



***“The mediocre teacher tells. The good teacher explains. The superior teacher demonstrates. The great teacher inspires.” ~ William Arthur Ward, writer***

SCED 4367 (10776) – MTED3330 (16721)

**ONLINE**

Teaching Mathematics in Secondary School  
Integrated and Alternative Representations of Math Principals  
Fall 2023

*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 (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).

Students enrolled in this course will 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/MTED3330 Required Texts:**

*Captivate, Activate, and Invigorate the Student Brain in Science and Math, Grades 6-12* by John Almarode. ISBN -13: 9781452218021

*Connecting Mathematical Ideas: Middle School Video Cases to Support Teaching and Learning* by Boaler, J. Second Edition. ISBN-13: 9780325078182

## **Additional materials/resources we will be using:**

Some required readings will be scanned and placed on blackboard, or you will be provided with



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appropriate web links:

- A. 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>
- B. Common Core Standards  
<https://study.com/teach/common-core-math-standards.html>
- C. These websites provide a wide selection of virtual manipulatives for teaching mathematics:  
<https://nlvm.usu.edu/en/nav/vlibrary.html>
- D. Book "How Students Learn: Mathematics in the Classroom".  
You can read it online at [http://www.nap.edu/catalog.php?record\\_id=11101](http://www.nap.edu/catalog.php?record_id=11101)

### **Software Requirements:**

- A. Course materials supplementing the required text will be uploaded on UTEP Blackboard Ultra LMS.
- 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 student work, or preparing activities. Completing these assignments is a critical part of your coursework.

### **Game Development/Collaboration (25 points):**

Based on the description of [professional develop task #2](#), *Captivate, Activate, and Invigorate*, collaboratively develop a game to teach a Texas Essential Knowledge & Skills (TEKS) standards mathematical concept. (50% of game development grade).

Review/Play two (2) other students' games and provide specific feedback by answering these questions (50% of game development grade):

- A. How did you feel about the game as a teaching strategy?
- B. Were you engaged?
- C. How would you modify/improve the game?
- D. What evidence supports your answers?

### **Final Project/Video-Website:**

Based on the foundations of Project-Based Learning, the 5-E Model of Lesson Planning and Unit Planning, you will be developing and creating a Lesson Plan/Website-Webquest for Texas Essential Knowledge and Skills Mathematics (TEKS)

[https://texreg.sos.state.tx.us/public/readtac\\$ext.ViewTAC?tac\\_view=4&ti=19&pt=2&ch=111](https://texreg.sos.state.tx.us/public/readtac$ext.ViewTAC?tac_view=4&ti=19&pt=2&ch=111) utilizing the



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pedagogical approach of three (2) learning centers/stations integrating hands-on student experiences.

You will videotape a ‘tour’ for each center/station **demonstrating** what students would do in each center/station (as if you were the student). Each center/station should take **no longer than ten (10) minutes** for students to complete the activity. Centers/stations are prepared for face-to-face instructions, yet easily adaptable to online learning as a ‘Webquest’ project utilizing **a website you will create**. Each center/activity are all integrated within the concepts of the student chosen standard.

Your website (Webquest Project) must include the following:

- A. Lesson Plan (20% of final project grade)
- B. Station Lesson Plans (15% of final project grade)
- C. Stated Objective(s) (5% of final project grade)
- D. Resource materials: handouts, links, list of materials, video etc. for each center/station (15% of final project grade)
- E. Video demonstrations/directions of/for each station (student-user friendly) (20% of final project grade)
- F. Visually engaging website with graphics, etc. (15% of final project grade)
- G. Forms of formative evaluation for each center/station (10% of final project grade)

You may use any free website building platform including (but not limited to) Wix, Weebly, Google, WordPress, Webs.com, Websitebuilder.com, or any other platform that you are comfortable with using. If you already have an established website, you may add a tab for SCED4367/MTED3330 (easy to navigate).

### Video Observation Hours:

As you view an assigned video, you will complete the video observation log affirming the time spent viewing the videos. This document will be submitted at the end of the semester, reviewed and submitted to the Teacher Education Department.

### 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</i> 7-12	<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



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**POLICIES:**

A. Grading Scale:

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

B. Submission of Assignments:

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

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

D. 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).

E. 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



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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)<<mailto:eoaa@utep.edu>> .

F. 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](mailto:eoaa@utep.edu) .

G. Professionalism:

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.



