



MAE 4353

Teaching Elementary School Mathematics III

89064 001

Fall 2026

Instructor Name

Sarah Trench

University Course Description

Students will develop mathematical content knowledge and mathematical pedagogical knowledge for teaching elementary students (K-6): measurement concepts, geometric thinking & reasoning concepts, concepts of data & statistics and probability. Students will learn how to develop integrated STEM (science, technology, engineering, and mathematics) lessons at the elementary (K-6) level.

Course Requisites

Prerequisite(s):

(MAE 4310 Minimum Grade: C)
and (MAE 4326 Minimum Grade: C)

Corequisite(s):

Course Format

This is an in-person, face-to-face course.

Student Learning Outcomes

In the content areas covered by this course (measurement, geometry, statistics,

probability), students will be able to:

- Select and Implement Cognitively Demanding Tasks that Promote Students' Reasoning and Problem-Solving
- Anticipate Students Errors and Misconceptions During Planning
- Make Connections between Multiple Representations
- Differentiate instruction
- Lead a Classroom Discussion
- Assess student learning in the content area
- Create an integrated STEM lesson

Course Objectives

- Describe the meaning and process of measuring.
- Explain the role of estimating before measuring.
- Demonstrate how to measure the length of objects.
- Explain the development of area formulas.
- Explain how volume is measured.
- Demonstrate strategies for comparing weights of objects.
- Explain strategies for teaching angle measurement.
- Describe the van Hiele levels of geometric thinking.
- Analyze strategies for teaching about shapes and properties.
- Identify approaches to teaching geometric transformations.
- Explore ways to engage students in thinking about location.
- Illustrate approaches that develop students' mental imagery and visualization skills.
- Explain differences between statistics and mathematics, including what is meant by "doing statistics."
- Engage students in designing meaningful statistical questions.
- Describe techniques for collecting data
- Identify meaningful ways for students to classify data
- Determine developmentally appropriate ways for students to analyze data.
- Illustrate and explain the meaning of measures of center and variability
- Describe the probability continuum, including examples from impossible to certain
- Contrast theoretical probability and experiments
- Describe various models of STEM integration.
- Integrate multiple STEM disciplines in lessons to support elementary student

learning.

Required Texts and/or Readings and Course Materials

Pearson E-Textbook Van de Walle, J., Karp, K., & Bay-Williams, J. (2020). *Elementary and Middle School Mathematics*. (11th Ed). Boston, MA: Allyn and Bacon

How to Succeed in this Course

For this course, students are expected to meet the following requirements:

- **Attend all class meetings.** Attending class is very important—it shows dedication to the teaching profession and is essential for you to master the content of this course. Punctuality, preparation and participation are all signs of professionalism. If an emergency arises please notify your instructor PRIOR to the start of class via email. Medical emergencies will be handled on an individual basis. Final grades can be lowered by 10% for each unexcused absence.
- **Prepare carefully for class.** Your input into the class discussion is important. Thus, you are expected to read all materials before class and participate during classroom activities and discussions.
- **Complete all assignments on time.** The due dates for assignments are specified in Canvas. DUE DATES ARE SUBJECT TO CHANGE AT DISCRETION OF INSTRUCTOR. ALL CHANGES IN DUE DATES WILL BE INDICATED ON CANVAS.
- **Absences.** Students should not attend class if they are ill, particularly if they have fever and/or gastrointestinal symptoms and/or respiratory symptoms such as a sneezing, runny nose, sore throat or coughing. Students experiencing any of these symptoms should contact Student Health Services immediately (813-974-2331) for appropriate medical guidance and to obtain a *verification of care letter*. ***To be approved for missed classes, late assignments or missed examinations a verification of care letter must be presented by the student to the faculty member upon return to class.***
- If you miss a class, it is your responsibility to secure from other students the information missed or material distributed **AND/OR** If you are absent on

a day when an assignment is due, the assignment must be submitted via Canvas and your instructor should be notified via email. THIS IS AN INTENSE, HANDS-ON CLASS. MORE THAN ONE UNEXCUSED ABSENCE WILL NEGATIVELY AFFECT YOUR GRADE- UP TO 10 PERCENTAGE POINTS FOR EACH ABSENCE. PLEASE COMMUNICATE ANY REASON FOR AN ABSENCE AT THE EARLIEST POSSIBLE OPPORTUNITY.

- **Interact professionally with classmates.** Students should demonstrate respectful standards of behavior during class activities and discussions. Students should also collaborate responsibly with colleagues in coursework.

Modifications to This Syllabus

I reserve the right to make changes in the readings, schedule of readings, assignments, and evaluation (grading) criteria. Changes in assignments may be warranted because of participants' interests, background knowledge etc.; these changes will be discussed with the class ahead of time.

Grading Scale

Grading Scale (%)	
90 – 100	A
80 – 89.5	B
70-79.5	C
60-69.5	D
Below 59.5	F

Grade Categories and Weights

Category	Points
Daily Quizzes (1 x 10), Understanding Check 1 (10) & Check 2 (10)	30
Integrated STEM Lesson	10
Application Assignments (2 x 10)	20

Category	Points
Story of My Professional Learning	15
Exam	25
TOTAL	100

Major Topics and Course Schedule

Week	Topic
1	Introduction to the Course Building the Math Community for all Learners Teaching through Problem Solving- Review of Ch17: Ratios, Proportions, and Proportional Reasoning
2	Research to Practice Workshop Chapter 18: Developing Measuring Concepts
3	What is STEM? What does it mean to integrate STEM Disciplines?
4	Chapter 18: Developing Measuring Concepts APPLICATION: Questioning & Assessment
5	Chapter 18: Developing Measuring Concepts
6	Continue Chapter 19: Developing Geometric Thinking and Geometric Concepts
7	Continue Chapter 19: Developing Geometric Thinking and Geometric Concepts

Week	Topic
8	Continue Chapter 19: <i>Developing Geometric Thinking and Geometric Concepts</i>
9	APPLICATION: Differentiation STEM reflections & your future STEM classroom
10	Chapter 20: Developing Concepts of Data & Statistics
11	Chapter 20: Developing Concepts of Data & Statistics
12	Chapter 21: Exploring Concepts of Probability
13	Exam
14	Story of My Professional Learning- DUE DATE
15	Story of My Professional Learning- Celebration

USF Core Syllabus Policies

USF has a set of central policies related to student recording class sessions, academic integrity and grievances, student accessibility services, academic disruption, religious observances, academic continuity, food insecurity, pregnancy and related conditions, and sexual harassment that **apply to all courses at USF**. Be sure to review these online:

<https://www.usf.edu/provost/faculty-success/resources-policies-forms/core-syllabus-policy-statements.aspx>

Student Recordings

Florida Statute 1004.097 Free Expression on Campus

Students may, without prior notice, record video or audio of a class lecture for a class in which the student is enrolled for their own personal, educational use (USF Policy 10-048). A class lecture is defined as a formal or methodical oral presentation as part of a university course intended to present information or teach enrolled students about a particular subject. Recording class activities other than class lectures, including but not limited to lab sessions, student presentations (whether individually or part of a group), class discussion, clinical presentations such as patient history, academic exercises involving student participation, test or examination administrations, field trips, private conversations between students in the class or between a student and the faculty member is prohibited. Recordings may not be used as a substitute for class participation and class attendance and may not be published or shared without the written consent of the faculty member. Failure to adhere to these requirements may constitute a violation of the USF Student Conduct Code.

Course Policies: Grades

Course Policies

Late Work:

As this course is intended to support the continuous development of professional learning, timely submission of assignments is a requirement to demonstrate conceptual understanding and generation of teacher knowledge over time. As such, all late assignments can lose 5% of the total score each day. Any assignment that is turned in after seven days might not receive credit (at discretion of instructor and depending upon reason for late work). ***Please note that late assignments reduce your opportunity for revisions and hinder my ability to provide effective feedback.

Modifications to This Syllabus: I reserve the right to make changes in the readings, schedule of readings, assignments, and evaluation (grading) criteria. Changes to due dates or grading criteria will be posted on Canvas.

Grades of "Incomplete"

The current university policy concerning incomplete grades will be followed in this course. For undergraduate courses: An "I" grade may be awarded to a student only when a small portion of the student's work is incomplete and only when the student is otherwise earning a passing grade. The time limit for removing the "I" is to be set by the instructor of the course. For undergraduate students, this time limit may not exceed two academic semesters, whether or not the student is in residence, and/or graduation, whichever comes first. For graduate students, this time limit may not exceed one academic semester. "I" grades not removed by the end of the time limit will be changed to "IF" or "IU," whichever is appropriate.

Campus Free Expression

It is fundamental to the University of South Florida's mission to support an environment where divergent ideas, theories, and philosophies can be openly exchanged and critically evaluated. Consistent with these principles, this course may involve discussion of ideas that you find uncomfortable, disagreeable, or even offensive.

In the instructional setting, ideas are intended to be presented in an objective manner and not as an endorsement of what you should personally believe. "Objective" means that the idea(s) presented can be tested by critical peer review and rigorous debate, and that the idea(s) is supported by credible research.

In this course you may be asked to engage with complex ideas and to demonstrate an understanding of the ideas. Understanding and engaging with an idea does not require you to believe it or to agree with it.

Course Policies: Technology and Media

Email: Please use course instructor email as a primary form of professional communication (outside of class). Please be advised that all communication is expected to be conveyed in professional form. I generally respond to emails within 48 hours.

Canvas: This course will be offered via USF's learning management system (LMS), Canvas. If you need help learning how to perform various tasks related to this course or other courses being offered in Canvas, please view

the following videos or consult the Canvas help guides. You may also contact USF's IT department at (813) 974-1222 or help@usf.edu.

Laptop Usage: Generally, laptops may be utilized during class sessions as a tool for classroom instructional enhancement. However, it is expected that laptops screens are down when engaging in class discussion and activities.

Phone Usage: It is expected that phones are not used during class session for making calls, texting, or posting on social media. Phone usage during class is limited to educational purposes (e.g., class polling apps or virtual manipulatives).

TEAMS/Canvas Recordings: In this class, software may be used to record live class lectures and discussions. As a student in this class, your participation in live class discussions may be recorded. These recordings will be made available only to students enrolled in the class, to assist those who cannot attend the live session or to serve as a resource for those who would like to review content that was presented. Students who prefer to participate via audio only will be allowed to disable their video camera so only audio will be captured. Please discuss this option with your instructor.

Course Policies: Student Expectations

Health and Wellness

Your health is a priority at the University of South Florida. We encourage members of our community to look out for each other and to reach out for help if someone is in need. If you or someone you know is in distress, please make a referral at www.usf.edu/sos so that the Student Outreach & Support can contact and provide helpful resources to the student in distress. A 24-hour licensed mental healthcare professional, offered through the counseling center, is available by phone at 813-974-2831, option 3. Please remember that asking for help is a sign of strength. In case of emergency, please dial 9-1-1.

Title IX Policy

USF is committed to fostering a safe and respectful learning environment, free from sex discrimination and sexual harassment, in accordance with Title IX and USF Policy 0-004. If a student shares an experience of sexual harassment, sexual assault, stalking, or relationship violence with a USF employee (including

faculty), that employee will notify the Title IX Office. This allows the Title IX Office to send the student an email with information about support resources and options—if it is safe to do so. Students are not required to respond to this email. The Title IX Office is a private resource. Information is shared only on a need-to-know basis to provide students with support measures. To speak to a confidential resource, students may contact USF Center for Victim Advocacy at 813-974-5757. Confidential resources do not notify the Title IX Office unless the student requests it. For more information about Title IX, available resources, or to make a report, please visit www.usf.edu/title-ix.

Course Hero / Chegg Policy

The USF Policy on Academic Integrity specifies that students may not use websites that enable cheating, such as by uploading or downloading material for this purpose. This does apply specifically to Chegg.com and CourseHero.com – almost any use of these websites (including uploading proprietary materials) constitutes a violation of the academic integrity policy.

Professionalism Policy

Per university policy and classroom etiquette; mobile phones, iPods, etc. must be silenced during all classroom and lab lectures. Those not heeding this rule will be asked to leave the classroom/lab immediately so as to not disrupt the learning environment. Please arrive on time for all class meetings. Students who habitually disturb the class by talking, arriving late, etc., and have been warned may suffer a reduction in their final class grade.

Turnitin.com

In this course, turnitin.com may be utilized. Turnitin is an automated system which instructors may use to quickly and easily compare each student's assignment with billions of web sites, as well as an enormous database of student papers that grows with each submission. Accordingly, you may be expected to submit all assignments in both hard copy and electronic format. After the assignment is processed, as instructor I receive a report from turnitin.com that states if and how another author's work was used in the

assignment. For a more detailed look at this process visit <http://www.turnitin.com>.

Netiquette Guidelines

- Act professionally in the way you communicate. Treat your instructors and peers with respect, the same way you would do in a face-to-face environment. Respect other people's ideas and be constructive when explaining your views about points you may not agree with.
- Be sensitive. Be respectful and sensitive when sharing your ideas and opinions. There will be people in your class with different linguistic backgrounds, political and religious beliefs or other general differences.
- Proofread and check spelling. Doing this before sending an email or posting a thread on a discussion board will allow you to make sure your message is clear and thoughtful. Avoid the use of all capital letters, it can be perceived as if you are shouting, and it is more difficult to read.
- Keep your communications focused and stay on topic. Complete your ideas before changing the subject. By keeping the message on focus you allow the readers to easily get your idea or answers they are looking for.
- Be clear with your message. Avoid using humor or sarcasm. Since people can't see your expressions or hear your tone of voice, meaning can be misinterpreted.

Email and Discussion Board Guidelines

- Use the subject line effectively by using a meaningful line of what your email or discussion is about.
- Keep your emails and postings related to the course content. You should not post anything personal on a discussion board unless it is requested by the instructor.
- Any personal, course or confidential issues should be directly communicated to the instructor via email. The discussion boards are public spaces; therefore, any issues should not be posted there.

End of Semester Student Evaluations

All classes at USF make use of an online system for students to provide feedback to the University regarding the course. These surveys will be made available at the end of the semester, and the University will notify you by email when the response window opens. Your participation is highly encouraged and valued.

Food and Drink Policy (for in-campus sessions only).

Please adhere to the firm policy of no beverages (other than bottled/capped water), food, tobacco products, or like items in the classroom. Your understanding of the necessity for this policy and cooperation will be greatly appreciated. This policy will be strictly enforced.

Learning Support and Campus Offices

Academic Accommodations

Students with disabilities are responsible for registering with Student Accessibility Services (SAS) in order to receive academic accommodations. For additional information about academic accommodations and resources, you can visit the SAS website.

[SAS website for the Tampa campus and Sarasota-Manatee Teachout site.](#)

[SAS website for the St. Pete campus.](#)

Academic Support Services

The USF Office of Student Success coordinates and promotes university-wide efforts to enhance undergraduate and graduate student success. For a comprehensive list of academic support services available to all USF students, please visit the [Office of Student Success website.](#)

Canvas Technical Support

If you have technical difficulties in Canvas, you can find access to the Canvas guides and video resources in the “Canvas Help” page on the homepage of your Canvas course. You can also contact the help desk by calling 813-974-1222 in Tampa or emailing help@usf.edu.

[USF IT Services](#)

Center for Victim Advocacy

The [Center for Victim Advocacy](#) empowers survivors of crime, violence, or abuse by promoting the restoration of decision making, by advocating for their rights, and by offering support and resources. Contact information is available online.

Counseling Center

The Counseling Center promotes the wellbeing of the campus community by providing culturally sensitive counseling, consultation, prevention, and training that enhances student academic and personal success. Contact information is available online.

[Counseling Center website for the Tampa campus and Sarasota-Manatee Teachout site.](#)

[Counseling Center website for the St. Pete campus.](#)

Tutoring

The Tutoring Hub offers free tutoring in several subjects to USF undergraduates. Appointments are recommended, but not required. For more information, email asctampa@usf.edu.

[Tutoring website for the Tampa campus and Sarasota-Manatee Teachout site.](#)

[Tutoring website for the St. Pete campus.](#)

Writing Studio

The Writing Studio is a free resource for USF undergraduate and graduate students. At the Writing Studio, a trained writing consultant will work individually with you, at any point in the writing process from brainstorming to editing. Appointments are recommended, but not required. For more information or to make an appointment, email: writingstudio@usf.edu.

[Writing studio website for the Tampa campus and Sarasota-Manatee Teachout Site.](#)

[Writing studio website for the St. Pete campus.](#)

Student Ombuds Office

Florida Statute 1006.51 and Florida Board of Governors Regulation 6.011 require that all public institutions provide ombuds services to students. The Student Ombuds Office at USF is a confidential, impartial, informal, and independent

resource for students experiencing challenges related to the university. Ombuds can help students safely explore options, clarify processes, and consider next steps. [Learn more or make an appointment at usf.edu/student-ombuds.](https://usf.edu/student-ombuds)