

**George Mason University
College of Education and Human Development
Elementary Education Program**

ELED 452-004 – Mathematics Methods for the Elementary Classroom
3 Credits
Spring 2023

Instructor: Sara Kirschner	Meeting Dates: 1/25/2023 – 5/3/202
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E-Mail: skirschn@gmu.edu	Meeting Time(s): 10:30 am – 1:10 pm
Office Hours: Wednesdays 1:10-3:00 pm or by appointment	Meeting Location: Thompson Hall Room 1020 Fairfax Campus
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Prerequisites/Corequisites

Admission to the elementary education licensure program.

University Catalog Course Description

Introduces methods for teaching all children topics in arithmetic, geometry, algebra, probability, and statistics in elementary grades. Focuses on using manipulatives and technologies to explore mathematics and solve problems.

Course Overview

In this course, we will begin an inquiry into mathematics teaching and learning that will guide you in your first teaching job and give you the tools that will enable you to continue to inquire and learn as part of your work as a teacher. Class sessions will be interactive and will include a variety of hands-on experiences with concrete and virtual manipulatives appropriate for elementary school mathematics. We will explore the teaching of mathematics, investigating both *what* to teach and *how* to teach it. We will explore what it means to do mathematics and what it means to understand mathematics through individual, small group, and large group mathematical problem solving. We will investigate ways to represent understandings of mathematical concepts, communicate reasoning about mathematical ideas, and construct mathematical arguments. We will investigate and read about ways children might represent mathematical concepts, looking at ways to help children build connections and see relationships among mathematical ideas. We will explore characteristics of a classroom environment conducive to mathematical learning by reading about and discussing the importance of mathematical tasks, mathematical tools, the roles of teachers and students, and the assessment of mathematical understanding.

- **Doing Mathematics** (Learning *for* practice): We will build our own *knowledge* of mathematics by closely investigating ideas in number sense and fraction concepts. Additionally, we will engage in several math tasks, extending our knowledge of mathematics and students' thinking, which will provide the foundation for your professional decision-making.
- **Examining Records of Practice** (Learning *from* practice): Records of practice—such as videotapes of lessons taught by yourself or others, students' work, and teachers' professional writing—allow us to investigate the work of teaching mathematics and improve our own practice.
- **Trying Things Out** (Learning *in* practice): Because teaching involves more than just having knowledge, we want you to engage in *enacting* the practices we are investigating as much as possible, so that you are developing the skills and professional decision-making that will make you a successful teacher.

Course Delivery Method

This course will be delivered using a face-to-face seminar. The course site will be available on January 18, 2023.

Learning activities include the following:

- Class lecture and discussion
- Small group/large group activities and discussion
- Hands-on activities
- Student presentations
- Video and other media supports
- Collaboration with peers
- Electronic supplements and activities via Blackboard
- Asynchronous online modules

Learner Outcomes or Objectives

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

- A. Know what constitutes the essential topics in mathematics of the modern early and intermediate grades school program.
- B. Identify and use selected manipulatives and technology such as linking cubes, attribute blocks, geoboards, base-10 blocks, fraction circles, tangrams, calculators, and computers to teach appropriate mathematics content topics in the early and middle grades.
- C. Identify and use various instructional strategies and techniques (cooperative and peer group learning, activity centers, laboratories and workshops, teacher-directed presentations, etc.) to teach mathematical content topics appropriate for the early and intermediate grades to all children, including those from non-mainstreamed populations.
- D. Identify and use alternative methods for assessing students' work in mathematics in the early and intermediate grades.
- E. Solve problems in the mathematical content areas of logic, number theory, geometry, algebra, probability, and statistics appropriate for adaptation to the early and intermediate grades.
- F. Know and explain the learning progression in relation to the standards-based mathematics curriculum, the key elements of the National Council of Teachers of Mathematics Principles and Standards for School Mathematics, and the key elements of the Virginia Standards of Learning for Mathematics.
- G. Understand the multiple representations of mathematical concepts and procedures.