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

Week/Day	Learning Agenda/Assignments	Assignment Due Date
Module 1	<p><b>Topic Introductions:</b> <i>Initial perceptions about students are frequently not accurate based on assumptions we make from available information before we get to know our students. This introductory activity exemplifies how making assumptions can lead to misinformation and inaccurate judgements.</i></p> <p>(1) Prepare a 2-3-minute video introducing yourself (2 points), post link on Blackboard. In the video include 3 things about yourself - 2 that are true and 1 thing that is false. Do not state what is true and what is false. (2) Post video or link in <b>Blackboard discussion</b> (3) Review your classmates' videos and post which thing you thought was a lie about them. (4) Respond to answers given by your classmates with the correct answer. <i>Think about how many inaccurate assumptions were made! Ponder: How can we avoid making assumptions and stereotyping students before we get to really know them?</i></p> <p><b>Readings and Evidence of Understanding:</b> (1) Read <i>Connecting Mathematical Ideas</i>, Chapter 1 – Opening the Door to My Classroom (2) Read <i>Captivate, Activate, and Invigorate</i>, Chapter 1- Recipe for Engaged Brain (3) Complete <b>3-2-1 Exit Ticket (graded)</b>, <i>Captivate, Activate, and Invigorate</i>, pp 14-15, Submit on Blackboard (3 points) (4) Watch Technological, Pedagogical and Content Knowledge (TPaCK) <a href="http://www.tpack.org/">http://www.tpack.org/</a></p>	9/5/23
Module 2	<p><b>Topics:</b> Background Knowledge</p> <p><b>Videos and Links to review (on Blackboard):</b> (1) Border Problem Part I (2) Fish is Fish (3) NCTM process standards (<a href="http://www.nctm.org/Standards-and-Positions/Principles-and-Standards/Process">http://www.nctm.org/Standards-and-Positions/Principles-and-Standards/Process</a> ) (4) Texas Essential Knowledge &amp; Skills (TEKS) Standards (<a href="http://ritter.tea.state.tx.us/rules/tac/chapter111/ch111c.html">http://ritter.tea.state.tx.us/rules/tac/chapter111/ch111c.html</a> )</p> <p><b>Readings and Evidence of Understanding:</b> (1) Read <i>Connecting Mathematical Ideas</i>, Chapter 2, and view video case* - (Building on Student Ideas, The Border Problem Part I): view, analyze and</p>	9/10/23





	<p><b>write a three (3) paragraph reflection of the pedagogical approaches used and responding to question prompts. (8 points)</b></p> <p>(2) Read <i>Captivate, Activate, and Invigorate</i>, <b>Stop-n-Think Box 3.6, pp 60-62</b></p> <p><i>* You may need to download video and open with "Power Media Player" or "Video" or another option than photo viewer</i></p>	
Module 3	<p><b><u>Topics:</u></b> Misconceptions and Effective Questioning</p> <p><b><u>Videos and Links to review (on Blackboard):</u></b></p> <p>(1) View "Mistakes"  <a href="https://www.youcubed.org/resources/mistakes-video/">https://www.youcubed.org/resources/mistakes-video/</a></p> <p>(2) The Border Problem Part II view, analyze, and using the question prompts <b>write a three (3) paragraph reflection of the pedagogical approaches used. (8 points)</b></p> <p><b><u>Readings and Evidence of Understanding:</u></b></p> <p>(1) <i>Connecting Mathematical Ideas</i>, Chapter 3, and view video case - (Building Understanding of Algebraic Representation)</p> <p>(2) Read <i>Captivate, Activate, and Invigorate</i>, Chapter 3- Prime the Brain, pp56-60.</p> <p>(3) Complete <i>Captivate, Activate, and Invigorate</i> <b>Stop-n-Think 3.5 and 3.6</b> (2 points)</p> <p>(4) Complete <i>Captivate, Activate, and Invigorate</i>, <b>Professional Development Task 1, 2, &amp; 3</b>, pp 62-63 (3 points)</p>	9/17/23
Module 4	<p><b><u>Topics:</u></b> Mathematical Reasoning, Sense-making, Pedagogical Moves, Role of Skeptics</p> <p><b><u>Videos and Links to review (on Blackboard):</u></b> view video case - Defending Reasonableness: Division of Fractions</p> <p><b><u>Readings and Evidence of Understanding:</u></b></p> <p>(1) Read <i>Connecting Mathematical Ideas</i>, Chapter 4, and view video case* - (Defending Reasonableness: Division of Fractions): view, analyze and <b>write a three (3) paragraph reflection of the pedagogical approaches used and responding to question prompts.</b></p> <p>(2) Read <i>Captivate, Activate, and Invigorate</i>, Chapter 4- Captivate with Novelty</p> <p>(3) Complete <b>Exit Ticket</b>, <i>Captivate, Activate, and Invigorate</i>, Chapter 4, pp 89-90 (2 points)</p> <p>(5) Complete <b>Professional Development Task</b>, <i>Captivate, Activate, and Invigorate</i>, 1 &amp; 2, p. 90 -91 (4 points)</p>	9/24/23
Module 5	<p><b><u>Topics:</u></b> Cooperative/Collaborative/Inquiry-Based/Project-Problem-Based Learning, Establish Relevance</p>	10/1/23



