

**George Mason University  
College of Education and Human Development  
Early Childhood Education**

ECED 515.001 Mathematics for Diverse Young Learners  
3 Credits, Fall 2020  
08/24/2020 – 12/16/2020, Tuesdays & Thursdays / 12:00pm – 1:15pm  
Online Synchronous

**Faculty**

Name: Carley Fisher-Maltese, PhD  
Office Hours: By Appointment  
Office Location: Thompson Hall 1251, Fairfax Campus  
Office Phone: 703-993-4848  
Email Address: [cfisher@gmu.edu](mailto:cfisher@gmu.edu)

**Required Prerequisites**

ECED 401 or 501 and ECED 403 or 503  
Prerequisites require a minimum grade of C for undergraduate courses and B- for graduate courses.

**University Catalog Course Description**

Examines ways to foster development of mathematics in preschool to third-grade children. Covers construction of mathematics lessons and hands-on experiences that promote learning in children with diverse abilities and cultural and linguistic backgrounds.

**Course Overview**

This class focuses on scholarly inquiry, where students learn about the recursive process of scholarly inquiry through studying previous scholarship and applying it to teaching and learning. In this course, students will analyze and evaluate quantitative and qualitative research focused on a specific question related to providing instruction that enhances young learners' mathematical understandings. Students will do the following:

- Articulate a question, problem, or challenge that is generally relevant and appropriate in scope (e.g., Why is teaching patterning important? What are effective approaches to teaching patterning to diverse prekindergartners?).
- Identify ethical issues related to using existing research to inform mathematics instruction and ethical considerations when working with young children.
- Communicate knowledge about evidence-based practices gathered from peer-reviewed research articles by writing a research brief to share with classmates.

**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 August 24, 2020.

**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](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](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 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/](http://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 4 times per week.
- 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. Those unable to come to a Mason campus can meet with the instructor 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 ensure accessibility must be registered with George Mason University Disability Services.

### **Learner Outcomes or Objectives**

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

1. Explain how previous mathematics content coursework has developed understandings of mathematics content identified in *Virginia's Foundation Blocks for Early Learning: Comprehensive Standards for Four-Year-Olds* and the *Virginia Mathematics Standards of Learning* and explain how these standards provide a sound foundation for teaching mathematics in prekindergarten through third grade.
2. Discuss the contributions of different cultures toward the development of mathematics and the role of mathematics in culture and society.
3. Describe the role of family and community knowledge, experience, and resources in planning and implementing mathematics content in the curriculum.
4. Explain the sequential nature and vertical progression of mathematics and the multiple representations of mathematical concepts and procedures.
5. Use the five processes: reasoning mathematically, solving problems, communicating mathematics effectively, making mathematical connections, and using mathematical models and representations at different levels of complexity.
6. Plan instruction guided by the *Virginia's Foundation Blocks for Early Learning: Comprehensive Standards for Four-Year-Olds*, the *Virginia Standards of Learning for Mathematics*, and the standards identified by the National Council of Teachers of Mathematics in the following content areas: (a) number systems, their structure, basic operations, and properties; (b) elementary number theory, ratio, proportion, and percent; (c) algebra; (d) geometry; and (e) probability and statistics.
7. Evaluate, select, and adapt a variety of instructional materials, manipulatives, technologies, and teaching strategies to engage diverse young learners in mathematics.
8. Describe strategies to help young children become mathematically literate, think critically and creatively, and to see the relationships between mathematics and other content areas.
9. Construct mathematics experiences in an environment that promotes equity and responds to cultural, linguistic, and ability diversity.
10. Describe the appropriate use of calculators and technology in the teaching and learning of

mathematics, including virtual manipulatives.

11. Develop informal assessment strategies to describe young children's understanding of mathematics concepts.
12. Analyze and evaluate qualitative and quantitative research literature to determine effective evidence-based practices for diverse young learners and inform instruction and use technology for learning, research, and communication.
13. Summarize and present research on evidence-based practices in teaching mathematics with diverse young children.
14. Engage in reflection, collaboration, and continuous learning to develop professionally.
15. Exhibit standards of professionalism, ethical standards, and personal integrity with children, families, and professionals in the field and in interactions with classmates, the instructor, the field experience coordinator, and others.
16. Use writing as an instructional and assessment tool to generate, gather, plan, organize, and to communicate for a variety of purposes; integrate correct written conventions (i.e., grammar, usage, mechanics, and spelling); and format using current APA style.

