University of Texas at El Paso
College of Education
Department of Teacher Education

MTED5322
Fall 2021

Course Title	Pedagogical Content Knowledge in Teaching Mathematics
Credits	3-0
Course Description	Course topics include (but are not limited to) the following main content domains of school mathematics and their effective teaching and learning: Development of Quantitative Reasoning; Fostering Algebraic Thinking; Conceptual Foundations of Calculus; Development of Geometric Thinking.

Course Instructor Contact Information

Professor: *Dr. Mourat A. Tchoshanov*
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Phone: *915-747-7668*
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Section: Online with some synchronous sections as needed
Office hours: R *4:00 - 5:00 PM*
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Required Texts

- Boaler, J., & Humphreys, C. (2005). Connecting Mathematical Ideas: Middle school video cases to support teaching and learning. – Portsmouth, NH: Heinemann.

Additional Bibliography could be found in the bibliography sections of the required text.

Learning Outcomes

On completion of this course, students should be able to:

- To understand the role of teacher pedagogical content knowledge in learning and teaching of school mathematics
- To reflect on the development of students' conceptual understanding and procedural fluency in learning mathematics
- To analyze classroom cases and situations with the purpose of improving teaching practices in the mathematics classroom
- To learn classroom techniques to make connections between students' ideas, between student and teacher ideas, between different mathematical ideas, domains, and representations.

Course Schedule

Week	Activities	Assignments/ Submissions
Week 1	Introduction and Syllabus Review/Zoom meeting	Introduction Card
Week 2	**Video case #1**	Reflection on Video Case-1*
Week 3	Discussion on Video Case-1	Discussion Board Postings**
Week 4	**Video case #2**	Reflection on Video Case -2
Week 5	Discussion on Video Case-2	Discussion Board Postings
Week 6	**Video case #3**	Reflection on Video Case -3
Week 7	Discussion on Video Case-3	Discussion Board Postings
Week 8	**Video case #4**	Reflection on Video Case -4
Week 9	Discussion on Video Case-4	Discussion Board Postings
Week 10	**Video case #5**	Reflection on Video Case -5
Week 11	Discussion on Video Case-5	Discussion Board Postings
Week 12	**Video case #6**	Reflection on Video Case -6
Week 13	Discussion on Video Case-6	Discussion Board Postings
Week 14	**Video case #7**	Reflection on Video Case -7
Week 15	Discussion on Video Case-7	Discussion Board Postings
Week 16	**Video case #8**	Reflection on Video Case -8 Discussion Board Postings

* Reflections are due every *even* week by Sunday at 11:59PM

** Required discussion board postings are due every *odd* week by Sunday at 11:59PM

Main Course Assignments

1. **Readings:** each student will read chapters from "Connecting mathematical ideas" related to each video case and use it as a reference for the reflections and discussions.
2. **Discussion Board Participation**: each student will submit 2 required (minimum 150 words each) postings in the Discussion board related to class activities (e.g., video cases, readings).
3. **Reflections on Video Cases** (APA style, 6-8 pages, double-spaced, 1-inch margins, font - Times New Roman, font size – 12, Word document)**:** each student will write reflections addressing discussion questions on every video case. There will be eight video cases and correspondingly eight reflections during the class.

Assessment of Learning Outcomes

Learning Outcome	Achieved by	Measured by
To understand the role of teacher pedagogical content knowledge in learning and teaching of school mathematics	Reading and reflection Participation in discussions	Written Reflection Discussion Board Posting

To analyze and reflect upon teaching and learning practices in middle school mathematics classroom.	Reflections on video cases Participation in discussions	Written Reflection Discussion Board Posting
To reflect on the development of students' conceptual understanding and procedural fluency in learning mathematics	Reading and reflection Participation in discussions	Written Reflection Discussion Board Posting
To learn and evaluate classroom techniques that provide connections between students' ideas, between student and teacher ideas, between different mathematical ideas, domains, and representations.	Reflections on video cases Participation in discussions	Written Reflection Discussion Board Posting

Grade Distribution

Participation/Discussions (each posting - 2 points)	32%
Reflections on Video Cases (each reflection - 8 points)	64%
Bonus points	4%

Grading Scale

Students are encouraged to demonstrate their ***knowledge of content (be content specific!), critical thinking, and communication accuracy*** while completing course assignments.

