

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

EDCI 859.001-Current Issues in Mathematics
3 Credits, Fall 2019
Tuesdays / 7:20 – 10:00 Thompson Hall L028, Fairfax Campus

Faculty

Name: Dr. Theresa Wills
Office Hours: By Appointment
Office Location: Thompson Hall, 2400B, Fairfax Campus
Office Phone: 703-993-6215
Cell Phone: 703-740-7691
Email Address: twills@gmu.edu (will respond within 48 hours on business days)

Prerequisites/Corequisites

Students enrolled in the course must be enrolled in the Mathematics Education Leadership doctoral program.

University Catalog Course Description

This introduces contemporary topics in mathematics education research. Students learn about current issues in research design and topics of interest in mathematics teaching, learning, policy and practice. They apply this knowledge to develop pilot studies.

Course Overview

This course was designed with three primary goals: (1) to introduce MEL students to contemporary issues in mathematics and STEM education; (2) to support students in critically reading research in mathematics and STEM education; and (3) to develop skills related to writing literature reviews and designing research.

Course Delivery Method

This course will be delivered using a seminar format.

Learner Outcomes or Objectives

This course is designed to enable students to do the following:

- Analyze and critique contemporary mathematics education research

- Understand major theories in contemporary mathematics education research
- Examine current issues and topics in mathematics education, teaching, learning, and school-based reform
- Demonstrate the ability to search the literature and to craft a literature review pertinent to their research interests that integrates seminal and contemporary literature in mathematics education
- Develop the research design for a pilot study informed by the literature review
- Develop and reinforce critical thinking, oral, and writing skills
- Write clearly and coherently
- Use APA style of writing

Required Texts

Not applicable. Reading materials will be made available via Blackboard and/or the university library.

Course Performance Evaluation

Students are expected to submit all assignments on time in the manner outlined by the instructor (e.g., Blackboard, Tk20, hard copy).

- **Assignments and/or Examinations**
 - **Current Issues in Mathematics and STEM Education Research Topic Search (total 30 points)**
 - Part 1: Lead a Research Expertise Presentation (10 points)**
You will give a 1 hour interactive presentation related to the current issues you explored that highlights the seminal, historic, and current research that informs your research topic of choice. Provide 5-7 articles for your classmates to read prior to your presentation (however, you may choose what they read and how they share their readings. Ex; jigsaw, 1 article and several sections of other articles, etc.) You will have 15 minutes in the previous class to launch your topic, articles, and any homework or special instructions.
 - Part 2: Brief Synthesis Paper (20 points)**
You will review the top journals and two most recent volumes of PME-NA conference proceedings for topics related to your research interest(s). Provide a summary and critique for approximately 5-7 papers. The critique should include the following parts: purpose, methods, results and critical comments as well as reflections about the article.
 - **Pilot Research Knowledge Assignment (40 points)**
You will create an individual pilot study to address a research question informed by your topic of interest and methodological choices that are best suited for your study. Sections of the paper will include:
PART 1: (1) Statement of the Problem; (2) Purpose of the Study; (3) Significance of the Study; (4) Research Questions
PART 2: (5) Review of Literature (you may incorporate your brief synthesis here)

PART 3: (6) Design: Methods and Procedures; (7) Sample; (8) Measures; and (9) Data Collection; (10) Preliminary Analysis

- **Collaborative Work- Preparing a Proposal for a MET Grant (15 points)**

As a team, students will identify possible category for a MET grant/Publication for their area of interest. In collaborative teams, participants with similar interests will work with the mathematics educator on a collaborative research project for a MET grant and/or a publication for a journal.

- **Weekly Reading Reflection (15 points)**

Each of you will reflect on the readings and its connection to your research interest and/or a methodology that is relevant to your work. Reflection should include at least 3 big ideas, 2 questions, 1 connection to your research that you want to bring up in class discussions.

- **Grading**

A+	98-100%	A	93-97.49%	A-	90-92.49%
B+	88-89.49%	B	83-87.49%	B-	80-82.49%
C	70-79.49%	F	below 70%		

Professional Dispositions

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

Class Schedule

Date	Topic Readings	Assignment Due
8/27 Week 1	Introduction & Course Overview APA writing expectations Writing center appointments Student Interest Brainstorm Current Issues Brainstorm Technology and the Mathematics Classroom	Bring an artifact that represents a current issue in Math and STEM education that you are interested in sharing Current Issues Topic selection sign up
9/3 Week 2	Readings from Critical Issues 1 on Blackboard: Topic 1 presentation: Technology and the Mathematics Classroom	Weekly Reflection Update Vitae/Link to portfolio site
9/10 Week 3	Readings from Critical Issues 2 on Blackboard: Topic 2 presentation:	Weekly Reflection In 1-2 pages, share your research interests and the topic you plan to use for your literature review.

9/17 Week 4	Readings from Critical Issues 3 on Blackboard: Topic 3 presentation: Overview – Pilot Studies	Weekly Reflection
9/24 Week 5	Readings from Critical Issues 4 on Blackboard: Topic 4 presentation: Statement of the Problem Defining the Purpose Significance of the Study Overview – MET Grant	Weekly Reflection Submit an outline of your literature review and/or a draft
10/1 Week 6	Readings from Critical Issues 5 on Blackboard: Topic 5 presentation: Literature Reviews: Searching, Surveying, and Organizing	Weekly Reflection
10/8 Week 7	Readings from Critical Issues 6 on Blackboard: Topic 6 presentation: Literature Reviews: Synthesis of Research Findings	Weekly Reflection Current Issues in Mathematics and STEM Education Research Paper (20 points) Bring a dissertation you want to read and use for an in-class exercise
10/15 Week 8	Readings from Critical Issues 7 on Blackboard: Topic 7 presentation: Crafting Research Questions and/or Hypotheses	Weekly Reflection
10/22 Week 9	Readings from Critical Issues 8 on Blackboard: Topic 8 presentation: Research Design: Selecting Appropriate Methodological Approaches	Weekly Reflection
10/29 Week 10	Readings from Critical Issues 9 on Blackboard: Topic 9 presentation: Research Design: Sampling Procedures	Weekly Reflection
11/5 Week 11	Research Design: Identifying Measures	Weekly Reflection

11/12 Week 12	Limitations, future directions for research, and education implications	Pilot Research Knowledge Assignment (40 points)
11/19 Week 13	MET Grant writing session	
11/26 Week 14	Presenting your Research	
12/3 Week 15	Student work session	Collaborative Work- Preparing a Proposal for a MET Grant (15 points)

Note: Faculty reserves the right to alter the schedule as necessary, with notification to students.

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/>.

GMU Policies and Resources for Students

Policies

- Students must adhere to the guidelines of the Mason Honor Code (see <https://catalog.gmu.edu/policies/honor-code-system/>).
- 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 <https://ds.gmu.edu/>).

- Students must silence all sound emitting devices during class unless otherwise authorized by the instructor.

Campus Resources

- Support for submission of assignments to Tk20 should be directed to tk20help@gmu.edu or <https://cehd.gmu.edu/aero/tk20>. Questions or concerns regarding use of Blackboard should be directed to <http://coursesupport.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/> .