

NOTE: THIS IS A SAMPLE SYLLABUS. CHANGES MAY BE MADE WHEN THE COURSE IS OFFERED FROM SEMESTER TO SEMESTER.

MATHEMATICS 578WWW
Research in Mathematics Education
SEMESTER TBA

Instructor: Dr. DesLey Plaisance

Office: 106-A Peltier

Phone: 985.448.4433 (Office); 225.335.2724 (Cell)

Email: desley.plaisance@nicholls.edu

Office hours: TBA

Catalog Description: **MATH 578. Research in Mathematics Education.** 3-3-0. Prerequisite: MATH 301 or 401. 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 (with Info Trac), (seventh edition)

Ary, Jacobs, Razaveih, and Sorensen (2006), ISBN: 0-534-55537-3

www.wadsworth.com

American Psychological Association (2001). *Publication manual of the American psychological association; fifth edition.* Washington, D.C.

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 to 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 and Analysis of Research Project

Students will design and conduct a mini-study focusing on a current issue or trend in a high school or university mathematics classroom. Students will analyze results. The research study will be reported online at the end of the semester. Specific format details will be provided.

4. Critical Readers of Research in Mathematics Education

Students will read and critique current and relevant mathematics education research (web addresses for articles will be posted or accessible online on InfoTrac). 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 Blackboard 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 Blackboard can be found in the last question on the FAQs site given above. A Blackboard Tutorial can be viewed at <http://www.nicholls.edu/distance/blackboard-tutorial/>.

Course Requirements:

- 1) Assigned readings from books and journals
- 2) Substantive class discussion participation based on readings (Blackboard Forum)
- 3) Two critical analyses of assigned research readings
- 4) Term Project: The development of a research mini-project including the design, analysis, and interpretation of results.
- 5) Final Exam (based on assigned readings and homework assignments from required textbook)

Methods of Evaluation:

Class discussion:	100 - 200 points
Two critical analysis papers:	200 points
Term project:	150 points
<u>Final Examination:</u>	<u>150 points</u>
Total	600 - 700 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 Blackboard. Forums will be created and points will be assigned based on level of difficulty and number of required posts. 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 in new threads are encouraged to allow for discussion among students.

Two critical analysis papers will be assigned during the semester. APA format is required. In addition to purchasing the APA Guidelines, assistance can be found at <http://owl.english.purdue.edu/owl/resource/560/01/> 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 NSU 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. If you are not sure if a source is considered reliable, please contact me. It is recommended that all or most research be conducted using libraries and/or library databases as opposed to open Internet searches. A specific rubric will be used to grade each paper and that rubric will be provided within the first two weeks of class.

Term project description will be given during the first half of the semester and will be due the last week of class. An exact date will be provided with the description.

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 Finals and will be due on Day 4 of Finals. Exact information will be provided within the last two weeks of class.

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.

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: http://www.nicholls.edu/documents/student_life/code_of_conduct.pdf

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 Office of Disability Services is located in Peltier Hall, Room 100-A. 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: xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

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 Blackboard (or university designated electronic delivery system);
- being familiar with emergency guidelines;
- evacuating textbooks and other course materials;
- knowing their Blackboard (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 Blackboard (or designated) software;
- having a plan for continuing their courses using only Blackboard 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.

Turnitin Policy:

By taking this course, students agree that all assignments are subject to submission to Turnitin.com, an online plagiarism prevention and detection service. All work submitted to Turnitin.com will be added to its database of papers. Turnitin’s privacy policy and a description of the service are available at <http://www.turnitin.com>. Specifically, this service compares your paper with Internet webpages, articles in databases, and all papers previously submitted from this university or any other. Turnitin then either confirms the originality of your work or gives the source of plagiarism. In cases of detected plagiarism, the paper and supporting evidence will be handled in compliance with the Student Code of Conduct (http://www.nicholls.edu/life/policy/code_of_conduct.pdf).

Bibliography

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/research_grants/pdfs/SMERReport.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