89 – 96 = **A** 81 – 88 = **B** 71 - 80 = **C** 61 - 70 = **D** 00 - 60 = **F**

General Grading Rubric

Course assignments will be graded using the following main benchmarks:

- **Content Specificity**

  Try to avoid the use of general language, be as *math-specific and detailed* as possible, please!

- **Critical Thinking**

  Do not just describe what you see and read, *think critically and analytically*, please!

- **Communication Accuracy**

  Try to avoid vague description and vocabulary, *communicate your ideas clearly and accurately*, please!

Grading Rubric

Reflections:

Based on these major benchmarks, the following rubrics will be used to grade your reflections:
Excellent Work (8 points + potential bonus point): an exemplary content-specific response with a high level of critical thinking and communication accuracy.

Good Work (5 points): a response is partially content specific with a good level of critical thinking and accurate communication.
Satisfactory Work (3 points): low level of content specificity along with descriptive thinking and partially accurate communication.
Poor Work (1 point): a response is too general without specifics and details, communication is poor.
No Work (0 point).

Discussion Board Postings:
There will be eight Discussions during the semester. Most of them will focus on the challenging aspects of the major class assignments (e.g., readings, video-cases). Below is the rubric, which will be used to assess the quality of your responses.

Quality of Posting	2.0 Points	1.5 Points	1.0 Point	0.5 Points
Completeness	Responds completely to all questions.	Responds to most questions.	Responds to a few of the questions.	Responds to one question or less.
Clarity and Details	Main idea stands out and is supported by detailed and content-specific information.	The main idea is clear but the supporting information is too general.	The main idea is somewhat clear but there is a need for more supporting information.	The main idea is not clear. There is a seemingly random collection of information.
Accuracy	All supportive facts are reported accurately.	Almost all supportive facts are reported accurately.	Few supportive facts are reported accurately.	NO facts are reported OR most are inaccurately reported.
Resources	All resources used for quotes and facts are credible and cited correctly using APA format.	Most resources used for quotes and facts are credible and cited correctly using APA format.	Few resources used for quotes and facts are credible and cited not correctly.	Resources used for quotes and facts are less than credible (suspect) and cited not correctly.
Grammar	The writer makes no errors in grammar or spelling that distracts the reader from the content.	The writer makes 1-2 errors in grammar or spelling that distract the reader from the content.	The writer makes 3-4 errors in grammar or spelling that distract the reader from the content.	The writer makes more than 4 errors in grammar or spelling that distracts the reader from the content.

Software Requirements

1. Course materials supplementing the required text will be uploaded on UTEP Blackboard Ultra LMS.

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

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

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

Course Schedule of Assignments

Please, look at the course schedule of assignments by clicking on the Syllabus link on the Blackboard homepage of the course.

Course Schedule Changes

As the course instructor, I reserve the right to adjust the course syllabus or change assignments as needed. I will be sure to give you plenty of notice prior to any changes. Remember that our course syllabus and class schedule are living documents and can be changed!

Class Participation

I *strongly* recommend that you check your Blackboard course at least three times a week at minimum to keep up.

Please, *do not 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!* Since the course is online, it is your responsibility to schedule any emergencies around the course schedule. *Not the other way around!*

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. I encourage you to use my office hours to clarify any questions or concerns you may have.

E-mail messages are sent to your UTEP email address, so you will want to check your UTEP e-mail several times a week.

There will be *no incomplete grades* offered in this course. Past experience has shown that if you cannot complete the course during the time allotted, you probably never will.

Professionalism

Along with basic standards of citizenship (e.g., "Student Conduct" and "Disruptive Acts Policy" in the UTEP *Catalog*), students in this course are required to display a positive attitude and professionalism. Be open to using or sharing opportunities for professional growth via Blackboard Discussion Board option. In terms of written assignments, professionalism includes that all assignments be Word processed, checked for spelling/ grammar, and have an appropriate output/ graphics electronically pasted into the document.

Academic Integrity

The instructor trusts that you understand and especially appreciate that cheating, plagiarism, and collusion in dishonest activities are serious acts, which erode the university's purpose and integrity. It is expected that work you submit will represent your own effort, will not involve copying from or accessing unauthorized resources or people (e.g., from a previous year's class), and will appropriately acknowledge (with complete citations) allowable references that you do consult. Also, don't resubmit work completed for other classes without specific acknowledgment and permission from the instructor. Violations are unacceptable and are required to be referred to the Dean of Students Office for possible disciplinary action.