- H. Understand and use the five processes—reasoning mathematically, solving problems, communicating mathematics effectively, making mathematical connections, and using mathematical representations—at different levels of complexity.
- I. Explore the contributions of different cultures toward the development of mathematics, and the role of mathematics in culture and society.
- J. Understand the relationship of math to science, the design process, and technology.
- K. Understand, possess, and integrate the knowledge, skills, dispositions, and processes needed to support learners’ achievement in an interdisciplinary manner in Virginia's Foundation Blocks for Early Learning: Comprehensive Standards for Four-Year-Old’s and the Virginia Standards of Learning in English, mathematics, history and social science, science, and computer technology.

Additionally, this course supports the CEHD Core Values of collaboration, ethical leadership, research-based practice, social justice, and innovation. Statements of these goals are at <http://cehd.gmu.edu/values/>.

Professional Standards: Interstate Teacher Assessment and Support Consortium (InTASC)
Upon completion of this course, students will have met the following professional standards:

Course Student Outcomes (above)	InTASC Standard (2013)
A. Essential math	#4
B. Planning and Teaching using manipulatives	#7
C. Instructional Strategies	#8
D. Assessing	#6
E. Problem Solving	#5
F. Learner Development and understanding of Learning Progression	#1 & #2

Course & PBA	INTASC
452 Math Learning Trajectory Assessment and Planning Project	#4 Content Knowledge #1 & #2 Learner Development & Differences #6 Assessment

Course Policies and Expectations

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

Required Text

Van De Walle, J., Karp, K. S., & Bay-Williams, J. M. (2018). *Elementary and Middle School Mathematics: Teaching Developmentally* (10th edition). Pearson. (2019:9780134802084)

Recommended Texts

Aguirre, J., Mayfield-Ingram, K., & Martin, D.B. (2013). *The impact of identity on K-8 mathematics: Rethinking equity-based practices*. NCTM.

American Psychological Association. (2020). *Publication manual of the American Psychological Association (7th ed.)*. American Psychological Association.

Huinker, D. & Bill, V. (2017). *Taking action: Implementing effective mathematics teaching practices in K-grade 5*. NCTM.

Kobett, B. M., & Karp, K. S. (2020). *Strengths-based teaching and learning in mathematics: 5 teaching turnarounds for grades K-6*. Corwin & NCTM.

Sangiovanni, J. J. (2020). *Daily routines jump-start math class: Engaging students, improve number sense, and practice reasoning*. Corwin.

Smith, M. S., Bill, V. & Sherin, M. G. (2020). *The 5 practices in practice: Successfully orchestrating mathematics discussions in your elementary classroom*. Corwin & NCTM.

Yeh, C., Ellis, M. W., & Hurtado, C. K. (2017). *Reimagining the mathematics classroom: Creating and sustaining productive learning environments*. NCTM.

Course Performance Evaluation

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

Assignments

Weekly Attendance and Participation (15 points)

Students are expected to attend class weekly and be on time to class. It is expected that students reach out to the instructor via email prior to the beginning of class if they will be tardy or absent. Participation points will be deducted for absences if students do not make arrangements with the instructor to make up missed work.

Active participation in all activities is expected. Rich, meaningful, problem-based tasks will be assigned in each session. Students are expected to complete these problems and incorporate their thinking about strategies used to solve the problems in class discussions. Work on problems will be shared in class and on occasion may be collected and evaluated. Students are expected to analyze and reflect on solution strategies, provide differentiated approaches to center activities, and actively participate in class discussions by applying field experiences and class readings. As an active participant, students will know when to step back, practice active listening, and encourage others to participate.

Students are expected to complete the weekly reading assignments. At the beginning of each class, students will be asked to respond in writing to a question about that week's reading assignment, which will count toward the participation point for each week.

Weekly Reflection Journal (15 points)

Addresses Learner Outcomes: A, B, C, D, E, F

Reading and activity reflections will be completed weekly. The journal will be completed in Blackboard each week. Prompts will be provided for each weekly reflection. Journal entries should demonstrate critical reflection on readings, class discussions/activities/problems, and the development of ideas regarding your own learning and your developing philosophy for teaching mathematics. Reflections should be approximately 300 words in length. Journal entries must be completed by 11:59 PM each Sunday. Due dates for each journal entry are noted on the schedule.

