



“The new evidence from brain research tells us that everyone, with the right teaching and messages, can be successful in mathematics and that everyone can achieve at the highest levels in school.” (Boaler, 2022)

SCED 4367 (10654) – MSED4310 (14440)

ONLINE

Teaching Mathematics in Secondary School

Teaching Mathematics in Middle School

Fall 2024

This syllabus is subject to change as needed. Any changes to the syllabus will be announced via email or posted on Blackboard.

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Course Philosophy and Description:

For teachers of mathematics to be truly effective involves bringing together four basic components:

- A. An appreciation (mathematical growth mindset) of the discipline of mathematics itself.
- B. An understanding of how students learn and construct ideas in active, inquiry-based learning.
- C. An ability to design and select challenging, open mathematical tasks, and create problem-solving environments.
- D. The ability to integrate appropriate, mathematically meaningful assessment within the teaching process.

One of the main components of teaching is helping students to “discover and construct” mathematics for themselves by creating successful inquiry-based, active learning environments, a friendly atmosphere, and an “open mind” approach. The goal of teaching mathematics is for students to develop understandings, not just for students to find the correct answer, but to find answers using the “best” methods. Hence, a teacher needs to promote students' thinking, to encourage searching for different methods leading to mathematical understanding (including through failure). Discovery learning is enhanced with error analysis and trial and error. The role of the teacher is to integrate novelty to engage students by posing challenging problems and encourage students to invent new ways of approaching the problem without fear of making a mistake.

This course has been constructed to help you in critically examining the philosophies, theories, research, pedagogical techniques, and materials associated with effective learning and teaching.

Course Goals and Objectives:

We will address factors that support meaningful growth and progress on an inner journey towards personal transformation. Our classroom community will develop a process that will allow us to explore “who we are, what assumptions we hold as true, how and what we teach, how we organize ourselves, and what barriers prevent us from creating authentic learning environments” (Crowell, Caine & Caine, 1998).



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Students enrolled in this course will actively explore the methods of effective teaching to provide opportunities for successful learning. Emphasis is placed on the equity principle (learning for all) and development of conceptual understanding of topics, as well as project/problem-based learning. Specifically, students will become more effective in the following areas by:

- A. Exploring innovative learning theories and techniques of teaching and learning including problem-based and inquiry, open-ended approach.
- B. Studying how to apply general and content methods of teaching and learning in diverse classroom settings.
- C. Helping the students to create successful learning environment in teaching and learning.
- D. Writing and analyzing lesson plans that support the learning cycle.
- E. Unpacking state standards for specific content areas and developing practical and engaging use of state standards/TEKS, NCTM Standards, and Common Core State Standards (CCSS)
- F. Demonstrating use of educational technology within lesson plan development and mini-teaching experiences.
- G. Demonstrating understanding of critical reading of texts and web sites through writing and discussion.
- H. Demonstrating reflection about teaching and learning through writing and discussion.
- I. Writing and discussion to demonstrate an informed perspective about curriculum and related educational issues.
- J. Addressing the domain and competencies that will prepare you for state certification content exam [TeXes].

Course Structure:

Classes for this course are online (UTEP Blackboard). Classes will be a combination of videos, readings, Blackboard discussion boards, individual/group course assignments and tasks, and project development. It is expected that students will participate in all activities and components of the course.

SCED 4367/MSED4310 Required Text:

Mathematical Mindsets: Unleashing Students' Potential through Creative Mathematics, Inspiring Messages and Innovative Teaching (Mindset Mathematics) (2022). Boaler, J. 2nd Edition. ISBN 9781119823063

https://www.amazon.com/Mathematical-Mindsets-Unleashing-Mathematics-Innovative/dp/1119823064/ref=sr_1_1?crid=500DX1TE5D1E&dib=eyJ2IjoiMSJ9.MtR_ow-5aadZiFSDkV6KZTKpCYaatxTUyhyMKhW42vc.PZj9VinOHH5rUjO2in75IRyXlbEjvtTjnqwlCpMwYq0&dib_tag=se&keywords=ISBN+9781119823063&qid=1723404468&prefix=isbn+9781119823063%2Caps%2C151&sr=8-1

Additional materials/resources we may be using:

Some required readings will be scanned and placed on blackboard, or you will be provided with appropriate web links:

- A. YouCubed, <https://www.youcubed.org/>
- B. Math-ish, <https://www.mathish.org/>
- C. Texas Essential Knowledge and Skills (TEKS) for all content areas and grade levels.

