



UNIVERSITY OF TEXAS  
EL PASO

College of Education- Department of Teacher Education

<b>Title of Course:</b> MTED 5322, CRN 28103 Pedagogical Content Knowledge in Teaching Math (Strengthening Quantitative Reasoning)	<b>Class hours:</b> 3
<b>Semester:</b> Spring 2021	<b>Instructor Information:</b> <b>Name:</b> Dr. Olga Kosheleva <b>Email:</b> on BlackBoard or <a href="mailto:olgak@utep.edu">olgak@utep.edu</a> <b>Office hours:</b> Virtual on Mondays, 6:45 – 8:55 pm; or use BlackBoard email for additional appointment
<b>Day/Time:</b> Fully Online	
<b>Credits:</b> 3	

**Course Description:** A course, which integrates basic principles from various mathematical domains. The course will emphasize interrelationships among those principles and alternate conceptual representations of them. The representations will be analyzed to determine the mathematical skills and conceptual levels necessary to understand them.

**Course Format Information:** This course will be conducted *fully online* [there are no in-person/campus-based class meetings]. It runs on a Monday to Sunday schedule; course work throughout the week are due at specific days/times, however, you are NOT required to be online at any specific time. The standard recommendation across the board by American universities is to plan for approximately three hours of study time for every one credit hour taken. Therefore, for this course, you can expect each week to spend 3 hours of class time + 9 hours of study and prep time, which equals approximately 12 hours per week devoted to this course. Please read the syllabus and information in the course site VERY carefully, understand what you need to do and when you need to do it, and then plan course study time in your week accordingly. If at any time you do not understand what to do or when to do it, you should contact your instructor immediately using BlackBoard email.

**For Technical Assistance:** For technical problems with our online course site or related computer/Internet applications, please contact the UTEP Helpdesk: M - F: 7AM - 8PM, Sat: 9AM - 1PM, Sundays 11-4 pm. On campus phone: 915.747.5257. Off campus: 915.747.4357. If you are on campus, you may also visit the ATLAS lab located within the Undergraduate Learning Center (UGLC building) or the Technology Support Center in Room 300, Library.

**Readings:**

This course does not require the purchase of a textbook. All of the required readings and video/audio files for the course are provided in Blackboard via our course site, either as an attached PDF that can be downloaded or through a clickable Internet link.

**Other materials/resources we will be using:**

**State Board for Educator Certification (SBEC)**

[http://tea.texas.gov/About\\_TEA/Leadership/State Board for Educator Certification/](http://tea.texas.gov/About_TEA/Leadership/State_Board_for_Educator_Certification/)

**This website includes resources for revised Texas Essential Knowledge and Skills (TEKS) for all grade levels (Mathematics)**

<http://tea.texas.gov/index2.aspx?id=6148>

**TEXES preparation manuals**

[http://www.tx.nesinc.com/PageView.aspx?f=HTML\\_FRAG/GENRB\\_PrepManuals.html](http://www.tx.nesinc.com/PageView.aspx?f=HTML_FRAG/GENRB_PrepManuals.html)

**National Council for Teachers of Mathematics (NCTM)**

<http://www.nctm.org/>

**Common Core Standards**

<http://www.corestandards.org/>

**These websites describe different aspects of math representations**

<http://www.abstractmath.org/MM/MMRepsModels.htm>

[http://en.wikipedia.org/wiki/Multiple representations %28mathematics education%29](http://en.wikipedia.org/wiki/Multiple_representations_%28mathematics_education%29)

<https://www.showme.com/topic/math>

<http://continuities.wordpress.com/2010/04/25/sharing-multiple-representations-of-systems/>

[http://www.losmedanos.edu/deved/documents/m25\\_student\\_work.multiple representations 000.pdf](http://www.losmedanos.edu/deved/documents/m25_student_work.multiple_representations_000.pdf)

<https://ctlonline.org/?s=representations>

<http://www.shodor.org/interactivate/activities/>

<http://www.fi.uu.nl/rekenweb/en/>

<http://www.internet4classrooms.com/index.htm>

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

**Copyright:**

Our online course site is copyrighted and is the property of UTEP faculty. Content from the course site, in part or whole, may *not* be shared or distributed without direct written permission. For questions or issues related to this, please contact the Teacher Education Department at [tedgrad@utep.edu](mailto:tedgrad@utep.edu).

