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

SEED 572 DL1 – Teaching Math Secondary School
3 Credits, Fall 2021
Mondays/4:30-7:10 p.m. Online Synchronous

Faculty

Name:	Theresa Wills, Ph.D.
Office Hours:	By Appointment
Office Location:	Thompson Hall, Room 2400B
Office Phone:	(703) 993-6215; Cell Phone: (703) 740-7691
Email Address:	twills@gmu.edu

COVID 19 Procedures: Fall 2021

Students, please be aware of and follow all policies and procedures for Mason's Safe Return to Campus: https://www2.gmu.edu/Safe-Return-Campus

Prerequisites/Corequisites
None

University Catalog Course Description
This course emphasizes developing different styles of teaching and covers curricula, current issues, and research literature in secondary school mathematics. School-based field experience required.

Course Overview
As a future secondary mathematics teacher, you have the opportunity to shape the future. You can play an important role in the development of adolescents and have an influence on the way in which they come to understand the world in which they live. You can help students to develop strong understandings of mathematics and its uses, understandings that are foundational for work beyond high school. Further, you can shape their dispositions toward learning mathematics. You have chosen an amazing and rewarding career path!
In this course, you will come to develop knowledge, skills, and understandings that will be useful to you in your work as a secondary mathematics teacher. Though there are no "easy recipes" for helping students learn mathematics, research has identified characteristics of effective mathematics teaching. Throughout the semester, we will explore these characteristics and ways in which you can incorporate them into your teaching. You will learn how to be reflective about your work and that of other teachers so that you can continue to draw on and build upon the

knowledge and understandings you gain in this course throughout your career as a secondary mathematics teacher who is equipped to help all children thrive in secondary mathematics classrooms.

Course Delivery Method

This course will be delivered online (76% or more) using a synchronous format via Blackboard Learning Management system (LMS) housed in the MyMason portal. You will log in to the Blackboard (Bb) course site using your Mason email name (everything before @masonlive.gmu.edu) and email password. The course site will be available on Monday, August 16, 2021.

Under no circumstances, may candidates/students participate in online class sessions (either by phone or Internet) while operating motor vehicles. Further, as expected in a face-to-face class meeting, such online participation requires undivided attention to course content and communication.

Technical Requirements

To participate in this course, students will need to satisfy the following technical requirements:

- High-speed Internet access with standard up-to-date browsers. To get a list of Blackboard's supported browsers see: https://help.blackboard.com/Learn/Student/Getting_Started/Browser_Support#supported-browsers

  To get a list of supported operation systems on different devices see: https://help.blackboard.com/Learn/Student/Getting_Started/Browser_Support#tested-devices-and-operating-systems
- Students must maintain consistent and reliable access to their GMU email and Blackboard, as these are the official methods of communication for this course.
- Students will need a headset microphone for use with the Blackboard Collaborate or Zoom web conferencing tool.
- Students may be asked to create logins and passwords on supplemental websites and/or to download trial software to their computer or tablet as part of course requirements.
- The following software plug-ins for PCs and Macs, respectively, are available for free download:
  - Adobe Acrobat Reader: https://get.adobe.com/reader/
  - Windows Media Player: https://support.microsoft.com/en-us/help/14209/get-windows-media-player
  - Apple Quick Time Player: www.apple.com/quicktime/download/

Expectations

- Course Week: Our course week will begin on the day that our synchronous meetings take place as indicated on the Schedule of Classes.
- Log-in Frequency:
  Students must actively check the course Blackboard site and their GMU email for communications from the instructor, class discussions, and/or access to course materials at least 3 times per week. In addition, students must log-in for all scheduled online synchronous meetings.
- Participation:
  Students are expected to actively engage in all course activities throughout the semester, which includes viewing all course materials, completing course activities and assignments, and participating in course discussions and group interactions.
- Technical Competence:
  Students are expected to demonstrate competence in the use of all course technology. Students who are struggling with technical components of the course are expected to seek assistance from the instructor and/or College or University technical services.
- Technical Issues:
  Students should anticipate some technical difficulties during the semester and should, therefore, budget their time accordingly. Late work will not be accepted based on individual technical issues.
- Workload:
  Please be aware that this course is **not** self-paced. Students are expected to meet *specific deadlines* and *due dates* listed in the **Class Schedule** section of this syllabus. It is the student's responsibility to keep track of the weekly course schedule of topics, readings, activities and assignments due.
- Instructor Support:
  Students may schedule a one-on-one meeting to discuss course requirements, content or other course-related issues via telephone or web conference. Students should email the instructor to schedule a one-on-one session, including their preferred meeting method and suggested dates/times.
- Netiquette:
  The course environment is a collaborative space. Experience shows that even an innocent remark typed in the online environment can be misconstrued. Students must always re-read their responses carefully before posting them, so as others do not consider them as personal offenses. *Be positive in your approach with others and diplomatic in selecting your words*. Remember that you are not competing with classmates, but sharing information and learning from others. All faculty are similarly expected to be respectful in all communications.
- Accommodations:

Online learners who require effective accommodations to insure accessibility must be registered with George Mason University Disability Services.

Learner Outcomes or Objectives

Success in this course is measured by the degree to which students are able to:
• Demonstrate an understanding of the ways in which secondary students develop strong, usable understandings of secondary mathematics content (NCTM SPA Standard 2; CEHD Core Value of Research-Based Practice)
• Analyze instruction and instructional materials for their potential to promote student learning of secondary mathematics content in diverse settings (NCTM SPA Indicator 3c; NCTM SPA Standards 4, 5, 6; CEHD Core Value of Research-Based Practice and Social Justice)
• Design tasks, including those that rely on technology, that foster the development of deep understanding of secondary mathematics concepts (NCTM SPA Indicators 3c, 4e, 5b; CEHD Core Values of Research-Based Practice and Innovation)
• Justify instructional decisions by reference to research findings, national standards, and learning theory (NCTM SPA Indicators 3a, 3b, 3c; NCTM SPA Standards 4, 6; CEHD 4 Last revised August 2018 Core Values of Collaboration and Research- Based Practice)
• Demonstrate the dispositions appropriate to work as a secondary mathematics teacher (NCTM SPA Standard 6; CEHD Professional Dispositions)
• Continue to develop their own knowledge of mathematics and problem solving ability as they explore mathematics from the perspective of a teacher and student (NCTM SPA Standards 1, 2, NCTM SPA Indicators 3a, 3b; CEHD Core Value of Innovation)
• Analyze different perspectives on mathematics teaching and learning (NCTM SPA Indicator 3.6; CEHD Core Value of Research-Based Practice)
• Develop knowledge, skills, and professional behaviors across secondary settings, examine the nature of mathematics, how mathematics should be taught, and how students learn mathematics; and observe and analyze a range of approaches to mathematics teaching and learning (NCTM SPA Indicator 7c; CEHD Core Value of Research-Based Practice)

Professional Standards (National Council of Teachers of Mathematics (NCTM))
This course aligns to the professional standards as outlined by the National Council for Teacher of Mathematics and Council for the Accreditation of Educator Preparation ("NCTM SPA Standards and Indicators) Upon completion of this course, students will have met the NCTM SPA professional standards 2-7 as detailed under Course Outcomes above.

Required Texts

Liljedahl, P. (2020). *Building thinking classrooms in mathematics, Grades K-12: 14 teaching practices for enhancing learning.* Corwin.

Course Performance Evaluation

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

- **Assignments and/or Examinations**
  - **Participation (15%)**

    Attendance
    - Attend all scheduled online meetings for the entire class period is a course expectation and absence will impact your grade
    - Arrive to all scheduled meetings on time
    - Notify your instructor in advance if you will miss class and work with peers for missed material

    Assignments
    - Complete all assignments on time.
    - All assignments will be assessed using posted criteria known to the student.
    - For full consideration, all assignments are due to professor *electronically* in the digital drop box prior to the beginning of class on the day they are due, unless otherwise announced.
    - All written assignments are to be word-processed using Times Roman 12 pt font, double-spaced, and POSTED electronically on our class Blackboard drop box. Please title each assignment with your last name and the name of the project/assignment, e.g., Smith. Professional Development Plan.

