MATHEMATICS 578WWP
Research in Mathematics Education
Spring 2018

Instructor: **Dr. DesLey Plaisance**
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Office hours: Wednesday (2:00-4:00), Tuesday and Thursday (1:30-3:00), and by appointment
Note: I am available for appointments on any week day at any time including evening hours. Please do not hesitate to contact me at any time if you have questions and/or concerns. I can be reached by text, email, or phone. Please note that my university responsibilities include administrative tasks as I serve as Director of University Graduate Studies and Head of the Department of Mathematics Therefore, I am often in meetings throughout each day, but can be reached by email or phone. I will reply to all emails and return all calls ASAP.

Catalog Description: **MATH 578. Research in Mathematics Education.** 3-3-0. Prerequisite or corequisite: MATH 509. Study of basic methods in mathematics education research. Includes experience in research designs, data gathering, analysis, and interpretation. Addresses elements affecting curricular and research agendas in the teaching of mathematics. (27.0199)

Prerequisite or Corequisite: **MATH 509**. **Logic and Foundations of Mathematics for Teachers.** Cornerstone course normally taken in first semester of graduate study. Developing and evaluating arguments and proofs, the use of various types of reasoning, methods of proof, making and investigating conjectures.

Required Text and Other Materials:
***Introduction to Research in Education, (10th Edition)*
Donald Ary; Lucy Cheser Jacobs; Christine K. Sorensen Irvine; David A. Walker
ISBN-10: 1-337-56600-4
ISBN-13: 978-1-337-56600-1 (Publisher website) https://www.cengage.com/
(Textbook purchase website) https://www.cengagebrain.com/shop/ProductDisplay?langId=-1&storeId=10151&catalogId=10057&productId=970026
** *Publication Manual of the American Psychological Association; sixth edition.*
(APA Publication Manual website) http://www.apastyle.org/manual/index.aspx
**Note: Other materials may be brought in as needed.

Course Goal:
Given that many of the students in the MCCM program plan to work in a secondary or post-secondary mathematics classroom, this course has been designed to assure that MCCM graduates are able to investigate and apply research methods in mathematics education. Students will become "critical readers" in order to appropriately analyze qualitative and quantitative research and utilize research results in improving teaching and learning.

Objectives:
Upon completion of the course, the student will be able to:

1) Examine and analyze basic designs of educational research;
2) Identify and discuss problems related to different research designs;
3) Explore and become familiar with basic research trends and issues in the teaching and learning of mathematics;
4) Analyze research in mathematics education including the evaluation of literature reviews, investigation of research methods, and interpretation of results;
5) Describe areas of research most useful to advancing the teaching and learning of mathematics; and
6) Incorporate areas of research most useful at advancing the teaching and learning of mathematics into classroom practices.

Course Content Outline

1. **Overview of Basic Research Design and Analysis**

   Topics to include:

   1) Basic research designs (qualitative and quantitative)
   2) Statistical analysis
   3) Reliability and validity issues

2. **Overview of Research Trends and Issues in Mathematics Education Utilizing Readings in Research Ideas for the Mathematics Classroom**

   Topics may include:

   1) Cognitive and affective issues in mathematics education
   2) Cooperative learning in mathematics classrooms
   3) Ethnomathematics
   4) Problem solving and metacognition in mathematics
   5) Curriculum developments
   6) Assessment issues

3. **Development of Research Project**

   Students will design a mini-study focusing on a current issue or trend in a high school or university mathematics classroom. Specific format details will be provided at a later date.

4. **Critical Readers of Research in Mathematics Education**

   Students will read and critique current and relevant mathematics education research (necessary information will be provided to access articles). Critiques will focus on the style in which the studies were designed, implemented, and reported (including statistical analyses). It is expected that students will become "critical readers" in order to appropriately analyze qualitative and quantitative research found in research journals such as *Journal of Research in Mathematics Education* and *Journal of Educational Research*.

