

**University of Texas at El Paso  
College of Education  
Department of Teacher Education  
Division of STEM Education**

**Spring 2024**

**Course**            **MTED3330/SCED4367 (HYBRID)**

**Topic**            **Integration and Alternative Representation of Basic Mathematical Principles**

**Credits**            3-0

**Course Description**

A course integrates basic principles from various mathematical domains. 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.

**Contact Information**

Instructor: *Mourat A. Tchoshanov*

Phone: *915-747-7668*

Office: *EDU612*

Office Hours: *M 4:00-6:00PM; 9:00-10:00PM*

E-mail: *mouratt@utep.edu*

Website: *http://mourat.utep.edu/*

**Office Hours** online via a video conferencing tool Zoom or Blackboard Collaborate.

**Required Text:**

Ennis, B. & Witeck, K. (2008). *Introduction to Representation: Grades 6-8*. Portsmouth, NH: Heinemann.

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

**Learning Outcomes**

Upon completion of this course, students should be able:

- To understand the role of representation standard in supporting mathematics teaching and student learning
- To learn how to use manipulatives to model and illustrate key mathematical concepts
- To use pictures and diagrams to represent mathematical thinking
- To use numbers and symbols to represent mathematical ideas
- To construct tables and graphs to record, organize, and communicate data
- To assess students' use of idiosyncratic and conventional representations across the content standards.

## Course Calendar

Week	Activities	Assignments/ Submissions
1. Jan. 22	Reading of the Syllabus Activity “Draw a problem”	Introduction Card
2. Jan. 29	<b>Critique #1:</b> Ch. 1. How representations support learning (IRG6-8, pp.13-34)	Critique-1*
3. Feb. 5	<b>Discussion on critique #1</b>	Discussion Board Posting-1
4. Feb. 12	<b>Critique #2:</b> Ch. 2. Using manipulatives to model and illustrate key math concepts (IRG6-8, pp. 35-49)	Critique-2
5. Feb. 19	<b>Discussion on critique #2</b>	Discussion Board Posting-2
6. Feb. 26	<b>Critique #3:</b> Ch. 3: Using pictures and diagrams to represent mathematical thinking (IRG6-8, pp. 50-65)	Critique-3
7. March 4	<b>Discussion on critique #3</b>	Discussion Board Posting-3
8. March 11	<b>Critique #4:</b> Ch. 4: Using numbers and symbols to represent mathematical ideas (IRG6-8, pp. 66-77)	Critique-4
9. March 18	<b>Spring break</b>	
10. March 25	<b>Discussion on critique #4</b>	Discussion Board Posting-4
11. April 1	<b>Critique #5:</b> Ch. 5: Using tables and graphs to record, organize, and communicate ideas (IRG6-8, pp. 78-86).	Critique-5
12. April 8	<b>Discussion on critique #5</b>	Discussion Board Posting-5
13. April 15	<b>Critique #6:</b> Ch. 6: Assessing students’ representations (IRG6-8, pp. 88-96)	Critique-6
14. April 22	<b>Discussion on critique #6</b>	Discussion Board Posting-6
15. April 29	<b>Critique #7:</b> Ch. 7: Representation across the content standards (IRG6-8, pp. 89-114)	Critique-7
16. May 6	<b>Discussion on critique #7</b>	Discussion Board Posting-7
17. May 13	<b>Final Reflection</b>	Final Paper

\* Note: Assignments are due on corresponding Sundays at 11:59PM

### **Course Communication**

Since this is a fully online course, contact will be limited to electronic communication. There are various ways we can keep "in touch":

- Via video conferencing during my Office Hours (stated at the beginning of this syllabus).
- Via email using either the mail tool in Blackboard, or my UTEP e-mail also shown at the beginning of the syllabus.
- Via the Questions and Concerns Board in the discussion area of the course. I will check frequently to provide feedback and answer your inquiries.

I will be checking my e-mail and the Blackboard once a day, and my responses shouldn't take more than 48 hours. This provides me with enough time to answer all your questions, so do take this into consideration.

### **Course Assignments**

1. Readings: each student will read chapters from "Introduction to Representation: Grades 6-8" and use it as a reference for the critiques and discussions.
2. Discussion Board Participation: each student will submit 2 required (minimum 150 words each) postings in the Discussion board related to readings and other class activities.
3. Critiques (5-6 pages, APA style, double-spaced, 1-inch margins, font - Times New Roman, font size – 12, Word document): each student will write critiques addressing every chapter of the required text. There will be seven critiques during the class.
4. Final Reflection paper (10-12 pages, APA style, double-spaced, 1-inch margins, font - Times New Roman, font size – 12, Word document): each student will write a reflection paper synthesizing his/her own understanding of representation and its effective use in mathematics classroom.

### **Grade Distribution**

Discussions (each posting - 2 points)	28%
Critiques (each critique - 7 points)	49%
Final Reflection Paper	23%

### **Grading Scale**

You are encouraged to demonstrate *knowledge of content/ issue you intend to critique, critical thinking, and communication accuracy* while completing major course assignments.

91 - 100 = **A**    81– 90 = **B**    71 - 80 = **C**    61 - 70 = **D**    00 - 60 = **F**

## **How to Write a Critique**

To write a critique/review of a text is to analyze and evaluate it, not just summarize or synthesize. A summary merely reports what the text said; that is, it answers only the question, "What did the author say?" A critique, on the other hand, analyzes, interprets, and evaluates the text, answering the questions How? Why? and How Well? A critique does not necessarily have to criticize the piece in a negative sense. Your reaction to the text may be largely positive, negative, or a combination of the two. It is important to explain why you respond to the text in a certain way.