	<p><b><u>Videos and Links to review (on Blackboard):</u></b> View video case - Defending Reasonableness: Notion of Proof Part I</p> <p><b><u>Readings and Evidence of Understanding:</u></b> (1) Read <i>Connecting Mathematical Ideas</i>, Chapter 5, and view video case - (Defending Reasonableness: Notion of Proof Part I): view, analyze and <b>write a three (3) paragraph reflection of the pedagogical approaches used and responding to question prompts.</b> (2) Read <i>Captivate, Activate, and Invigorate</i>, Chapter 5- Establish Relevance (3) Complete <b>Professional Development Task #2</b>, <i>Captivate, Activate, and Invigorate</i>, Chapter 5, p.121, Develop a Game (10 points)</p>	
Module 6	<p><b><u>Topics:</u></b> “Sticky Learning,” Cross-Curricular Connections, Integrating Writing</p> <p><b><u>Videos and Links to review (on Blackboard):</u></b> view video case - Defending Reasonableness: Notion of Proof Part II</p> <p><b><u>Readings and Evidence of Understanding:</u></b> (1) Read <i>Connecting Mathematical Ideas</i>, Chapter 6, and view video case - (Defending Reasonableness: Notion of Proof Part II): view, analyze and <b>write a three (3) paragraph reflection of the pedagogical approaches used and responding to question prompts.</b> (2) Read <i>Captivate, Activate, and Invigorate</i>, Chapter 7- Make Learning a Long-Lasting, Invigorating Experience (3) Complete <b>Stop-n-Think Box</b>, <i>Captivate, Activate, and Invigorate</i>, 7.8, p.169 (3 points) (4) <b>Review/Play two</b> (2) other students’ games and provide specific feedback (4 points)</p>	10/8/23
Module 7	<p><b><u>Topics:</u></b> Models, Background Knowledge, Real World Connections, Differentiation, Level Up/Down</p> <p><b><u>Videos and Links to review (on Blackboard):</u></b> (1) view video case - Volume of Prisms &amp; Cylinders (2) Using technology to teach mathematics: Explore and Review three (3) of the following applications: a) GeoGebra (<a href="https://www.geogebra.org/">https://www.geogebra.org/</a>) b) Desmos (<a href="https://www.desmos.com/">https://www.desmos.com/</a>) c) “Zeros of Cubics” <a href="https://www.cuemath.com/algebra/zeros-of-a-cubic-polynomial/">https://www.cuemath.com/algebra/zeros-of-a-cubic-polynomial/</a> d) “Mathematics of Motion”</p>	10/15/23



