

**University of Texas at El Paso  
College of Education  
Teacher education Department  
Summer 2017**

**MTED5322**  
**Pedagogical Content Knowledge in Teaching Mathematics**  
*"Strengthening Mathematical Pedagogy in Algebraic reasoning"*

CRN 35677

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**Welcome to the class.**

**Course Description**

Course: MTED 5322

Topic: Pedagogical Content Knowledge in Teaching Mathematics (*Strengthening Mathematical Pedagogy in Algebraic reasoning*)

Credits: 3-0

Delivery method: ONLINE

**Instructor Contact Information**

This course is taught by Dr. Olga Kosheleva. She may be contacted by email within the Blackboard course system or by email at [olgak@utep.edu](mailto:olgak@utep.edu), or by phone at 915-747-7588.

Instructor Office Hours: Fridays, 8 am - 10:30 am ONLINE

**Information about HB 2504 Requirements**

*Texas House Bill 2504 requires each institution of higher education's faculty to provide the following syllabus related items, at a minimum:*

- 1. A brief description of each major course requirement, including each major assignment and examination*
- 2. the learning objectives for the course*
- 3. a general description of the subject matter of each lecture or discussion*
- 4. and, list of any required or recommended readings.*

### ***Required Readings***

The selected articles are available to students on Discussion Forum in the BlackBoard.

### ***Recommended materials/resources***

Texas Essential Knowledge and Skills (TEKS)

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

- National Council for Teachers of Mathematics (NCTM) standards

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

<http://standardstrial.nctm.org/triallogin.asp>

<http://www.fayar.net/east/teacher.web/math/Standards/>

<http://www.fayar.net/east/teacher.web/math/Standards/document/chapter3/rep.htm>

- NCTM curriculum focal points

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

- Texas State University System Mathematics for English Language Learners Project

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

- These websites provides a wide selection of virtual manipulatives interactive games for teaching mathematics:

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

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

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

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

- Book "How Students Learn". You can read it online at

<http://www.nap.edu/books/0309074339/html/1.html>

- Book "Adding It Up: Helping Children Learn Mathematics". You can read it online at

<http://books.nap.edu/books/0309069955/html/>

### ***Course Goals and Learning Outcomes***

Students enrolled in this course are offered a research-based and multi-faceted look at issues regarding the teaching and learning of algebra. Based on recent scholarly work, the course focuses on the following topics: 1) the nature of algebra as a domain of mathematics, 2) a constructivist-based analysis of math students' algebraic reasoning and learning, 3) algebraic habits of mind and 4) the critical challenges faced by teachers to foster robust algebraic reasoning in K-12 mathematics classrooms.

**Table 1. Student learning outcomes and assessment**

<b>Student Learning Outcomes</b>		<b>Assessments</b>
	<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 algebraic habits of mind, algebraic reasoning, and multiple representations.	Critical reflections.
2.	To deepen understanding of meanings of operations and procedures as related to variables and equations, and how they relate to one another.	Critical reflections.
3.	To understand the cognitive processes that result in effective learning and teaching of mathematical content.	Critical reflections.
4.	To create successful learning environments in mathematical classroom.	Critical reflections.
5.	Develop an understanding of current issues, practices and directions in mathematics curriculum and the ability to inquire into these.	Critical reflections.
6.	Improve his/her capacity to think reflectively and creatively about their teaching of mathematics.	Critical reflections.
7.	Increase confidence to teach mathematics.	Critical reflections.
8.	Improve their ability to manage and assess their pupils' mathematics learning. Discover innovative methods of instruction to increase effectiveness and pupils'	Critical reflections.

	engagement, learning, and thinking.	
9.	Increase their capacity to become an agent of change in the field of mathematics education.	Critical reflections.
10.	Develop knowledge and strategies to design curriculum at classroom and school levels.	Critical reflections.

### ***Academic Integrity***

It is expected that work you submit will represent your own effort (or your own group's effort, if it is a group project), will not involve copying from or accessing unauthorized resources or people (e.g., from a previous year's class), and will appropriately acknowledge allowable references that you do consult. If, in future, in your articles and grant submissions you will be using ideas developed and presented by other students in this class, you are required to appropriately acknowledge their contributions. Violations are unacceptable and will be referred to the Dean of Students Office for possible disciplinary action. Don't resubmit work completed for other classes without specific acknowledgment and permission from me.

