

EDEE 3350: Teaching Mathematics in Grades EC-6	
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Office location: Matthews Hall 218X	Office Hours Mon 8:00 to 10:00 am (virtual) Wed 8:15 to 9:15 am (UNT Frisco Landing 228) Thurs 2:00 to 5:00 pm (UNT Denton 218X)
Contact info: Parvathi.Sivaraman@unt.edu Please allow 24 hours for email responses during weekdays. Responses will be sent between 8:00 am and 6:00 pm on weekdays.	Class Meetings: Tuesdays 1:00 to 3:50 pm @ George W. Truett Elementary Aug 20 th to Dec 13 th , 2024

CATALOG DESCRIPTION

This course is designed to prepare preservice teachers to teach mathematics to diverse student populations in EC-6 grade classrooms. Students will become familiar with the national and state standards in mathematics that outline the mathematics that students should learn across grade levels and the mathematical processes they should be engaged in while learning them. Most importantly, students in this course will learn methods of teaching mathematics that are equity and asset-based, rigorous, foster children's positive mathematics identity development, and transform math classrooms into spaces that challenge marginality and use mathematics as a tool to critically examine the world.

PREREQUISITES

Corequisite(s): EDCI 4010; EDSP 4350; EDRE 4850; EDRE 4860

Must be admitted to teacher education program: Must be taken in Block B; Requires field hours at an offsite location.

COURSE GOALS

This course is designed to help you transition from being a learner of mathematics to a teacher of mathematics.

In this course we will explore three themes: What mathematics? For whom? For what purpose? (Aguirre, Mayfield-Ingram, & Martin, 2013):

1. What mathematics?
 - What mathematics concepts are children expected to learn in school and when? How can we teach these concepts in ways that are relevant to students' lives?
 - What mathematical understandings do children bring to the classroom and how can we leverage those in our mathematics instruction?

- What mathematics standards and resources can teachers draw from when developing and implementing mathematics lessons?
 - What teaching practices can we use to promote equitable and rigorous mathematics teaching and learning?
2. For Whom?
- Who is a mathematician? What popular myths and stereotypes are associated with who is or isn't mathematically competent?
 - How are our mathematics identities shaped by our mathematics learning experiences, and how does that consequently impact our teaching of mathematics?
 - How do we center the experiences, identities, and mathematical understandings of all students?
 - How do we teach mathematics to students from different (e.g., cultural, racial, social, and linguistic) backgrounds?
 - How do we partner with parents and communities in our mathematics teaching and learning?
3. For What Purposes?
- Why is mathematical literacy important? How can we explore the beauty and power of mathematics with our students?
 - What is the role of assessment and how can we learn to assess students effectively?
 - In what ways can we promote humanizing mathematics instruction?
 - How can we provide opportunities for our students to engage with mathematics in ways that allow them to critically examine their world?

COURSE TEXTS

Required:

Aguirre, J., Mayfield-Ingram, K., & Martin, D. (2013). *The impact of identity in K-8 mathematics: Rethinking equity-based practices*. The National Council of Teachers of Mathematics. (ebook available through the UNT Library)

Recommended:

van de Walle, J., Karp, K., & Bay-Williams, J. (2019). *Elementary and Middle School Mathematics: Teaching Developmentally* (10th ed.). Boston: Pearson Education, Inc.

Yeh, C., Ellis, M. & Koehn Hurtado, C. (2017). *Reimagining the mathematics classroom: Creating and sustaining productive learning environments*. The National Council of Teachers of Mathematics. (ebook available through the UNT Library)

Carpenter, T., Fennema, E., Franke, M. L., Levi, L., & Empson, S. B. (2015). *Children's mathematics: Cognitively Guided Instruction*. Portsmouth, NH: Heinemann. 2nd Edition

National Council of Teachers of Mathematics – Student e-Membership

(<http://www.nctm.org/Membership/Membership-Options-for-Individuals/>)

- Sign up for student membership
- Membership includes complimentary registration to regional meetings, e-access to all journals and learning resources, and 30% discount on purchases through the web site.

Electronic Resources:

National Council of Teachers of Mathematics: www.nctm.org

Math TEKS: <http://ritter.tea.state.tx.us/rules/tac/chapter111/index.html>

Common Core Math Standards: <http://www.corestandards.org/Math/>

Course Canvas Page: <https://unt.instructure.com>

Educator Standards this Course Addresses:

[TEA Educator Standards](#)

[English as a Second Language](#)

[ELPS](#)

[Technology Applications Standards](#)

[Texas Prekindergarten Guidelines](#)

COURSE ASSIGNMENTS

Every week you will be evaluated on your participation and engagement with our class activities and discussion of course readings. In-class activities will include opportunities to practice aspects of teaching mathematics in an EC-6 classroom (e.g., leading number talks and other types of warm-ups, creating math stations and anchor charts, teaching mini-lessons, engagement with math manipulatives etc.). In the table below you will find a brief description of the additional assignments in this course. Full descriptions can be accessed on our class Canvas page.

