MATH 598 Spring-2020
August 30 to December 13, 2021

RESEARCH IN MATHEMATICS EDUCATION

READ THIS SYLLABUS CAREFULLY. YOU ARE RESPONSIBLE FOR KNOWING THIS INFORMATION!

Dr. Philip P. Halloran
Professor

Class: Mondays beginning 8/30/2021 – 12/13/2021
7:20 – 9:55 p.m.
Room 212 Maria Sanford Hall

860-833-6393 Cellular
413-525-7888 Home
Office Hours: Monday 12:00 to 4:00
halloran@ccsu.edu, halloran@gmail.com
Office: MW 121

Course Description:

A survey of the research literature; evaluation of research techniques; consideration of relevant instructional curriculum theory; evaluation of modern teaching methods and techniques; preparation of Capstone Proposal

Course Objectives:

* To become familiar with major research paradigms in mathematics education
* To become familiar with major research questions in the teaching and learning of mathematics and the status of research-based knowledge related to each question.
* To develop the ability to critically analyze reported research studies, including issues of design, rationale, data collection, and interpretation.
* To identify appropriate research questions for a given topic for your Capstone. To provide a literature review of the Capstone topic and design a research study to address the questions.
* Submit completed Capstone proposal to Human Studies Council.

Course Requirements/Evaluation:

* Active participation in class
* Written, critical reviews of two significant research studies
  One study related to learning mathematics
  One study related to teaching mathematics
* Design of a complete research Capstone study including an extensive review of literature and data analysis if appropriate.
  Complete and submit the Human Studies Form


Recommended Reference Text from Library

The following is a set of readings for the class. They can be obtained from data bases


I will provide you with readings in the Handbook of Research on Mathematics Teaching and Learning, articles will be available on BlackBoard.

Course Requirements/Assessment

Active participation in class with extensive discussion
Written, critical review of two significant research studies
  • One study related to learning mathematics
  • One study related to teaching mathematics
  • Make certain to use correct APA format!!

Design of a research study in some area of interest in mathematics education. This paper will become the basis of your Capstone Proposal. What you are writing in this class is assessed for MATH 598. What you finally submit to the Graduate School and Human Studies Council starts the ball rolling for either MATH 590 or MATH 599. This activity will take place in this course.
In a class of this type good attendance is a must.

NOTE ON WRITING: We want you to become a good writer using the format generally used by researchers. Therefore, when you write you must use the American Psychological Association (APA) style manual. When you write the two critical reviews of research you will cite other research which supports your criticism. When you do this, you must use the APA Manual. We will know that you did this because you will use square brackets [...] and put within those brackets the page number in the APA Style Manual where you found out how to write your citation.

When you write your Research Proposal for Math 598, you will use the square brackets [...] each time you create a citation within the body of the proposal, and also for each citation in the Reference section of the proposal. I will show you copies of proposals that have been submitted to the Graduate School in the past. Also pay attention to how the various researchers, that you have read, write. They rarely use the first person. They often refer to themselves as “this researcher”, or they write in such a way as to avoid the whole thing. Try to pay attention to this. Professional language tends to prefer the word adolescent rather than teenager, mathematics rather than math, subjects as opposed to students. Try to be sensitive to your choice of professional vocabulary.

You will each make a presentation of your proposed research. When you do that we will video record you if you wish. It should be used by you, as you self-evaluate your presentation.


Reference Text

NCTM. Lessons Learned from Research.


Second Handbook of Research on mathematics Teaching and Learning: A Project of the National Council of Teachers of Mathematics

Extensive use of the Journal for Research in Mathematics Education will be made in this class. The journal can be found in the Elihu Burrett Library and on the internet at the NCTM web site NCTM.org

Other journals that you may find useful in this course are:

American Educational Research Journal
Educational Psychologist
Educational Researcher
Educational Studies in Mathematics
Journal of Educational Psychology
Journal of Mathematical Behavior
Journal of Psychology
Mathematical Cognition
Mathematical Thinking and Learning
Mathematics Teacher
Psychological Bulletin
Psychological Reports
Teaching Children Mathematics

Other useful bits of information.

University Policies:

1. If you need course adaptations or accommodations because of a disability, if you have emergency medical information to share with me, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible. My telephone numbers and office hours are given above.

2. In the event of a weather emergency which requires curtailment or cancellation of classes, listen to WTIC (1080 AM) or call (860) 832-3333 for the “general snow message.”

Resources Available:

1. If you need help, take advantage of your instructor's office hours.
2. Share your writing with at least one other student in the class. Reading other’s papers will sharpen your own editing skills.

Preliminary Class schedule. This outline may be adjusted due to unforeseen circumstances.

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Assignment</th>
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<tbody>
<tr>
<td>Aug 30</td>
<td>House keeping, APA and developing a list of references, Think about your proposal. Reference list from <em>The Teaching Gap</em></td>
<td>Write up (about one page) some questions about teaching and learning math that you might like to explore? Due 1/27</td>
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<tr>
<td>Sep 13</td>
<td>Visit librarian in Elihu Burritt Library. We will meet at the library.</td>
<td>Research on Teaching and write a critique of the research. Due 2/10</td>
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<td></td>
<td>This date could be substituted for either 9/20 or 9/27</td>
<td>Begin Library reference search for Literature Review Proposal Due 2/17</td>
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<td>Date</td>
<td>Assignment</td>
<td>Due Date</td>
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<td>Sep 20</td>
<td>Research on Teaching</td>
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<td>Sep 27</td>
<td>Research on Learning, think about your proposal. Identify the person who will be your capstone advisor. You have to speak with that person.</td>
<td>2/17</td>
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<td>Oct 4</td>
<td>ANOVA, Multiple Regression, other Tools, think about proposals. Look at some real proposals. Plan what your proposal will look like and what it</td>
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<td>will include. Begin writing Draft of Proposal to this point. Talk about updated Literature Review.</td>
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<td>Oct 11</td>
<td>Conversations on Teaching and Learning Research Articles. Think about your proposal. You will have met with your capstone advisor by this time</td>
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<td>having discussed initial topic ideas.</td>
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<td>Oct 18</td>
<td>Continued Conversations on Research Articles. Think about your proposal.</td>
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<td>Reminder: Schedule a time to meet with me.</td>
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<td>Recent research by CCSU mathematics Education Professors or recent graduates. Share a draft copy of your proposal with your capstone advisor no</td>
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<td>later than this date.</td>
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<td>Nov 1</td>
<td>Presentation. You must submit to us a hard copy of a second draft of your proposal in order to receive a grade for the course.</td>
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<td>Nov 8</td>
<td>Human Studies Form. Bring Laptop.</td>
<td>Prepare HSC Form in class</td>
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<td>Nov 15</td>
<td>Presentations</td>
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<td>Nov 22</td>
<td>Presentations</td>
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Nov 29  Presentations

Dec 6  Final Proposal Due - Turn Proposal into your assigned Professor so that it can be sent to the HSC for approval.

Dec 13  This class will be held at Paradise Pizza at 10 East Street in New Britain. *Plan ahead for this date.* You MUST be present for this last class. We will have final discussions at this class.