**UTEP Learning Resources:**

(UTEP provides a variety of student services and support, including the resources below.)

- UTEP Library: You can access a wide range of resources including online, full-text access to thousands of journals and eBooks plus reference service and librarian assistance for enrolled students.
- The University Writing Center (UWC): Virtually everyone needs help with writing academic English. There's no shame in it. The UWC [Library Building, Rm.227; phone: 915.747.5112] provides online consultations to all UTEP students at no cost. They also have walk-in services, if you are local. It is a terrific resource. If I suggest you attend the Writing Center, it's because I think you will benefit from it. It's not a punishment – it's intended to help you. Check the website for more information: <http://uwc.utep.edu>

**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 [making plans to cheat with another], 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 an 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.

**Students with Disabilities statement:** If you have or believe you have a disability, you may wish to self-identify. You can do so by providing documentation to the Center for Accommodations and Support Services (CASS) located in Union E Room 106. Students who have been designated as having a disability must reactivate their standing with CASS on a yearly basis. Failure to report to this office will place a student on the inactive list and nullify the benefits received. If you have a condition that 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 CASS. You may call 919-747-5148 for general information about the Americans with Disabilities Act (ADA).

**Student Conduct and Discipline:** All students are expected and required to obey the law and to comply with Regent, Rules, and Regulations (<http://www.utsystem.edu/bor/rules>) with system and University rules, with directives issued by an administrative official in the course of his or her authorized duties and to observe the standards of conduct appropriate for the university.

**Equal Opportunity:** All students regardless of gender, age, class, race, religion, physical disability, sexual orientation, etc., shall have equal opportunity without harassment in this course. Any problems with or questions related to this can be discussed confidentially with your instructor.

### **Guide to Online Etiquette:**

As a member of the learning community of this class, the following is a list of specific expectations (Note that this list is not exhaustive and that it may be added to as needed throughout the semester):

1. *You are expected to actively engage in the learning community of this class.*

This includes: completing the coursework tasks as outlined in each week's session, actively contributing to discussions, seeking guidance if you have questions (note that if you have a question, it is likely that everyone will benefit if ask your question), and exhibiting professional courtesy during interactions with classmates/ your instructor. Class participation includes but is not limited to: engaging in in-class activities and writing, volunteering inputs in class discussions, answering questions, defending personal viewpoints, and presenting completed assignments to your classmates.

2. *You are expected to exhibit appropriate behavior for a higher learning environment.*

Even though we will not meet face-to-face, logging on to our online course site is the equivalent of walking on to the UTEP campus. Therefore, the rules of conduct that apply on campus also apply in our course site. Our course site is a place to engage in social learning; it is meant to be a safe space for all. Our ideas and beliefs shape who we are and will differ from our peers; sharing these within class allows us to learn different perspectives and points of view, but this can only happen successfully if everyone in our learning community is respectful of individual ideas. You are encouraged to participate in all activities to the fullest extent possible, with an open mind to new experiences. In particular, the following are general guidelines for online interactions:

- All the information discussed between peers and/or with your instructor should be kept confidential, thus providing a safe atmosphere for creative expression, free of judgment.
- You are encouraged to participate to the depth that you feel comfortable sharing with the class (Note: An electronic record will remain, so be thoughtful in how much personal information you share. The general rule is - share only that which you would be comfortable seeing printed in a newspaper/ public Internet page.).
- Do not use inappropriate language, all capital letters, or language short cuts (i.e. texting shorthand). Online entries should reflect academic writing standards, with edited spelling, grammar, and punctuation.
- When reacting to someone else's message, whether in agreement or disagreement, please address the ideas, not the person. (Note: Harassing, flaming, and/or inappropriate postings will not be tolerated.)
- Be sure to read everyone's responses before posting. Avoid repetition of what someone else has already said. Add something new to the discussion!
- Please refrain from posting yes/no or I agree/disagree answers (this will NOT earn you participation points). The point of our online interactions is to create a rich and meaningful sharing of ideas; therefore, posts should: justify positions, provide specific examples, and demonstrate that you have read the required readings and your classmates' comments carefully and thoughtfully.