<https://tea.texas.gov/academics/curriculum-standards/teks/texas-essential-knowledge-and-skills>



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D. Common Core Standards

<https://study.com/teach/common-core-math-standards.html>

E. These websites provide a wide selection of virtual manipulatives for teaching mathematics:

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

F. Book "How Students Learn: Mathematics in the Classroom".

You can read it online at http://www.nap.edu/catalog.php?record_id=11101

Software Requirements:

A. Course materials supplementing the required text will be uploaded on UTEP Blackboard.

B. Adobe® Reader® is free software that allows everyone from business professionals to home users to view easily and reliably, print, and search PDF files using a variety of platforms and devices.

C. Microsoft Office® - This product is available at the UTEP Bookstore.

D. E-mail tool with file attachment capability. Please use your UTEP e-mail account.

Weekly Assignments:

You will be asked to complete weekly assignments. These assignments will be diverse and may include assigned readings, solving or analyzing mathematical tasks, watching a video, analyzing peer work, or preparing activities. Completing these assignments is a critical part of your coursework.

Final Exam:

- The final exam will be posted on Blackboard.
- Exam will cover all readings and videos assigned during the course.
- The exam will be taken as an individual student in one seating – once you begin the exam, you must finish it. You may not stop and start the exam, nor go back and forth among the questions. There is no time limit for the single seating.
- The window for taking the exam will be December 1st to December 9th at 11:59 pm.
- Technical difficulties are not an acceptable excuse for not completing the exam; Allow enough time and trouble shoot all technical issues prior to beginning the exam.

Observation Hours:

Observation hours are required (10 hours) for this course. It is the student's responsibility to arrange and complete in-person or video observation hours and record information required on the log (attached at the end of this syllabus). Videos included in this course may be included toward the 10-hour requirement. Logs (saved as .pdf) will be submitted at the end of the semester. For additional information, contact the UTEP COE Center for Student Success (CSS) <https://www.utep.edu/education/css/>.

Guiding Principles for this Course: T-TESS Domains

The T-TESS Rubric includes 4 Domains and 16 Dimensions. T-TESS domain and dimension rubrics include specific descriptors of practices and 5 performance levels; Distinguished, Accomplished, Proficient, Developing, and Improvement Needed.



Planning	Instruction	Learning Environment	Professional Practices and Responsibilities
Standards and Alignment	Achieving Expectations	Classroom Environment, Routines and Procedures	Professional Demeanor and Ethics
Data and Assessment	Content Knowledge and Expertise	Managing Student Behavior	Goal Setting
Knowledge of Students	Communication	Classroom Culture	Professional Development
Activities	Differentiation		School Community Involvement
	Monitor and adjust		

Student Learning Outcomes:

“Talent is a dreadfully cheap commodity, cheaper than table salt. What separates the talented individual from the successful one is a lot of hard work and study.” ~Stephen King.

The course’s learning outcomes will require the student to acquire throughout the semester knowledge and skills and build upon them. The following table provides a list of the most relevant student learning outcomes for the course. The following outcomes are aligned with SBEC-approved Texas educator standards. Please, see the full standard* at

[https://texreg.sos.state.tx.us/public/readtac\\$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&p_g=1&p_tac=&ti=19&pt=2&ch=149&rl=1001](https://texreg.sos.state.tx.us/public/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&p_g=1&p_tac=&ti=19&pt=2&ch=149&rl=1001)



Table 1. Student learning outcomes and assessment

Student Learning Outcomes		Formative & Summative Assessments
<i>TeXes 7-12</i>	<i>By the end of the course, the student will be able to:</i>	<i>To evaluate these outcomes, the faculty member will use the following assessment procedures:</i>
<i>V, VI</i>	Develop an understanding of current issues, practices and directions in mathematics curriculum and the ability to inquire into these.	a. Online interactive, Socratic discussions b. Quizzes and Exams c. Written Reflections
<i>V, VI</i>	Develop knowledge and skills in educational research	a. Online interactive, Socratic discussions b. Lesson Plan Development c. Quizzes and Exams c. Written Reflections
<i>V, VI</i>	Identify and Analyze topics of importance in current mathematics education	a. Online interactive, Socratic discussions b. Electronic Databases Literature Searches c. Quizzes and Exams c. Written Reflections
<i>ALL</i>	Deepen their commitment to their pupils' learning of mathematics	a. Pre/Post Test b. Pre/Post Survey c. Comprehensive Exams d. Written Reflections
<i>ALL</i>	Increase their confidence to teach mathematics	a. Micro-Teaching Exercise b. Pre/Post Survey c. Written Reflections d. Self and Peer Feedback and Ratings
<i>V, VI</i>	Improve their ability to manage and assess their pupils' mathematics learning. Discover innovative methods of instruction to increase effectiveness and pupils' engagement, learning, and thinking.	a. Online interactive, Socratic discussions b. Quizzes and Exams c. Written Reflections d. Micro-Teaching Exercise
<i>ALL</i>	Improve their capacity to think reflectively and creatively about their teaching of mathematics	a. Online interactive, Socratic discussions b. Quizzes and Exams c. Written Reflections d. Micro-Teaching Exercise
<i>ALL</i>	Increase their capacity to become an agent of change in the field of mathematics education through effective teaching and communication.	a. Online interactive, Socratic discussions b. Lesson Plan Development c. Electronic Databases Literature Searches
		c. Written Reflections d. Pre/Post Survey
<i>ALL</i>	Develop knowledge and strategies to design curriculum at classroom and school levels.	a. Online interactive, Socratic discussions b. Lesson Plan Development c. Electronic Databases Literature Searches c. Written Reflections