**Professional Standards** – Virginia Professional Studies Competencies, Virginia Early Childhood Special Education Endorsement Competencies, Virginia Early/Primary Education PreK-3 EPK3 Endorsement Competencies, Interstate Teacher Assessment and Support Consortium (InTASC) Standards, Council of Exceptional Children (CEC) and Division of Early Childhood (DEC) Standards, and National Association for the Education of Young Children (NAEYC) Standards

Upon completion of this course, students will have met the following professional standards:

### **Virginia Early/Primary Education PreK-3 Endorsement Competencies**

Methods

Knowledge and Skills: Mathematics

### **Required Texts**

American Psychological Association. (2020). *Publication manual of the American Psychological Association* (7th ed.). Washington, DC: Author.

Copley, J. V. (2010). *The young child and mathematics* (2nd ed.). Washington, DC: National Association for the Education of Young Children. ISBN: 9781928896685

National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics*. Reston, VA: Author.

<http://www.nctm.org/standards/content.aspx?id=16909>

National Council of Teachers of Mathematics. (2006). *Curriculum focal points for prekindergarten through grade 8 mathematics*. Reston, VA: Author.

<http://www.nctm.org/standards/content.aspx?id=270>

Van de Walle, J., Lovin, L. A., Karp, K., & Bay-Williams, J. (2018). *Teaching student-centered mathematics: Developmentally appropriate instruction for grades pre-k-2* (2nd ed.). New York, NY: Pearson.

Virginia Department of Education. (2009). Mathematics standards of learning.

[http://www.doe.virginia.gov/testing/sol/standards\\_docs/index.shtml](http://www.doe.virginia.gov/testing/sol/standards_docs/index.shtml)

Virginia Department of Education. (2016). Mathematics curriculum framework.  
[http://www.doe.virginia.gov/testing/sol/standards\\_docs/index.shtml](http://www.doe.virginia.gov/testing/sol/standards_docs/index.shtml)

Access Blackboard for required and optional class readings.

### Course Performance Evaluation

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

Assignments	Due Dates	Points
Attendance and Participation <ul style="list-style-type: none"> <li>Self-Evaluation</li> </ul>	Ongoing December 1	<b>25</b>
Personal Journal <ul style="list-style-type: none"> <li>Part 1</li> <li>Part 2</li> </ul>	September 3 December 1	<b>10</b>
Mathematics Activity Share	Variable	<b>15</b>
Teaching Math Through Picture Books Poster and Presentation	September 24	<b>10</b>
An Inquiry Into Evidence-Based Practices Research Brief Research Presentation	October 15	<b>15</b> 10 5
Online Mathematics Lesson Implementation and Reflection <ul style="list-style-type: none"> <li>Planning the Lesson</li> <li>Collecting Data</li> <li>Reflecting on the Lesson &amp; Link to Video Recorded Lesson</li> </ul>	October 29 October 29 November 24	<b>25</b> 10 5 10
<b>TOTAL</b>		<b>100</b>

### • Assignments and/or Examinations

#### Personal Journal (Part 1=5 points; Part 2=5 points)

- Part 1:** To initiate class experiences, students will write a critical reflection on their personal experiences as a learner of math (2 pages). They will use the following prompts to help guide their reflection process.
  - Begin with your earliest memories (give examples) and reflect until the present as a graduate student in a teacher preparation program.
  - Reflect on your experiences in school, out of school, in the context of your family, etc.
  - What thoughts do you tell yourself about math (e.g., ANTs = automatic negative thoughts/assumptions/not truths)?
  - How do you see yourself as a math learner?
  - Why do you think you feel that way?