Hardware and Software Requirements:

The course will be conducted via Internet using Moodle and e-mail. The URL for the university's distance learning website is http://www.nicholls.edu/distance/ . FAQS about Internet courses can be viewed at http://www.nicholls.edu/distance/faqs/ . A download for minimum computer requirements for taking a course on Moodle can be found in the last question on the FAQS site given above. A Moodle Tutorial can be viewed at http://www.nicholls.edu/distance/moodle-tutorial/.

Course Requirements:

1) Assigned readings from books and journals
2) Substantive class discussion participation based on readings (Moodle Forum)
3) Critical analyses of assigned research readings
4) Homework assignments following each chapter
5) Term Project: Design of a research project
6) Final Exam (based on assigned readings and homework assignments from required textbook)

Methods of Evaluation:

Class discussion (Discussion Board):	100 - 200 points
Two-three critical analysis papers:	200 - 300 points
Homework assignments:	110 points
Term project:	150 points
Final examination:	150 points
Total	710 - 910 points

Grading Scale:

90-100% A 80-89.9% B 70-79.9% C 60-69.9% D Below 60 F

Class discussion will primarily involve use of the Discussion Board on Moodle. Forums will be created and points will be assigned based on level of difficulty and number of required posts. A maximum of 200 points will be given. Please note that specific instructions will be provided in the Forum and not following those instructions will result in a loss of points. A single Forum may involve more than one question or topic and all questions/topics from a single Forum should be responded to in one "thread." Follow-up comments to other students' threads or in new threads are encouraged to allow for discussion among students.

Two or three critical analysis papers will be assigned during the semester. APA format is required. You may choose to purchase the APA Guidelines, but adequate assistance can be found at http://owl.english.purdue.edu/owl/resource/560/01/ and various other APA sites. Specific instructions with topics will be provided for each paper. Topics will relate to assigned readings and/or research issues. Please familiarize yourself with the Nicholls Library website: http://www.nicholls.edu/library/ Citations must come from reliable sources such as research journals, books, etc. Sites such as "Wikipedia" are not considered reliable but may possibly lead you to reliable sources. If you are not sure if a source is considered reliable, please contact me. Utilize Chapter 3 in your textbook. It will be assigned reading, but you may want to peruse that chapter ASAP. Utilize libraries and/or library databases noting that open Internet searches may also lead you to valuable resources. While open Internet searches will provide some helpful information, one should "verify" any sources using open Internet searches. As stated, Chapter 3 of the required text is a good guide and resource for determining what is acceptable. A basic rubric will be used to grade each paper and that rubric will be provided within the first three weeks of class. Each paper will be worth 100 points.

Homework assignments will be given at the completion of each chapter or a set of chapters. These assignments may include textbook assignments, online quizzes, essay questions, etc. Approximately thirteen chapter assignments (10 points each) will be given and the top 11 scores will be counted for a maximum of 110 points. This part of the "course evaluation" is to provide an opportunity to review each chapter and to assist students with staying on task as it is necessary to complete reading of chapters in suggested order.

Term project description will be given by mid-semester. Approximate due date is two or three weeks prior to final exam period. The project will be worth 150 points.

Final examination will be "take-home" with a specified amount of time for completion. It is anticipated that the exam will be posted on Day 1 of Final Exam Period and will be due on Day 3 of Final Exam Period. Exact information will be provided within the last two weeks of class. The final exam will be worth 150 points.

Make-up Procedure: In that all assignments and examinations will be take-home assignments, students will have ample time to complete assignments. If a student has an emergency situation resulting in a late assignment, each situation will be handled based upon the circumstances. Please contact me ASAP in reference to any issues resulting in late assignments.

Academic Honesty Policy: Disciplinary action for academic dishonesty will be handled according to the *Code of Student Conduct*. You may find a copy at the following Internet website:
https://www.nicholls.edu/sja/files/2015/06/Code-of-Student-Conduct-Handbook.pdf
Please note the definition of plagiarism as defined in the Student Code of Conduct and printed below. In cases of detected plagiarism, the paper and supporting evidence will be handled in compliance with the Student Code of Conduct. Please read this carefully. Plagiarism is a serious offense and will be handled as such.