POLICIES:

A. Grading Scale:

Excellent	Above Average	Average	Below Average	Failing
A = 90 – 100%	B = 80 – 89%	C = 70 – 79%	D = 60 – 69%	F = 59% and below

B. Submission of Assignments:



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Assignments are to be submitted through Blackboard Assignment on the date and time indicated by assignments. **Late assignment submissions will not be accepted.**

Exception: Accommodations/Modifications provided to instructor by Office of Disabled Student Services.

C. Expectations for Participation

- Please allow yourself approximately 8-10 hours a week to complete the readings and the assignments
- Students are expected to learn and know how to navigate in Blackboard; avail yourself of training offered in Blackboard for orientation, etc,
- Students are expected to communicate with one another in small groups via discussion boards
- Students are expected stay informed of course announcements
- Students are expected to keep instructor informed of class related problems, or problems that may prevent the student from full participation (send an email when you encounter problems so that the instructor knows you still have intentions of completing the course).
- Students are expected to address technical problems immediately with Blackboard Support

Students are expected to always observe course netiquette.

Netiquette Ground Rules:

- Use proper grammar and spelling.
- This course encourages different perspectives related to such factors as gender, race, nationality, ethnicity, sexual orientation, religion, and other relevant cultural identities.
- The course seeks to foster understanding and inclusiveness related to such diverse perspectives and ways of communicating.

D. Class Attendance

Though this course is 100% online through Blackboard, if you do not complete your weekly discussions, you will earn an ABSENCE. If you have more than three (3) absences, you may be dropped from the course.

E. Expectations for Assignments/Coursework

I give each of you my commitment to help you succeed in this course. In return, I am asking you prioritize this course and give it the effort it requires. By the end of this course, you will have multiple means of using pedagogy and mindset to drive your classroom.

F. Standards of Academic Integrity:

Students are expected to uphold the highest standards of academic integrity. Any form of scholastic dishonesty is an affront to the pursuit of knowledge and jeopardizes the quality of the degree awarded to all graduates of UTEP. Any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes, but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are not attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts. Proven violations of the detailed regulations, as printed in the Handbook of Operating Procedures (HOP) and available in the Office of the Dean of Students, may result in sanctions ranging from



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disciplinary probation, to failing grades on the work in question, to failing grades in the course, to suspension or dismissal, among others.

E. Students with Disabilities:

If you have or believe you have a disability, you may wish to self-identify. You can do so by providing documentation to the Office of disabled Student Services located in Union E Room 203. Students who have been designated as disabled must reactivate their standing with the Office of Disabled Student Services on a yearly basis. Failure to report to this office will place a student on the inactive list and nullify benefits received. If you have a condition which may affect your ability to exit safely from the premises in an emergency or which may cause an emergency during class, you are encouraged to discuss this in confidence with the instructor and/or the director of Disabled Student Services. You may call 747-5148 for general information about the Americans with Disabilities Act (ADA).

F. Equal Educational Opportunity:

To create equal educational opportunities in the class, all students are expected to demonstrate respect for the diverse voices and individual differences in the class. Particularly, no person shall be excluded from participation in, denied benefits of, or be subject to discrimination under any program or activity sponsored or conducted by the University of Texas at El Paso based on race, color, national origin, religion, sex, age, veteran status, disability, or sexual orientation. Any member of the University community who engages in discrimination or other conduct in violation of university policy is subject to the full range of disciplinary action, up to and including separation from the University. Complaints regarding discrimination should be reported to the University's Equal Opportunity Office. Inquiries regarding applicable policies should be addressed to the University's Equal Opportunity Office, Kelly Hall, 3rd Floor, 915.747.5662 or eoaa@utep.edu<<mailto:eoaa@utep.edu>> .