3. *You are expected to exhibit high level time management skills and turn your work in ON TIME.* As previously mentioned, this is a fast-paced, intensive course that requires you to devote significant time to complete the required readings, discussions, and various additional assignments that are due each week. Although there is no mandatory time that you must be online, the research shows that those with the best success in online courses create a set schedule for coursework and stick to it (whether you do your work at 3am or 10am on whatever day does not matter, what matters is just that you allow a sufficient, set time each week of the semester to focus on coursework). Timely completion of all coursework is essential for this class to run smoothly (i.e. your classmates rely on you to do your readings early in the week and contribute to the discussion on time in order for them to be able to post feedback later in the week). Therefore, late work will NOT be accepted. All online assignments are due by the due date and time listed in the task directions (see each weekly session in our course site for specific details). Please ensure that you carefully read all instructions for each assignment, particularly the due dates and times, and then schedule the time you devote to this class accordingly.

Missing two weeks of BlackBoard participation will result in you automatically dropping this course, regardless of any points earned.

Note: Exceptions may be made in the case of an *extreme emergency* with supporting documentation. I will not accept ANY late coursework after one week from the originally scheduled due date during the semester or after the last scheduled coursework due date at the end of the semester. If you anticipate your assignment will be late due to unusual circumstances, please contact us and explain your situation prior to the due date of the assignment. Without prior notice, late assignments will NOT receive any credit.

*If BlackBoard is down and you cannot get into our course site to post work by the required due date:* ALL coursework should be posted in our online course site. If you find that you are unable to log into Blackboard to access our course site at the time that you are trying to post your work by the due date, you must email instructors and co-instructors (through regular email [olgak@utep.edu](mailto:olgak@utep.edu)) IMMEDIATELY WITH AN ATTACHMENT OF YOUR WORK. When you do this, we will know that you have completed the work in a timely manner and it will be accepted, even though it was not posted in our course site as is generally required. We will then check with the Technology staff at UTEP to determine when Blackboard was out. If you email us indicating that you did not post your coursework because Blackboard is down, but you do not send us your work as an attachment in the message, you will not receive credit for your work.

4. *You work is expected to be your own.*

Everything you turn in for this course must be your own work. The purpose of coursework is to know what *you* think, not how clever you are at getting around the rules.... so, use your brilliance in a productive way. Any student caught engaging in instances of cheating, plagiarism or any other form of academic misconduct WILL be referred to the Dean of Students Office for disciplinary action. Students may be suspended or expelled from UTEP for such actions. It's serious! Don't do it.

5. *You are expected to contact instructor and co-instructors for help if needed throughout the semester.*

This class will have virtual office hours on Wednesday, 6:45 – 8:55 pm. You can email us (via BB email) for a quick response. Please include your first and last name and the title of the course you are taking in the body of your message. Outside of our virtual office hours, you can expect a response from us with 24-48 hours (usually sooner) for any email communication you send.

If at any time, you have difficulty understanding the course material or completing course work for any reason—BE PROACTIVE!!! We are here for you.

We *strongly* encourage you to reach out to me as soon as possible (do not wait until the day before something is due or the end of the semester) and we will work together to make this class a success for you!

**Student Learning Outcomes:**

COURSE SPECIFIC LEARNING OUTCOMES	Measurements (means of assessment for student learning outcomes listed in first column):
<i>By the end of course, the successful student will be able to:</i>	<i>To evaluate these outcomes, the faculty member will use the following assessment procedures:</i>
1. Deepen understanding of numbers, multiple ways of representing numbers, relationships among numbers, and number systems.	Classroom assignments, Midterm, and Discussions submissions.
2. Deepen understanding of meanings of operations and procedures, and how they relate to one another.	Classroom assignments, Midterm, and Discussions submissions.
3. Understand connection between measurement; geometry concepts and multiple ways of representing numbers, relationships among numbers, and number systems.	Classroom assignments, Midterm, and Discussions submissions.
4. Understand the cognitive processes that result in effective learning and teaching of mathematical and science content.	Classroom assignments, Midterm, and Discussions submissions.
5. Create successful learning environments in mathematical classroom.	Classroom assignments, Midterm, and Discussions submissions.
6. Develop an understanding of current issues, practices and directions in mathematics curriculum and the ability to inquire into these.	Classroom assignments, Midterm, and Discussions submissions.
7. Improve their capacity to think reflectively and creatively about their teaching of mathematics.	Classroom assignments, Midterm, and Discussions submissions.
8. Increase their capacity to become an agent of change in the field of mathematics education.	Classroom assignments, Midterm, and Discussions submissions.
9. Develop knowledge and strategies to design curriculum at classroom and school levels.	Classroom assignments, Midterm, and Discussions submissions.