ASSIGNMENT OVERVIEW
<i>Math Autobiography and Interview</i> You will reflect over your own math learning experiences and formulate a math autobiography that details those experiences. You will also present the math story of a significant person in your life (e.g., parent, grandparent, sibling, best friend, partner) after conducting an audio or video interview with that person. Finally, you will compare your experiences with that of your “significant person”.
<i>Case Study Project</i> In this two-part project, you will first learn more about one child in your placement classroom, their home and community experiences, and their attitudes towards math. Second, you will formulate a math problem for them to solve and practice eliciting, interpreting, and assessing students’ mathematical thinking from an asset-based lens.

Community Walk & Math Lesson Plan

In this semester-long multi-component group assignment, you will develop and enact a math lesson plan that incorporates the lived experiences of children in your placement. You will consider modifications that can be made to ensure that you serve all students in your classroom.

Final Reflection

In this culminating assignment, you will reflect over what you learned over the course of the semester with specific emphasis on your developing math teacher identity, readings/activities that were especially impactful for your future teaching, and the ways you plan to incorporate what you have learned in your future math classroom.

COURSE EVALUATION

Class Participation and Attendance*	10%
Math Autobiography and Interview	20%
Case Study Project	20%
Community Walk & Math Lesson Plan	35%
Final Reflection	15%
Total	100%

**details can be found under "Course Policies"*

A = 90-100% B = 80-89% C = 70-79% D = 60-69% F = 0-59%

Assignment Policies: All grades/points for assignments are final. If you have any questions about grades/points earned for assignments, make an appointment to see me during office hours or send me an email. I will not discuss grades/points during class time.

All assignments are due on Canvas by 11:59pm on the due date (e.g., an assignment due on February 13 is due by 11:59pm on February 13).

All assignments must be submitted in the designated area on our class Canvas page. All written items should include a professional standard of spelling, grammar and punctuation. Cohesion of thought, clarity of expression, depth of reading, analysis of issues and relevance of discussion will need to be evident. Standard requirements for each assignment are 12-point font, double-spacing, appropriate APA referencing style, use of headings and subtitles if necessary and reference lists.

When submitting assignments to Canvas, please be sure to upload word documents unless specifically instructed otherwise. Be sure to name your files using the following convention: ***AssignmentName_LastName.FirstName*** (e.g., ***MathAutobiography_BrownTabitha for the Math Autobiography***). My general policy is that late work is not preferred but you may submit any assignment within 24 hours past the due date without asking for permission to do so and without penalty. Assignments submitted beyond that point will incur a 5% point reduction in your grade for each day. If you are having difficulty meeting an assignment deadline, you should let me know as soon as possible so that we can discuss your options.

The following rubric will be used across all assignments for this course unless otherwise specified.

Module Assignment Grading Guide: Unless grading criteria are specified for the assignment	
<p>A score $\geq 90\%$ Excellent</p>	<p><i>Exceeds or meets ALL of the following:</i></p> <p>Submission is completed thoughtfully and with depth. It shows a commitment to learning and to the content of this course. It addresses the assignment requirements but also appears to be personally meaningful and/or relevant. Language/communication is professional and appropriate to the audience. Connections are made to other components of the course (e.g., readings, discussions, assignments).</p>
<p>B $80\% \leq \text{score} < 90\%$ Good</p>	<p><i>Meets most or many of the following:</i></p> <p>Submission addresses the assignment requirements. Language/communication is professional and appropriate to the audience. Connections are made to other components of the course (e.g., readings, discussions, assignments).</p>
<p>C $70\% \leq \text{score} < 80\%$ Developing</p>	<p><i>Meets some of the following:</i></p> <p>Submission addresses the assignment requirements. Language/communication is professional and appropriate to the audience. Connections are made to other components of the course (e.g., readings, discussions, assignments).</p>
<p><C <70% Unsatisfactory</p>	<p><i>Meets very few or none of the following:</i></p> <p>Submission addresses the assignment requirements. Language/communication is professional and appropriate to the audience. Connections are made to other components of the course (e.g., readings, discussions, assignments).</p>

COURSE POLICIES

Canvas: Our course Canvas page is the hub where all things related to our course are located. All assignments should also be uploaded there. Please do not email assignments to me. Email announcements will also be sent from Canvas to your UNT email address so be sure to check your email regularly.