G. Inclusiveness and equity:

Learning happens only when we feel respected human being. My top priority in our course is to cultivate relationships of trust and respect and a sense that we see each other as whole, complex human beings. That you experience this in our course is important for the sake of your learning in our course and for the sake of your future students' learning, so that you feel able to cultivate such relationships with them. To that end, I want you to know that all of you is welcome in our learning space—all the parts of you as a person are welcome in our discussions, our activities, our assignments, and in our assessments. We are all complex people with a variety of perspectives, experiences, challenges, assets, and resources—our gender identities, our sexual orientations, our religions, our races, our ethnicities, our economic statuses, our immigration statuses, our parenthoods, our veteran statuses, our ages, our languages, our abilities, and disabilities. All the parts of you are welcome in our learning community to the extent that you feel comfortable bringing them in. I strive to show respect for the variety and wholeness in each of you, and I expect that each of you shows respect for each other as well. If you feel marginalized in our class, and you feel comfortable discussing it, I would like to know so that I can support you, protect you, and make changes that feel more inclusive and equitable. You can also talk with our Department Chair and/or you can report a complaint of discrimination to the University's Equal Opportunity Office, Kelly Hall, Third Floor, 915-747-5662 or eoaa@utep.edu .

H. Professionalism:



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Consistent commitment to being successful in the course as well as, collegiality, supportive critique, and professionalism will be expected.

Course expectations:

- Attend virtual meetings when you are scheduled to attend meetings (virtual meetings with peers, instructor, etc.)
- Be prepared to raise, share, discuss and attempt to solve any individual or collective problems you may have with your colleagues and/or your instructor in constructive ways that allows us all to maintain our dignity and continue to function effectively as a community.
- Demonstrate an understanding that while we can, and will, disagree, we need to do so within a community of respect; and
- Provide your classmates with supportive critique and constructive feedback.



Tentative Online Course Outline: SCED4367/MSED4310- Fall 2024

NOTE: All topics, assignments, and due dates are subject to change at the instructor's discretion.

Weekly Discussions, Response to Peer Group, Strategies Connecting to your Classroom.

- Students will post on discussion board their short reflections about the assigned weekly readings/videos/website review (THREE THOUGHTFUL AND WELL-DEVELOPED PARAGRAPHS) every two weeks. Include at least four direct quotes from course readings/video using “APA formatting, which looks like this” (Author, year, p. xx). (10 points)
- ****Post your reflection by Sunday at 11:59pm so your peers can respond before Tuesday.
- Respond with 3-4 thoughtful sentences to each of your peers in the group (4 students per group = 4 responses). (10 points)
- Your reflection must mention 1-2 tangible classroom strategies that the readings/video evoked which could be useful in your classroom/mathematics. (5 points)

Week/Day	Learning Agenda/Assignments	Assignment Due Date
Module 1 Weeks 1 & 2	<p><u>Topic:</u> The Brain and Mathematics Learning</p> <p><u>Readings and Evidence of Understanding:</u></p> <p>(1) Read <i>Mathematical Mindsets</i>, Chapter 1 – “The Brain and Mathematics Learning” and Appendix B -1</p> <p>(2) Watch: <i>Our Brains Think Visually About Math</i> https://www.youcubed.org/resources/brains-think-math-visually-video/ 3:12 minutes</p> <p>(3) Read: <i>How Understanding Your Brain Can Help You Learn</i> https://greatergood.berkeley.edu/article/item/how_understanding_your_brain_can_help_you_learn#thank-influence</p> <p>(4) Read: <i>Mathematics and the Brain</i> https://www.ams.org/publicoutreach/feature-column/fcarc-brain</p> <p>Requirements: Weekly Discussions, Response to Peer Group, Strategies connecting to your current or future classroom.</p> <ul style="list-style-type: none"> • Students will post on discussion board and assignments their short reflections about the assigned weekly readings/videos/website review (THREE THOUGHTFUL AND WELL-DEVELOPED PARAGRAPHS). Include at least <u>four direct quotes</u> from course readings/videos using “APA formatting, which looks like this” (Author, year, p. xx). (10 points) • Your reflection must mention 1-2 tangible classroom strategies that the readings/video evoked which could be useful in your classroom/mathematics. (5 points) <p>****Post your reflection by Sunday at 11:59pm so your peers can respond before Tuesday.</p> <ul style="list-style-type: none"> • Respond with 3-4 <u>thoughtful</u> sentences to each of your peers in the group (4 students per group = 4 responses). (10 points) 	Reflection: 9/8/24 Peer Responses: 9/10/24



