

**MAE 5347 Teaching K – 8 Mathematics Methods
Fall 2022 Semester**

Instructor: Mackenzie McNickle

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Office hours: Thursday 5:30 - 6:30 or by appointment

Class Meeting Time: Tuesday 4:00 - 5:30, 8/30, 9/13, 9/27, 10/11, 10/25, 11/8, 11/29

Course Description This course will expose students to the instructional components involved in the teaching of mathematics to K – 8 school children. Students will engage in concept formation, reviews of current research and resources, lesson planning, and applications of mathematics into other areas of the curriculum to firmly establish how to effectively teach mathematics with a focus on the National Council of Teachers of Mathematics (NCTM) Principles and Standards and Mathematics Florida Standards (BEST). The mathematical content introduced in this course is: whole-number place-value concepts, strategies for addition, subtraction, multiplication, and division whole number computation, algebraic thinking, fraction concepts, fraction operations, ratios, integers, geometric concepts, and concepts of data and statistics.

Course Purpose The purpose of this course is to prepare students to be teachers of mathematics for K – 8 school children. Students will learn how to implement mathematics pedagogical strategies for K - 8 mathematics instruction. These strategies will include how to use mathematics manipulatives, questioning, formative assessment, and engaging school children in mathematical discourse.

Course Objectives Through successful completion of this course, participants will be able to:

- Develop a positive attitude toward mathematics and increase their confidence in their ability to teach mathematics.
- Demonstrate an understanding of current research in mathematics education.
- Explain how to implement strategies that develop students into problem solvers.
- Use different methods of teaching mathematics to include a variety of elementary student interests.
- Plan, sequence, present, and assign proper practice, as well as evaluate, children's learning in elementary mathematics.
- Develop methods of classroom management while teaching mathematics.
- Understand methods to scaffold mathematics instruction for students with exceptionalities.

Required Text:

- The required course material is *Elementary and Middle School Mathematics: Teaching Developmentally*, 10th Edition by Van de Walle and will be delivered digitally through MyLab. Should you feel you need additional print support, please visit the University Bookstore located in the Reitz Union. To opt in to the program, please go to <https://www.bsd.ufl.edu/G1C/bookstore/allaccess.asp> .

Online (supplemental) resources I would suggest you browse the following websites throughout the semester as they may be of potential use to you as a teacher of mathematics.

National Council for Teachers of Mathematics www.nctm.org

Florida Standards Assessment <http://www.fsassessments.org/>

Virtual manipulatives <http://nlvm.usu.edu/en/nav/vlibrary.html>

Standards Each student will experience and participate in instruction that is parallel to mathematics standards presented by the National Council of Teachers of Mathematics (NCTM) and the State of Florida.

Standards Reference

- Common Core State Standards for Mathematics (CCSSM) <http://www.corestandards.org/Math>
- National Council of Teachers of Mathematics (NCTM) Principles and Standards & Curriculum Focal Points <http://nctm.org/standards/default.aspx?=58>
- Florida Mathematics Standards <http://www.cpalms.org/Public/>
- English for Speakers of Other Languages (ESOL) Performance Standards <http://www.fldoe.org/aala/perstand.asp>
- Council for Exceptional Children <https://www.cec.sped.org/Special-Ed-Topics/Specialty-Areas/Common-Core-State-Standards>

Class Attendance: Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with the university policies at <http://gradcatalog.ufl.edu/content.php?catoid=5&navoid=1054#attendance>. As stated there, “acceptable reasons for absences from class include illness, serious family emergencies, special curricular requirements, military obligations, severe weather conditions, religious holidays, and participation in official University activities. Absences from class for court – imposed legal obligations (e.g., jury duty or subpoena) must be excused. Other reasons may also be approved.” In the event of an excused absence, the instructor will consider the individual circumstances and work with the student to

determine a timeline for make-up work, assignments, and exams.

Completeness and Promptness Only assignments submitted complete and on time will be considered for full credit. Assignments submitted after the due date will receive a grade deduction of 5% per day after the due date. Missing a class is not an excuse for not having an assignment turned in. In order to complete the course you must complete every assignment.

Assessments for Grade Determination The descriptions of the activities that follow are intended to be general. The instructor reserves the right to alter the assignment as the class proceeds according to the needs of the group. Specifics, including due dates and relevant rubrics, will be described on the class website in a timely manner.

Attendance/ Professionalism/ Participation (10%) It is assumed that each student will exhibit a positive and professional attitude, attend every class meeting, be on time, have completed required reading assignments, and **actively contribute** in a **positive** manner in classroom discussions.

In the case we have synchronous Zoom sessions, our class may be audio visually recorded. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared.

Each unexcused absence or two tardies will result in a points deduction from the participation grade. If you are ill or an emergency arises, it is your responsibility to email the instructor before class. Think of this class as your "job", where you are expected to be there at a particular time unless some major extenuating circumstance arises. You are responsible for making-up all work missed during your absence. You can make up an excused absence by completing the regular work and a make-up assignment (see below in syllabus for further details) and handing it in no later than **4 days after** your absence. Please make sure you have a fellow student take notes for you should you miss a class.