Plagiarism is the presentation of the works, words, or ideas of others as one's own, or the use of others' works, words, and ideas without giving proper acknowledgment through appropriate others to present one's work as their own. Individual faculty members may restrict, extend, or modify the university's general definition of plagiarism to better accommodate specific course learning outcomes. All students should carefully review course syllabi and talk with their instructors to ensure understanding of each instructor's plagiarism policy.

Attendance Policy: Participation in activities is required where an electronic record which clearly indicates time and date activity was submitted. For financial aid purposes, student must complete at least one activity, which is equivalent to having attended a class at least once.

Americans With Disabilities Act:
If you have a documented disability that requires assistance, you will need to register with the Office of Disability Services for coordination of your academic accommodations. The Student Access Center (formerly known as the Office of Disability Services) is located in Shaver Hall. The phone number is (985) 448-4430 (TDD 449-7002).

Academic Grievances:
The proper procedure for filing grade appeals or grievances related to academic matters is listed in Section 5 of the Code of Student Conduct and at the following link:
http://www.nicholls.edu/documents/student_life/code_of_conduct.pdf.

DROP DATE: The last day to drop a course with a **"W"** is:

Continued Learning following an Extreme Emergency:
In order to make continued learning possible following an extreme emergency, **students are responsible for**:

- reading regular emergency notifications on the NSU website;
- knowing how to use and access Moodle (or university designated electronic delivery system);
- being familiar with emergency guidelines;
- evacuating textbooks and other course materials;
- knowing their Moodle (or designated system) student login and password;
- contacting faculty regarding their intentions for completing the course.

Faculty are responsible for:

- their development in the use of the Moodle (or designated) software;
- having a plan for continuing their courses using only Moodle and email;

- continuing their course in whatever way suits the completion of the course best, and being creative in the continuation of these courses;
- making adjustments or compensations to a student's progress in special programs with labs, clinical sequences or the like only in the immediate semester following the emergency.

Bibliography

This is a very abbreviated bibliography that I created when I initially developed this course. As we read various articles in this course, you should add them to this class bibliography. I expect each of you to send me articles/books throughout the semester to place on the course bibliography to share with our classmates and to include on this bibliography in future semesters. I challenge each of you to send me one article for this list by February 10! Look at what your textbook readings are about and send me a scholarly publication to include.

Articles/Reports (Partial List):

Kilpatrick, J. (2001). Where's the evidence? *Journal for Research in Mathematics Education*. 32(4): 421-427.

Marcus, R., Fukawa-Connelly, T., Conklin, M., & Fey, J.T. (2007). New thinking about college mathematics: implications for high school teaching. *Mathematics Teacher*. 101(5): 354-358.

Schoenfield, A.H. (2000). Purposes and methods of research in mathematics education. *Notices of the American Mathematical Society*. June/July (2000): 641-649.

Stallings, W.M. (1995). Confessions of a quantitative educational researcher trying to teach qualitative research. *Educational Researcher*. 24(3): 31-32.

The American Statistical Association. (2007). *Using statistics effectively in mathematics education research.* Retrieved October 1, 2008 from http://www.amstat.org/education/pdfs/UsingStatisticsEffectivelyinMathEdResearch.pdf

Books (Partial List):

Brookfield, S.D., (1987). *Developing critical thinkers*. New Jersey: John Wiley & Sons, Inc.

Denzin, N.K. & Lincoln, Y.S. (1994). *Handbook of qualitative research,* Sage Publications, Thousand Oaks, CA.

Krathwohl, D.R. (1998). *Methods of educational and social science research an integrated approach (Second Edition),* Waveland Press, Inc., Long Grove, IL.

National Council of Teachers of Mathematics (2003). *A research companion to principles and standards for school mathematics,* Reston, VA.

National Council of Teachers of Mathematics (2000). *Principles and standards for school mathematics*. Reston, VA