<p>Module 2 Weeks 3 & 4</p>	<p>Topics: The Power of Mistakes and Struggle and The Creativity and Beauty in Mathematics</p> <p>Readings and Evidence of Understanding:</p> <p>(1) Read <i>Mathematical Mindsets</i>, Chapter 2 – “The Power of Mistakes and Struggle”, Chapter 3 – “The Creativity and Beauty in Mathematics”, and Appendices B -2 and B-3</p> <p>(2) Read “Learning Conditions are an Actionable Early Indicator of Math Learning” chrome-extension://efaidnbmnibpcajpcglclefindmkaj/https://273273b6-3c0f-4787-a4c3-c446568cf07b.usrfiles.com/ugd/989d9a_3bc71d9c9b6c44e5b4bec9174d719e46.pdf</p> <p>(3) View “Mistakes” https://www.youcubed.org/resources/mistakes-video/</p> <p>(4) View “Mistakes are Powerful” https://www.youcubed.org/resources/wim-2-day-2-video/</p> <p>(5) View “Teaching kids real math with computers” https://www.ted.com/talks/conrad_wolfram_teaching_kids_real_math_with_computers?subtitle=en</p> <p>(6) View “Importance of Struggle” https://www.youcubed.org/resources/the-importance-of-struggle/</p> <p>Requirements: Weekly Discussions, Response to Peer Group, Strategies connecting to your current or future classroom.</p> <ul style="list-style-type: none"> Students will post on discussion board and assignments their short reflections about the assigned weekly readings/videos/website review (THREE THOUGHTFUL AND WELL-DEVELOPED PARAGRAPHS). Include at least <u>four direct quotes</u> from course readings/videos using “APA formatting, which looks like this” (Author, year, p. xx). (10 points) Your reflection must mention 1-2 tangible classroom strategies that the readings/video evoked which could be useful in your classroom/mathematics. (5 points) <p><i>***Post your reflection by Sunday at 11:59pm so your peers can respond before Tuesday.</i></p> <ul style="list-style-type: none"> Respond with 3-4 <u>thoughtful</u> sentences to each of your peers in the group (4 students per group = 4 responses). (10 points) 	<p>Reflection: 9/22/24 Peer Responses: 9/24/24</p>
<p>Module 3 Weeks 5 & 6</p>	<p>Topics: Creating Mathematical Mindsets: The Importance of Flexibility with Numbers and Rich Mathematical Tasks</p> <p>Readings and Evidence of Understanding:</p> <p>(1) Read <i>Mathematical Mindsets</i>, Chapter 4 – “Creating Mathematical Mindsets: The Importance of Flexibility with Numbers”, Chapter 5 – “The Creativity and Beauty in Mathematics”, and Appendices B -4 and B-5</p>	<p>Reflection: 10/6/24 Peer Responses: 10/8/24</p>



	<p>(2) Read “Softening the sharp edges in mathematics” https://ed.stanford.edu/news/softening-sharp-edges-mathematics</p> <p>(3) Read “Fluency Without Fear: Research Evidence on the Best Ways to Learn Math Facts” https://efaidnbmnnnibpcajpcgclefindmkaj/https://www.youcubed.org/wp-content/uploads/2017/09/Fluency-Without-Fear-1.28.15.pdf</p> <p>(4) View: Number Talks https://www.youcubed.org/resources/cathy-humphreys-teaching-number-talk/</p> <p>Requirements: Weekly Discussions, Response to Peer Group, Strategies connecting to your current or future classroom.</p> <ul style="list-style-type: none"> Students will post on discussion board and assignments their short reflections about the assigned weekly readings/videos/website review (THREE THOUGHTFUL AND WELL-DEVELOPED PARAGRAPHS). Include at least <u>four direct quotes</u> from course readings/videos using “APA formatting, which looks like this” (Author, year, p. xx). (10 points) Your reflection must mention 1-2 tangible classroom strategies that the readings/video evoked which could be useful in your classroom/mathematics. (5 points) <p><i>***Post your reflection by Sunday at 11:59pm so your peers can respond before Tuesday.</i></p> <ul style="list-style-type: none"> Respond with 3-4 <u>thoughtful</u> sentences to each of your peers in the group (4 students per group = 4 responses). (10 points) 	
<p>Module 4 Weeks 7 & 8</p>	<p><u>Topics:</u> Mathematics and the Path to Equity</p> <p><u>Readings and Evidence of Understanding:</u></p> <p>(1) Read <i>Mathematical Mindsets</i>, Chapter 6 – “Mathematics and the Path to Equity” and Appendix B – 6.</p> <p>(2) Read “A data-centered approach to education AI” https://ed.stanford.edu/news/data-centered-approach-education-ai</p> <p>(3) Read “A Focus on Equity in Math Instruction” https://www.edutopia.org/article/equity-based-math-practices</p> <p>(4) Read “Creating Mathematical Futures through an Equitable Teaching Approach: The Case of Railside School” https://efaidnbmnnnibpcajpcgclefindmkaj/https://www.youcubed.org/wp-content/uploads/2017/09/Creating-Mathematical-Futures.pdf</p> <p>(5) View Data Science Students https://vimeo.com/673398725</p> <p>(6) View Introduction to Data Science Course https://vimeo.com/569394563</p> <p>(7) View Like a Detective https://vimeo.com/510792526</p>	<p>Reflection: 10/20/24</p> <p>Peer Responses: 10/22/24</p>