## Evaluation & Coursework Requirements of Students:

### Grades determined by the usual cutoffs (90-80-70-60), based on the following parts:

- A. Class introductions, reflections on readings, Midterm, and final paper (literature review on selected math and/or science topic)  
(14 x 6 points = 84%).

Your reflections and final paper must be written in APA style (American Psychological Association) with appropriate and complete citations, search [www.apa.org](http://www.apa.org). Use free ONLINE service Grammarly.com for good grammar.

Discussion Board Participation: each student will submit 3 required postings per week on the Discussion board:

- one reflection on the assigned reading, and during some weeks you will be asked to write extended reflection and email it to BB email to Dr. Kosheleva, Rocio and Sonia, (TAs for this class)

- two reactions to peers' postings (minimum of 100 words each).

All reflections – are due on Saturday of the assignment week (by 11 pm, Mountain Time).  
Reactions to peers' postings – are due on Wednesday of the following week (by 11 pm, Mountain Time).

- B. Participation (16%). Student participation in class activities, discussions, and reflections are encouraged.

Your Grade points will be emailed to you (via BB email) once every two weeks.

Extra Credit: during ZOOM office hours (once a month) you will have a chance to participate in Rocio's presentation about how to work on your final project (literature review) – students who will participate in these office hours will receive Extra Credit points.

**Class Schedule:** Please note that the schedule below is subject to change.

<b>Date</b>	<b>Assignment</b>
<p>Week 1 Jan. 19</p> <p><b>Virtual Online Office Hours</b></p>	<p>Post introductions and questions about the syllabus. Use a Thread with your name in the Discussion folder “Introduction.” Please, present your attitude towards teaching, mathematics, science; please, share your teaching experiences, your hobbies, and your special interests.</p> <p>Use a Thread with your name in Discussion folder “Questions about Class” to post your questions (at least two) about class.</p> <p>Provide two reactions to peers' postings.</p> <p>Read assigned readings from the folder “Readings,” thread “Readings, Week 1.”</p>
<p>Week 2 Jan. 25</p> <p><b>Virtual ZOOM Office Hours</b></p> <p>ZOOM invitation will be emailed to you via BB email</p>	<p>Post your reflection on Readings from Week 1. Use a Thread with your name in Discussion folder “Week 2.”</p> <p>Provide two reactions to peers' postings.</p> <p>Please, read assigned readings from the folder “Readings,” thread “Readings, Week 2.”</p> <p>Additional specific instructions for posting your work might be posted in your <b>Readings Discussion folder</b>.</p>
<p>Week 3 Jan.31</p> <p><b>Virtual Online Office Hours</b></p>	<p>Post your reflection on Readings from Week 2. Use a Thread with your name in Discussion folder “Week 3.”</p> <p>Provide two reactions to peers' postings.</p> <p>Please, read assigned readings from the folder “Readings,” thread “Readings, Week 3.”</p> <p>Additional specific instructions for posting your work might be posted in your <b>Readings Discussion folder</b>.</p>
<p>Week 4, Feb.7</p> <p><b>Virtual Online Office Hours</b></p>	<p>Post your reflection on Readings from Week 3. Use a Thread with your name in Discussion folder “Week 4.”</p> <p>Provide two reactions to peers' postings.</p> <p>Please, read assigned readings from the folder “Readings,” thread “Readings, Week 4.”</p> <p>Additional specific instructions for posting your work might be posted in your <b>Readings Discussion folder</b>.</p>