- How do you think these experiences will shape you as a teacher of math? In other words, what positive impacts or challenges on your teaching practice do you foresee from your prior experiences or self-conception?
- **Part 2:** In conclusion of the course, students will revisit their initial thoughts in their first journal entry and reflect on how their thoughts and/or self-conception have changed, if at all (2 pages). They will use the following prompts to help guide their reflection process.
  - What thoughts do you tell yourself about math (e.g., ANTs)? Have your thoughts changed? Your self-conception related to math?
    - If you did in the first place, do you still have ANTs?
    - What do you do if you have an ANT?
    - How does this change, if at all, how you will work with your future students?
  - How did learning about cognitive behavioral therapy (CBT) and transactional analysis (TA) impact your feelings about the course and math? Was it helpful?
  - Do you view yourself as a math learner differently than you did before?
  - What have you learned in the course?
  - Is there a concept you learned in the course that really stuck out for you? (Include references to course readings, as necessary.)
  - Is there a particular reading, handout, or material from class that you found particularly helpful or eye-opening? (Include references to course readings, as necessary.)
  - Articulate the kind of early childhood mathematics teacher you plan to be. Will something you learned in the course be included in your guiding principles?

### **Mathematics Activity Share (15 points)**

Students will choose a mathematics content area from one of the following: (a) number systems, their structure, basic operations, and properties; (b) elementary number theory, ratio, proportion, and percent; (c) algebra; (d) geometry; and (e) probability and statistics during the first class session in which to present an activity. Three students will sign up per content area: one person will focus on PreK, one on K-Grade 1, and one on Grades 2-3. Check sign-up sheet to avoid duplication of activities. Individual students will prepare a lesson plan using the template provided for the activity they will present. Math activity share should be 15-minutes in duration.

Before the mathematics activity share, students will post all share materials (lesson plan, resources) on Blackboard under Discussion Board. During the Activity Share, each student will include the following in a manner that is easy to see in the online space (integrating PPT slides is encouraged):

- An overview of the topic to include the key ideas or content and the importance of the topic to children's mathematics learning
- An overview of relevant state and national content standards at the appropriate grade level(s), noting consistencies (or inconsistencies, if the case may be)
- A description of classroom and behavior management strategies that would increase the effectiveness of the implementation of the activity

- Materials appropriate to the activity (use own or borrow from the instructor; attempt to use items that can be found easily around the home; materials should be visually attractive and engaging for young learners)
- Modeling of the math concept (no videos please); It should be evident that the student has read the course material on the mathematics topic
- Modeling how to engage in the activity chosen for math concept. Math activity should be in-line with the type of math teaching practices we are learning about in the course (e.g., hands-on with materials, not a worksheet)
- Modeling of the math concept and activity should be role played as if student is the teacher and classmates are young learners in the class
- Preparation for how to adapt the activity for a range of learners
- A list of at least three resources related to teaching the topic that could include children's literature, websites, manipulatives or materials, or other teacher resources (at least one must be a relevant developmentally appropriate picture book and one must be an article from a practitioner journal (e.g., *Teaching Children Mathematics* or *Young Children*) on the topic)

### **Teaching Math Through Pictures Books Poster and Presentation (10 points)**

To engage in the core math content areas of (a) number systems, their structure, basic operations, and properties; (b) elementary number theory, ratio, proportion, and percent; (c) algebra; (d) geometry; and (e) probability and statistics in an appropriate interdisciplinary context, students will choose a picture book focused on a math concept. They will make an electronic poster that includes the following information: title, author, possible math concepts explored within the text, appropriate age/grade level, relevant standards, a meaningful quote, instructions and diagram(s) for a relevant interactive activity for children, and a rationale (no more than one double-spaced page) for decisions made, including citations of at least two course readings. Students should have materials for the activity available to show classmates during presentation. Students will present their posters to classmates during an in-class poster session. Students will upload an electronic copy of the poster to Blackboard in addition to their rationale.

### **Research Brief and Presentation: An Inquiry Into Evidence-Based Practices (15 points)**

In two-person partnerships, students will identify a question of interest related to the teaching of mathematical concepts to diverse young learners. Each student will conduct a literature search to identify four research articles (eight total per pair) related to the question published in peer-reviewed journals. Each student will read the articles identified in the literature search.

Student partners will prepare and share with classmates a two-page, single-spaced research brief, including the reference list, that presents the findings of four of the research studies read and analyzed. Students will follow APA style and will include the following:

- An introduction that presents the question, describes the mathematical concept that is the focus of the inquiry, and provides an overview of the research
- A paragraph summary for three research articles, including (a) a brief description of the participants, (b) a brief summary of the methods, and (c) an overview of the findings (Each student will be responsible for drafting two of the summary paragraphs. They will be responsible for reviewing and providing feedback on their partner's two summary paragraphs.)