Attendance: This course is designed and organized to be highly collaborative and interactive. Our sessions will involve small and whole group activities and discussions. Therefore, your attendance and participation are essential to the learning of everyone in our course. It is very

difficult to be enriched by discussions and collaborations if you are not physically present or prepared for class. [University policy 06.039](#) will be followed for attendance problems. If necessary, you may miss one class with a valid excuse (see [university policy for excused absences](#)) and not face penalties related to your grade (thus you are encouraged to save this absence for illness or emergencies that may arise). You must let me know as soon as possible if you will be missing class. It is your responsibility to obtain all notes and handouts missed during your absence. All assignments are due on dates indicated on the syllabus regardless of your absences. A second absence will result in a loss of points from the total grade (see table below). In the event that you miss **four or more classes**, you will receive a failing grade. Students who miss more than one hour of class will be considered absent from that class meeting. Chronic tardiness or early departure (arriving more than 15 minutes late or leaving more than 15 minutes early) will result in the lowering of a final grade at my discretion. Please note: it is your responsibility to drop this course, if necessary.

# of Absences	Total participation points for the class (out of 10 points)
0 – 1	10
2	7
3	3
4 or more	You will automatically receive an F for your final grade

Plagiarism and Artificial Intelligence

Generative AI programs often produce text that is plagiarized: it takes words and ideas from sources without attribution. Your credibility as a writer and student relies on both generating your own ideas in your own words and giving attribution (credit) to sources. However, most of the assignments in this class require reflection and original ideas (e.g. lesson plans).

See **Academic Integrity Standards and Consequences** (p. 14) regarding UNT policy on plagiarism.

Course Materials for Class Sessions: It is recommended that you bring a laptop, tablet, and/or notebook to class each session.

COURSE SCHEDULE				
Week	Date	Topics Covered	Media*	Assignments
1	8/20	Course overview Math and Related Standards Intro to Equity-Based Practices		
2	8/27	<u>Content</u> Early Number Sense and Place Value <u>Pedagogy</u> Culturally Relevant, Culturally Responsive, & Culturally Sustaining Math Teaching	Early Number and Counting Progression Video IOI Ch 1 What Mathematics? For Whom? For What Purposes? Culturally Relevant Practices in the Elementary Math Classroom (Rounding Up Podcast Episode)	
3	9/3		IOI Ch 2: Identities, Agency, and Mathematical Proficiency: What Teachers Need to Know to Support Student Learning Practicing Culturally Responsive Math Teaching (Bonner, 2021)	Math Autobiography-Interview and Reflection
4	9/10	<u>Content</u> Addition, and Subtraction of Whole Numbers <u>Pedagogy</u> Fostering a Sustaining and Productive Math Learning Environment	Addition and Subtraction Progression Video RMC Ch. 1: The Physical and Virtual Environment Classroom Rules Reimagined as Rights of the Learner (Kalinec-Craig and Robles, 2020)	
5	9/17		RMC Ch. 2 Discourse-Rich Environments Building a Broader Definition of Participation (Rounding Up Podcast Episode)	Getting to Know You Assignment Case Study Problem Solving Interview-Problem submission

6	9/24	<u>Content</u> Multiplication and Division of Whole Numbers <u>Pedagogy</u> Asset Based Math Teaching	Progression of Multiplication Video IOI Ch. 5 Building on Students' Strengths Math Teacher Lounge Season 3 Episode 5: Developing an Asset Orientation with Lani Horn	
7	10/1	Cultivating Mathematical Agency	Progression of Division Video IOI Ch. 4 Cultivating Mathematical Agency: "He Was Suspended for Being Mexican"	
8	10/8	<u>Content</u> Algebraic Reasoning and Relations <u>Pedagogy</u> Problem Posing & Problem Solving	Algebra and Representations Progression Video (Up to Grade 6) Just Say Yes to Early Algebra (Stephens et. al, 2015) RMC Ch 3: The Task-Rich Environment Avoiding the Ineffective Keyword Strategy (Karp, Bush, and Dougherty, 2019)	Interview, Reflection, and Mock Parent-Teacher Conference
9	10/15	<u>Content</u> Fraction Concepts and Operations <u>Pedagogy</u> Teaching Math to Multilingual Learners & Learners with Disabilities	Fractions Progression Video Creating a Responsive Learning Community for Els (Dong, 2016) Enhancing Tasks for Multilingual Learners (Rounding Up Podcast Episode)	
10	10/22		TD Chapter 6 pg 105-112 TODOS Mathematics for All Video Podcast Episode: Countering Deficit Myths about Students with Disabilities	Community Walk Assignment