	<p>Requirements: Weekly Discussions, Response to Peer Group, Strategies connecting to your current or future classroom.</p> <ul style="list-style-type: none"> Students will post on discussion board and assignments their short reflections about the assigned weekly readings/videos/website review (THREE THOUGHTFUL AND WELL-DEVELOPED PARAGRAPHS). Include at least <u>four direct quotes</u> from course readings/videos using “APA formatting, which looks like this” (Author, year, p. xx). (10 points) Your reflection must mention 1-2 tangible classroom strategies that the readings/video evoked which could be useful in your classroom/mathematics. (5 points) <p><i>***Post your reflection by Sunday at 11:59pm so your peers can respond before Tuesday.</i></p> <ul style="list-style-type: none"> Respond with 3-4 <u>thoughtful</u> sentences to each of your peers in the group (4 students per group = 4 responses). (10 points) 	
<p>Module 5 Weeks 9 & 10</p>	<p>Topics: From Tracking to Growth Mindset Grouping: Opportunities to Learn</p> <p><u>Readings and Evidence of Understanding:</u></p> <p>(1) Read <i>Mathematical Mindsets</i>, Chapter 7 – “From Tracking to Growth Mindset Grouping”, Review Appendix A pp. 254-255 and Appendix B – 7. (2) Read “Low-Floor/High-Ceiling Tasks & Other Takeaways” https://www.mathlearningcenter.org/blog/low-floorhigh-ceiling-tasks-other-takeaways (3) Read “Opening Our Ideas”: How a detracked mathematics approach promoted respect, responsibility, and high achievement.” https://efaidnbmnnnibpcajpcgclcfndmkaj/https://www.youcubed.org/wp-content/uploads/2017/03/TIP2006.pdf (4) View and Solve the Proposed Problem “Math Resource Showcase Low Floor High Ceiling” https://youtu.be/DJzh70eL-A (5) View “An EXAMPLE UDL lesson - Low Floor, High Ceiling using FRACTALS” https://youtu.be/Ubl-rhLNDjk</p> <p>Requirements: Weekly Discussions, Response to Peer Group, Strategies connecting to your current or future classroom.</p> <ul style="list-style-type: none"> Students will post on discussion board and assignments their short reflections about the assigned weekly readings/videos/website review (THREE THOUGHTFUL AND WELL-DEVELOPED PARAGRAPHS). Include at least <u>four direct quotes</u> from course readings/videos using “APA formatting, which looks like this” (Author, year, p. xx). (10 points) Your reflection must mention 1-2 tangible classroom strategies that the readings/video evoked which could be useful in your classroom/mathematics. (5 points) 	<p>Reflection: 11/3/24 Peer Responses: 11/5/24</p>



	<p>***Post your reflection by Sunday at 11:59pm so your peers can respond before Tuesday.</p> <ul style="list-style-type: none"> Respond with 3-4 <u>thoughtful</u> sentences to each of your peers in the group (4 students per group = 4 responses). (10 points) 	
<p>Module 6 Weeks 11 & 12</p>	<p>Topics: Assessment for a Growth Mindset</p> <p>Readings and Evidence of Understanding:</p> <p>(1) Read <i>Mathematical Mindsets</i>, Chapter 8 – “Assessment for a Growth Mindset” and Review Appendix A – pp. 256 - 280. (2) Read “Aligning Assessment to Brain Science” https://efaidnbmnnnibpcajpcglclefindmkaj/https://www.youcubed.org/wp-content/uploads/2017/05/Aligning-Assessment-with-Brain-Science-no-ppt.pdf (3) View “Race to Nowhere” TRAILER https://youtu.be/BE7TLXbXROg?si=NrVUyYVDAFfHPoEd (4) View “Beyond Measure Vicki Abeles Talks at Google” https://youtu.be/qcOBI0WH39U?si=7POQhdZow8KctStv (5) Include in your Peer Response “Two Stars and a Wish” as described on page 165 in <i>Mathematical Mindsets</i>.</p> <p>Requirements: Weekly Discussions, Response to Peer Group, Strategies connecting to your current or future classroom.</p> <ul style="list-style-type: none"> Students will post on discussion board and assignments their short reflections about the assigned weekly readings/videos/website review (THREE THOUGHTFUL AND WELL-DEVELOPED PARAGRAPHS). Include at least <u>four direct quotes</u> from course readings/videos using “APA formatting, which looks like this” (Author, year, p. xx). (10 points) Your reflection must mention 1-2 tangible classroom strategies that the readings/video evoked which could be useful in your classroom/mathematics. (5 points) <p>***Post your reflection by Sunday at 11:59pm so your peers can respond before Tuesday.</p> <ul style="list-style-type: none"> Respond with 3-4 <u>thoughtful</u> sentences to each of your peers in the group (4 students per group = 4 responses). (10 points) 	<p>Reflection: 11/17/24 Peer Responses: 11/19/24</p>
<p>Module 7 Week 13</p>	<p>Topics: Teaching Mathematics for a Growth Mindset</p> <p>Readings and Evidence of Understanding:</p> <p>(1) Read <i>Mathematical Mindsets</i>, Chapter 9 – “Teaching Mathematics for a Growth Mindset” (2) View “Speed is not important” https://www.youcubed.org/resources/wim-2-day-4/ (3) View “Do schools kill creativity? Sir Ken Robinson TED” https://youtu.be/iG9CE55wbtY?si=-KRe1y7KteEuO99h (4) View Encouraging Students to Be Mathematicians: Classroom Example https://hdl.handle.net/2027.42/65013</p>	<p>Reflection: 11/24/24 Peer Responses: 11/26/24</p>



