George Mason University  
College of Education and Human Development  
Mathematics Education Leadership

EDCI858 (01)– Mathematics Education Research Design and Evaluation  
3 Credits, Fall 2017  
Tuesdays, 4:30-7:10, Robinson Hall B218

Instructor: Margret Hjalmarson  
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Phone: 703-993-4818  
Email: mhjalmar@gmu.edu  
Office hours: By appointment  
Prerequisites/Corequisites: None

University Catalog Course Description
Students review methods of research appropriate for mathematics education settings and develop theoretical framework and action plan for conducting research project. Notes: Yearlong seminar for PhD students in the mathematics education leadership cohort program. Offered by Graduate School of Education. May not be repeated for credit.

Students must use their MasonLive email account to receive important University information, including messages related to this class. See http://masonlive.gmu.edu for more information.

All course materials will be posted on Blackboard.

Course Description: Students review methods of research appropriate for mathematics education settings and develop theoretical framework and action plan for conducting research project.

Learner Objectives
1. Explore the scope of mathematics education research methods and their evolution over time.
2. Develop an understanding of the design of mathematics education research at a variety of scales (e.g., qualitative, quantitative)
3. Examine the development of a research agenda over time and the conceptual development of mathematics education research.

Required Readings
All readings will be posted on Blackboard.

https://doi.org/10.3102/0013189X032001021


**Attendance Policy**

"Students are expected to attend the class periods of the courses for which they are registered. In-class participation is important not only to the individual student, but also to the class as a whole. Because class participation may be a factor in grading, instructors may use absence, tardiness, or early departure as de facto evidence of nonparticipation. Students who miss an exam with an acceptable excuse may be penalized according to the individual instructor's grading policy, as stated in the course syllabus." (George Mason University Catalog 2017-2018, AP.1.6 Attendance Policies)

All students are expected to arrive on time and participate in class in a scholarly fashion including have prepared by reading course materials and being prepared to engage in discussion of such materials. 10% of the final grade in the course depends on satisfactory participation in class.

**Course Assignments**
Detailed instructions and rubrics for all assignments will be posted to the Blackboard site for the course at http://mymason.gmu.edu. Please refer to these documents when completing your work.

All written assignments should be submitted using APA 6th Edition for formatting.

All assignments should be submitted in Blackboard by 9:00 pm on the due date for the assignment. Extensions may be provided at the instructor's discretion only with permission provided by email prior to the deadline. Assignments submitted after the deadline will be subject to a 10% reduction in grade for the assignment.

A. Research Methodology Synthesis (50%)
From your readings in the field of mathematics education, select a particular area of interest. In this assignment, the final paper will focus on summarizing the research from a methodological perspective by examining how different methods were used in different studies on a related topic. Formulate a question or problem of interest to design a research project. This assignment will occur in two major phases: (1) peer discussion and feedback about topic and questions and (2) writing a synthesis paper

B. Pick-a-Researcher Biography (40%)
In this project students will select a significant researcher in mathematics education, seek out their articles and papers, and summarize their work from a historical perspective. What were the origins of their work? What were early topics they began investigating? What are major projects or themes they have pursued? What methodologies have they used to conduct their work? How has their work evolved over time? Finally, what can you as a mathematics education researcher and leader take away from their work? What have you learned about the nature of mathematics education research?

C. Class Participation & Reading Analysis (10%)
Participation and engagement is an important part of engaging in a scholarly community such as mathematics education research. Hence, participation and timely attendance in class is a critical part of development as a researcher in mathematics education. Consistent lack of participation (including late arrival or inconsistent attendance) will result in deductions from the participation grade. Some absences are unavoidable and should be communicated to the instructor in advance if possible.

Grading

Grades will be assigned as follows.

90-100% = A, 80% - 89% = B, 70% - 79% = C, 60% - 69% = D, Less than 60% = F

Professional Dispositions

See https://cehd.gmu.edu/students/policies-procedures/

Core Values Commitment
The College of Education and Human Development is committed to collaboration, ethical leadership, innovation, research-based practice, and social justice. Students are expected to adhere to these principles: http://cehd.gmu.edu/values/.
# Schedule

Note that the schedule may be adjusted at the discretion of the instructor. Changes will be announced on the course site in Blackboard.

<table>
<thead>
<tr>
<th>Date</th>
<th>Readings</th>
<th>Assignments Due</th>
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<tbody>
<tr>
<td>8/29/17</td>
<td>None</td>
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<tr>
<td>9/5/17</td>
<td>Landscape of research - (Schoenfeld, 2008; Steffe, 2013) &amp; <em>Common Guidelines for Education Research</em></td>
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<tr>
<td>9/12/17</td>
<td>Studies of Learning - (Confrey &amp; Kazak, 2006; Lesh &amp; Clarke, 2000; Star, 2005)</td>
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<tr>
<td>9/19/17</td>
<td>Quantitative research - Sloane, in press;</td>
<td>Research Synthesis – Topic Summary Due</td>
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<td>9/26/17</td>
<td>Teaching Experiments - (Simon, 2000; Steffe &amp; Thompson, 2000)</td>
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<tr>
<td>10/3/17</td>
<td>Analyzing Interactions - (Hall, 2000; Herbel-Eisenmann &amp; Otten, 2011; Rasmussen &amp; Stephan, 2008)</td>
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<tr>
<td>10/10/17</td>
<td><em>No Class - October break</em></td>
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<td>10/17/17</td>
<td><em>Researcher Biography Presentations</em></td>
<td>Researcher Biography Paper</td>
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<td>10/24/17</td>
<td>Case Study (Elliott et al., 2009; Larnell, 2016; Wood, Cobb, &amp; Yackel, 1991)</td>
<td>Research Synthesis – Reference List Due</td>
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<tr>
<td>10/31/17</td>
<td>Observation (Eisenhart, 1988; Gainsburg, 2007; Shih, Ing, &amp; Tarr, 2015)</td>
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<td>11/7/17</td>
<td>Design Research - (Bannan-Ritland, 2003; Cobb, Confrey, diSessa, Lehrer, &amp; Schauble, 2003; Hjalmarson &amp; Lesh, 2008)</td>
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<td>11/21/17</td>
<td>International Comparisons - (Hiebert et al., 2003; Hiebert &amp; Stigler, 2000)</td>
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<td>11/28/17</td>
<td><em>Thanksgiving – online assignment</em></td>
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<td>12/5/17</td>
<td>TBD</td>
<td>Research synthesis - Final paper due</td>
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George Mason University Policies and Resources for Students

Policies

- Students must adhere to the guidelines of the Mason Honor Code (see http://oai.gmu.edu/the-mason-honor-code/).

- Students must follow the university policy for Responsible Use of Computing (see http://universitypolicy.gmu.edu/policies/responsible-use-of-computing/).

- Students are responsible for the content of university communications sent to their Mason email account and are required to activate their account and check it regularly. All communication from the university, college, school, and program will be sent to students solely through their Mason email account.

- Students with disabilities who seek accommodations in a course must be registered with George Mason University Disability Services. Approved accommodations will begin at the time the written letter from Disability Services is received by the instructor (see http://ods.gmu.edu/).

- Students must follow the university policy stating that all sound emitting devices shall be silenced during class unless otherwise authorized by the instructor.

Campus Resources

- Questions or concerns regarding use of Blackboard should be directed to http://coursessupport.gmu.edu/.

- For information on student support resources on campus, see https://ctfe.gmu.edu/teaching/student-support-resources-on-campus

For additional information on the College of Education and Human Development, please visit our website https://cehd.gmu.edu/students/.