

COURSE SYLLABUS

Semester: Spring 2023
Class Meeting Days: Wednesday
Class Meeting Time: 5:00 – 7:45 pm
Class Meeting Location: EDU 314 (when face to face)
Online Class instruction link (<https://teams.microsoft.com/l/meetup-join/19%3anMDow7UOgcX4RJT54mOLAeM7yIGpjzQUGV-zVJU6RzM1%40thread.tacv2/1672671765658?context=%7b%22Tid%22%3a%22741bf7de-e2e5-46df-8d67-82607df9deaa%22%2c%22Oid%22%3a%22e38d4bab-7ce5-4368-8c8d-17a6b48fce66%22%7d>)
Instructor: Dr. Ruthmae Sears
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- I. **Welcome!**
Welcome to MAE 4330 – Teaching Senior High School Mathematics!
- II. **University Course Description**
The course is designed to prepare the student for a successful internship experience as well as an induction to teaching mathematics in the high schools of today. The experiences help bridge the perceived gap between theory and practice.
- III. **Course Prerequisites**
Admission to Mathematics Education Program or Curriculum and Instruction.
- IV. **Course Purpose**
This course is a core course for students pursuing a degree in secondary mathematics education. It is design to develop preservice teachers technological pedagogical content knowledge, thereby increasing the likelihood they can deliver high-quality, rigorous mathematics instruction that is equitable in nature.

V. How to Succeed in this Course

Good time management is critical to your success in the course. The class does have a heavy reading load, although the readings are not particularly dense. It is essential that you have read the assigned readings for the week and are prepared to discuss those readings during class. There may be some weeks when specific individuals will be responsible for leading the class discussion. Hence, you must plan ahead!

I know that in addition to your responsibilities for this class, you are all incredibly busy and productive in a multitude of other life roles. It is my sincere hope that you will read this syllabus carefully and ensure that you are willing to devote the time and energy needed to have a successful and enjoyable experience in this course. Most people who do not succeed in this course are unwilling and/or unable to devote the necessary time to this course. The “necessary time” depends on prior knowledge, the grade you would like to earn, and the effort taken to complete the assigned tasks.

Professional Disposition & Responsibilities

Disposition

According to the COE, it is important that students demonstrate the disposition necessary of a professional in this field. Disposition, according to Webster’s dictionary, is defined as a prevailing tendency, mood, or inclination. As such, an educator’s professional disposition includes, but is not limited to: self-sufficiency, intellectual curiosity, reflective practice, and ongoing improvement. **Self-sufficiency** is the ability to work autonomously, communicate effectively, seek assistance and obtain additional information when needed, work within established timelines, and work effectively with peers. **Intellectual curiosity** refers to the acute awareness that learning does not simply occur within the classroom walls and that it may necessitate extra effort to obtain the intended knowledge. **Reflective practice** “describes a process of problem solving, reconstruction of meaning and subsequent reflective judgments while persons are engaged in significant new activity” (Reiman, 1999, p. 598). As such, reflection refers to the ability to consider experiences (e.g. new ways of teaching a topic) and its influence on your own understanding, the understanding of the students you will teach, or potential teaching practices. By reflecting on experiences, teacher or those who aim to become teachers

demonstrate a capacity (or disposition) to analyze the process of what they are doing, and to reconstruct their professional and personal knowledge schemes, while simultaneously making judgments to adapt their practice so that it best matches the needs of students. Theoretically, it connotes conceptually complex, ethical, caring, and flexible persons who consider alternative viewpoints (Reiman, 1999, p. 598).

Ongoing improvement refers to the recognition that current states, strategies, practices, or lines of thinking may not be the most appropriate or effective and the willingness to attempt things differently if an appropriate rationale surfaces.

[Reiman, A. J. (1999). The evolution of the social roletaking and guided reflection framework in teacher education: Recent theory and quantitative synthesis of the research. *Teaching and Teacher Education*, 15, 597-612.]

Responsibilities of teachers of mathematics

The items listed below represents a small fraction of the things mathematics teachers must do in the course of their work:

- 1.Design mathematically accurate explanations that are comprehensive and useful to students;
- 2.Use mathematically appropriate and comprehensible definitions;
- 3.Represent ideas carefully, mapping between a physical or graphical model, and symbolic notation, and the operation or process.
- 4.Interpret and make mathematical and pedagogical judgments about students' questions, solutions, problems and insights (both predictable and unusual);
- 5.Be able to respond productively to students' mathematical questions and curiosities;
- 6.Make judgments about the mathematical quality of instructional materials and modify as necessary;
- 7.Be able to pose good mathematical questions and problems that are productive for student's learning;
- 8.Assess students' mathematics learning and take next steps.

[Source: Ball (2003) Mathematics in the 21st Century: What mathematical knowledge is needed for teaching mathematics. <http://www.ed.gov/inits/mathscience/ball.html>]

Students are expected to demonstrate behavior consistent with a professional career. An individual's temperament, aptitudes, beliefs, values, etc. should be exemplary for teacher candidates who are pursuing a teacher education program. Failure to demonstrate such conduct will impact a student's grade as noted in the course syllabus. In particular, students must:

- Attend all class meeting. You are expected to be present at the beginning and conclusion of this class. Individuals' attendance, punctuality and engagement should be consistently eminent.
- Prepare carefully for class. Your ability to contribute to your own and your peers' understanding is dependent on your level of preparation. Therefore, you must be thoroughly prepared for each class.
- Complete and submit all assignments on time. You should demonstrate an ability to complete work autonomously, effectively utilize feedback, and follow directions. All assignment should be completed on time (before the specified due date and time). See assignment policy above. Students should maintain a file of all graded assignments until after receiving an official grade notification from the registrar.
- Collaborate responsibly with colleagues in coursework. Thoughtful participation, capacity to objectively reflect on one's disposition and behaviors, and demonstration of civility, diplomacy and sensitivity towards others should be evident.
- Engage in all course activities and discussions.
- Individuals should exhibit a positive response to feedback.
- Exhibit an aptitude to objectively consider new ideas.
- Interact professionally with classmates. Be respectful in conversation, behavior, and written correspondence to all parties. Students must demonstrate respectful standards of behavior during class discussion. *Please turn off all cellular phones, or place them in a non-ringing mode.*

- Students are expected to conduct themselves as professionals by positively influencing the classroom environment. Students who come late, leave early, or are absent, rarely contribute ideas, appear to be participating in discussions extraneous to the class, are observed to be doing work not related to the class, are disruptive, or inattentive, or passive are not behaving professionally.
- Students are expected to support all claims made in written and oral communications by relevant mathematics education literature.

