Syllabus SPED 503 – Research Design and Methodology

(3 Credits)

Online Asynchronous

Date: Fall 2016

Professor:	Brent A. Askvig, Ph.D.
Office:	Memorial 234
E-mail Address:	brent.askvig@minotstateu.edu *
Phone:	701-858-3052
Office Hours:	As scheduled via course email

**** Please use in-class email for this course.***

Required Texts:

Creswell, J.W. (2014). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research, Enhanced Pearson eText with Loose-Leaf Version - (5th Edition)*. Upper Saddle River, NJ: Pearson Education Inc. *ISBN-13: 978-0133831535 or ISBN-10: 0133831531*

Salkind, N. J. (2013). *Statistics for people who (Think They) hate statistics, 5th Ed.* Thousand Oaks, CA: Sage Publications, Inc. *ISBN: 1452277710 ISBN-13: 9781452277714*

Catalog Description: SPED 503. Research Design and Methodology. 3 Hours.
This course is part of the special education research core and provides students with a comprehensive foundation in quantitative and qualitative methods for conducting meaningful inquiry and research. The purpose of this course is to help students write a clear description of the methodology section of their Master's thesis. They will gain a deeper understanding of research intent and design, methodology and technique, format and presentation, and data management and analysis informed by commonly used statistical methods.

Additional Course Information: This course is part of the MSU Department of Special Education core research sequence. *Please make sure you review this sequence with your major advisor to be sure you are on track with your thesis and student research.*

Course Pre-Requisite Knowledge/Skills: As part of the departmental research sequence, faculty expect that you enter SPED 503 with a certain set of knowledge and skill. In some cases you may be transferring in credits or courses from other universities, or following a slightly adjusted sequence of courses. However, we want to make sure you have some basics in place before taking this course. These expectations include:

- A basic understanding of research in education and the research process
- A topic area and preliminary research question(s) for your student thesis.
- Possible hypotheses for your proposed study including preliminary literature to support your topic/question/hypothesis.
- Some level of understanding of a theoretical basis for your area of research.

CEC & InTASC Standards:

Relationship of Course to MSU Teacher Education Standards and National CEC Content Standards

This course is designed to incorporate several university and national standards. At MSU, the Teacher Education Unit adheres to *the theme* of **Teacher as a Reflective Decision-Maker**, and *the conceptual model*, **ARK: Action, Reflection, Knowledge**, for Teacher Education programs across the university. Minot State University provides a teacher education program that meets CAEP, state, and other appropriate university and program accreditation requirements. MSU uses the INTASC (Interstate New Teacher Assessment and Support Consortium) guidelines for teacher preparation. (see http://intascstandards.net/). Further, the MSU Department of Special Education generally designs courses to meet the National Council for Exceptional Children Content Standards (see http://www.cec.sped.org/standards/). **The CEC standards most relevant to this course include Advanced Standard 4: Research and Inquiry; and Advanced Standard 6: Professional and Ethical Practice.**

Advanced Preparation Standard 4: Research and Inquiry	
Knowledge	
SEAIS.4.K1	Determination of academic and behavior intervention practices consistent with best-evidence syntheses of research
SEAIS.4.K2	Fidelity of intervention
Skills	
SEAIS.4.S1	Build the capacity of stakeholders to analyze data relative to individual progress and outcomes
SEAIS.4.S2	Assist stakeholders in selecting, implementing with fidelity, and evaluating academic and behavior intervention research and practices

Advanced Preparation Standard 6: Professional and Ethical Practice	
Knowledge	
SEAIS.6.K1	Needs of individual learners and families
SEAIS.6.K2	Culture biases and differences that affect one's practice
SEAIS.6.K3	Principles of adult learning theory
Skills	
SEAIS.6.S1	Articulate and apply current evidence-based practices in professional development
SEAIS.6.S2	Engage in reflective inquiry and professional self-assessment
SEAIS.6.S3	Promote universal design for learning principles
SEAIS.6.S4	Foster the use of culturally responsive content and pedagogical practices to meet the needs of learners from diverse cultural and linguistic backgrounds

Student Outcomes:

The successful student will:

1. Describe measures of central tendency and their use.
2. Compute measures of central tendency.
3. Describe measures of variability and their use.
4. Compute range, standard deviation and variance.
5. Describe and develop various charts, tables and graphs to illustrate data.
6. Describe correlations and how they work.
7. Compute and interpret correlation coefficients.
8. Describe reliability and validity regarding data.
9. Identify and describe basic measurement scales.
10. Compute and interpret various reliability scores.
11. Describe the difference between a sample and a population.
12. Describe probability and its importance in statistics.
13. Describe the normal curve and its characteristics.
14. Compute and interpret *z* scores.
15. Describe the concept of significance in data analysis.
16. Identify and describe Type I and Type II errors in statistics.
17. Describe the concept and characteristics of inferential statistics.
18. Describe, compute and interpret the one-sample *Z* test.
19. Describe, compute and interpret the various *t* tests.
20. Describe the characteristics and give examples of various non-parametric statistics.
21. Describe the connection between the type of research question/purpose and the general methodology of a study.
22. Differentiate the essential features between quantitative and qualitative research designs.
23. Describe various sampling methods for obtaining subjects for a research study.
24. Identify the relevant aspects of an appropriate data collection instrument that match a research purpose/question and methodology.
25. Describe various processes for data collection (both quantitative and qualitative) and compilation prior to analysis.
26. Discuss the potential threats to internal and external validity amongst various research designs.

27. Identify possible data analysis procedures for specific research questions/purposes.
28. Describe and demonstrate procedures for reporting results for a research question/purpose.
29. Differentiate between experimental and non-experimental designs.
30. Describe the basic characteristics of group, single subject, survey, and correlational research designs.
31. Describe the basic characteristics of various qualitative, mixed method and action research designs.
32. Understand the importance of, and go through the preliminary processes of, making an application to the Institutional Review Board for the Protection of Human Subjects (IRB).

Instructional Strategies for this Course: A variety of strategies will be used in this course. This will include independent readings, online material presentations, quizzes (and practice quizzes), exams, discussion postings, papers, and statistics problem sets (along with practice sets). MANY materials will be used, and students are offered multiple methods to access the content. **BE SURE TO LET THE INSTRUCTOR KNOW if you have verified accommodations that you need.** Unless otherwise noted, all assignments, quizzes, exams, papers, etc. are to be done independently by the individual learner. When students have difficulty with the material, they are asked to contact the instructor directly (via in-class email or by office phone). We can then discuss individual questions and issues more directly.

Course Assignments:

Quizzes (on both statistics and design/methodology readings) (10 points each)	50
Problem Sets (statistics examples/calculations) (10 points each)	50
Discussion postings (10 points each)	50
Research paper/case analyses (25 points each)	50
Midterm and Final Exam: (100 points each)	200
Final paper (Research Methodology Section for Proposed Thesis)	100
Total	**500**

Assignment Explanations:

Quizzes: Students will complete online quizzes on both statistics and design/methodology readings for the course. These quizzes will be done online in the course shell and will be multiple choice and time-limited. In other words, you will need to do the readings, and go to the course to take the quizzes within the specified deadlines/time ranges. Scores will be automatically calculated by the BB Learn system and immediately posted in the course grade book. (NOTE: There will be sample/practice quizzes to get you ready for this!)

Problem Sets: A key feature of most statistics courses is to make sure students actually calculate/complete stats problems. You will be directed to complete online problems using hand calculations or Excel features. (NOTE: There will be practice problem sets to get you ready for this!)

Discussion postings: Students will be asked to respond to questions, cases, and/or examples in the online discussion section. Students will respond to the discussion questions to the instructor's comments and to other student's postings. (NOTE: accurate spelling and

punctuation are not required, but the posting must have substance to it. Thus, just saying "yea, I agree!" won't be sufficient.)

Research paper/case analyses: The instructor will post or direct students to an external site for a paper or research case study. Students must then read and review the document, answering brief questions about the document.

Midterm and Final Exams: Student will complete midterm and final exams. Generally these will be case-based examples or scenarios that require students to demonstrate understanding of and application of various concepts in the course.