11	10/29	<u>Content</u> Geometry Concepts Measurement Concepts	TD: Ch 19 Developing Geometric Thinking and Geometric Concepts IOI Ch. 6 Mathematics Assessment within Equity-Based Practices	
12	11/5	<u>Pedagogy</u> Assessment	What Children Need to Know about Measurement: DREME Math Website Turning Trucks Into a Meaningful Geometry Exploration (Roscioli & Suh, 2023)	Draft Lesson Plan
13	11/12	<u>Content</u> Data and Statistics Concepts Personal Financial Literacy	What Children Need to Know about Data- DREME Math Website The Life and Times of a Third Grade Pencil (Kandel, 2023)	
14	11/19	<u>Pedagogy</u> Engaging Parents, Families and Communities	IOI Ch. 7 Routine Practices to Engage Parents A praxis approach to financial literacy education (Blue & Grootenboer, 2019) IOI Ch. 8 Partnering with Families and Communities	
THANKSGIVING BREAK (NO CLASS)				
15	12/3	Micro-Lesson Presentations		Final Lesson Plan and Reflection
Finals Week				Final Reflection

Educator Standards Addressed in this Course

The UNT Educator Preparation Program curriculum includes alignment to standards identified by the Texas State Board of Educator Certification (SBEC) for beginning educators. These standards are addressed throughout your preparation and assessed through the TExES Certification exams required for your teaching certificate. Additionally, the Commissioner of TEA has adopted these rules pertaining to Texas teaching standards:

Texas Teaching Standards:

Standards required for all Texas beginning teachers fall into the following 6 broad categories:

Standard 1--Instructional Planning and Delivery. Standard 1Ai,ii,iv; 1Bi,ii (Lesson design)

Standard 2--Knowledge of Students and Student Learning.

Standard 3--Content Knowledge and Expertise.

Standard 4--Learning Environment.

Standard 5--Data-Driven Practice.

Standard 6--Professional Practices and Responsibilities.

Standards, Domains, and Competencies for the EC-6 CORE SUBJECTS-Math

Competency 001: (Mathematics Instruction) The teacher understands how students learn mathematical skills and uses that knowledge to plan, organize and implement instruction and assess learning. (1A-1N)

Competency 002: (Number Concepts and Operations): The teacher understands concepts related to numbers, operations and algorithms and the properties of numbers. (2F, 2J)

Competency 006: (Mathematical Processes): The teacher understands mathematical processes and knows how to reason mathematically, solve mathematical problems and make mathematical connections within and outside of mathematics. (6A-6N)

Pedagogy and Professional Responsibilities Standards (EC-Grade 12)

Domain I. Designing Instruction and Assessment to Promote Student Learning

Competency 001: The teacher understands human developmental processes and applies this knowledge to plan instruction and ongoing assessment that motivate students and are responsive to their developmental characteristics and needs. (I.001.A-C, I.001.F, I.001.K, I.001L, I.001P)

Competency 002: The teacher understands student diversity and knows how to plan learning experiences and design assessments that are responsive to differences among students and that promote all students' learning. (I.002.A-F)

Competency 003—The teacher understands procedures for designing effective and coherent instruction and assessment based on appropriate learning goals and objectives. (I.003.A, I.003.E)

Competency 004—The teacher understands learning processes and factors that impact student learning and demonstrates this knowledge by planning effective, engaging instruction and appropriate assessments. (I.004.E, I.004.F, I.004.J)

Domain II. Creating a Positive, Productive Classroom Environment

Competency 005: The teacher knows how to establish a classroom climate that fosters learning, equity and excellence and USES this knowledge to create a physical and emotional environment that is safe and productive. (II.005.A, B, II.005.E, II.005.G)

Domain III. Implementing Effective, Responsive Instruction and Assessment

Competency 007: The teacher understands and applies principles and strategies for communicating effectively in varied teaching and learning contexts. (III.007.A, B)

Competency 008: The teacher PROVIDES appropriate instruction that actively ENGAGES students in the learning process. (III.008.C)

Competency 009: The teacher INCORPORATES the effective use of technology to plan, organize, deliver, and evaluate instruction. (III.009.E, F)

Competency 010: The teacher monitors student performance and achievement; PROVIDES students with timely, high-quality feedback; and RESPONDS flexibly to promote learning for all students. (III.010.C)

Domain IV. Fulfilling Professional Roles and Responsibilities

Competency 011: The teacher understands the importance of family involvement in children's education and knows how to interact and communicate effectively with families. (11B, 11D, 11F)