	<p>(5) Complete the ‘Tethered Goat’ investigation on p. 207. Post with your reflection. In peer response, include commentary on the results provided for the ‘Tethered Goat’ problem.</p> <p>Requirements: Weekly Discussions, Response to Peer Group, Strategies connecting to your current or future classroom.</p> <ul style="list-style-type: none"> Students will post on discussion board and assignments their short reflections about the assigned weekly readings/videos/website review (THREE THOUGHTFUL AND WELL-DEVELOPED PARAGRAPHS). Include at least <u>four direct quotes</u> from course readings/videos using “APA formatting, which looks like this” (Author, year, p. xx). (10 points) Your reflection must include the ‘Tethered Goat’ investigation (p.207). (5 points) <p><i>****Post your reflection by Sunday at 11:59pm so your peers can respond before Tuesday.</i></p> <ul style="list-style-type: none"> Respond with 3-4 <u>thoughtful</u> sentences to each of your peers in the group (4 students per group = 4 responses). (10 points) 	
<p>Module 8 Week 14</p>	<p><u>Topics:</u> Highlighting Course Connections to Education and Teaching</p> <p><u>Evidence of Understanding:</u> (1) Final Reflection</p> <p>Final Reflection Requirements: Compose (using APA formatting) your final reflection focusing on:</p> <ul style="list-style-type: none"> the ‘Big Ideas’ from the course, what you learned about the big ideas (including citations as supporting evidence), what takeaways, in what situations you plan to use those concepts/ideas and how you will implement those concepts/ideas, what new ideas or thoughts you now have about teaching mathematics, and What questions you still have. <p>Format as a scholarly paper with a Running Head, Title Page, Introductory Paragraph, Body (at least FIVE THOUGHTFUL AND WELL-DEVELOPED PARAGRAPHS), and Conclusion Paragraph. Include at least <u>seven direct quotes</u> from course readings/videos using “APA formatting, which looks like this” (Author, year, p. xx). (200 points)</p> <p><i>****Post your reflection by 11/27/24 at 11:59pm on Blackboard Assignments</i></p> <p>(2) Develop three (3) Final Exam Questions to possibly be included on the final exam. (30 points)</p>	<p>11/27/23</p>



	<p>Final Exam Question Development Criteria:</p> <ul style="list-style-type: none"> • Questions may be open-ended (short paragraph), Multiple Choice, Matching, True False, or Fill-in-the-Blank. • Questions may be based in assigned readings or assigned videos. • Provide what you feel the correct answer is or would include. • Avoid superficial questions. <p>***Post your questions by 11/27/24 at 11:59pm on Blackboard Assignments</p>	
Module 9 Weeks 15 & 16	<p><u>Final Exam (100 Points)</u></p> <p><u>The final exam will cover all readings and videos.</u></p>	Final Exam Window: 12/1/24- 12/9/24

Final Word: "Mathematics is not about numbers, but about life. It is about the world in which we live. It is about ideas. And far from being dull and sterile as it is so often portrayed, it is full of creativity" (Devlin, 2001)

Rubrics:

Academic work must be written with appropriate citations utilizing **APA Style (7th edition)**.

Inattention to APA will immediately result in returned work and a request for rewrite. Continued inattention to APA will result in a failing grade for each assignment it pertains to. +Students may not submit a similar paper for this class and another class. If you are planning on working on the same topic for this course and another course, you must obtain permission from both course instructors and submit a copy of both papers to your instructor upon completion. Failure to do this will result in a failing grade for the course.

Weekly Assignments:

Weekly Discussions, Response to Peer Group, Strategies connecting to your current or future classroom.