- A conclusion that summarizes what the research says about teaching the selected mathematical concept to diverse young children
- Citations within the brief to support the evidence presented
- A bibliography, including the four articles summarized plus the additional two to four articles read

As part of the inquiry process, students will use the research synthesis to inform their *mathematics implementation lesson and reflection* assignment.

Partners will present their research brief to a small group of classmates in class. Students will prepare a PowerPoint presentation to share their inquiry into evidence-based practice. Students will summarize what the research says about teaching the selected mathematical concept to diverse young children. Slides will include (a) title slide, (b) introduction to line of inquiry, (c) overview of the studies (i.e., participants, methods, findings), (d) implications for practice, and (e) references.

### **Online Mathematics Lesson Implementation and Reflection (25 points)**

Due to the Coronavirus pandemic, schools across the country closed last spring forcing teachers to shift learning to alternative and online. In an effort to make learning in the course relevant and meaningful, this assignment is to convert a math lesson to a video-recorded asynchronous learning experience. In the same two-person Research Brief partnerships, students will use what they learned during their inquiry into evidence-based practices to choose a developmentally appropriate math lesson for prekindergarten learners in one of the core math content areas as defined by *Virginia's Foundation Blocks of Early Learning*, the *Virginia Math Standards of Learning*, and the *National Council of Teachers of Mathematics Standards* from either the course textbooks or Virginia Department of Education or Math Innovations websites. They will evaluate the lesson in light of what the research suggests and decide what, if any, adaptations need to be made to the lesson plan.

The lesson can be for any target grade level between PreK to third grade. The recorded lesson should be between 8 to 15 minutes (not to exceed 15 minutes). *The recorded lesson should sound as though the student is speaking to children who are the age of your target audience, not a class of adult learners.* Visuals should be presented in a manner that is easy to see in the online space (integrating PPT slides is encouraged). Background information about the lesson, learning standards, and modifications for the lesson should be included in the lesson plan. Partners will act as sounding boards, review the recorded lesson, suggest modifications, and take reflective notes that he/she will share with his/her partner. Students will submit a link to their video-recorded lesson and written reflection in three parts.

- ***Planning the Lesson (10 points).*** The first part of the reflection will be due before the experience and will include how the lesson was selected; a list of relevant standards; how course readings support the selection of the lesson plan and plans to teach; what adaptations were made, if any, to the lesson plan and why; how students prepared to implement the video-recorded lesson: and what they will have the children submit to show their learning (e.g., a photo of their math layout with materials, a completed student recording sheet with words, pictures, and numbers, a video of them solving the problem or doing the math activity). Students will include tips for maintaining a safe environment



for their target audience. In this part, students will be assessed on their preparation of the necessary materials for the video-recorded lesson (think about what materials children, and you, have access to at home). They will prepare a list of alternative materials. Partners will write and submit this reflection individually, but should work supportively and collaboratively. (2 to 3 double-spaced pages)

- **Collecting Data (5 points).** The second part of the reflection will be due before the experience and will include (a) a statement about ethical considerations as they plan for data collection and (b) a plan for collecting quantitative and qualitative data, including the “assignment” or student work that the young learners will turn in for evaluation (e.g., on Google Classroom). Partners will develop a teacher’s checklist to be used to collect data about the children’s learning. Partners will write and submit this part individually, but should work supportively and collaboratively. (1 page double-spaced, plus the created teacher’s checklist).
- **Reflecting on the Lesson (10 points).** The third part of the reflection will be due with a link to the video-recorded lesson (e.g., a link can be generated from any number of platforms, including YouTube, OneDrive, Google Drive, etc.) and will include a reflection on how the lesson went (what went well, what could have been done differently/better for next time), key learnings, and “aha” moments. Students will provide specific linkages to course readings examined for the inquiry to show how evidence-based practices were used. They will conclude the reflection by providing recommendations for next steps to this math lesson for supporting children’s understanding of the science concept and extending their learning. Partners will engage in reflective discussions about the implementation of the video-recorded lesson, but will submit written reflections independently. (3 double-spaced pages)
- **Other Requirements**