NCTM (2014) Effective Mathematics Teaching Practices

As teachers of mathematics you are expected to exhibit the professional standards of the discipline. During your mathematical instruction, you are encouraged to exhibit the NCTM (2014) effective mathematics teaching practices. The practices are as follow:

- **Establish mathematics goals to focus learning.** Effective teaching of mathematics establishes clear goals for the mathematics that students are learning, situates goals within learning progressions, and uses the goals to guide instructional decisions.
- **Implement tasks that promote reasoning and problem solving.** Effective teaching of mathematics engages students in solving and discussing tasks that promote mathematical reasoning and problem solving and allow multiple entry points and varied solution strategies.
- **Use and connect mathematical representations.** Effective teaching of mathematics engages students in making connections among mathematical representations to deepen understanding of mathematics concepts and procedures and as tools for problem solving.
- **Facilitate meaningful mathematical discourse.** Effective teaching of mathematics facilitates discourse among students to build shared understanding of mathematical ideas by analyzing and comparing student approaches and arguments.
- **Pose purposeful questions.** Effective teaching of mathematics uses purposeful questions to assess and advance students' reasoning and sense making about important mathematical ideas and relationships.
- **Build procedural fluency from conceptual understanding.** Effective teaching of mathematics builds fluency with procedures on a foundation of conceptual understanding so that students, over time, become skillful in using procedures flexibly as they solve contextual and mathematical problems
- **Support productive struggle in learning mathematics.** Effective teaching of mathematics consistently provides students, individually and collectively, with opportunities and supports to engage in productive struggle as they grapple with mathematical ideas and relationships.
- **Elicit and use evidence of student thinking.** Effective teaching of mathematics uses evidence of student thinking to assess progress toward mathematical understanding and to adjust instruction continually in ways that support and extend learning.
<http://www.nctm.org/Conferences-and-Professional-Development/Principles-to-Actions-Toolkit/Resources/7-EffectiveMathematicsTeachingPractices/>

Computational Thinking Practices and Disposition (Perez, 2018, p. 428)

- *Computational Thinking Practices*

Problem Solving

Assessing and pursuing different approaches and solutions to a problem

Generalizing and transferring problem solving processes to other situations
 Using incremental and iterative approaches; decomposing tasks into smaller pieces
 Reusing, remixing, and innovating
 Efficient and effective combinations of resources; testing and debugging
 Formulating problems so that they can be analyzed using programs and other tools

Abstraction & Generalization

Collecting, organizing, manipulating, and representing data
 Abstracting the essential elements of a situation or task
 Thinking in levels and understanding relationships within a system
 Choosing effective tools and models for working with data
 Developing algorithms and automations
 Designing and using computational models and simulations

- ***Computational Thinking Disposition***

Confidence in dealing with complexity
 Persistence in working with difficult problems
 Tolerance for ambiguity
 The ability to deal with open-ended problems
 The ability to communicate and work with others to achieve a common goal or solution

Reference: Pérez, A. (2018). A framework for computational thinking dispositions in mathematics education. *Journal for Research in Mathematics Education*, 49(4), 424-461.

AMTE (2017) Standards for Well Prepared Teachers of Mathematics (https://amte.net/sites/amte.net/files/SPTM_ExecSummary.pdf)

STANDARDS FOR WELL-PREPARED BEGINNING TEACHERS OF MATHEMATICS	
C.1 MATHEMATICS CONCEPTS, PRACTICES, AND CURRICULUM	Well-prepared beginning teachers of mathematics possess robust knowledge of mathematical and statistical concepts that underlie what they encounter in teaching. They engage in appropriate mathematical and statistical practices and support their students in doing the same. They can read, analyze, and discuss curriculum, assessment, and standards documents as well as students' mathematical productions.
C.2 PEDAGOGICAL KNOWLEDGE AND PRACTICES FOR TEACHING MATHEMATICS	Well-prepared beginning teachers of mathematics have foundations of pedagogical knowledge, effective and equitable mathematics teaching practices, and positive and productive dispositions toward teaching mathematics to support students' sense making, understanding, and reasoning.
C.3 STUDENTS AS LEARNERS OF MATHEMATICS	Well-prepared beginning teachers of mathematics have foundational understandings of students' mathematical knowledge, skills, and dispositions. They know how these understandings can contribute to effective teaching and are committed to expanding and deepening their knowledge of students as learners of mathematics.
C.4 SOCIAL CONTEXTS OF MATHEMATICS TEACHING AND LEARNING	Well-prepared beginning teachers of mathematics realize that the social, historical, and institutional contexts of mathematics affect teaching and learning and know about and are committed to their critical roles as advocates for each and every student.

VI. Course Topics

As a competent mathematics teacher candidate you must accept the challenge to effectively teach all students assigned to your classes, and be knowledgeable of mathematical content, mathematics education research and pedagogy. As a result of your active participation in this class you will be able to:

1. Explain how a school's mathematics curriculum plan fits the overall view of curriculum and how it aligns with national, state and local standards;
2. Plan for teaching a mathematics course on a long range (year), medium range (unit), and short range (lesson) basis.
3. Assess student progress and assign grades to students in a fair manner;
4. Identify and implement effective instructional strategies that are appropriate for a given task;
5. Incorporate both problem solving and the use of technology in classroom teaching;
6. Work with students of various mathematical abilities, increasing their skills and improving their attitudes towards mathematics and its usefulness in daily life;
7. Explain a professional teacher's varying relationships with administrators, parents, students and other teachers;
8. Explain a teacher's responsibilities for professional growth and development;
9. Initiate an ongoing effort to collect materials for classroom use that; promote problem solving, reflect the contributions of people from diverse backgrounds to the field of mathematics, and provide for appropriate uses of technology – especially graphing calculators and computers.
10. Relate actual, observed classroom life to information covered in other university courses about teaching.
11. Effectively use mathematics education research literature to influence instructional decision making and practices.

