MISSISSIPPI STATE UNIVERSITY
COLLEGE OF EDUCATION

DEPARTMENT of COUNSELING and EDUCATIONAL PSYCHOLOGY
COURSE SYLLABUS

Course Prefix & Number: EPY/EDF 9443

Course Title: Single-Subject Research Designs in Education

Credit hours: Three (3) semester hours

Type of Course: Lecture

Catalog Description: A detailed examination of single-subject research designs and their associated research methods including data collection and data evaluation techniques.

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.

Course Description:

EPY/EDF 9443 is intended for highly motivated students who wish to learn about experimental research designs that allow one to integrate science with behavior change. Students will be required to demonstrate attainment of knowledge of single subject design methodology through performance on exams, comprehensive reviews and critiques of articles utilizing single subject designs, and development of graphs from data sets.

Course Objectives:

The goal of this course is for each student to meet the following objectives:

1. Determine the position of single subject methodology and experimental design in the world of research. **CFPO # 4; NASP 2.9; InTASC 4, 5, 6**
2. Plan and conduct single subject research using within-series, between-series, and combined series designs. **CFPO #1, 8; NASP 2.9; InTASC 4, 5, 6**
3. Critically analyze data from single subject designs and draw empirically-based conclusions from the analyses. **CFPO #1, 4, 5, 8, 11; NASP 2.1, 2.11; InTASC 4, 5, 6**
4. Critically analyze data from peer-refereed journal articles using of single subject design methodology. **CFPO #1, 2, 4, 5, 10, 11, 12; NASP 2.1; InTASC 4, 5, 6, 9**
5. Understand the applied and experimental issues associated with each single-subject research design. **CFPO #4; NASP 2.1, 2.9; InTASC 4, 5, 6, 9**
6. Understand the ethical issues associated with utilizing single subject design methodology. **CFPO #4, 5, 7; NASP 2.10; InTASC 4, 5, 6, 9**

Topics Covered:

1. History and issues in single-subject research design (3 hours)
2. Ethical and Professional use of Single Subject Designs (3 hours)
3. Methods of measurement (3 hours)
4. Essential Characteristics of single-subject research designs (3 hours)
5. Visual analysis of single-subject research designs
    a. Within series designs (9 hours)
    b. Between series designs (6 hours)
    c. Combined series designs (6 hours)
6. Graphing and electronic development of graphs (6 hours)
7. Utilization of Single Subject Designs within a Systems Level Change Model (3 hours)
    a. Response to Intervention
    b. Positive Behavior Interventions and Supports
8. Statistical analysis of data within single subject designs (3 hours)

Required Texts:

Hayes, S. C., Barlow, D. H., & Nelson-Gray, R. O. (1999). *The scientist-practitioner: Research and accountability in the age of managed care (2nd Ed.)*. Needham Heights, MA: Allyn & Bacon.

Recommended Course Texts:

Barnett, D.W., Daly, E.J., Jones, K.M., & Lentz, F.E. (2004). Response to intervention: Empirically-based special service decisions from single-case designs of increasing and decreasing intensity. *The Journal of Special Education, 38*, 66-79.

Campbell, J.M. (2004). Statistical comparison of four effect sizes for single-subject designs. *Behavior Modification, 28, 234-246*.

Edwards, R.P. (1987). Implementing the scientist-practitioner model: the school psychologist as data-based problem solver. *Professional School Psychology, 2*, 155-161.

Moore, J. W., Doggett, R. A., Edwards, R. P., & Olmi, D. J. (1999). Using functional assessment and teacher-implemented functional analysis outcomes to guide intervention for two students with attention-deficit/hyperactivity disorder. *Proven Practice: Prevention and Remediation Solutions in Schools, 2*(1), 3 - 9.

Olive, M.L., & Smith, B.W. (2005). Effect size calculations and single subject designs. *Educational Psychology, 25*, 313-324.

Polaha, J. A. & Allen, K. D. (1999). A tutorial for understanding and evaluating singe subject methodology. *Proven Practice: Prevention and Remediation Solutions in Schools, 1*(2), 73-77.

Riley-Tillman, T.C., & Burns, M.K. (2009). *Evaluating educational interventions: Single-case design for measuring response to intervention*. New York, NY: Guilford.

Skinner, C.H. (2004). *Single-subject designs for school psychologists*. New York, NY: Hawthorne.

Method of Instruction:

Lecture

Student Activities:

The following activities are required:

<u>Article Reviews and Presentations:</u> You need to find, read, and critique an article published in your interest area, *which employs one of the designs discussed in this course*. You are required to turn in a copy of a published study employing the design and a summary critique of the study. You will make a presentation (30 minutes) of this study and hand out your article summary sheet to all class members. For your presentation, you will need to embed the manuscript graphs into the power point presentation, explain the purpose of the study, determine why the author(s) used the

selected design, offer an interpretation of the results, discuss important implications and limitations of the study, and make informed recommendations for future research. The summary should be formatted to include the following **(Course Objectives 1 - 6)**:

- Reference: APA style (check the current APA style manual carefully)
- Purpose: General reason for why the authors conducted this study.
    - Paraphrase the overall purpose for conducting the study.
    - Be sure to include specific research questions or hypotheses.
- Participants and settings: brief description of participants & location/setting
- Design: Identify the design used; ***Was it appropriate to answer the question?***
- Independent variable(s): List and briefly describe (provide overview of the procedures)
- Dependent variable(s): List and briefly describe (provide the operational definitions)
- Inter-observer Agreement: Discuss method and percent agreement
- Treatment integrity: Discuss method and percent integrity
- Results: Use graph; Discuss changes across and within phases
    - Discuss level, variability, and trend; convergence or divergence;
    - Discuss any statistical analyses used by the authors
- Discussion: Interpret the clinical and/or statistical significance of the results; address social validity and ethical or professional concerns.
- Discuss limitations of the research study
    - Discuss threats to internal validity
    - Discuss issues related to external validity
- Provide a brief description of issues researchers may want to investigate in future studies and a brief rationale why. **Due dates vary – see tentative schedule.**

Excel Graphs: One of the most important components of single subject design research or the proper evaluation of interventions is the production of graphs to evaluate changes in behavior. As such, students will be required to produce graphs from each of the types of designs (e.g., within-series, between series, combined series). **The graphs should be sent to me electronically via email (Course Objectives 1 – 6).**

Policy for Academic Misconduct:

Any acts of academic misconduct (e.g., cheating, plagiarism,), 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

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."

Technology:

Students will use a variety of technology and tools (e.g., computer software) to complete work in the school, to turn in work samples.

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.

Disability:

I want to facilitate the learning of all students in the class. If you have a disability that may significantly interfere with your learning or believe that you need special assistance to successfully complete the requirements of the class, please contact me during the first week of class so that I can attempt to accommodate your learning needs. Also, if you are having problems in this course, for whatever reason, I invite you to make an appointment with me to discuss the matter. Be sure to make the appointment early in the semester so that we have enough time to remediate the problem.

Important Note: If you think you have a disability that qualifies under the Americans with Disabilities Act and requires accommodations, you should contact the Office of Student Support Services for information on appropriate policies and procedures (Montgomery Hall, 325-3335).

Field Component:

None

Evaluation of Student Progress:

Exams: Your final grade in this course will be based in part on your performance on two examinations. Each exam will be worth 25% for a total of 50% of the final grade. The exams will emphasize assigned readings and lecture material. Exams will be composed of short answer items and/or short essays. **See syllabus for dates**

Article Review and Presentation: Your final grade in this course will also be based in part on your performance on article reviews and presentations. The article review and presentation will be worth 25% of your final grade. Dates for presentation will be assigned the first day of the course.

Graphs: Your final grade in this course will also be based in part on your performance on development of graphs in an excel program. Data for each graph and the specific designs to be displayed will be provided by the professor. The development of the graphs will be worth 25% of your final grade.

Grading Scale:
Course grades will be based on exams, article reviews, and excel graphs. A 10-point grading scale

will be used to assign the final grade. The maximum obtainable points are as follows:

Grade	
A	90-100
B	80-89
C	70-79
D	60-69
F	<59

Bibliography:

Barlow, D. H. & Hersen, M. (1984). *Single case experimental designs: Strategies for studying behavior change*. (2nd ed). Elmsford, NY: Pergamon Press.

Kazdin, A. E. (1982). *Single-case research designs: Methods for clinical and applied settings.* New York: NY: Oxford University press.

Miltenberger, R.G. (2004). *Behavior modification: Principles and procedures* (3rd Ed.). Belmont,CA: Wadworth/Thomson.

Morgan, D.L., & Morgan, R.K. (2009). *Single-case research methods for the behavioral and health sciences*. Los Angeles, CA: Sage.

Scheuermann, B.K., & Hall, J.A. (2008). *Positive behavioral supports for the classroom*. Upper Saddle River, NJ: Pearson.