Final Paper: One major outcome for this course is to get students to a point of having a reasonable draft of Chapter 3 – Methodology Section for their thesis proposals. Students will be given information, materials, templates, and editing comments throughout the course on various versions of the Chapter 3 document. **STUDENTS WILL SUBMIT TWO DRAFTS THROUGHOUT THE SEMESTER ALONG WITH THE FINAL (THIRD) SUBMISSION.** (See the calendar for due dates for submission of the drafts.) At the end, the student will submit the end-of-course version for review and evaluation. (NOTE: *You should be working with your major advisor and committee members throughout the semester so that you are getting ongoing feedback on developing your full thesis proposal!* However, YOU are responsible for developing and submitting the materials for this class per the schedule.). See the Grading Schema attached to this syllabus

Grade Scale:

This course uses the MSU Graduate School grading system of A-B-C-F. Individual Course grades are assigned based on percentage of points earned, as follows:

A – 90% - 100%
B – 80% - 89%
C – 70% - 79%
F – less than 70%

Course Policies:

Academic Honesty

Academic honesty is at the core of pre-professional and professional programs. Any behavior deemed as academically dishonest by the Special Education department will result in disciplinary action including, but not limited to, a failing grade for the assignment and/or course, and/or dismissal from the program. Academic dishonesty includes, but is not limited to,:

A. Misrepresenting another individual's work as one's own, e.g. plagiarism.
B. Copying from another student during an exam.
C. Altering one's exam after grading for the purpose of enhancing one's grade.
D. Submitting the same paper to more than one class.
E. Use of any material not approved by the instructor during an exam.
F. Turning in reports intended to be based on field collected data but, in fact, is not.
G. Failure to respect the confidentiality of students/persons served or studied.
H. Failure to uphold the professional standards for ethical conduct as set forth by the Council for Exceptional Children.

ADA Accommodation Statement:
In coordination with the Disability Support Service, reasonable accommodations will be provided for qualified students with disabilities (LD, Orthopedic, Hearing, Visual, Speech, Psychological, ADD/ADHD, Health Related & Other). Please contact the instructor during the first week of class to make arrangements. Accommodations and alternative format print materials (large print, audio, disk or Braille) are available through the Disability Support Service, located in the basement of Lura Manor, phone number 701-858-3371 or evelyn.klimpel@minotstateu.edu.

MSU's Guidance for Online Netiquette: When communicating online, it is very important to follow the basic rules of netiquette. In the online environment, it is easy to forget that you are communicating with real people. At times it can also be difficult to be understood correctly. The following basic rules of netiquette may help you to communicate effectively in your online course.

- Keep paragraphs and messages short and to the point.
- Focus on one subject per message and always include a pertinent subject title for the message, that way the user can locate the message quickly.
- Use the jargon associated with the course, but otherwise keep your language simple.
- Reply to others by using their name and include your signature at the bottom of messages.
- Capitalize words only to highlight an important point or to distinguish a title or heading. *Asterisks* surrounding a word also can be used to make a stronger point. Capitalizing whole words that are not titles is generally termed as SHOUTING!
- Avoid control (special non-language) characters.
- Be professional and respect the views and opinions of others.
- Be careful what you say about others. Course mail is easily forwarded.
- Cite all quotes, references, and sources and respect copyright and license agreements.
- Be careful when using sarcasm and humor. Since you do not have the same visual cues such as body language and facial expression as in face to face communication, jokes may be viewed as criticism.
- Flaming is an often-angry, mean-spirited attack on another person via email. It is a major breach of netiquette to flame someone. It's rather counterproductive and usually the result of either a quick move to judgment or a sadistic temperament. Unfortunately, there is little you can do when you have been flamed. Responding in kind brings only joy to the flamer and provides you with only momentary satisfaction. My advice is to contact the instructor and register a complaint.

Title IX Statement:
Minot State University is committed to a safe and violence free campus. If you experience any form of violence or sexual harassment. Please don't hesitate to reach out or contact one of the resources available at http://www.minotstateu.edu/keepusafe/ . Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to accountability and support. If you or someone you know has been harassed or assaulted, you can find the appropriate resources off/on Minot State University's campus. Contact: Lisa Dooley Title IX Coordinator, Memorial Hall, 4th floor, Room 412 701-858-3447 lisa.dooley@minotstateu.edu

Minot State University does not discriminate on the basis of sex, religion, creed, national origin, race, age, disability, or any other basis prohibited by law. If you believe you have been discriminated against unlawfully, please bring this matter to the attention of your instructor or the MSU's Human Resource Office at 701-858-3352

Topical Sequence (with readings and assignments)

Week	Topic	Readings	Assignment(s)
1	Introduction to Statistics and Research Design	Salkind, 1, 2, 7 Creswell, 4	Graded Discussion 1 Practice Problem Set 1
2	Variability in Stats and Design Features	Salkind, 3 Creswell, 1 (pp. 11-22)	Graded Problem Set A Quiz 1 (graded)
3	Collecting quantitative data	Salkind, 21 Creswell, 5	Practice Problem Set 2
4	Illustrating data; compiling and analyzing quantitative data; Type I and Type II errors	Salkind, 4 Creswell, 6	Graded Problem Set B Quiz 2 (graded)
5	Collecting and analyzing qualitative data	Creswell, 7, 8	**Chapter 3 Draft 1 due** Graded Discussion 2
6	Research designs: threats to validity; data reliability and validity	Salkind, 6 Creswell 10, pp. 304-309	Practice Problem Set 3 Quiz 3 (graded)
7	Correlational designs; correlation coefficients	Salkind, 5 Creswell, 11	Graded Problem Set C
8	Experimental designs; probability	Salkind, 8 Creswell, 10	Midterm exam (covering readings and concepts from weeks 1 through 7)
9	Experimental designs continued; statistical significance	Salkind, 9 Creswell, 10	Case Analysis 1 due Graded Discussion 3
10	Single subject designs	Creswell, 10	Quiz 4 (graded)
11	*z* test; *t* test – independent groups; survey designs; the IRB process	Salkind, 10, 11 Creswell,12 Handouts and the MSU IRB website	Graded Problem Set D
12	*t* test – dependent groups	Salkind, 12	**Chapter 3 Draft 2 due** Graded Problem Set E
13	Non-parametric analyses	Salkind, 17	Graded Discussion 4
14	Qualitative research designs – Grounded theory	Creswell: 13	Case Analysis 2 due
15	Qualitative research designs – narrative research and action research	Creswell, 15, 17	Quiz 5 (graded) Graded Discussion 5
16	Presenting the methodology and the data	Creswell, 9	Complete the final exam and turn in your **Chapter 3 Final Draft.**

Resources for SPED 503

You may want/need more or different information to help understand some of the concepts in this course. Here are a few examples that you might select. **THESE ARE NOT REQUIRED.** Some of these are in the MSU library and some are available online. You might check out the interlibrary loan option if you do not want to purchase the materials.

Jones, W.P., & Kottler, J.A. (2006). *Understanding Research: Becoming a Competent and Critical Consumer.* Upper Saddle River, NJ: Pearson Education Inc.

Leedy, P.D., & Ormrod, J.E. (2001). *Practice Research: Planning and Design, 7th Ed.* Upper Saddle River, NJ: Prentice-Hall, Inc.

McMillan, J.H., & Wergin, J.F. (2002). *Understanding and Evaluating Educational Research.* Upper Saddle River, NJ: Pearson Education Inc.

Salkind, N.J. (2012). *100 Questions (and Answers) About Research Methods*. Thousand Oaks, CA: Sage Publications, Inc.

Salkind, N.J. (2014). *Study Guide for Statistics for People Who (Think They) Hate Statistics*. Upper Saddle River, NJ: Pearson Education Inc.

Vogt, W.P., Gardner, D.C., & Haeffele, L.M. (2012). *When to Use What Research Design.* New York, NY: Guilford.

Vogt, W.P., Vogt, E.R., Gardner, D.C., & Haeffele, L.M. (2014).*Selecting the Right Analyses for Your Data: Quantitative, Qualitative and Mixed Methods.* New York, NY: Guilford Press.

Online Resources

- *Hyperstat Online*. http://davidmlane.com/hyperstat/index.html This site provides free online information about some basic statistical concepts. There is also a link to various free online statistical analysis software items.
- *SurfStat Australia* http://surfstat.anu.edu.au/surfstat-home/surfstat-main.html Our colleagues down-under have compiled a very large website that includes basic statistics information, an online text, exercises, and links to other sites.(Hint: do the exercises (with answers!) to improve your level of understanding of some of the basic concepts.)
- *Internet Glossary of Statistical Terms* http://www.animatedsoftware.com/statglos/statglos.htm#index What a great site!! When you get to that point where you really aren't sure about the meaning of a term in statistics, research or an article that you are reading, go here! You can look up a term, and see the definition and some examples.
- *SparkNotes* http://www.sparknotes.com/psychology/psych101/researchmethods/quiz.html This site generates research methods quizzes that you can use to practice. Note that in some cases, we may not cover some of the topics in this class. But that is OK, because you'll just be learning a lot more….for FREE!!

SPED 503
Final Paper Grading Schema

You MUST SUBMIT drafts of your paper at the scheduled times for review and feedback. The first two drafts are not graded. Rather the drafts are reviewed and feedback is provided to make improvements. *Failure to submit your drafts in a timely fashion may result in a ZERO score for this assignment*. ***Also, you must submit your final draft on or before the specified date.*** Failure to do so will result in a ZERO score for the assignment.

There are 100 possible points for this assignment. In general, you must submit an acceptable chapter 3 methodology for your proposed study. While I strongly suggest you keep your thesis advisor and committee up to date on your work on this chapter, your grade is not dependent on their feedback or failure to provide feedback. Rather, the grade is dependent on the presence of the following items, and upon the quality of the following items. The following is provided as a GUIDE for the sections of your Chapter 3 document. *The actual necessary sections may vary from the following lists. Be sure to discuss this with the instructor. In those cases, the instructor will re-assign points to various sections to assure that 100 total points are possible.*

Chapter 3 - Quantitative Thesis Components

1. Introduction includes a clear outline of the major areas of the chapter. ***Points possible 10***

2. Research Design and approach ***Points possible 25***
    a. includes a description of the research design and approach,
    b. provides justification for using the design and approach, and
    c. derives logically from the problem or issue statement.

3. Setting and Sample ***Points possible 10***
    a. describes the population from which the sample will be or was drawn,
    b. describes and defends the sampling method including the sampling frame used,
    c. describes and defends the sample size,
    d. describes the eligibility criteria for study participants, and
    e. describes the characteristics of the selected sample.

4. If a treatment is used, it is described clearly and in detail. ***Points possible 10***

5. Instrumentation and Materials ***Points possible 20***
    a. presents descriptions of instrumentation or data collection tools to include
        i. name of instrument,
        ii. type of instrument,
        iii. concepts measured by instrument,
        iv. how scores are calculated and their meaning,
        v. processes for assessment of reliability and validity of the instrument(s),
        vi. processes needed to complete instruments by participants,
        vii. where raw data are or will be available (appendices, tables, or by request from the researcher), and
    b. includes a detailed description of data that comprise each variable in the study.

6. Data Collection and Analysis ***Points possible 20***
    a. includes an explanation of descriptive and/or inferential analyses used in the study, such as
        i. nature of the scale for each variable,
        ii. statements of hypotheses related to each research question,
        iii. description of parametric, nonparametric, or descriptive analytical tools used, and
        iv. description of data collection processes, and
    b. description of any pilot study results, if applicable.

7. Measures taken for protection of participants' rights are summarized. ***Points possible 5***

Chapter 3 - Qualitative Thesis Components

1. Introduction describes how the research design derives logically from the problem or issue statement. ***Points possible 10***

2. Design describes which qualitative paradigm will be used (case study, phenomenology, grounded theory, feminist, narrative, etc.). The choice of paradigm is justified, with explanations why other likely choices would be less effective. ***Points possible 10***

3. The Role of the Researcher in the data collection procedure is described. ***Points possible 5***

4. Where appropriate, questions and sub questions make sense, are answerable, are few in number, are clearly stated, and are open-ended. When it is proposed that questions will emerge from the study, initial objectives are sufficiently focused. ***Points possible 10***

5. The context for the study is described and justified. Procedures for gaining access to participants are described. Methods of establishing a researcher-participant working relationship are appropriate. ***Points possible 10***

6. Measures for ethical protection of participants are adequate. ***Points possible 5***

7. Criteria for selecting participants are specified and are appropriate to the study. There is a justification for the number of participants, which is balanced with depth of inquiry - the fewer the participants the deeper the inquiry per individual. ***Points possible 15***

8. Choices about which data to collect are justified. Data collected are appropriate to answer the questions posed in relation to the qualitative paradigm chosen. How and when the data are to be or were collected and recorded is described. ***Points possible 15***

9. How and when the data will be or were analyzed is articulated. Procedures for dealing with discrepant cases are described. If a software program is used in the analysis, it is clearly described. The coding procedure for reducing information into categories and themes is described in sufficient detail. ***Points possible 15***

10. If an exploratory study will be conducted, its relation to the larger study is explained. ***Points possible 5***