	<p><a href="https://www.physicsclassroom.com/class/circles/Lesson-1/Mathematics-of-Circular-Motion">https://www.physicsclassroom.com/class/circles/Lesson-1/Mathematics-of-Circular-Motion</a></p> <p>e) Effects of Parameters (Desmos) f) “Making a GeoGebra app” <a href="https://www.geogebra.org/a/14">https://www.geogebra.org/a/14</a></p> <p><b><u>Readings and Evidence of Understanding:</u></b> (1) Read <i>Connecting Mathematical Ideas</i>, Chapter 8, and view video case - Volume of Prisms &amp; Cylinders view, analyze and <b>write a three (3) paragraph reflection of the pedagogical approaches used and responding to question prompts.</b> (2) Read <i>Captivate, Activate, and Invigorate</i>, Chapter 2- Building Background Knowledge (3) Complete and submit <b>review sheet</b> of application/sites (3 points)</p>	
Module 8	<p><b><u>Topics:</u></b> Math Talk/Engaging Students in Math Communication</p> <p><b><u>Videos and Links to review (on Blackboard):</u></b> View video case - Surface Area</p> <p><b><u>Readings and Evidence of Understanding:</u></b> (1) Read <i>Connecting Mathematical Ideas</i>, Chapter 9, and view video case* - (Surface Area): view, analyze, and <b>identify Math Talk/Moves in the Video (script video)</b> (2) Read <i>Captivate, Activate, and Invigorate</i>, Chapter 3- Prime the Brain (3) Complete <b>Stop-n-Think Box</b>, <i>Captivate, Activate, and Invigorate</i>, #3.4, p.52, K-W-L (3 points)</p>	10/22/23
Module 9	<p><b><u>Topic:</u></b> Lesson Planning, student engagement, student positioning, mathematical disposition</p> <p><b><u>Videos and Links to review (on Blackboard):</u></b> (1) Review The 5E Instructional Model <a href="https://www.nasa.gov/sites/default/files/atoms/files/the_5e_instructional_model.pdf">https://www.nasa.gov/sites/default/files/atoms/files/the_5e_instructional_model.pdf</a></p> <p><b><u>Readings and Evidence of Understanding:</u></b> (1) Read <i>Captivate, Activate, and Invigorate</i>, Chapter 1-Review (2) Read <i>Captivate, Activate, and Invigorate</i>, Chapter 8 (Lesson Planning) (3) Complete <b>Stop-n-Think Box</b>, <i>Captivate, Activate, and Invigorate</i>, # 1.2 (p.9), 1.3 (p.11), 1.4 (p.13) (3 points) (4) Complete <b>Professional Development Task</b>, <i>Captivate, Activate, and Invigorate</i>, #2, p.16 (3 points) (5) <b>Begin</b> working on Final Project/Video/Website</p>	10/29/23
Module 10	<p><b><u>Videos and Links to review (on Blackboard):</u></b> View Learning Centers: <a href="https://youtu.be/xtEsc-ooHvc">https://youtu.be/xtEsc-ooHvc</a></p>	11/5/23



	<b><u>Readings and Evidence of Understanding:</u></b> (1) Continue working on Final Project/Video/Website Work (2) Submit <b>website link</b> (3 points)	
Module 11	<b><u>Readings and Evidence of Understanding:</u></b> (1) Continue working on Final Project/Video/Website Work (2) Post on Blackboard and Website <b>Draft Lesson Plan</b> (10 points)	11/12/23
Module 12	<b><u>Readings and Evidence of Understanding:</u></b> (1) Continue working on Final Project/Video/Website Work (2) Post on Blackboard and Website <b>Station Lesson Plans</b> (15 points).	11/19/23
Modules 13/14/15	<b><u>Readings and Evidence of Understanding:</u></b> (1) Finish Final Project/Video/Website Work Finalized (100 points) (2) Post on Blackboard and Website <b>materials &amp; Video for Stations</b>	12/3/23

*Final Word: I reserve the right to adjust the course syllabus or change assignments as needed.*

### **Rubrics:**

#### Introductory Video Description/Grading Rubric (2 points):

- (1) Prepare a 2-3-minute video introducing yourself. In the video include 3 things about yourself - 2 that are true and 1 thing that is false. Do not state what is true and what is false.
- (2) Post link to the video/or the video on Blackboard
- (3) Review your classmates' videos and post which thing you thought was a lie about them.
- (4) Respond to answers given by your classmates with the correct answer. Think about how many inaccurate assumptions were made! Ponder: How can we avoid making assumptions and stereotyping students before we get to really know them?

#### Game Development/Collaboration (10 points):

Based on the description of professional develop task #2, *Captivate, Activate, and Invigorate*, collaboratively develop a game to teach a high school Texas Essential Knowledge and Skills (TEKS) standards mathematical concept [http://corestandards.org/assets/CCSSI\\_Math%20Standards.pdf](http://corestandards.org/assets/CCSSI_Math%20Standards.pdf) . (50% of game development grade). Review/Play two (2) other students' games and provide specific feedback by answering these questions (50% of game development grade):

- (1) How did you feel about the game as a teaching strategy?
- (2) Were you engaged?
- (3) How would you modify/improve the game?
- (4) What evidence supports your answers?

#### Weekly Assignments:

Including, but not limited to Stop-n-Think Boxes, Professional Development Tasks, Exit Tickets and reflections. Assignments should not be essays of great length. Submit complete, succinct



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responses integrating topics and concepts learned in that lesson. Demonstrate evidence or readings and videos/links review. Use citations to support assertions. Be wary of ‘copy/paste’ to avoid plagiarism; reflection should be direct quotes, paraphrasing or your own words. Demonstrate critical thinking and analysis. Do not be repetitive in your submissions.

(Grading varies depending on the assignment: maximum points = 8).