Math Autobiography (10 points)

At the beginning of the semester, students will write a brief autobiography (approximately 2 pages) that reflects on their past experiences as learners and doers of mathematics. Questions to prompt the reflection will be provided on Blackboard. (Initial autobiography worth 5 points.)

At the end of the semester, students will write a reflection on their math autobiography in light of their learning and growth throughout the semester. (Final autobiography reflection worth 5 points.)

Learning Trajectory Assessment and Planning Project: Course Performance Based Assessment (60 points)

Addresses Learner Outcomes: A, B, C, D, E, F

To plan effective instruction, you will need to know how to assess children's knowledge of mathematical concepts. For this project, you will go through the assessment-planning-teaching cycle with one focal student in your field placement classroom. You will identify one specific topic taught to the student's grade level and research the learning trajectory (LT) for that topic. Then you will develop an individualized assessment and instructional plan for the student with the learning trajectory for the topic in mind.

The Learning Trajectory (LT) project has 6 parts:

- 1) Description of learning trajectory/progression (literature review): 10 points
- 2) Clinical interview (formative assessment) protocol: 10 points
- 3) Clinical interview implementation and analysis of the student's strengths and proficiencies: 15 points
- 4) Number sense routine plan, rehearsal, enactment, and reflection: 15 points
- 5) Rich task lesson plan: 5 points
- 6) Final reflection: 5 points

Part 1: Learning Trajectory Paper (Literature review and description of the LT)

approx. 5 pages

10 Points

Due Week 5

This paper will be a description of a learning trajectory/progression for a specific mathematics topic taught in the grade of your selected student.

- Using the course text and other learning trajectory resources, summarize the research around the learning trajectory for a chosen math topic.
- Describe some of the common teaching strategies and the ways in which children develop the skills and understandings of the selected topic.
- Describe common conceptions and misconceptions children may hold about the topic, based on research of learner development. Include descriptions with specific examples from the research literature, including the course text.
- Create a concept map for the topic to illustrate the big ideas and related concepts.

Part 2: Clinical Interview Protocol

10 points

Due Week 6

- Create a clinical interview protocol that will provide information about the focal student's conceptions related to the chosen topic and learning trajectory.
- Design or adapt assessment tasks that use multiple representations including pictorial, numerical, verbal, and hands-on manipulatives to assess the child's thinking. Align tasks to the student's interests and background, based on information gathered in the Empathy Interview.
- Include specific questions linked to the tasks that elicit and make the student's thinking visible.
- You will receive feedback from your instructor before doing the interview with the focal student.

Part 3: Implement and Analyze the Clinical Interview

5-10 pages

15 points

Implement interview in Field Placement Weeks 7-8

Analysis Due Week 8-9

3a. Do the clinical interview with the focal student.

- Use the planned tasks and questions from your Clinical Interview Protocol (part 2).
- Video record yourself doing the interview (to be used in your analysis, part 3b).
- Collect the student's work on the assessment tasks.

3b. Analyze the child's thinking and knowledge using their work on the assessment tasks.

- Use a framework provided in class (called Show me Narrative) to analyze the student's thinking in the interview and identify their strengths in the identified mathematics content of the assessment, as well as their general mathematics dispositions and processes.

3c. Summarize the student's strengths/understandings and set a learning goal for the student.

- Based on the clinical interview data as a whole, summarize what the student knows, can do, and their strengths:
 - content
 - dispositions
 - processes
- Based on the formative assessment data from the clinical interview (above) and the learning trajectory from part 1, identify a learning goal (aka: target, benchmark, expectation) for the child. Describe why the objectives/goals are meaningful learning outcomes for the student.