#### **Attendance and Participation (25 points)**

Because active participation and engagement are imperative for optimal learning, preparation for and participation in in-class and online activities will be evaluated based on the following criteria:

- Students attend class, arrive on time, and stay for the entire class period.
- Students notify the instructor by email in the case of an absence.
- Students submit a 2-3-page written reflection of the content covered (e.g., course readings, content on Blackboard) of any missed class. Reflection is due within 1 week after an absence.
- Students use laptops and personal devices for instructional purposes only.
- Students complete readings and prepare for class activities prior to class as evidenced by their ability to discuss and write about the concepts presented and examined in the texts as well as participate fully in related activities.
- Students are actively involved in in-class and online learning experiences as evidenced by (a) participating in all activities, (b) engaging in small- and large-group discussions, (c) completing written work related to the activities, and (d) supporting the participation and learning of classmates.

- Students show evidence of critical reflective thinking through in-class and online discussions, activities, and written reflections.
- Students display professional dispositions at all times while interacting with the instructor and other students.
- Students complete participation activities across the semester that complement the scheduled course topic. Instructors will periodically collect artifacts from the activities. Students in attendance and who actively engage in the learning experience will receive credit for their efforts. Graded participation activities are not announced and are implemented at the discretion of the instructor.
- Students submit attendance and participation self-evaluation.

### **Written Assignments**

All formal written assignments will be evaluated for content and presentation. The American Psychological Association, Seventh Edition (APA) style will be followed for all written work. All written work unless otherwise noted must be completed on a word processor and should be proofread carefully. (Use spell check!) If students are not confident of their own ability to catch errors, they should have another person proofread their work. When in doubt, they should check the APA manual. Students may consult the Writing Center for additional writing support.

Students will do the following:

1. Present ideas in a clear, concise, and organized manner. (Avoid wordiness and redundancy.)
2. Develop points coherently, definitively, and thoroughly.
3. Refer to appropriate authorities, studies, and examples to document where appropriate. (Avoid meaningless generalizations, unwarranted assumptions, and unsupported opinions.)
4. Use correct capitalization, punctuation, spelling, and grammar.
5. Type the paper with double spacing, indented paragraphs, 1-inch margins all around, and 12-point Times New Roman font.

- **Grading**

A = 95-100 A- = 90-94 B+ = 87-89 B = 80-86 C = 70-79 F = <70

Incomplete (IN): This grade may be given to students who are passing a course but who may be unable to complete scheduled coursework for a cause beyond reasonable control.

All CEHD students are held to the university grading policies as described in the Academic Policies section of the current catalog, which can be accessed at <http://catalog.gmu.edu>. Those students seeking Virginia initial teaching licensure must earn a B- or better in all graduate licensure coursework.

### **Professional Dispositions**

Students are expected to exhibit professional behaviors and dispositions at all times. See <https://cehd.gmu.edu/students/policies-procedures/>.

## Class Schedule

Date	Topics	Readings & Assignments
<p><b>Week 1</b> Aug 25</p>	<p>Cognitive Aspects of Math</p> <p>Meaningful Math</p> <p>Being a Reflective, Collaborative Teacher of Mathematics Committed to Continuous Learning</p>	<p>Van de Walle et al., Chapter 1 Copley, Chapter 1</p>
<p>Aug 27</p>	<p>Introducing the Core Math Content Areas</p> <ul style="list-style-type: none"> <li>• Number systems, their structure, basic operations, and properties</li> <li>• Elementary number theory, ratio, proportion, and percent</li> <li>• Algebra</li> <li>• Geometry</li> </ul> <p>Probability and statistics</p>	
<p><b>Week 2</b> Sep 1</p>	<p>Relevant Learning Theories/Theorists</p> <p>Constructivist Environments to Support Mathematics Learning</p> <p>Reflecting on Past and Current Experiences with Mathematics and the Implications for Teaching</p>	<p>Van de Walle et al., Chapter 2 Copley, Chapter 3</p> <p><u>On Blackboard</u> <i>Why Do Americans Stink at Math?</i></p> <p><b>Due to Bb by 9/3 – Personal Journal Part 1</b></p>
<p>Sep 3</p>	<p>Inquiry into Evidenced-Based Practices for Teaching the Core Math Content Areas</p> <p>Presentation by the Educational Librarian on conducting literature searches and ethical considerations for selecting and using research findings</p>	
<p><b>Week 3</b> Sep 8</p>	<p>Mathematics Content Knowledge for Teaching and Learning</p> <p>Mathematics Content Standards as the Foundation for Teaching Mathematics: <i>Virginia's Foundation Blocks for Early Learning, Virginia Standards of Learning for Mathematics,</i></p>	<p>Van de Walle et al., Chapter 3 Copley, Chapter 2</p> <p><i>Virginia's Early Learning Foundation Building Blocks, Virginia Mathematics Standards of Learning, National Mathematics Learning Standards</i></p>