<p>Week 5 Feb. 15 <b>Virtual Online Office Hours</b></p>	<p>Post your reflection on Readings from Week 4. Use a Thread with your name in Discussion folder “Week 5.”</p> <p>Provide two reactions to peers' postings.</p> <p>Please, read assigned readings from the folder “Readings,” thread “Readings, Week 5.”</p> <p>Additional specific instructions for posting your work might be posted in your Readings Discussion folder.</p>
<p>Week 6 Feb. 22 <b>Virtual ZOOM Office Hours</b></p> <p>ZOOM invitation will be emailed to you via BB email</p>	<p>Post your reflection on Readings from Week 5. Use a Thread with your name in Discussion folder “Week 6.”</p> <p>Provide two reactions to peers' postings.</p> <p>Please, read assigned readings from the folder “Readings,” thread “Readings, Week 6.”</p> <p>Additional specific instructions for posting your work might be posted in your Readings Discussion folder.</p>
<p>Week 7 March 1 <b>Virtual Online Office Hours</b></p>	<p>Post your reflection on Readings from Week 6. Use a Thread with your name in Discussion folder “Week 7.”</p> <p>Provide two reactions to peers' postings.</p> <p>Please, read assigned readings from the folder “Readings,” thread “Readings, Week 7.”</p> <p>Additional specific instructions for posting your work might be posted in your Readings Discussion folder.</p>
<p>Week 8 March 8 <b>Virtual ZOOM Office Hours</b></p> <p>ZOOM invitation will be emailed to you via BB email</p>	<p>Post your reflection on Readings from Week 7. Use a Thread with your name in Discussion folder “Week 8.”</p> <p>Provide two reactions to peers' postings.</p> <p>Please, read assigned readings from the folder “Readings,” thread “Readings, Week 8.”</p> <p>Additional specific instructions for posting your work might be posted in your Readings Discussion folder.</p>
<p>Spring Break</p>	<p>No classes</p>
<p>Week 9 March 22 <b>Virtual ZOOM Office Hours</b></p> <p>ZOOM invitation will be emailed to you via BB email</p>	<p>MIDTERM. Specific instructions will be emailed to you via BB email on March 21.</p>

<p>Week 10 March 29</p> <p><b>Virtual Online Office Hours</b></p>	<p>Post your reflection on Readings from Week 8. Use a Thread with your name in Discussion folder “Week 10.”</p> <p>Provide two reactions to peers' postings.</p> <p>Please, read assigned readings from the folder “Readings,” thread “Readings, Week 10.”</p> <p>Additional specific instructions for posting your work might be posted in your Readings Discussion folder.</p> <p>Start your work on final paper.</p>
<p>Week 11 April 5</p> <p><b>Virtual ZOOM Office Hours</b></p> <p>ZOOM invitation will be emailed to you via BB email</p>	<p>Post your reflection on Readings from Week 10. Use a Thread with your name in Discussion folder “Week 11.”</p> <p>Provide two reactions to peers' postings.</p> <p>Please, read assigned readings from the folder “Readings,” thread “Readings, Week 11.”</p> <p>Additional specific instructions for posting your work might be posted in your Readings Discussion folder.</p> <p>Continue your work on final paper.</p>
<p>Week 12 April 12</p> <p><b>Virtual Online Office Hours</b></p>	<p>Post your reflection on Readings from Week 11. Use a Thread with your name in Discussion folder “Week 12.”</p> <p>Provide two reactions to peers' postings.</p> <p>Please, read assigned readings from the folder “Readings,” thread “Readings, Week 12.”</p> <p>Additional specific instructions for posting your work might be posted in your Readings Discussion folder.</p> <p>Continue your work on final paper.</p>
<p>Week 13 April 19</p> <p><b>Virtual Online Office Hours</b></p>	<p>Post your reflection on Readings from Week 12. Use a Thread with your name in Discussion folder “Week 13.”</p> <p>Provide two reactions to peers' postings.</p> <p>Additional specific instructions for posting your work might be posted in your Readings Discussion folder.</p> <p>Continue your work on final paper.</p>
<p>Week 14 April 26</p> <p><b>Virtual Online Office Hours</b></p>	<p>Submit your final paper via BB email. Deadline for submission is April 30, 11 pm, MT.</p>