Part 4: Number Sense Routine Lesson Plan, Rehearsal, Enactment, and Reflection

15 points

Lesson Plan due Week 10

Rehearsal in class Weeks 11-12

Reflection due Week 14

4a. Plan a Number Sense Routine

- Select a Number Sense Routine that will be appropriate for the focal student and the learning goal set in part 3c. Write a rationale for the Routine by explaining how it will support the child along the developmental path to reach the learning goal.
- Write a lesson plan for the Number Sense Routine using the template provided in class, including anticipated student responses to the problems presented and expected sequence of follow-up questions.
- Submit the draft lesson plan for instructor's feedback before rehearsals.

4b. Rehearse the Number Sense Routine in ELED 452 class

- Prepare any materials/slides needed for the Number Sense Routine.
- Rehearse/present the Number Sense Routine with a small group of classmates to receive feedback prior to field implementation.
- Revise Routine lesson plan based on feedback from the rehearsal.

4c. Enact the Number Sense Routine in Field Placement Classroom

- Lead/teach the Routine for a small group of children (including the focal student) in the field

- placement classroom.
- Video record the enactment of the Routine and collect artifacts of the focal student's thinking about the topic of the Routine.

4d. Reflect on the Number Sense Routine

- Write a reflection on the outcome of the Number Sense Routine, including how the Routine advanced the focal student's thinking toward the identified learning goal. Reflection prompts will be provided.
- Submit the final Routine lesson plan, with any revisions made after the rehearsal, with the reflection.

Part 5: Rich Task Lesson Plan

2-4 pages

5 points

Due Week 14

Select a rich task to meet the learning goal identified for the focal student in part 3. Write a lesson plan for the rich task, incorporating the 5 practices for facilitating mathematical discourse.

- Write a rationale for the rich task by explaining how it will support the focal student along the developmental path to reach the learning goal.
- Using the rich task lesson plan template, describe the process for enacting the rich task with the focal student's class. Detail how the 5 practices would be used during the lesson, with specific focus on anticipated student responses to the rich task.
- This rich task will not be taught to the focal student's class for this assignment.

Part 6. Final Reflection

2-3 pages

5 points

Due Week 15

6a. Reflect on the focal student's progress along the Learning Trajectory for the selected topic.

- Using data from the Number Sense Routine and other artifacts of the student's thinking, discuss the student's progress toward the learning goal set in part 3c.
- What would you do next with this student to support their progression along the learning trajectory?

6b. Reflect on your developing understanding of learning trajectories

- How did this project help you understand how learning trajectories can be used in assessment and instruction?
- Describe how your understanding of the selected mathematics topic developed throughout this project.

Note: Faculty reserve the right to add, alter, or omit any assignment as necessary during the semester. You will always receive advanced notice of any modifications.

Assignment Summary

Course grades are calculated by summing the points earned on assignments and dividing by the total possible points. Grades are designed to indicate your success in completing assignments, not the level of effort you put into them.

Assignment	Number of Points
Learning Trajectory Assessment and Planning Project	60 points total
LT Part 1: Learning Trajectory Topics Paper	10 points
LT Part 2: Clinical Interview Protocol	10 points
LT Part 3: Clinical Interview Analysis	15 points
LT Part 4: Number Sense Routine	15 points
LT Part 5: Rich Task Lesson Plan	5 points
LT Part 6: Final Reflection	5 points
Attendance/Participation	15 points
Weekly Reflection Journal	15 points
Math Autobiography	10 points total
Initial Math Autobiography (beginning of semester)	5 points
Reflection on Math Autobiography (end of semester)	5 points
Total Number of Points	100 points

Course Performance Evaluation Weighting

The assignments across the semester are intended to further your understanding of what it means to teach, learn, and assess mathematics in light of current reforms in mathematics education.

All assignments are to be completed and submitted to your instructor by the date listed in the syllabus. Written work will not be accepted after the due date unless prior arrangements have been made with the instructor. Additionally, late work will not be accepted for full credit. If the student makes prior arrangements with the instructor, assignments turned in late will receive a 10% deduction from the grade per late day or any fraction thereof (including weekends and holidays).