	<i>National Mathematics Learning Standards</i>	<u>On Blackboard</u> <i>Implementing Portfolio Assessment</i>
Sep 10	Formal and Informal Assessment Strategies to Describe Diverse Young Children's Understanding of Mathematics Concepts  Analyzing and Interpreting Data to Inform Instruction and for Progress Monitoring	
<b>Week 4</b> Sep 15	Mathematics Instruction and Assessment to Develop the Five Processes of Mathematical Understanding <ul style="list-style-type: none"> <li>Reasoning mathematically, solving problems, communicating mathematics effectively, making mathematical connections, and using mathematical models and representations at different levels of complexity</li> <li>Sequential nature and vertical progression of mathematics</li> </ul>	Van de Walle et al., Chapter 4  <u>On Blackboard</u> <i>Modeling Problem-Based Instruction</i>
Sep 17	Differentiating Instruction  Collaborating with Other Professionals  Generating Questions to Guide Inquiry of Evidence-Based Practices	
<b>Week 5</b> Sep 22	Role of Mathematics in Culture and Society <ul style="list-style-type: none"> <li>Cultures and the development of mathematics</li> <li>Mathematics experiences to promote equity and respond to cultural, linguistic, and ability diversity</li> </ul>	Van de Walle et al., Chapters 5 & 6  <b>Due to Bb by 9/24 – Teaching Math Through Picture Books Poster and Presentation</b>
Sep 24	Collaborating with Professional Partners  Reading and Analyzing Research on Evidence-Based Practices	

	Understanding who the participants are, what methods were used, and what the results or findings mean	
<b>Week 6</b> Sep 29	Collaborating with Families and Communities <ul style="list-style-type: none"> <li>• Role of family and community in mathematics</li> <li>• Using family and community knowledge, experience, and resources in planning and teaching mathematics</li> </ul>	Van de Walle et al., Chapter 7  <u>On Blackboard</u> <i>Multicultural Mathematics Instruction</i>
Oct 1	Analyzing and Evaluating Research on Evidence-Based Practices	
<b>Week 7</b> Oct 6	Assessment and Instruction <ul style="list-style-type: none"> <li>• Sets</li> <li>• Number systems and number sense</li> </ul>	Van de Walle et al., Chapters 8 & 9
Oct 8	<ul style="list-style-type: none"> <li>• Basic operations and properties</li> <li>• Multiple representations of mathematical concepts and procedures</li> </ul> Instructional materials, manipulatives, technologies	
<b>Week 8</b> Oct 13	Assessment and Instruction <ul style="list-style-type: none"> <li>• Basic facts</li> <li>• Whole number place value</li> <li>• Multiple representations of mathematical concepts and procedures</li> <li>• Instructional materials, manipulatives, technologies</li> </ul>	Van de Walle et al., Chapters 10 & 11  <b>Due to Bb by 10/15 – Research Brief: An Inquiry into Evidence-Based Practices</b>
Oct 15	Using Research to Make Instructional Decisions  <b>Mathematics Activity Share – Operations &amp; Computation</b>	
<b>Week 9</b> Oct 20	Assessment and Instruction <ul style="list-style-type: none"> <li>• Whole number computation</li> <li>• Elementary number theory, ratio, proportion, and percent</li> <li>• Multiple representations of mathematical concepts and procedures</li> </ul>	Van de Walle et al., Chapter 12