### Final Project:

Based on the foundations of Project-Based Learning, the 5-E Model of Lesson Planning and Unit Planning, you will be developing and creating a Lesson Plan/Website-Webquest for Texas Essential Knowledge and Skills Mathematics (TEKS)

[https://texreg.sos.state.tx.us/public/readtac\\$ext.ViewTAC?tac\\_view=4&ti=19&pt=2&ch=111](https://texreg.sos.state.tx.us/public/readtac$ext.ViewTAC?tac_view=4&ti=19&pt=2&ch=111) utilizing the pedagogical approach of **two (2) learning centers/stations** integrating hands-on student experiences.

You will videotape a ‘tour’ for each center/station **demonstrating** what students would do in each center/station (as if you were the student). Each center/station should take **no longer than ten (10) minutes** for students to complete the activity. Centers/stations are prepared for face-to-face instructions, yet easily adaptable to online learning as a ‘Webquest’ project utilizing **a website you will create**. Each center/activity are all integrated within the concepts of the student chosen standard.

Your website (Webquest Project) must include the following:

- A. Lesson Plan (20% of final project grade)
- B. Station Lesson Plans (15% of final project grade)
- C. Stated Objective(s) (5% of final project grade)
- D. Resource materials: handouts, links, list of materials, video etc. for each center/station (15% of final project grade)
- E. Video demonstrations/directions of/for each station (student-user friendly) (20% of final project grade)
- F. Visually engaging website with graphics, etc. (15% of final project grade)
- G. Forms of formative evaluation for each center/station (10% of final project grade)

You may use any free website building platform including (but not limited to) Wix, Weebly, Google, WordPress, Webs.com, Websitebuilder.com, or any other platform that you are comfortable with using. If you already have an established website, you may add a tab for SCED4367/MTED3330 (easy to navigate).

### Video Observation Hours:

As you view an assigned video, you will complete the video observation log affirming the time spent viewing the videos. This document will be submitted at the end of the semester, reviewed and submitted to the Teacher Education Department (5 Points).

Log Below:



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**SCED4367/MTED3330**  
**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	Border Problem Part I <i>Connecting Mathematical Ideas</i>
			2	Fish is Fish <a href="https://youtu.be/cvp5F">https://youtu.be/cvp5F</a>
			3	“Mistakes” <a href="https://www.youcubed.org/resources/mistakes-video/">https://www.youcubed.org/resources/mistakes-video/</a>
			4	Border Problem Part II <i>Connecting Mathematical Ideas</i>
			5	Defending Reasonableness: Division of Fractions <i>Mathematical Ideas</i> <span style="float: right;"><i>Connecting</i></span>
			6	Making Cross-Curricular Connections
			7	Defending Reasonableness: Notion of Proof Part I <i>Mathematical Ideas</i> <span style="float: right;"><i>Connecting</i></span>
			8	Defending Reasonableness: Notion of Proof Part II <i>Mathematical Ideas</i> <span style="float: right;"><i>Connecting</i></span>
			9	GeoGebra ( <a href="https://www.geogebra.org/">https://www.geogebra.org/</a> ) Desmos ( <a href="https://www.desmos.com/">https://www.desmos.com/</a> ) “Zeros of Cubics” <a href="https://www.cuemath.com/algebra/zeros-of-a-cubic-polynomial/">https://www.cuemath.com/algebra/zeros-of-a-cubic-polynomial/</a> “Mathematics of Motion” <a href="https://www.physicsclassroom.com/class/circles/Lesson-1/Mathematics-of-Circular-Motion">https://www.physicsclassroom.com/class/circles/Lesson-1/Mathematics-of-Circular-Motion</a> Effects of Parameters (Desmos) “Making a GeoGebra app” <a href="https://www.geogebra.org/a/14">https://www.geogebra.org/a/14</a>
			10	Surface Area <i>Ideas</i> <span style="float: right;"><i>Connecting Mathematical</i></span>
			11	The 5E Instructional Model <a href="https://www.nasa.gov/sites/default/files/atoms/files/the_5e_instructional_model.pdf">https://www.nasa.gov/sites/default/files/atoms/files/the_5e_instructional_model.pdf</a>
			12	Learning Centers: <a href="https://youtu.be/xtEsc-ooHvc">https://youtu.be/xtEsc-ooHvc</a>

The following student \_\_\_\_\_ has completed \_\_\_\_\_ hours of video observation. If you have any questions, you may contact me at [rllynch@utep.edu](mailto:rllynch@utep.edu)

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

Date: \_\_\_\_\_