VII. Student Learning Outcomes

By the end of this course, students will be able to:

- a. Design lesson plans and unit plans suitable for high school mathematics
- b. Develop a portfolio to demonstrate proficiency in the mathematical knowledge needed for teaching.
- c. Bridge educational research to instructional practice
- d. Integrate technology into the teaching and learning of mathematics
- e. Demonstrate competency in secondary mathematics content

VIII. Required Texts and/or Readings and Course Materials

Sultan, A., & Artzt, A. F. (2010). *The mathematics that every secondary school math teacher needs to know*. New York: Routledge

IX. Supplementary Texts and Materials

Supplementary readings will be accessible via the University of South Florida Library Presto course reserve services, and/ or on Canvas.

Recommended resources:

- Journals (e.g. Mathematics Teacher: Learning and Teaching PK-12, School Science and Mathematics, Journal for Research in Mathematics Education).
 - Florida B.E.S.T Standards for Mathematics
- Various middle school mathematics texts

X. Grading Scale

The university's plus/minus system of grading will be used

Grading Scale (%)	
94-100	A
90 – 93	A-
87 – 89	B+
84 – 86	B
80 – 83	B-
77 – 79	C+
74 – 76	C
70 – 73	C-
67 – 69	D+
64 – 66	D
60 – 63	D-
0 – 59	F

A Outstanding Performance

The student demonstrates solid conceptual understanding and insight as evidenced by participation during in-class discussions and activities. The student shows mastery of the course content and is able to make extensions or apply that knowledge to new situations. Assignments/papers/projects are of excellent quality. The student contributes substantially to class and shows strong development toward becoming a mathematics teacher.

B Good Performance

The student demonstrates good mastery of the course content and is able to make some extensions or apply some of the knowledge to new situations as evidenced by participation during in-class discussions and activities. Assignments/papers/projects are of good quality but are not exceptional. The student contributes to class discussions. The student shows good development toward becoming a mathematics teacher.

C Adequate Performance

The student demonstrates adequate understanding and mastery of the course content but has difficulty extending or applying the knowledge to new situations as evidenced by in-class discussion and activities. Assignments/papers/projects are acceptable. The student

shows acceptable development toward becoming a mathematics teacher.

D Below Average Performance

The student demonstrates unacceptable understanding and mastery of the course content. Assignments/papers/projects are inadequate. The student shows poor development toward becoming a mathematics teacher.

F Unacceptable Performance

The student demonstrates poor performance of the course content. Some assignments are not completed, are often late, or are of poor quality. The student does not contribute to class discussions. The student lacks development toward becoming a mathematics teacher

XI. Grade Categories and Weights

Students' achievement of course goals and objectives are based on the following assessments.

Assessment	Points allocated	Percentage of Final Grade**	Tentative Due / Scheduled Date
Unit Plan	100	20%	February 22, 2023
Using co-planning and co-teaching to facilitate equitable learning opportunities and teaching mathematics for social justice (CLASSROOM OBSERVATIONS- minimum of 25 hours)	75	15%	8 March, 2023
Portfolio	100	20%	April 26, 2023
Curriculum & Assessment Project	75	15%	April 5, 2023
Peer Teaching of High School Mathematics Content	75	15%	Ongoing throughout the semester – Individuals must be prepared to facilitate class discussions on their assigned date. No alternative time will be allocated ***
MyMathTest - Program ID: XL4B-G14D-501Z-50W2	50	10%	January 25, 2023
Attend the Mathematics Enrichment Meeting (ISA Building 7 th Floor- 8:30am-1:30pm	25	5%	February 4, 2023

XII. Description of Assignments

- **Unit Plan (INDIVIDUAL ASSIGNMENT)**

Considering that we live in a technological era, you will seek to integrate technology into a mathematics unit plan which seeks to develop high school students reasoning and sense making in mathematics. Therefore, you can choose a mathematical strand of your choice (algebra, functions, financial literacy, geometry, data analysis and probability, trigonometry, logic and theory strand, and calculus), and must skillfully seek to integrate technology throughout the unit. Be sure to provide a cover page, an overview of the unit, strategies to address diverse learners, unit objectives, outline of skills progression, technological tools utilized and relevant assessment instruments.

Furthermore, for each lesson, be sure to identify state

(<https://www.fldoe.org/core/fileparse.php/18736/urlt/StandardsMathematics.pdf>)

Standards for which the tasks aligns, objectives, tasks assigned, materials used, and a description of how each lesson will be enacted. Your lessons should reflect a deep understanding of how the task supports the technological pedagogical content knowledge specific to mathematics teaching and learning. Hence be sure to skillfully plan your lessons such that they are coherent, incorporate multiple instructional strategies, demonstrates mathematical knowledge needed for teaching, and knowledge of assessment.

- **Using Co-Planning and Co-Teaching to Facilitate Equitable learning opportunities and teaching mathematics for social justice(INDIVIDUAL ASSIGNMENT)**

For this assignment, you will be required to watch training videos relative to co-planning and co-teaching and observe mathematical instruction for a minimum of 25 hours.

Subsequently, you are to submit a report which includes the following:

- a) Provides a reflective summary of the online training of co-planning and co-teaching
- b) Classroom observations reflection with log sheet. Be sure to reflect on the nature of mathematical instruction and student learning, and the extent it attends to equity and social justice in mathematics.
- c) One lesson plan that reflects teaching mathematics for social justice
- d) Video recording of the lesson focusing on teaching mathematics for social justice
- e) Written reflection about the lesson plan for teaching mathematics for social justice video recording and/or enacted lesson.

- **Portfolio (INDIVIDUAL OR GROUP ASSIGNMENT)**

A portfolio should document your growth and improvement as a professional within the discipline of mathematics education. Hence, in your portfolio, you will document your growth as a pre-service mathematics education teacher. Although, required artifacts will be explicitly stated below, feel free to include self-generated or self-selected artifacts, since the portfolio ought to be beneficial to you beyond the scopes of this course.

For this assignment, you can choose to work in a group (Not more than 4) if you desire; however, the ultimate goal is to ensure that you demonstrate self-sufficiency, intellectual curiosity, and reflective practice. If you choose to work in a group, all members are required to complete the following artifacts individually: Introduction of the author, Statement of belief/ Philosophy in Education, and Self-assessment of professional portfolio.

Required artifacts for the portfolio:

- i. **Introduction of the author (s) - Describe who you are, your academic background, your inspiration for wanting to become a mathematics teacher, strengths and weakness, challenges you overcame to pursue your goals, and plan for professional growth, etc. Be sure to include a recent résumé. (each author)**
 - ii. Discuss the Florida B. E..S.T (2020) Mathematical Thinking and Reasoning Standards
 - iii. Discuss the Florida B.E.S.T (2020) Algebra 1 and Algebraic Reasoning standards. Subsequently, identify strategies that can be used to teach algebra effectively, based on relevant mathematics education research literature.
 - iv. Discuss the Florida B.E.S.T (2020) Geometry for grades 9-12 and geometric reasoning standards. Subsequently, identify strategies that can be used to teach geometry effectively, based on relevant mathematics education research literature.
 - v. Discuss the Florida B.E.S.T (2020) grades 9-12 data analysis and probability strand. Subsequently, identify strategies that can be used to teach statistics and probability effectively, based on relevant mathematics education research literature.
 - vi. Lesson Plans - Be sure to include at least 1 geometry lesson plan, 1 algebra lesson plans, and 1 probability and statistics lesson plan.
 - vii. The importance of assessment in school mathematics - Discuss the role assessment plays in school mathematics, and how assessment can be used to facilitate to students learning.
 - viii. Sample assessments for algebra, geometry and probability and statistics, with related rubric.
 - ix. Integration of technology – Describe a technological tool that can be integrated into a senior high mathematics classroom. Additionally, be sure to include a lesson plan, which seeks to integrate the tool into the mathematics lesson.
 - x. Motivation and Classroom Management Strategies.
 - xi. **Statement of belief/ philosophy in education (e.g. views about learning, and views about teaching that you adhere to, etc) (each author)**
 - xii. **Reflection of how teachers can teach mathematics for social justice (each author)**
 - xiii. A lesson plan for teaching mathematics for social justice
 - xiv. Commitment to equity and diversity - Discuss your commitment to equity and diversity and strategies that can be utilized to promote equity and diversity within the classroom setting.
 - xv. Video recording/ link – illustrating good high school mathematics teaching - Be sure to describe the clip in detail, and what about it that makes it good teaching.
 - xvi. At least 2 ideas for games that can be used in a classroom-learning center.
 - xvii. **Completion of students' self-assessment for professional portfolio (each author)**
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- **Peer Teaching of High School Mathematics Content (TWO- THREE STUDENTS ASSIGNMENT)**

Individuals will collaborate and co-teach a mathematics lesson by attending to specified mathematical content within the course textbook. Based on the instruction the class should be able to complete at least one of the student learning opportunities within the given section. As the co-teachers, you should creatively seek to enhance your colleagues understanding of the assigned chapter while modeling teaching of high school mathematics, which reflects the NCTM (2014) effective mathematics teaching practices. You will be evaluated on the extent the information is presented in a logical and interesting sequence, the quality of content shared and questions posed, the extent it aligns with the chapter, and the overall professionalism exhibited. An outline of the nature of the facilitation should be provided to the instructor prior to the start of the class.

- **Curriculum & Assessment Project**

Students will evaluate an open educational resource for mathematics curriculum (<https://irsc.libguides.com/mathematics/OER>), a reform curriculum, or a traditional mathematics curriculum. A summary of notable characteristics of the curriculum and an evaluation of curriculum assessment is provided (National Research Council, 2004, On Evaluating Curricular Effectiveness: Judging the Quality of K-12 Mathematics Evaluations. Washington, DC: The National Academies Press. <https://doi.org/10.17226/11025>) In evaluating the curriculum effectiveness consideration ought to be given to implementation component variables (be it professional development support, length of activities, types of formative and summative assessments) utilized.

Additionally, students will create a module in CANVAS based on the curriculum utilized, and will create two assignments that aligns with the module. The students will provide a clear and comprehensive analysis of the test, an appropriate rubric, and identify how they aligns with the Standards for Mathematical Practice. The students also draw on knowledge and skills learned in professional development or other educational resources to make determination about the assessment utilized. They will also acknowledge modifications that could be made to accommodate the needs of diverse learners, and to promote equitable learning outcomes.

MyMathTest - Program ID: XL4B-G14D-501Z-50W2

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You will be allowed a maximum of three attempts to take the MyMathTest (**Program XL4B-G14D-501Z-50W2**), for which the higher score will be used for your grade. Additionally, you will write reflectively about your experience of taking the MyMathTest, by addressing the following questions:

- i. How prepared were you to take the exam that covered mathematical content for grades 6-12?
- ii. Which topics did you get right? Why do you believe you got those questions right?
- iii. Which topics did you get wrong or struggled with? Why do you believe you got those questions wrong or struggled with those particular topics?
- iv. Describe what you did to correct what you had wrong?
- v. To what extent does this test capture your mathematical knowledge for secondary mathematics? Explain.

- vi. To what extent does the MyMathTest, influence your perceptions of your mathematical knowledge needed for teaching?
- vii. Discuss what you learned from writing the MyMathTest?
- viii. Did this test let you show what you know? To what extent does the test capture your ability to reason mathematically?
- ix. In your opinion, to what extent did the test assess the Florida B.E.S.T Mathematics Thinking and Reasoning Standards (2020) ? Explain.
- x. What mathematical knowledge do teachers need to be successful in secondary mathematics? Explain
- xi. What can be done to enhance preservice teachers mathematical content knowledge?
- xii. If you wrote the state certification exam, please state if you passed it, and how much attempts were needed for you to pass the mathematics section of the exam.

XIII. Grade Dissemination

Graded assignments for this course will be returned via correspondence in CANVAS. You can access your scores at any time using "Grades" in Canvas.

XIV. Course Schedule

This outline represents my current thinking. We may need to adjust the syllabus as the course proceeds depending on the interests and needs of students. The table list readings that we will all do.

Dates	Topics	Supplementary Readings	Assignment Due
11 January, 2023 VIRTUAL	The Challenge of Teaching And Computational Thinking	Fey, J., Garfunkel, S., Briars, D., Isaacs, A., Pollak, H., Robinson, E., ... & Usiskin, Z. (2014). The future of high school mathematics. <i>Mathematics Teacher</i> , 107(7), 488-490. Milou, E., & Leinwand, S. (2022). The Case for High School Math Pathways. <i>Mathematics Teacher: Learning and Teaching PK-12</i> , 115(12), e1-e4. Shute, V. J., Sun, C., & Asbell-Clarke, J. (2017). Demystifying computational thinking. <i>Educational Research Review</i> , 22, 142-158.	
18 January, 2023	Differentiated Instruction	Frank, K. (2021). The structure of the quadratic formula. <i>Mathematics Teacher: Learning and Teaching PK-12</i> , 114(5), 395-398. Lambert, R. (2021). The Magic Is in the Margins: UDL	

	The quadratic formula (p.90-93)	Math. <i>Mathematics Teacher: Learning and Teaching PK-12</i>, 114(9), 660-669. Little, C. A., Hauser, S., & Corbishley, J. (2022). Constructing Complexity for Differentiated Learning. <i>Mathematics Teacher: Learning and Teaching PK-12</i>, 115(4), 320-321. Lynch, S. D., Hunt, J. H., & Lewis, K. E. (2018). Productive struggle for all: Differentiated instruction. <i>Mathematics Teaching in the Middle School</i>, 23(4), 194-201. Meagher, M. S., Edwards, M. T., & Özgün-Koca, S. A. (2021). A Quadratic to a Quadratic? This Is New!. <i>Mathematics Teacher: Learning and Teaching PK-12</i>, 114(11), 860-868. Sears, R., Bay-Williams, J., Willingham, J. C., & Cullen, A. (2022). Symbiosis: Social and Emotional Learning & Mathematics Learning. <i>Mathematics Teacher: Learning and Teaching PK-12</i>, 115(11), 770-780.	
25 January, 2023	Short Range Planning Area of triangles and quadrilaterals (p.113-125)	Bostic, J. D., Vostal, B., & Folger, T. (2021). Growing TTULPs through your lessons. <i>Mathematics Teacher: Learning and Teaching PK-12</i>, 114(7), 498-507. Eskelson, S. L., Townsend, B. E., & Hughes, E. K. (2021). Maximizing Area and Perimeter Problems. <i>Mathematics Teacher: Learning and Teaching PK-12</i>, 114(1), 41-46. Livers, S. D., & Bennett, V. M. (2021). Planning Pitfalls: Considerations for Decision-Making. <i>Mathematics Teacher:</i>	MyMathTest: Program XL4B-G14D-501Z-50W2

		<i>Learning and Teaching PK-12, 114(4), 306-311.</i> Ortiz, N. A., & Davis, T. J. (2020). Gladys's Lesson Plan: A Culturally Relevant Exemplar. <i>Mathematics Teacher: Learning and Teaching PK-12, 113(8), 651-657.</i> Peterson, B. (2022). Area of a Changing Triangle: Piecing It Together. <i>Mathematics Teacher: Learning and Teaching PK-12, 115(3), 211-219.</i>	
1 February, 2023	Long Range Planning and Unit Plans The circle - Area of the circle (p.125-123)	Baker, K., Morrison, S. A., & Perez, M. F. C. (2022). Five Core Routines for Teaching Mathematics Outside. <i>Mathematics Teacher: Learning and Teaching PK-12, 115(7), 476-482.</i> Coleman, L. K. (2020). Build a bridge: Provide access to grade-level content for all students. <i>Mathematics Teacher: Learning and Teaching PK-12, 113(7), 590-593.</i> Hallman-Thrasher, A., & Spangler, D. A. (2020). Purposeful questioning with high cognitive-demand tasks. <i>Mathematics Teacher: Learning and Teaching PK-12, 113(6), 446-459.</i> Roberts, S. A., de Araujo, Z., Willey, C., & Zahner, W. (2022). Three Ways to Enhance Tasks for Multilingual Learners. <i>Mathematics Teacher: Learning and Teaching PK-12, 115(7), 458-467.</i> Wasserman, N. H., Weber, K., Fukawa-Connelly, T., & Mejía-Ramos, J. P. (2020). Area-preserving transformations:	

		Cavalieri in 2D. <i>Mathematics Teacher: Learning and Teaching PK-12</i> , 113(1), 53-60.	
8 February, 2023	Teaching Mathematics for Social Justice	Aguirre, J. M., Anhalt, C. O., Cortez, R., Turner, E. E., & Simic-Muller, K. (2019). Engaging teachers in the powerful combination of mathematical modeling and social justice: The Flint water task. <i>Mathematics Teacher Educator</i>, 7(2), 7-26. Berry, R. Q., Conway, B. M., Lawler, B. R., & Staley, J. W. (2020). Lessons to explore, understand, and respond to social injustice. <i>Mathematics Teacher: Learning and Teaching PK-12</i>, 113(9), e34-e36. Izard, B. (2018). Teaching human rights through mathematics. <i>The Mathematics Teacher</i>, 112(2), 114-119. Lesser, L. M. (2022). Sound Off! Staring Down Stereotypes. <i>Mathematics Teacher: Learning and Teaching PK-12</i>, 115(12), 915-920.	
15 February, 2023	Using technology to enhance mathematics instruction Functions and modeling (Chapter 9- p. 397- 450)	Barlow, A. T., Edwards, C. M., Robichaux-Davis, R., & Sears, R. (2020). Enhancing and transforming virtual instruction. <i>Mathematics Teacher: Learning and Teaching PK-12</i>, 113(12), 972-982. Baldinger, E. E., Campbell, M. P., & Graif, F. (2020). Sorting out definitions. <i>Mathematics Teacher:</i>	

		<i>Learning and Teaching PK-12, 113(3), 209-215</i> Coleman, T. D., & Walkoe, J. D. (2020). Productive Technology Use in Mathematics Explorations. <i>Mathematics Teacher: Learning and Teaching PK-12, 113(11), 925-930.</i> Davis, J. D. (2021). Constructing and adapting technology-infused lessons. <i>Mathematics Teacher: Learning and Teaching PK-12, 114(4), 290-297.</i> Erickson, T. (2020). Modeling a Bouncing Ball with Exponential Functions and Infinite Series. <i>Mathematics Teacher: Learning and Teaching PK-12, 113(3), 233-236.</i>	
22 February, 2023 VIRTUAL	Reasoning and Proof Chapter 1-Intuition and Proof (p. 1-15)	Anderson, N. (2021). Keep calm and press for reasoning. <i>Mathematics Teacher: Learning and Teaching PK-12, 114(8), 591-597.</i> Candela, A. G., Boston, M. D., & Dixon, J. K. (2020). Discourse actions to promote student access. <i>Mathematics Teacher: Learning and Teaching PK-12, 113(4), 266-277.</i> Derrick, J., & Cavey, L. (2021). High School Students' Understanding of Proof. <i>Mathematics Teacher: Learning and Teaching PK-12, 114(3), 212-218.</i> Vinsonhaler, R., & Lynch, A. G. (2020). Students' Understanding of Counterexamples. <i>Mathematics Teacher: Learning and Teaching PK-12, 113(3), 223-228.</i>	Unit Plan
1 March 2023	Classroom Questioning The law of cosine and the law of sine	Fox, C., & DeJarnette, A. (2022). Trigonometry and the World Water Crisis. <i>Mathematics Teacher: Learning and Teaching PK-12, 115(3), 220-227.</i>	

	(p.159-175)	Harrow, C., & Merchant, N. (2020). Envelope curves unify sinusoidal graphing. <i>Mathematics Teacher: Learning and Teaching PK-12</i>, 113(4), 301-308. Just, A., & Cribbs, J. D. (2020). Focusing on Visual Representations in Mathematics. <i>Mathematics Teacher: Learning and Teaching PK-12</i>, 113(12), e100-e106. Rhodes, S. (2020). Eliciting Critical Thinking through Purposeful Questioning. <i>Mathematics Teacher: Learning and Teaching PK-12</i>, 113(11), e71-e77 Snider, R. B. (2021). Guiding questions for selecting mathematical examples. <i>Mathematics Teacher: Learning and Teaching PK-12</i>, 114(1), 63-68.	
8 March, 2023	Classroom Management and Strategies for Teaching more Effectively Geometric Transformation (Chapter 10, p. 451-481)	Kalinec-Craig, C., & Robles, R. A. (2020). Classroom rules reimaged as the rights of the learner. <i>Mathematics Teacher: Learning and Teaching PK-12</i>, 113(6), 468-473. Lo, J. J., & Cox, D. C. (2020). Reasoning about Composite Shapes with Transformations. <i>Mathematics Teacher: Learning and Teaching PK-12</i>, 113(12), e85-e90. Ruttenberg-Rozen, R. (2020). A Wonder-Full Task Leads to a Wonder-Full Intervention. <i>Mathematics Teacher: Learning and Teaching PK-12</i>, 113(6), 474-479. Teuscher, D., Dingman, S., Olson, T. A., & Kasmer, L. A. (2021). Geometric Reflections: Why Should They Not Be Just a Flip?. <i>Mathematics Teacher:</i>	Using co-planning and co-teaching to facilitate equitable learning opportunities and teaching mathematics for social justice

		<i>Learning and Teaching PK-12, 114(1), 27-32.</i> Sullivan, P. L., Livers, S. D., & Evans, W. (2020). Navigating the Uncertainty of Sharing Mathematical Authority. <i>Mathematics Teacher: Learning and Teaching PK-12, 113(7), 581-589.</i> Zbiek, R. M., & Larson, M. R. (2015). Teaching strategies to improve algebra learning. <i>Mathematics Teacher, 108(9), 696-699</i>	
15 March, 2023	SPRING BREAK	SPRING BREAK	
22 March , 2023	Curriculum Evaluation and Effectiveness	National Research Council (2004). On evaluating curricular effects: Judging the quality of K-12 mathematics evaluations. J. Confrey & V. Stohl (Eds.). Committee for a Review of the Evaluation Data on the Effectiveness of NSF-Supported and Commerically Generated Mathematics Curricular Materials. Mathematical Sciences Education Board, Center for Education, Division of Behavioral and Social Sciences and Education. Washington, DC: National Academy Press.	
29 March, 2023	Assessment Data Analysis (p. 658-675)	Bargagliotti, A., Arnold, P., & Franklin, C. (2021). GAISE II: Bringing data into classrooms. <i>Mathematics Teacher: Learning and Teaching PK-12, 114(6), 424-435.</i> Hicks, T., & Bostic, J. D. (2021). Formative assessment through think alouds. <i>Mathematics Teacher: Learning and Teaching PK-12, 114(8), 598-606.</i>	

		Star, J. R., Jeon, S., Comeford, R., Clark, P., Rittle-Johnson, B., & Durkin, K. (2021). Compare and discuss multiple strategies. <i>Mathematics Teacher: Learning and Teaching PK-12</i>, 114(11), 853-859. Yeh, C. (2021). Responsive and Relevant to Whom?. <i>Mathematics Teacher: Learning and Teaching PK-12</i>, 114(1), 83-84.	
April 5, 2023 VIRTUAL		PRESENTATION OF CURRICULUM & ASSESSMENT PROJECT	Curriculum & Assessment Project
April 12, 2023	The Role of Problem Solving Trigonometry (Chapter 11, p.513-581)	Lischka, A. E., Prince, K. M., & Reed, S. D. (2020). Implementing extended tasks: Developing perseverance. <i>Mathematics Teacher: Learning and Teaching PK-12</i>, 113(1), 47-52. Mateas, V. (2022). Perspectives from Physics: Constraints on Our Curriculum. <i>Mathematics Teacher: Learning and Teaching PK-12</i>, 115(12), 882-890. Nieman, H. J., Kochmanski, N. M., Jackson, K. J., Cobb, P. A., & Henrick, E. C. (2020). Student Surveys Inform and Improve Classroom Discussion. <i>Mathematics Teacher: Learning and Teaching PK-12</i>, 113(12), e91-e99. Vanoli, L., & Luebeck, J. (2021). Examining errors and framing feedback. <i>Mathematics Teacher: Learning and Teaching PK-12</i>, 114(8), 616-623.	
April 19, 2023	Financial Literacy		

		Blue, L. E., & Grootenboer, P. (2019). A praxis approach to financial literacy education. <i>Journal of Curriculum Studies</i>, 51(5), 755-770. Sole, M. A. (2017). Financial education: Increase your purchasing power. <i>The Mathematics Teacher</i>, 111(1), 60-64. Stephan, M. L., Reinke, L. T., & Cline, J. K. (2020). Beyond hooks: Real-world contexts as anchors for instruction. <i>Mathematics Teacher: Learning and Teaching PK-12</i>, 113(10), 821-827. Florida B.E.S.T. Standards (2020) Financial Literacy Strand (p. 137-140)	
April 26, 2023	Reflections		Portfolio

* Note: The Schedule is subject to revision

XV. Course Policies:

Assignments

All assignments must be completed by the start of class (Wednesday 5:00pm) on the due date. Many of the activities in which we will engage will depend on your preparedness for class. Therefore, it is strongly recommended that students arrange to meet with the instructor in advance to receive feedback and additional guidance regarding progress on submissions, if needed. Submitted assignments will be graded according to a scoring rubric that will be distributed. There are no extra credit assignments.

If a student misses a class, it is the student's responsibility to secure from other students the information missed or material distributed. The student at the next class must retrieve scored assignments/papers distributed to the class or it will be discarded. Students should retain all graded papers until final grades are issued.

If a student is absent on a day when an assignment is due, the assignment must be submitted via Canvas and or their university email account to the instructor.

The due dates for assignments are clearly specified in the "Course Assessment" section of this document. Generally, permission to submit late work is only granted in extreme family or personal circumstances, and not because the student failed to submit the work in a timely fashion. Unless the instructor of the course has granted the student a formal extension, the following penalties will be applied for assignments submitted late:

- up to two days late, loss of 10% of the total available marks for the assignment;
- two to five days late, loss of 15% of the total available marks for the assignment;
- five to seven days late, loss of 20% of the total available marks for the assignment;
- seven to nine days late, loss of 25% of the total available marks for the assignment;
- over nine days late, no mark will be given for the assignment. Hence, the student would obtain a 0% as a grade for the assignment.

****Note:** Expect to complete at least 4 hours of work outside of class for each hour you spend in class.

Attendance

Candidates are expected to attend all classes. Each candidate should arrive prior to class and remain until the conclusion of the class. Prompt attendance is expected. A tardy may count as an absence. In the event of an unavoidable absence (e.g. serious illness, accident, hospitalization, or significant immediate family tragedy) the candidate may provide the instructor with documentation verifying the absence within 48 hours for any consideration. If a candidate anticipates the necessity of being absent from class due to the observation of a major religious observance please provide the instructor a notice of the date(s), in writing, by the second class meeting. With the exception of major religious observances, candidates who come to class late, leave early, and/or miss class are not entitled to the same professional disposition points (and/or other forms of evaluation) as candidates who attend more or all classes. Regarding engagement, each candidate must be actively engaged in class work at all times to be considered present. Candidates will be considered absent if they disengage from class activities and professional disposition points will be deducted. Absences, coming late, leaving early and disengaging in class significantly affect each candidate's ability will impact your overall grade in the course. **More than two unexcused absences will result in a lower letter grade in the course.**

Academic Dishonesty

Plagiarism is defined as "literary theft" and consists of the unattributed quotation of the exact words of a published text, or the unattributed borrowing of original ideas by paraphrase from a published text. On written papers for which the student employs information gathered from books, articles or oral sources, each direct quotation, as well as ideas and facts that are not generally known to the public at large must be attributed to its author by means of the appropriate citation procedure. Citations may be made in footnotes or within the body of the text. Plagiarism also consist of passing off as one's own segment or the total of another person's work.

Punishment for Academic Dishonesty will depend on the seriousness of the offense and may include receipt of an "F" with a numerical value of zero on the item submitted, and the "F" shall be used to determine the final course grade. It is the option of the instructor to assign the student a grade of F or FF (the latter indicating dishonesty) in the course.

XVI. Course Policies: Technology and Media Web Portal Information

An official USF e-mail account is given to every USF student when enrolled. Every official correspondence to students will be sent to this account via Canvas. Please ensure that you arrange to forward your email to an account that you read regularly if you do not use the official USF email.

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.

Recording of class sessions

All unauthorized recording of class are prohibited. Recording of class via audio/ visual recorder, or cellular phone is strictly prohibited without the express permission of the instructor. Recording that accommodate individual student needs must be approved in advance and be used for personal use during the semester only. Redistribution and/or sharing information in the public or private domain is prohibited.

XVII. Course Policies: Student Expectations

Academic Integrity

Academic integrity is the foundation of the University of South Florida System's commitment to the academic honesty and personal integrity of its university community. Academic integrity is grounded in certain fundamental values, which include honesty, respect, and fairness. Broadly defined, academic honesty is the completion of all academic endeavors and claims of scholarly knowledge as representative of one's own efforts. The final decision on an academic integrity violation and related academic sanction at any USF System institution shall affect and be applied to the academic status of the student throughout the USF System, unless otherwise determined by the independently accredited institution. The process for faculty reporting of academic misconduct, as well as the student's options for appeal, are outlined in detail in USF System Regulation 3.027.

Disruption to Academic Progress

Disruptive students in the academic setting hinder the educational process. Disruption of the academic process is defined as the act, words, or general conduct of a student in a classroom or other academic environment which in the reasonable estimation of the instructor: (a) directs attention away from the academic matters at hand, such as noisy distractions, persistent, disrespectful or abusive interruption of lecture, exam, academic discussion, or general University operations, or (b) presents a danger to the health, safety, or well-being of self or other persons.

Academic Grievance Procedure

The purpose of these procedures is to provide all undergraduate and graduate students taking courses within the University of South Florida System an opportunity for objective review of facts and events pertinent to the cause of the academic grievance. An "academic

grievance” is a claim that a specific academic decision or action that affects that student’s academic record or status has violated published policies and procedures, or has been applied to the grievant in a manner different from that used for other students.

Disability Access

Students with disabilities are responsible for registering with Students with Disabilities Services (SDS) (SVC 1133) in order to receive academic accommodations. SDS encourages students to notify instructors of accommodation needs at least five (5) business days prior to needing the accommodation. A letter from SDS must accompany this request.

Sexual Misconduct / Sexual Harassment

USF is committed to providing an environment free from sex discrimination, including sexual harassment and sexual violence (USF System Policy 0-004). The USF Center for Victim is a confidential resource where you can talk about incidents of sexual harassment and gender-based crimes including sexual assault, stalking, and domestic/relationship violence. This confidential resource can help you without having to report your situation to either the Office of Student Rights and Responsibilities (OSSR) or the Office of Diversity, Inclusion, and Equal Opportunity (DIEO), unless you request that they make a report. Please be aware that in compliance with Title IX and under the USF System Policy, educators must report incidents of sexual harassment and gender-based crimes including sexual assault, stalking, and domestic/relationship violence. If you disclose any of these situations in class, in papers, or to me personally, I am required to report it to OSSR or DIEO for investigation. Contact the USF Center for Victim Advocacy and Violence Prevention: (813) 974-5757.

Religious Observances

All students have a right to expect that the University will reasonably accommodate their religious observances, practices and beliefs (USF System Policy 10-045). The USF System, through its faculty, will make every attempt to schedule required classes and examinations in view of customarily observed religious holidays of those religious groups or communities comprising the USF System’s constituency. Students are expected to attend classes and take examinations as determined by the USF System. No student shall be compelled to attend class or sit for an examination at a day or time prohibited by his or her religious belief. However, students should review the course requirements and meeting days and times to avoid foreseeable conflicts, as excessive absences in a given term may prevent a student from completing the academic requirements of a specific course. Students are expected to notify their instructors at the beginning of each academic term if they intend to be absent for a class or announced examination, in accordance with this Policy.

Statement of Academic Continuity

In the event of an emergency, it may be necessary for USF to suspend normal operations. During this time, USF may opt to continue delivery of instruction through methods that include, but are not limited to: Learning Management System, online conferencing, email messaging, and/or an alternate schedule. It is the responsibility of the student to monitor the Learning Management System for each class for course-specific communication, and the main USF, College, and Department websites, emails, and MoBull messages for important

general information ([USF System Policy 6-010](#)). For additional guidance on emergency protective actions and hazards that affect the University, please visit www.usf.edu/em

Attendance Policy: Students are expected to attend classes. If an emergency arises that hinders a student attending class, the student should notify the instructor as soon as possible.

Professionalism Policy:

Per university policy and classroom etiquette; mobile phones, iPods, etc. **must be silenced** during class. Those not heeding this rule will be asked to leave the classroom so as to not disrupt the learning environment. Please arrive on time for all class meetings. Students who habitually disrupt discourse relative to the mathematics education content being discussed, arriving late, etc., and have been warned may suffer a reduction in their final class grade.

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 students by email when the response window opens. Hence, students participation is highly encouraged and valued.

Turnitin.com: In this course, turnitin.com will 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, students will 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>. Assignments are due at turnitin.com the same day as in class.

The Writing Studio: Offer information about the Writing Studio.

Example: 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, visit <http://www.lib.usf.edu/writing/>, stop by LIB 2nd Floor, or call 813-974-8293.

XVIII. Covid-19 Procedures

All students must comply with university policies and posted signs regarding COVID-19 mitigation measures.

XIX. Important Dates to Remember

*All the assignments dates are tentative, and can be changed at the discretion of the professor.

Drop/Add Deadline:	January 13, 2023
Attend the Mathematics Enrichment Meeting	February 4, 2023
Unit Plan	February 22, 2023
Spring Break:	March 13-19, 2023
Using co-planning and co-teaching to facilitate equitable learning opportunities and teaching mathematics for social justice	8 March, 2023
Withdrawal Deadline:	March 25, 2023
Portfolio	April 26, 2023
Curriculum & Assessment Project	April 5, 2023
Peer Teaching of High School Mathematics Content	Ongoing
MyMathTest (Program ID: XL4B-G14D-501Z-50W2)	

XX. Diversity of Thought

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.

Not all ideas can be supported by objective methods or criteria. Regardless, you may decide that certain ideas are worthy of your personal belief. In this course, however, you may be asked to engage with complex ideas and to demonstrate an understanding of the ideas. Understanding an idea does not mean that you are required to believe it or agree with it.