Choice Menu Assignments & Discussions (25%) Choice menus provide students

with the opportunity to select areas of mathematics education that they would like to focus on around a central topic. Each menu will consist of items in the following columns: "See it/Hear it," "Read it," and "Try it." Students will be provided with instructions for selecting items to complete the menu. Afterwards, students will complete a reflective formative assessment and post a summary of what they learned about the items in a discussion forum. A rubric is provided on Canvas for this assignment.

Preconception/ Misconception FEAP Assignment (25%) This assignment aligns with FEAP 3: Instructional Delivery and Facilitation. More specifically, 3d. Modify instruction to respond to preconceptions or misconceptions. The assignment has five parts: Part Zero - Identify Multiple Levels of Understanding for Your Standard/Topic, Part One - Pre-Assessment, Part Two - Select Student Work, Part Three - Plan for Modifying Instruction, and Part Four - Reflection. This is a multi-week assignment. Specific dates, instructions, and a rubric are available on Canvas.

Materials Demonstration (25%) Students will work with two partners in groups of three. Each group of students will become proficient with a selected manipulative material, will demonstrate the use and benefits of the material to the class, and lead an activity in a breakout room for the material. A written report on the use of the material must be prepared. The report should be a document that includes: (a) a thorough description of what the manipulative is, (b) an extensive list of the mathematical concepts that can be demonstrated by using the manipulative [a discussion is not needed, just a complete listing], and (c) three activities that demonstrate the diversity and creativity of its use (using two different referenced sources [other than the book required for the course]). These three activities should illustrate the diversity of content and grade level material that can be promoted through use of the manipulative. The report should include appropriate handouts (links from websites are appropriate) to support the activities. The purpose of the assignment is to judge the student's ability to examine commercial resources and familiarize others with their purpose and classroom use. Please see the rubric for more details regarding this assignment.

Final Paper (15%) There will be a final exam where you will be asked to synthesize material from articles to content in the textbook. It is imperative that you have read the chapters of the book to be able to do well on this assignment. More details about this assignment and a rubric will be provided on Canvas.

Make-Up Assignment for a missed class session: You can make up each excused absence by 1. Completing all in-class work and homework assigned on the day you

missed. In addition, write a brief summary of the activities we did the day you missed class. You are responsible for making-up all work missed during your absence and please make sure you have a fellow student take notes for you should you miss a class. Use your classmate's notes to write your summary. 2. Find 2 articles in Teaching Children Mathematics (available online or in the Education library) that relate to the topic discussed in class on the date of your absence (please note this topic in your summaries). Make a copy of the articles and include the copy with your write up.

a. Summarize the article and connect it to the activities we did in class and the homework for that day (1 page).

01. What are the main points of the article? ii. How does the article connect to our course? b. Talk about how this article may help you as a teacher of mathematics (1 page)

02. Why did you choose this article? ii. What is the mathematical content of the article?

03. How can you use what is described in the article in your classroom?

Please submit in person or by email no later than 4 days after the absence you are making up. Late makeup assignments will NOT be accepted.

Statement on Plagiarism: Plagiarizing has become easier and more prevalent in today's educational systems. It is a problem at all levels of educational system – in K – 12 and in higher education. Plagiarism is a violation of the University of Florida Student Honor Code. Students in the School of Teaching and Learning should be aware of what plagiarism is and what steps to take to avoid plagiarism, as detailed in the information below.

Merriam-Webster's Online Dictionary states that to plagiarize is: to steal and pass off (the ideas or words of another) as one's own; use (another's production) without crediting the source; to commit literary theft; to present as new and original an idea or product derived from an existing source. Examples of plagiarism/academic dishonesty include:

- Using words, sentences, ideas, and/or organization from a source (book, webpage, etc.) without providing the proper citation
- Submitting the same paper for multiple classes
- Submitting an assignment obtained from commercial firms, websites, fraternity or sorority files, or any other group or individual.

Often education students believe they can use materials that are not their own by claiming their actions are protected by the Fair Use section of the Copyright Laws. This is often not the case. All materials put in a tangible form after January 1, 1978

are copyrighted. A word does not need the copyright symbol © to be copyrighted. In the 1976 Copyright Act, educators have been given fair use guidelines. In order to be able to claim fair use, you must meet all four of the following factors:

1. Purpose of the use is for nonprofit educational reasons
 2. The nature of the work and spontaneity
 3. Amount and substance of the work
 4. Financial impact on the market
- Additional information about Copyright can be found at the Copyright Office (<http://www.copyright.gov/>) and the Stanford Fair Use website (<http://fairuse.stanford.edu>). The University of Florida Library system has a website for students about plagiarism (<http://web.uflib.ufl.edu/msl/07b/studentplagiarism.html>).

Online Course Evaluations: Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. [Click here for guidance on how to give feedback in a professional and respectful manner](#). Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via ufl.bluera.com/ufl/. [Summaries of course evaluation results are available to students here](#).

Final Grade Determination The purpose of this course, as is all education, is to learn – not just to “work for a grade.” While all students should be capable of earning an A in the course, merely completing the work does not constitute A work. Instead, the final determination of a course grade relies primarily on the **quality** of work presented for the various assignments. Please note that to receive full credit, all work must be submitted on time.

Grading Scale Grade Percent A 93 – 100 A - 90 – 92 B+ 87 – 89 B 83 – 86 B - 80 – 82 C+ 77 – 79 C 73 – 76 C - 70 – 72 D+ 67 – 69 D 63 – 66 D - 60 – 62 E 0 - 59

****NOTE:** Any student who does not complete (i.e., for some reason takes a “0” on) even one assignment during the term will not be able to earn an “A” for the course, even if that individual accumulates the required points. An “A” student is not only a person who earns enough points but is one who shows consistent effort throughout the term.

Campus Resources

Health and Wellness

U Matter, We Care: If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or visit [U Matter, We Care website](#) to refer or report

a concern and a team member will reach out to the student in distress.

Counseling and Wellness Center: [Visit the Counseling and Wellness Center website](#) or call 352-392-1575 for information on crisis services as well as non-crisis services.

Student Health Care Center: Call 352-392-1161 for 24/7 information to help you find the care you need, or [visit the Student Health Care Center website](#).

University Police Department: [Visit UF Police Department website](#) or call 352-392-1111 (or 9-1-1 for emergencies).

UF Health Shands Emergency Room / Trauma Center: For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; [Visit the UF Health Emergency Room and Trauma Center website](#).

Academic Resources

E-learning technical support: Contact the [UF Computing Help Desk](#) at 352-392-4357 or via e-mail at helpdesk@ufl.edu.

Career Connections Center: Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.

Library Support: Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center: Broward Hall, 352-392-2010 or to make an appointment 352- 392-6420. General study skills and tutoring.

Writing Studio: 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.

Student Complaints On-Campus: [Visit the Student Honor Code and Student Conduct Code webpage for more information](#).

On-Line Students Complaints: [View the Distance Learning Student Complaint Process.](#)

In-Class Recording:

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor. A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session. Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

THE INSTRUCTOR RESERVES THE RIGHT TO CHANGE ANY PART OF THIS SYLLABUS DURING ANYTIME IN THE SEMESTER. STUDENTS WILL BE ADEQUATELY NOTIFIED WHENEVER CHANGES OCCUR.

Course Topics:

The topics for each week will be posted on the Canvas website. Below is a tentative schedule.

MAE 5347 – Fall 2022

Module	Dates	Topics	Reading	Assignments
1	8/30 - 9/12	Introduction/Syllabus NCTM and MAFS What does it mean to know and do math? What is problem solving and how does it relate to teaching mathematics?	-Read Chapter 1: Teaching Mathematics in the 21 st Century -Read Chapter 2: Exploring What it Means to Know and Do Mathematics	-Choice Menu 1 -Choice Menu 1 Discussion
2	9/13 - 9/26	Developing Early Number Concepts and Number Sense Materials Demo Color Tiles and/or Hundreds Chart	-Read Chapter 8: Developing Early Number Concepts and Number Sense -Read Chapter 9: Developing Basic Fact Fluency	-Choice Menu 2 -Choice Menu 2 Discussion
3	9/27 - 10/10	Developing Whole-Number Place-Value Concepts Materials Demo Cuisenaire Rods	-Read Chapter 10: Developing Whole-Number Place-Value Concepts	-Choice Menu 3 -Choice Menu 3 Discussion
4	10/10 - 10/24	Flexible Approaches to Whole Number Grouping Materials Demo Pattern Blocks	-Read Chapter 11: Developing Strategies for Addition and Subtraction Computation. -Read Chapter 12: Developing Strategies for Multiplication and Division Computation	-Choice Menu 4 -Choice Menu 4 Discussion
5	10/25 - 11/7	Fraction Concepts Materials Demo Rekenrek	-Read Chapter 14 – Developing Fraction Concepts	-Choice Menu 5 -Choice Menu 5 Discussion
6	11/8 - 11/28	Geometry and Algebraic Reasoning Materials Demo Geoboards	-Read Chapter 19: Geometric Thinking and Geometric Concepts -Read Chapter 13: Algebraic Thinking, Equations, and Functions	-Choice Menu 6 -Choice Menu 6 Discussion -Student Misconception Assignment
7	11/29 - 12/13	Data Analysis and Measurement Materials Demo Unifix	-Read Chapter 19: Developing Measurement Concepts -Read Chapter 20:	-Choice Menu 7 -Final paper due 12/13

		Cubes and/or Two-color counters	Developing Concepts of Data and Statistics	
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