	<ul style="list-style-type: none"> <li>• Instructional materials, manipulatives, technologies</li> </ul>	
Oct 22	Planning and Preparing for Instruction, Classroom Management, and Guiding Behavior	
<b>Week 10</b> Oct 27	<p>Assessment and Instruction</p> <ul style="list-style-type: none"> <li>• Patterns</li> </ul> <p>Preparing to Teach Mathematical Concepts and Skills to Diverse Prekindergartners</p> <p><b>Mathematics Activity Share – Estimation &amp; Patterns</b></p>	<p>Van de Walle et al., Chapter 13</p> <p><u>On Blackboard:</u> <i>What Comes Next? The Mathematics of Pattern in Kindergarten</i></p> <p><b>Due to Bb by 10/29 – Mathematics Lesson Implementation and Reflection: Parts 1 and 2</b></p>
Oct 29	<ul style="list-style-type: none"> <li>• Algebraic reasoning</li> <li>• Multiple representations of mathematical concepts and procedures</li> <li>• Instructional materials, manipulatives, technologies</li> </ul> <p><b>Mathematics Activity Share – Algebra</b></p>	
<b>Week 11</b> Nov 3 (Election Day – No class meeting)		<p>Van de Walle et al., Chapter 14</p> <p><u>On Blackboard</u> <i>Making Fractions Meaningful</i> <i>Meaningful Technology</i></p>
Nov 5	<p>Assessment and Instruction</p> <ul style="list-style-type: none"> <li>• Fractions</li> <li>• Multiple representations of mathematical concepts and procedures</li> <li>• Instructional materials, manipulatives, technologies</li> </ul> <p><b>Mathematics Activity Share – Fractions</b></p>	
<b>Week 12</b> Nov 10	<p>Assessment and Instruction</p> <ul style="list-style-type: none"> <li>• Measurement</li> </ul> <p><b>Mathematics Activity Share – Measurement</b></p>	<p>Van de Walle et al., Chapters 15 &amp; 16</p>

Nov 12	<ul style="list-style-type: none"> <li>• Geometry</li> <li>• Multiple representations of mathematical concepts and procedures</li> <li>• Instructional materials, manipulatives, technologies</li> </ul> <p><b>Mathematics Activity Share – Geometry</b></p>	
<b>Week 13</b> Nov 17	<p>Assessment and Instruction</p> <ul style="list-style-type: none"> <li>• Probability and statistics</li> <li>• Multiple representations of mathematical concepts and procedures</li> <li>• Instructional materials, manipulatives, technologies</li> </ul>	<p>Van de Walle et al., Chapter 17</p> <p><u>On Blackboard:</u> <i>Zoos, Aquariums, and Expanding Students' Data Literacy</i></p>
Nov 19	<ul style="list-style-type: none"> <li>• Data analysis</li> </ul> <p>Analyzing and Presenting Data</p> <p><b>Mathematics Activity Share – Data Analysis</b></p>	
<b>Week 14</b> Nov 24	<p>Appropriate Use of Calculators, Technology, and Virtual Manipulatives</p> <p>Reflecting on the Mathematics Lesson Implementation and Implications for Filling the Role of Mathematics Teacher for Diverse Young Learners</p>	<p><u>On Blackboard</u> <i>Putting the “T” in STEM for the Youngest Learners</i></p> <p><b>Due to Bb by 11/24 – Mathematics Lesson Implementation and Reflection: Part 3</b></p>
Nov 26 (Thanksgiving – No class meeting)		
<b>Week 15</b> Dec 1	<p>Strategies for Children</p> <ul style="list-style-type: none"> <li>• Becoming mathematically literate</li> <li>• Thinking critically and creatively</li> <li>• See the relationships between mathematics and other content areas</li> </ul> <p>Course Wrap-Up</p>	<p><b>Due to Bb by 12/1 – Personal Journal-Part 2</b></p> <p><b>Due to Bb by 12/1 – Attendance and Participation Self Evaluation</b></p>
Dec 7-8	Reading Days – No class meeting	
<b>Week 16</b> Dec 9-16	Exam Period – No class meeting	

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 <http://ds.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/VIA should be directed to [tk20help@gmu.edu](mailto:tk20help@gmu.edu) or <https://cehd.gmu.edu/aero/tk20>. 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](mailto:titleix@gmu.edu).

**For additional information on the College of Education and Human Development, please visit our website: <http://cehd.gmu.edu>.**