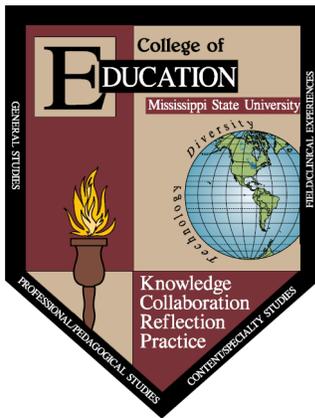


MISSISSIPPI STATE UNIVERSITY
COLLEGE OF EDUCATION
DEPARTMENT of COUNSELING and EDUCATIONAL PSYCHOLOGY
COURSE SYLLABUS

| | |
|------------------------------------|---|
| Course Prefix & Number: | EPY 8513 |
| Course Title: | Psychometric Theory |
| Credit Hours: | 3 Semester Hours |
| Course Type: | Lecture |
| Course Description: | (Prerequisites: EPY 6214, EPY 8214, EPY 8263 or equivalent.) Three lectures. Classical and modern models and their application to solving measurement problems, including developing and evaluating assessment instruments. |

College of Education Conceptual Framework:



The faculty in the College of Education at Mississippi State University are committed to assuring the success of students and graduates by providing superior learning opportunities that are continually improved as society, schools, and technology change. The organizing theme for the conceptual framework for the College of Education at Mississippi State University is educational professionals - dedicated to continual improvement of all students' educational experiences. The beliefs that guide program development are as follows:

1. **KNOWLEDGE** - Educational professionals must have a deep understanding of the organizing concepts, processes, and attitudes that comprise their chosen disciplinary knowledge base, the pedagogical knowledge base, and the pedagogical content knowledge base. They must also know how to complement these knowledge bases with the appropriate use of technology.
2. **COLLABORATION** - Educational professionals must continually seek opportunities to work together, learn from one another, forge partnerships, and assume positions of responsibility.
3. **REFLECTION** - Educational professionals must be willing to assess their own strengths and weaknesses through reflection. They must also possess the skills, behaviors, and attitudes necessary to learn, change, and grow as life-long learners.
4. **PRACTICE** - Educational professionals must have a rich repertoire of research-based strategies for instruction, assessment, and the use of technologies. They must be able to focus that array of skills on promoting authentic learning by all students or clients, while exhibiting an appreciation and commitment to the value and role of diversity.

Topics to Be Covered:

Outline of topics, readings, and approximate class times (see web site for calendar).

Introduction to test theory

C&A: Chapters 1-2

Scaling (1.5)

C&A: Chapter 3

Composite Scores (1.5)

C&A: Chapter 5

Reliability (6.0)

Classical model

C&A: Chapter 6

Estimation

C&A: Chapter 7

Generalizability theory

C&A: Chapter 8

Criterion-referenced tests

C&A: Chapter 9

Validity (4.5)

Validation methods

C&A: Chapter 10

Factor analysis

C&A: Chapter 13

Test construction, scaling, norming, and equating (7.5)

Construction

C&A: Chapter 4

Item analysis

C&A: Chapter 14

Norms and standard scores

C&A: Chapter 19

Equating

C&A: Chapter 20

Item response theory (6.0)

C&A: Chapter 15

Outside readings

Differential Item Functioning and appraisal of bias in test scores, Use (3.0)

C&A: Chapter 16

Outside readings

Classification, prediction, and selection (3.0)

C&A: Chapters 11, 12

Formula scoring (1.5)

C&A: Chapter 17

Review and Special Topics (4.5) [CAT, Practical issues, Efficient measurement strategies]

Outside readings

Project presentations/discussion (3.0): Thursday, May 2, during final examination period.

Required Textbook:

Crocker, L., & Algina, J. (1986). *Introduction to classical and modern test theory*. New York: Holt, Rinehart and Winston. [Note: This text is reprinted/distributed by Wadsworth, 2006]

Highly Recommended Text:

Brennan, R. L. (Ed.) (2006). *Educational measurement* (4th ed.). New York: Praeger. [Text sponsored by the National Council on Measurement in Education and the American Council on Education.]

Standards for educational and psychological tests. (1999). Washington, DC: American Psychological Association. [Joint publication of American Educational Research Association, American Psychological Association, and National Council on Measurement in Education.]

Methods of Instruction:

Lecture

Student Activities:

Assigned work

All assigned work is due the next class period after the assignment is made (due dates are shown on course calendar). Assignments turned in late will have 1 point deducted for each class that passes after the announced due date, including the due date itself. On occasion, you may be asked to make revisions and resubmit assignments; the revised work will be evaluated as if it were the original, if turned in on time (the following class period). Revisions turned in after the

announced due date will not be considered; the mark will be based on the original version of the work. Omissions will not be included in any requested revisions, nor will copied work (regardless of who did the copying). *Copied work includes duplication of computation, analysis, explanation, or interpretation from anyone else in the class, whether this semester or from past semesters. (The MSU Honor Code policy on academic misconduct, <http://www.honorcode.msstate.edu/pdf/honor-code.pdf>, also applies to issues of cheating and plagiarism; any such instances result in a score of “0” for the work in question and referral to the Honor Code Office.)*

Assignments are rated on a scale from 0-3 points, as follows:

| <i>Scale rating</i> | <i>Qualitative interpretation/definition</i> |
|---------------------|---|
| 3 | Excellent work; virtually error-free with no omissions |
| 2 | Good work, though with several errors, or omissions no more than 20% of total |
| 1 | Poor work, with numerous errors, errors and few omissions, or omissions of 21-40% |
| 0 | Numerous omissions (over 40%), copied work, off-task responses, and/or excessively late |

Contributions to Class

Contributions to class are of four varieties: (a) correctly answering questions posed by the instructor or others during class periods, or similarly participating in and enhancing the discussion of or work on a topic (up to 3 points); (b) making presentations to the class during the semester--there will be at least one assigned topic for each person during the semester (up to 3 points); and (c) bringing to class some issue(s) pertinent to the course topics as reflected in the popular press or scholarly publication (up to 3 points); and (d) treats for the class (no points, but we'll all enjoy it more!). Attendance is necessary in order to earn contribution points (though no points are awarded for just showing up with a measurable pulse), as is respecting the class environment (set cell phones and pagers to vibrate or turn them off, please).

Attendance

A record of attendance will be kept during the semester. Being in attendance is defined as being present when the class roll is checked, and not departing early from class.

Course Project

This may be on just about any topic that we cover in the course, and possibly on one that we cannot cover due to time. Applications or investigations of methods are strongly encouraged; mere recitations of literature are strongly discouraged. The topic and scope must be approved by the instructor by April 11, or you will receive no credit for the project.

The final project will be judged according to the following guidelines:

| | |
|--------------------------------|------------------|
| Statement of the problem* | (up to 1 point) |
| Appropriate literature review* | (up to 2 points) |

| | |
|--|------------------|
| Method* | (up to 2 points) |
| Results* | (up to 3 points) |
| Discussion* | (up to 3 points) |
| Appendix with data and your annotation of data analyses* | (up to 1 point) |
| Presentation to class (you must prepare a brief handout, use suitable visual aid/s, make a complete and coherent presentation, <i>and appropriately</i> <i>answer questions about your presentation</i>) | (up to 3 points) |

* These portions must be turned in as a typed, double-spaced (except for appendix) manuscript. The paper is absolutely, positively due by the first scheduled date of the presentations. Project papers turned in late will have 2 points deducted per calendar day (starting May 2); no papers will be accepted after May 5. Up to 2 points can be deducted for papers not conforming to APA style (excepting the appendix). Attach a signed copy of topic approval to project when you turn it in.

Honor Code:

“As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do.”

Any acts of academic misconduct (e.g., cheating, plagiarism, etc.), as outlined by Mississippi State University, will be vigorously pursued by the instructor. Some words of advice: DO NOT CHEAT! For detailed information regarding the university’s policies related to academic misconduct please refer to the following link on the university’s website:
<http://www.msstate.edu/dept/audit/1207.html>

Technology:

Several of the assignments, and, for most persons, the project, will require use of the computer for data analysis, location of information via on-line resources, or both. If you do not have access to a personal computer, you may go the library, main (2nd) floor, or to any of several labs on campus. Assignments and most course handouts will be available on the course web site. Students are responsible for obtaining assignments from the web site.

Diversity:

Issues of diversity will be inherent in all discussions and activities completed as a part of this course. Young adolescents live and function in a diverse world; as such, students must develop an understanding of diversity as it relates to young adolescents and their worlds.

Disabilities:

Students having special needs conditions documented through Student Support Services must contact the instructor to make arrangements for appropriate accommodations.

Evaluation of Student Progress:

Appraisal of student performance will be based upon: (a) the quality of assigned work related to each topic (60% of total: 36 points maximum); (b) contributions to class (nominal weight of 15%; 9 points maximum); and (c) project (nominal weight of 25%; 15 points maximum). Course marks will be determined on the following scale, with values rounded to the nearest integer:

| <i>Total Points</i> | <i>Course mark</i> |
|---------------------|--------------------|
| 53-60 | A |
| 47-52 | B |
| 42-46 | C |
| 36-41 | D |
| Below 36 | F |