If you are found to be cheating or plagiarizing, you will be subject to disciplinary action, per UTEP catalog policy. Refer to <http://www.utep.edu/dos/> for further information. In addition, you may also see the Regent Rules and Regulations at <http://www.utsystem.edu/bor/rules/>

The following is a website provides a brief overview of how to accurately cite sources: <http://www.bedfordstmartins.com/online/citex.html>

### ***Course requirements, assignments, examination***

#### **Course Policy/Requirements**

To be successful in this course, class functionality, assignments and activities rely heavily on your early understanding of expectations. You are also responsible for doing all the work and going over your readings and completing assignments the. These courses take as much, if not more time than traditional classes.

Please check course announcements/emails every day to keep yourself abreast of any changes in course content and deadlines.

1. It is required that you have a UTEP e-mail. You must use your UTEP email account for all correspondence related to this course and check it regularly to ensure that you receive important messages about the course on a timely basis. If you are enrolled in this course, you already have an email account created for you. If you do not remember your UTEP email address and password, please call 915-747-5257 or go to "<https://newaccount.utep.edu/>";
2. Mandatory file formats: all text attachments you upload to assignments, discussion postings, or email messages must be MS Word documents (.doc, .docx or .rtf); all

- images should be in JPEG Format (.jpg); if you send your work in a file, its name should always include week submission number and your name (last and first name).
3. The general format used by papers in this course is APA version 6.
  4. **It is responsibility of any student desiring to drop the course to turn in all the necessary drop forms. The instructor will not drop students who are no longer attending the class.**
  5. **The instructor reserves the right to drop students who have not participated (did not submit any completed assignments to the correct Blackboard Discussion folder) during one week of class. The instructor can drop any student any time a student violates the written rules/requirements for remaining in good standing in the course.**

**Students will be required to:**

- Actively participate in class assignments (via Blackboard);
- Read assigned articles.
- Participate in all class activities by emailing individual reflections.
- Complete and submit via BlackBoard email Final Reflection paper.

**Tentative Course Schedule/Calendar and Short Description of the Assignments**

<b>Dates</b>	<b>Assignments</b>
<b>Week 1</b> <i>July 11-15</i>	Please, read and complete the assignment posted in the Discussion Folder "Week 1."
<b>Week 2</b> <i>July 16 - 22</i>	Please, read and complete the assignment posted in the Discussion Folder "Week 2."
<b>Week 3</b> <i>July 23 - 29</i>	Please, read and complete the assignment posted in the Discussion Folder "Week 3."
<b>Week 4/Final</b> <i>July 30 – August 4</i>	Please, read and complete the assignment posted in the Discussion Folder "Week 4/Final."

**Deadline and Assignments Policy**

- All on-line assignments are **due by 11:50 PM (Mountain Time)** on the last day (Saturday) of the corresponding week.
- Please ensure that you carefully read all instructions for each assignment, particularly the due dates and times. Reading instructions is your responsibility and you should not assume due dates or times.
- Keep electronic copies of all work submitted. In case your file submission is too big, please break it into several smaller files, and then submit these smaller files in several submissions.
- Professional courtesy and a positive, collaborative attitude are required in all aspects of this course. I invite open, honest communication. However, all communication must be on a professional level, not personal.
- You are expected to produce quality work in this course. Spelling, grammatical errors, structure and presentation will influence your final grade and each grade on any project.

- The rule of thumb for time planning for a course is approximately 3 hours for every credit hour taken. This is a standard figure recommended across the board by American universities. So for this course you should expect to spend 3 hours of class time + 9 hours of study and prep time = 12 hours per week. Bear in mind that there will be many weeks where you will not need even half of that time, but there will be weeks where you will need the full quota of time. So plan ahead and get caught up on readings in advance in the slow weeks.
- You are expected to produce quality work in this course. Spelling, grammatical errors, structure and presentation will influence your final grade and each grade on any project.