So, the critique is a rigorous critical reading of a text (e.g., article, chapter, passage). Thus, the critique's value as an academic document rests on your ability to say precisely why you agree or disagree. The structure of the critique may include the following main parts:

- **Abstract** which briefly introduces the chapter: what it is about? It should also provide your readers with a little background so that they will understand why your critique is worth reading. At the end of the abstract, you should *clearly state the point(s) you are to critique* and the arguments you intend to make about it.
- **Summary** of the chapter under critique, making sure to use adequate transitions so that *the writing flows smoothly*.
- **Analysis** of the author's presentation of the selected point(s). Present an in-depth analysis of the validity of the author's logic and use of evidence in supporting the selected point(s). Be sure to present your information in a form, which is easy to follow, using *transitional elements* whenever necessary to preserve the *smooth flow of your writing*.
- **Response to the argument**. As discussed above, you may agree or disagree with the author's point(s), and this is the part of the critique where you make your own views on the point(s) clear. Remember that your own arguments must be well-supported using external *references of empirical research* (2-3 references are required) related to the selected point(s). You must give compelling reasons for your agreement or disagreement with the author.
- **Conclusion**. Synthesize your critique: *what do you take away from the chapter*. Evaluate the author's overall success or failure in achieving his or her point(s). Also, remind your readers of the strengths and weaknesses of the paper.

Once the critique is drafted, revise it, making sure you have emphasized the most salient points in your discussion. Check your *sentence variety, your organization, and your word choice*. Is the critique all it can be? Have you edited the critique to eliminate errors in spelling, sentence structure, and agreement?

## Rubrics for Critique

<b>Criteria</b>	<b>Good (7 points)</b>	<b>Fair (4 points)</b>	<b>Poor (2 points)</b>
<b>Knowledge of Content</b>	Solid knowledge and understanding of the issue to be critiqued is demonstrated. The article is clearly but succinctly summarized - the key points of the article are addressed.	Good knowledge and understanding of the issue to be critiqued is demonstrated. The article is clearly summarized, but some sub points are addressed along with main points. The summary is not succinct.	Weak knowledge and understanding of the issue to be critiqued is demonstrated. The article summary is unclear or overly detailed.
<b>Critical Thinking and Argumentation</b>	Strengths and weaknesses that are central to the key points of the article are addressed. The discussion of strengths and weaknesses take up the majority of the assignment.	Strengths and weaknesses that are peripheral to the article are addressed. The discussion of strengths and weaknesses take up the majority of the assignment.	Strengths and weaknesses are addressed peripherally or not at all. The discussion of strengths and weaknesses take up only a small part of the assignment.
<b>Organization and Communication Accuracy</b>	Paper is well organized, has a very clear intro, body and conclusion. The purpose of the paper is clear from the very beginning. There are no grammatical errors or typos. APA and page length requirements are met.	Paper is organized, has an intro, body and conclusion. The purpose of the paper becomes clear within the paper. There are few grammatical errors or typos. APA and page length requirements are met.	Paper is not well organized, has an unclear or non-existent intro, body and conclusion. The purpose of the paper is unclear. There are many grammatical errors and/or typos. APA and page length requirements are not met.

### 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, do not resubmit work completed for other classes without specific acknowledgment and permission from the instructor. Violations are unacceptable and required to be referred to the Dean of Students Office for possible disciplinary action.

### 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.

### 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 Discussion Board option. In terms of

written assignments, professionalism includes that all assignments be Word processed, checked for spelling/ grammar, and have any appropriate output/ graphics electronically pasted into the document.

### **Netiquette Statement**

Netiquette, or network etiquette, refers to the guidelines and recommended practices for online communications.

Be respectful. Remember that you are communicating with actual people. Always be courteous and show respect, especially when there are differences of opinion. Remember the golden rule: treat others as you would like to be treated!

Think before you post. Be aware of who may be able to view your posting, and how your post may be interpreted. Try to maintain a fair and objective tone.

Stay on topic. Make sure your communication is related to the subject at hand and does not wander off-topic.

Write clearly. Even though the online environment may seem more informal than your face-to-face class, this is still an academic course and intelligible: mature communication is expected. Correct spelling and grammar are required: proper composition and punctuation are expected.

Use appropriate language and style. Profanity or offensive wording will not be tolerated. You should avoid using ALL CAPS and repeated punctuation (???? or !!!).

Be considerate of others. Do not make derogatory, condescending, or harassing remarks. Communication should be well-intentioned, well-articulated, and aimed at fostering a positive learning environment. Be aware of how sarcasm may be misinterpreted by your readers.

Allow for misunderstandings. Keep in mind that writing often conveys the incorrect tone or intention in the absence of nonverbal communication. You should make allowances. What you may perceive as rudeness may be unintended.

Cite your sources. If you post work that is not your own, be sure to reference your sources.

### **ADA Statement**

In Section 504 of the Vocational Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) of 1990, if a student needs an accommodation, then the Office of Disabled Student Services located at UTEP need to be contacted. If you have a condition, which may affect your ability to perform successfully in this course, you are encouraged to discuss this in confidence with the instructor and/or the director of the Disabled Student Services. You may call (915)747-5148 for general information about the American with Disabilities Act (ADA) and the rights that you have as a UTEP student with a disability. Individuals with disabilities have the right to equal access and opportunity. It is the student's responsibility to contact the instructor and the UTEP Disabled Student Services Office.

### **Equal Educational Opportunity Statement**

In order 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 on the basis of 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).