Grading Policies

The mathematics education courses in the School of Education's Elementary Education Program

integrate pedagogy and mathematics content appropriate for the elementary school grades. For students to earn a grade of A in the course, they must demonstrate excellence in *both* the pedagogical knowledge and the content knowledge of mathematics appropriate at their level of teaching. Thus, the grading in the course is structured to help evaluate fair student excellence in both areas. Problem sets and assessment work focuses primarily on ascertaining student excellence in handling mathematics content appropriate for the elementary grades and represents 50% of students' grades. Pedagogical knowledge is ascertained primarily from readings, assignments, and participation in the course, and represents 50% of students' grades. Therefore, students who demonstrate excellence in both pedagogical knowledge and content knowledge receive grades of A.

At George Mason University, course work is measured in terms of quantity and quality. A credit normally represents one hour per week of lecture or recitation or not fewer than two hours per week of laboratory work throughout a semester. The number of credits is a measure of quantity. The grade is a measure of quality. The university-wide system for grading undergraduate courses is as follows:

UNDERGRADUATE GRADING SCALE

Grade	Grading Scale	Interpretation
A+	97-100	<i>Represents mastery of the subject through effort beyond basic requirements</i>
A	93-96	
A-	90-92	
B+	87-89	<i>Reflects an understanding of and the ability to apply theories and principles at a basic level</i>
B	83-86	
B-	80-82	
C+	77 – 79	
C	73 – 76	
C-	70-72	<i>Denotes an unacceptable level of understanding and application of the basic elements of the course. Grade does not meet the minimum requirement for licensure courses.</i>
D	60-69	
F	<69	

****Remember: A course grade less than C requires that you retake the course. “C-” is not satisfactory for a licensure course; “F” does not meet requirements of the School of Education***

Other Requirements

This is a 3-credit undergraduate level course. Traditionally, 3-credit courses across a 15-week semester require an average of 45 hours of in-class time and approximately 90 hours of independent reading and assignment completion. Be prepared to put in that amount of time into this class and plan your schedule accordingly.

For some assignments you may use research to support your ideas or to synthesize your ideas in writing. In such cases, **you are expected to give the sources credit through formal in-text citations and a reference list.** The standard format for writing in the field of education is outlined in the *Publication Manual of the American Psychological Association, 7th edition*. The citation for this manual is included in the section entitled "Recommended Texts". For an online resource, see www.apastyle.org.

It is expected that you know how to paraphrase and cite information appropriately to meet both APA guidelines and to avoid plagiarism. This website provides some useful information on how to avoid plagiarism in your writing: <http://www.plagiarism.org/>

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 operating 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 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 and software 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 face-to-face meetings take place as indicated on the Schedule of Classes.
- 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.
- 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 2 times per week. In addition, students must log-on for all scheduled online synchronous meetings.
- 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.
- 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. Students can meet with the instructor via in-person meetings or web conferences. Students should email the instructor to schedule a one-on-one session, including their preferred meeting method and suggested dates/times.
- **Classroom etiquette:** The course environment (including when online) is a collaborative space meant to foster independent thought and critical analysis of complex ideas. Be open to the thoughts of others, particularly when they may be different from your own. Seek first to understand another's perspective from their point of view. Do not be afraid to ask one another difficult questions but be positive in your approach and thoughtful with 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:** Learners who require effective accommodations to ensure accessibility must be registered with George Mason University Disability Services.

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/>.

Professional Dispositions

Students are expected to always exhibit professional behaviors and dispositions while interacting with the instructor and other students. Cell phones are not to be used during class. Laptops are to be used for instructional purposes only. See [Policies and Procedures](#).

GMU 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

- 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/>.
- The Writing Center provides a variety of resources and services (e.g., tutoring, workshops, writing guides, handbooks) intended to support students as they work to construct and share knowledge through writing (see <http://writingcenter.gmu.edu/>).
- The Counseling and Psychological Services (CAPS) staff consists of professional counseling and clinical psychologists, social workers, and counselors who offer a wide range of services (e.g., individual and group counseling, workshops, and outreach programs) to enhance students' personal experience and academic performance (see <http://caps.gmu.edu/>).
- The Student Support & Advocacy Center staff helps students develop and maintain healthy lifestyles through confidential one-on-one support as well as through interactive programs and resources. Some of the topics they address are healthy relationships, stress management, nutrition, sexual assault, drug and alcohol use, and sexual health (see <http://ssac.gmu.edu/>). Students in need of these services may contact the office by phone at 703-993-3686. Concerned students, faculty and staff may also make a referral to express concern for the safety or well-being of a Mason student or the community by going to <http://ssac.gmu.edu/make-a-referral/>.
- **Notice of mandatory reporting of sexual assault, sexual harassment, interpersonal violence, and stalking:** As a faculty member, I am designated as a "Non-Confidential Employee," and must report all disclosures of sexual assault, sexual harassment, 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 or support measures from Mason's Title IX Coordinator by calling 703-993-8730 or emailing titleix@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 <http://cehd.gmu.edu/>.

Course Materials and Student Privacy

- All course materials posted to Blackboard or other course sites are private; by federal law, any materials that identify specific students (via their name, voice, or image) must not be shared with anyone not enrolled in this class.
- Video recordings of class meetings that include audio or visual information from other students are private and must not be shared.
- Live Video Conference Meetings (e.g., Collaborate or Zoom) that include audio or visual information from other students must be viewed privately and not shared with others in your household.
- Some/All your CEHD synchronous class meetings may be recorded by your instructor to provide necessary information for students in this class. Recordings will be stored on Blackboard [or another secure site] and will only be accessible to students taking this course during this semester.

Incident Weather

If classes are canceled at George Mason University, a message will be posted on the class Blackboard site and all class members will receive an email. Because such cancellations are often at the last minute, it may be difficult to get this message prior to leaving for class. If in doubt, dial the University phone number (703-993-1000) or visit the university website (www.gmu.edu). I will email you regarding the weather as soon as it is announced. *Please note, the cancellation of classes due to inclement weather is determined by the decision of the instructing university only. If the instructing university is open and operational, then you are expected to attend class.*

Class schedule

These topics and activities are subject to change to be responsive to the pace of the course. Faculty reserves the right to alter the schedule as necessary, with notification to students

Week & Date	Topic(s)	Readings Due	Assignments Due
Week 1 Jan. 25	-Syllabus -Identity/Agency -Teachers as Learners -Models of Math Instruction -What is Number Sense?	Van de Walle Chapters 1-2	Reflection journal entry due Sunday, Jan. 29
Week 2 Feb. 1 <i>*Asynchronous Class</i>	-NCTM Mathematics Teaching Practices	Van de Walle Chapters 3-4 Podcast: https://makemathmoments.com/episode103/ (Interview with Douglas Clements)	Asynchronous Assignment and Discussion Board due Sunday, Feb. 5
Week 3 Feb. 8	- <i>Counting</i> - <i>Number Sense</i> -Learning Trajectories -Strengths-based teaching	Van de Walle Chapters 5 & 7 Kobett & Karp Strengths book introduction (p. 1-17)	Reflection journal entry due Sunday, Feb. 12 Math Autobiography due Friday, Feb. 10
Week 4 Feb. 15	- <i>Operations & Relationships</i> - <i>Fact Fluency</i> -Problem solving -Learning Trajectories -Empathy interviews	Van de Walle Chapters 8-9 Keywords article	Reflection journal entry due Sunday, Feb. 19
Week 5 Feb. 22	- <i>Place Value</i> - <i>Addition/Subtraction of whole number</i> -Clinical Interviews -Empathy interviews	Van de Walle Chapters 10-11 13 Rules that Expire article	Reflection journal entry due Sunday, Feb. 26 Learning Trajectory Paper due Friday, Feb. 24
Week 6 March 1	- <i>Multiplication/Division of whole numbers</i> -Discourse-Rich Environments	Van de Walle Chapter 12 Yeh et al. Reimagining book Chapter 2 (p. 19-40)	Reflection journal entry due Sunday, March 5 Clinical Interview Protocol due Friday, March 3
Week 7	- <i>Fraction and Decimal</i>	Van de Walle	Reflection journal entry

March 8	<i>Number Sense</i> -Math Sense Routines	Chapter 14 Sangiovanni Routines book Part 1 (p.1-17) Podcast: https://makemathmoments.com/episode156/ (Math Talks)	due Sunday, March 12
Week of March 15	Spring Break		
Week 8 March 22	- <i>Fraction and Decimal Number Sense</i> -Identity & Agency	Van de Walle Chapter 6 Aguirre Identity book Chapters 1-2	Reflection journal entry due Sunday, March 26 Clinical Interview Analysis (Show Me Narrative) due Sunday, March 26
Week 9 March 29	- <i>Addition/subtraction of rational numbers</i> -Rich Tasks	Van de Walle Chapter 15 Yeh et al. Reimagining book chapter 3 (p. 41-64)	Reflection journal entry due Sunday, April 2
Week 10 April 5 (FCPS Spring Break)	- <i>Multiplication and Division of rational numbers</i> -5 Practices for Facilitating Discourse	Van de Walle Chapter 16 Sigmon et al. Goals article	Reflection journal entry due Sunday, April 9 Number Sense Routine Lesson Plan due Friday, April 7
Week 11 April 12	- <i>Multiplication and Division of rational numbers</i> *Number Sense Routine Rehearsals	Van de Walle Chapter 17	Reflection journal entry due Sunday, April 16
Week 12 April 19	- <i>Measurement</i> - <i>Geometry</i> *Number Sense Routine Rehearsals	Van de Walle Chapters 18 & 19	Reflection journal entry due Sunday, April 23
Week 13 April 26	- <i>Algebraic Thinking</i> - <i>Proportional Thinking</i>	Van de Walle Chapter 13	Reflection journal entry due Sunday, April 30
Week 14 May 3	- <i>Data & Statistics</i> - <i>Order of Operations</i>	Van de Walle Chapters 20-22	Reflection journal entry due Sunday, May 7

*LAST CLASS			Number Sense Reflection due Friday, May 5 Rich Task Lesson Plan due Sunday, May 7
Week 15 May 10	NO CLASS		Math Autobiography Reflection due Wednesday, May 10 Learning Trajectory Final Reflection due Sunday, May 14

Great resources at your fingertips:

As you work on your assignments, the intent is that you also deepen your math knowledge for teaching and learn about important resources for teaching and learning such as:

- Van de Walle et al. text as a resource
- Curriculum Framework document (standards unpacked with essential knowledge and skills)
https://www.doe.virginia.gov/testing/sol/standards_docs/mathematics/index.sht
- Math Instructional Plans (suggested instructional plans for each standard)
https://www.doe.virginia.gov/testing/sol/standards_docs/mathematics/2016/mip/index.shtml
- VDOE Bridging Standards Site <https://www.mathstrength.org/>
- Clements and Sarama Learning Trajectories website: <https://www.learningtrajectories.org/>

Helpful Websites

- University of Washington Number Talks and other Instructional Activities with videos and lesson plans: tedd.org
- National Council of Teachers of Mathematics – Illuminations: illuminations.nctm.org
- Jo Boaler’s blog and resources: jdboaler.com
- Another Jo Boaler/Stanford University folk’s website w/K-12 math resources: youcubed.org
- Estimation 180 (Andrew Stadel’s site – elementary and MS focused): estimation180.com
- Fawn Nguyen’s website (MS Math focused): fawnnguyen.com
- Dan Meyer’s website (more HS focused): blog.mrmeyer.com and his “3-Act” math lessons (MS and HS focused, linked to CCSS): www.livebinders.com/play/play_or_edit?id=330579
- Michael Pershan’s blog, elementary school teacher: rationalexpressions.blogspot.com

Common Core State Standards Helpful Websites

- CCSS Learning Progressions Documents: <http://ime.math.arizona.edu/progressions/>
- Lots of lesson plans and videos organized by Standard: insidemathematics.org
- CCSS aligned tasks: illustrativemathematics.org
- CCSS aligned tasks and assessments: map.mathshell.org/