### **Class Participation**

- It is recommended that you check your UTEP blackboard course and discussion area daily to keep up.
- All the assignments are described in the Syllabus and detailed descriptions are posted on Blackboard. All your submissions should be done via Blackboard. Please, communicate with your professor via Blackboard email.
- Please, **DON'T WAIT UNTIL THE LAST MINUTE** to complete and submit your assignments! There might be some technical glitches in the system: try to avoid them. The best way to avoid them is to start your assignments as soon as they are posted. **LATE SUBMISSIONS ARE NOT ALLOWED.**
- You are welcome to use any resources to successfully complete your assignments. Outside resources should be quoted and a proper reference to the resource should be made.
- E-mail messages could be also sent to your UTEP email address, so you will want to check your UTEP e-mail every day. Professor will also call you each week to provide feedback on submitted assignments. Please, make sure that you updated your phone number on Goldmine.

### **What should you expect from me as the instructor?**

- I will provide you clear instructions on class expectations.
- I will check my email at least three times per week and will answer back to you as soon as possible.
- During our weekly phone conversation I will keep you informed about your graded progress in the class and will make time to discuss your needs.
- I will leave myself open to suggestions about improvement of the class and class related activities.
- I will do all I can to ensure your learning and success in this class
- If any changes in the course are to be implemented, I will ensure that the class is notified in a timely manner.

### ***Course Grading***

#### **Grade Distribution**

Assignment	Possible number of points
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Reflections (weeks 1, 2, 3)	<b>20 points each</b>
Final Reflection Paper	<b>40 points</b>
<b>Total</b>	<b>100 points</b>

### **Grading Scale**

90 - 100 = A (Excellent - 4.0)

80 - 89 = B (Good - 3.0)

70 - 79 = C (Average - 2.0)

60 - 69 = D (Passing - 1.0)

0 - 59 = F (Failure - 0.0)

You are encouraged to demonstrate *knowledge of content/ issues discussed in the class, critical thinking, and communication accuracy* while completing major course assignments.

The course instructor reserves the right to adjust the course syllabus or change assignments as needed. Remember that our course syllabus and class schedule are living documents and can change!

### **Students with Disabilities**

If you have or believe you have a disability, you may wish to identify yourself. You can do this by contacting the Center for Accommodations and Support Services Office to show documentation of a disability or to register for testing and services. Students who have been designated as disabled must reactivate their standing with this office yearly.

Please, visit the following website for more details: <http://sa.utep.edu/cass/>

### **Copyright Notice**

Many of the materials that are posted within this course are protected by copyright law. These materials are only for the use of students enrolled in this course and only for the purpose of this course. They may not be further retained or disseminated.

## Final Project Rubric

Criterion	Strong (8-10 pts)	Acceptable/pass (5-7 pts)	Not acceptable (1-4 pts)
<b>Foundation of Knowledge</b>	Response demonstrates a professional command of the subject matter. The scholarly conversation about the topic is analyzed and synthesized; response shows how ideas are related.	Response demonstrates above average command of subject matter. Analysis, synthesis, or relationships among ideas are explored.	Response explains some concepts, but overlooks critical details. Analysis, synthesis, or relationships among ideas are not provided.
<b>Organization and development of Ideas and/or arguments</b>	Major sections of response follow a logical sequence. Organization within sections is logical and consistent. If section headings are used, they are clear and logically placed. Fully responds to each component of the questions.	Major sections of response generally follow a logical sequence. Organization within sections is basically logical. Minimal responses to all components of the question.	The structure of the response is unclear or relies on simplistic narrative. Organization between paragraphs is difficult to determine. If section headings are used, they are vague and/or, illogical. Response does not address all the components of the question.
<b>Writing Skills</b>	Response demonstrates an excellent command of grammar, spelling, and mechanics and is free of distracting errors. Word use is appropriate and accurate.	Response demonstrates a good command of grammar, spelling, and mechanics and has only a few distracting errors. Word use is generally appropriate and accurate. May have a few misused words.	Response has consistent patterns of error in grammar, spelling, and mechanics that must be addressed. There are frequent, noticeable errors or inappropriate uses of words.
<b>Citations (APA format)</b>	In-text citations clearly and appropriately identify every author whose ideas are referred to, discussed, summarized, paraphrased, or quoted.	In-text citations identify most authors whose ideas are referred to, discussed, summarized, paraphrased, or quoted. One or two citations are vague or inaccurate.	In-text citations are generally inconsistent, unclear, misplaced, or missing.