    Readings, Class Activities, and Online Participation
    - Complete all readings prior to class
    - Participate in class and all online discussions with openness, consideration, and effort to "hear for" and "listen to" others as you also seek to be understood.
    - Come to class prepared to contribute your critical reflections on both your own experiences and ideas presented by your critical friends.
    - Demonstrate positive and collaborative professional dispositions towards colleagues during peer review along with a willingness to accept constructive criticism.

  - **Mathematics Autobiography (10%)**
    - John Graham's famous quote states, "We teach who we are." Contemporary research in mathematics education finds this to be especially true for secondary mathematics teachers. It is important to examine our own assumptions about teaching and learning mathematics as a result of our learning experiences. In this activity, you will spend some time reflecting on your personal experiences as a mathematics learner. You will use your responses as part of a reflection activity later in the semester.

- **Discussion and Critique of Secondary math lesson plan (10%)**
    - This assignment will give you a chance to apply best practices learned in our class coupled with research to a sample lesson. This will prepare you for your problem lead presentation and lesson plan assignment.

- **Problem Lead (20%)**
    - This assignment will give you a chance to test your skills in leading work and discussion on a mathematics problem. Given a mathematics problem, learning goal, and conceptual explanation for the mathematics via Nix the Tricks and your lesson plan assignment, you will prepare a 20- minute activity, facilitate it for the class, and record the facilitation. After the activity, you will analyze your video and reflect upon the effectiveness of the approach you used to engage your peers in work with mathematical content.
- **Field Work Assignments (15%)**
    - One of the most valuable pieces of pre-service teacher training is the opportunity to do field work. You will complete 15 hours of field work and keep a log of these hours for submission at the end of the semester. Throughout the semester, you will be required to complete smaller assignments during your field work. These assignments provide you with opportunities to reflect upon the practice of teaching after having watched instances of teaching in real world settings.
- **Lesson Plan Assignment and Presentation (30%)**
    - Throughout the semester, you will explore many issues related to the teaching and learning of mathematics. In this culminating assignment, you will have the opportunity to use the knowledge, skills, and understandings you have gained in the creation of two consecutive lesson plans (One will be assessed to meet CEHD PBA requirements). Within these lessons, you will attend to the use of technology, the development of student understanding of mathematics content, various standards documents, and problem-based instruction. After submission of the lesson plans, you will present your ideas to your peers so that the entire class can begin to create a collection of teaching ideas for various content areas within secondary mathematics. You must meet minimum standard on this, or you will be asked to resubmit.

- **Other Requirements**

Via/Performance-Based Assessment(s) Submission Requirement:

Every student registered for any Mathematics Education Leadership course with a required Via performance-based assessment (designated as such in the syllabus) must submit these

assessments to Via through ***'Assessments'*** in Blackboard. Failure to submit the assessment(s) to Via (through Blackboard) will result in the course instructor reporting the course grade as Incomplete (IN). Unless this grade is changed upon completion of the required Via submission, the IN will convert to an F nine weeks into the following semester.

- **Attendance**
  It is your responsibility to attend all class sessions. You are held accountable for all information from each class session whether you are present or not. Reasons for any absence must be reported to the instructor in writing.

- **Tardiness**
  It is your responsibility to be on time for each class session. Reasons for any absence must be reported to the instructor in writing.

- **Grading**
  All assignments are to be turned in to your instructor on time. **Late work will not be accepted for full credit.** Assignments turned in late will receive a 10% deduction from the grade per late day or any fraction thereof (including weekends and holidays).

  The final evaluation criteria utilizes the graduate grading scale and is as follows:

A	95%-100%	B+	87%-89%	C	70%-79%
A-	90%-94%	B	83%-86%	F	Below 70%
		B-	80%-82%		

Professional Dispositions

Students are expected to exhibit professional behaviors and dispositions at all times. Education professionals are held to high standards, both inside and outside of the classroom. Educators are evaluated on their behaviors and interactions with students, parents, other professionals, and the community at large. At the College of Education and Human Development, dispositions may play a part in the discussions and assignments of any/all courses in a student's program (and thus, as part or all of the grade for those assignments). For additional information visit: https://cehd.gmu.edu/students/polices-procedures/

This course will require students to audiotape, videotape, or use the audio/video conferencing feature. Students should dress professionally, speak professionally, and aware of their recording surroundings and backgrounds. Background noise (such as television, music, conversations, etc.) and inappropriate background video are distracting, unprofessional, and not allowed in this course.

Class Schedule

	Topic	Readings (read before class begins on the date to the left)	Assignments Due (before class begins on the date to the left)
Week 1 8/23	Math Topic: Course Introduction Learning Mathematics & Mathematical Proficiency	Thinking Classrooms – Introduction Nix – Ch. 1 & 2	
Week 2 8/30	Math Topic: Proportions The Nature of Mathematics Mathematics Identities Teaching Towards Equity Culturally Relevant Teaching Social Justice Pedagogy The Teaching of Mathematics Selecting Rich Mathematical Tasks	Thinking Classrooms – Ch. 1 Nix – Ch. 3	Mathematics Autobiography
Week 3 9/13	Math Topic: Geometry & Measurement Planning for Instruction Learning Progressions Curricular Standards	Thinking Classrooms – Ch. 6 Nix – Ch. 4	
Week 4 9/20	Math Topic: Number Systems	Thinking Classrooms – Ch. 7	

	Planning for Instruction Overall Goal of a Lesson Learning Objectives Curricular Standards	Nix – Ch. 5	
Week 5 9/27	Math Topic: Equations & Inequalities Planning for Instruction Lesson Plan Components Launching/Enacting Lessons	Thinking Classrooms – Ch. 8 Nix – Ch. 6	**Field Experience Check-In (reminder to complete: log sheet; a minimum of 3 critical incidents reflection forms to help write your 4-5pg culminating paper) Class Workshop: Problem Lead
Week 6 10/4	Planning for Instruction Reflecting & Effectively Summarizing Lessons Role of Assessment Types of Assessment Referencing Learning Objectives & Curricular Standards	Thinking Classrooms – Ch. 12, 13, & 14	
Week 7 10/11* Asynchronous	Planning for Instruction Lesson Preparation Protocol (Preparing to Teach)	Thinking Classrooms – Ch. 10 Nix – Ch. 7	
Week 8 10/18	Establishing a Learning Environment Conducive to Student Engagement Instructional Design Classroom Setup	Thinking Classrooms – Ch. 3 & 4	Class Workshop: Problem Lead

	Virtual Apps		
Week 9 10/25	Establishing a Learning Environment Conducive to Student Engagement Manipulatives, Differentiation	Thinking Classrooms – Ch. 11 Nix – Chapter 8	**Field Experience Check-In (reminder to complete: log sheet; a minimum of 3 critical incidents reflection forms to help write your 4-5pg culminating paper)
Week 10 11/1	Establishing a Learning Environment Conducive to Student Engagement Role of Discourse Effective Questioning Cooperative Learning	Thinking Classrooms – Ch. 2 & 5	Class Workshop: Lesson Plan
Week 11 11/8	Facilitating Productive Struggle	Thinking Classrooms – Ch. 9	
Week 12 11/15	Leading through Learning		Discussion and Critique of Secondary Math Lesson Plan Class Workshop: Lesson Plan
Week 13 11/22	Problem Lead Presentations, Group A		Field Work Assignments
Week 14 11/29	Problem Lead Presentations, Group B Transitioning to Methods 2 Revisiting our Mathematics Autobiographies		Problem Lead Presentations Upload, Group A
Week 15 12/6	Summing Up		Problem Lead Presentations Upload, Group B

			Final upload of all assignments

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 https://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 Via should be directed to viahelp@gmu.edu or https://cehd.gmu.edu/aero/assessments. Questions or concerns regarding use of Blackboard should be directed to https://its.gmu.edu/knowledge-base/blackboard-instructional-technology-support-for-students/.

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

Notice of mandatory reporting of sexual assault, interpersonal violence, and stalking:

As a faculty member, I am designated as a "Responsible Employee," and must report all disclosures of sexual assault, interpersonal violence, and stalking to Mason's Title IX Coordinator per University Policy 1202. If you wish to speak with someone confidentially, please contact one of Mason's confidential resources, such as Student Support and Advocacy Center (SSAC) at 703-380-1434 or Counseling and Psychological Services (CAPS) at 703-993-2380. You may also seek assistance from Mason's Title IX Coordinator by calling 703-993-8730, or emailing titleix@gmu.edu.

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