives of the class, you may be required to participate in remedial activities designed to permit you to successfully complete the course (such as observation of others that are performing the task appropriately, assignment of additional literature review of the current topic area, or direct discussion of the topic area). Participation in those remedial activities, however, will not guarantee your successful completion of the course.
**Knowledge and Skills:** In this course you will acquire knowledge content areas that you can recall, discuss, and apply to the critical evaluation of published research articles. Most of the articles reviewed will have clinical implications. Your acquisition of knowledge and skills will be assessed during the course of the semester (through formative assessment) and at the end of the semester (through summative assessments). Formative assessments will measure your progress during the course of the semester; they include but are not limited to: a. examinations of your knowledge as well as assessments of your ability to critically evaluate research articles. The presentation of articles in class establishes one source of formative assessments. Students will also be graded on class participation: your contributions to class discussions and your performance on classroom presentations. Should formative assessments indicate that you are not meeting the objectives of the class, you may be required to participate in remedial activities designed to permit you to successfully complete the course. Participation in those remedial activities, however, will not guarantee your successful completion of the course.

The summative assessment (assessment of cumulative work, such as a body of reviewed articles) will determine if you have acquired the overall knowledge and skills expected of students completing the course.

**ASHA Standards:** This course is designed to meet the following standards for the Certificate of Clinical Competence in Audiology from the American Speech-Language-Hearing Association:

- **Standard 3.1.A:** Instruction in foundations of audiology practice must include opportunities for students to acquire knowledge in “principles and practices of research, including experimental design, evidenced based practice, statistical methods, and application to clinical populations”.

**Students with Disabilities**
If a student has a disability that qualifies under the Americans 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 may contact ODA for clarification if they are not certain whether a medical condition/disability qualifies. The ODA address is:
The USM 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
[https://www.usm.edu/oda](https://www.usm.edu/oda).
Student’s Name:                  Date:                  GRADE: ____

I. Author’s full name(s)
II. Journal name, volume, issue, page numbers, year of publication.
III. Title of Article.
IV. Abstract [must be verbatim – OK to cut and paste].
V. Method
   A. Describe subjects or objects studied.
      1. quantity
      2. group classification, or categories
   B. Describe experimental procedures (minimal things to consider are listed below):
      1. null hypothesis and alternative hypothesis
      2. dependent variable(s)
      3. independent variable(s) and names & levels for each

VI. Results/findings
   A. Briefly describe important finding(s)
   B. List each statistical procedure & outcome

VII. Your comments
   A. List 1-3 important facts/findings from this article (could be something you learned or
      something you knew already).
   B. Any concerns you have with the study that were not addressed by the author(s).
   C. Was there a special or creative aspect to the study’s design or author’s interpretation
      of results?
   D. Were appropriate statistical analyses used?
   E. Were the authors objective (was there any reason for bias, conflict of interest, or lack
      of objectivity)?
Format for journal article review: NOT an Experimental Design

Student’s Name: Date: GRADE: ____

I. Author’s full name(s)

II. Journal name, volume, issue, page numbers, year of publication.

III. Title of Article.

IV. Abstract [must be verbatim] or a brief introduction.

VI. Results/findings
   A. Brief summary (ok to list)

VII. Brief Summary of author(s)’s Conclusions

VIII. Your comments
   A. List 1-3 important facts/findings from this article (could be something you learned or something you knew already).
   B. Was there any indication of bias or conflict of interest?
I request approval of the topic proposed below for my Annotated Bibliography as part of the requirements for Summer Semester SHS 791 (topic must be approved prior to last day of the spring semester)

TOPIC: ____________________________________________________________

______________________________________________________________

Topic approved by:

_________________________________________  _______________________
Edward L. Goshorn, Ph.D.                      Date
TOP TEN THINGS EVERY INVESTIGATOR SHOULD KNOW ABOUT THE ______________

1. Name of procedure:
2. Level of measure:
3. Sample type:
4. Rationale:
5. Test equation:
6. Test statistic:
7. Method:
8. Power-Efficiency:
9. Example:
10. References:
List of Statistical Procedures
1. Mean
2. Standard deviation
3. Standard error of the mean
4. Median
5. Mode
6. Paired comparison t-test
7. Two independent sample t-test
8. One-way analysis of variance
9. Two-way analysis of variance
10. Analysis of covariance
11. Repeated measures analysis of variance
12. Regression analysis
13. Multiple regression analysis of variance
14. Logistic regression
15. Correlation
16. Levene’s test of homogeneity of variance
17. Chi Square (2 independent samples)
18. Chi Square (goodness of fit)
19. Binomial test
20. McNemar test
21. Sign test
22. Walsh test
23. Fisher Exact Probability test
24. Cochran Q test
25. Wilcoxon test
26. Kolmogorov-Smirnov test
27. Friedman 2-way
28. Spearman
29. Contingency coefficient
30. Mann-Whitney test
31. Wald-Wolfowitz runs test
32. Moses test of extreme reactions
33. Randomization test
34. Bonferroni
35. Mauchley’s test of Sphericity
36. Tukey LSD
1. P-value
2. Alpha value
3. Variability
4. Variable
5. Continuous variable
6. Discrete variable
7. Homogeneity of variance
8. Degrees of freedom
9. Parametric tests
10. Non-parametric tests
11. Normal
12. Normal distribution
13. Sample
14. population
15. Confidence interval
16. Mean
17. Standard deviation
18. range
19. Regression
20. Correlation
21. F-ratio
22. T-ratio
23. Binomial
24. Negative binomial
25. Skewed distribution
26. Null hypothesis
27. Dependent variable
28. Independent variable
29. Probability
30. Random
31. Mean square error
32. Estimate
33. Sphericity
34. Type 1 error
35. Type 2 error
36. Power
37. Z-score
38. Statistically significant
39. True experiment
40. Natural experiment