- Students will post on discussion board and assignments their short reflections about the assigned weekly readings/videos/website review

(THREE THOUGHTFUL AND WELL-DEVELOPED PARAGRAPHS). Include at least four direct quotes from course readings/videos using "APA formatting, which looks like this" (Author, year, p. xx). (10 points)

- Your reflection must mention 1-2 tangible classroom strategies that the readings/video evoked which could be useful in your classroom/mathematics. (5 points)

***Post your reflection by Sunday at 11:59pm so your peers can respond before Tuesday.

- Respond with 3-4 thoughtful sentences to each of your peers in the group (4 students per group= 4 responses). (10 points)

Final Reflection Requirements: Compose (using APA formatting) your final reflection focusing on:

- the 'Big Ideas' from the course,



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- what you learned about the big ideas (including citations as supporting evidence),
- what takeaways, in what situations you plan to use those concepts/ideas and how you will implement those concepts/ideas,
- what new ideas or thoughts you now have about teaching mathematics, and
- What questions you still have.

Format as a scholarly paper with a Running Head, Title Page, Introductory Paragraph, Body (at least FIVE THOUGHTFUL AND WELL-DEVELOPED PARAGRAPHS), and Conclusion Paragraph. Include at least seven direct quotes from course readings/videos using “APA formatting, which looks like this” (Author, year, p. xx). (100 points)

Body:			
	‘Big Ideas’ from the course	20	
	what you learned about the big ideas	20	
	takeaways	20	
	situations	Incl	
	how	Incl	
	new ideas or thoughts	20	
	questions you still have.	20	
	Development of thought	40	
Mechanics:			
	APA formatting	6	
	Formatting Sections	6	
	Length	30	
	Grammar and Punctuation	6	
	citations as supporting evidence	6	
Total Points			200

Note: I reserve the right to adjust the course syllabus or change assignments as needed.



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Possible General Resources for Video Classroom Teaching Observations:

- TED Talks on Teaching (Choice)
[https://www.ted.com/talks?topics\[0\]=teaching](https://www.ted.com/talks?topics[0]=teaching)

- PBS Learning
https://nm.pbslearningmedia.org/search/?q=Science&selected_facet=grades:6-8,9-12&selected_facet=subject:1184,8337

Filter: 6-8 and 9-12
Mathematics and/or Science

- TIMSS Videos
<https://www.timssvideo.com/>
Filter: Mathematics and/or Science

- UCLA teaching videos
<https://centerx.gseis.ucla.edu/teacher-education/teaching-practices-videos-secondary/>

- Teacher Tube
<https://www.teachertube.com/>
Filter: Mathematics and/or Science

- NASA: 24 STEM Lessons You Can Quickly Deploy in the Classroom
<https://www.jpl.nasa.gov/edu/news/2022/1/26/24-stem-lessons-you-can-quickly-deploy-in-the-classroom/>

- “Teaching kids real math with computers”
https://www.ted.com/talks/conrad_wolfram_teaching_kids_real_math_with_computers?subtitle=en

Video Observation Hours Log:



SCED4367/MSED4310
VIDEO OBSERVATION ASSIGNMENT LOG SHEET

Name of Student:

80# _____

Content:

<i>Date</i>	<i>Time- In</i>	<i>Time- Out</i>		<i>Video Link</i>
			1	Our Brains Think Visually About Math https://www.youcubed.org/resources/brains-think-math-visually-video/
			2	Mistakes https://www.youcubed.org/resources/mistakes-video/
			3	Mistakes are Powerful https://www.youcubed.org/resources/wim-2-day-2-video/
			4	Teaching kids real math with computers https://www.ted.com/talks/conrad_wolfram_teaching_kids_real_math_with_computers?subtitle=en
			5	Importance of Struggle https://www.youcubed.org/resources/the-importance-of-struggle/
			6	Number Talks https://www.youcubed.org/resources/cathy-humphreys-teaching-number-talk/
			7	Data Science Students https://vimeo.com/673398725
			8	Introduction to Data Science Course https://vimeo.com/569394563
			9	Like a Detective https://vimeo.com/510792526
			10	“An EXAMPLE UDL lesson - Low Floor, High Ceiling using FRACTALS” https://youtu.be/Ubl-rhLNDjk
			11	“Math Resource Showcase Low Floor High Ceiling” https://youtu.be/DJzhl70eL-A
			12	“Race to Nowhere” TRAILER https://youtu.be/BE7TLXbXROg?si=NrVUyYVDAFdHPoEd
			13	Beyond Measure Vicki Abeles Talks at Google https://youtu.be/qcOBI0WH39U?si=7POQhdZow8KctStv



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<i>Date</i>	<i>Time- In</i>	<i>Time- Out</i>		<i>Video Link</i>
			14	“Speed is not important” https://www.youcubed.org/resources/wim-2-day-4/
			15	“Do schools kill creativity? Sir Ken Robinson TED” https://youtu.be/iG9CE55wbtY?si=-KRe1y7KteEuO99h
			16	Encouraging Students to Be Mathematicians: Classroom Example https://hdl.handle.net/2027.42/65013

The following student _____ has completed _____ hours of video observation.

Ruby L. Lynch-Arroyo, PhD, Part-time Instructor, COE _____

Date: