

Advanced Math Methods (Middle Grades)

TED 4350: CRN

Fall 2023

CRN: 14031

ONLINE (asynchronous)

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Office Hours: ONLINE (via Blackboard), Thursdays, 7 – 9:10 pm

COURSE DESCRIPTION

This course covers the methods and resources for teaching mathematics in intermediate and middle school classrooms. Emphasis is placed on the equity principle (mathematics for all) and the development of conceptual understanding on topics such as real numbers and operations, geometry, algebra and functions, statistics and probability.

COURSE GOALS AND OBJECTIVES

People are born with a great capacity to learn. Doing mathematics can be a creative and empowering extension of our innate sense-making abilities. Unfortunately, few students experience math this way. School teaches many students that doing math is about quickly recalling facts and following a lot of detailed rules. Furthermore, students often get the message that if they do not excel at those things, they are not as smart or as valuable as those who do.

The principles listed below are well supported by decades of educational research. They will form the backbone (sometimes explicitly, sometimes tacitly) of our work together.

- All students can make sense of rich mathematical ideas if their teachers provide appropriate opportunities for them to do so.
- All students have knowledge and strengths that are relevant to mathematics learning.
- All students benefit from strong relationships and supportive communities. Being a teacher is as much about building community—for our students and ourselves—as it is about developing content knowledge.

STUDENT LEARNING OUTCOMES

At the end of this course, students will be able to:

	OUTCOMES	HOW OUTCOMES WILL BE ASSESSED
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1	Understand how children learn and develop mathematical skills, procedures, and concepts; know the typical students' errors and misconceptions; and uses this knowledge to plan, organize, and implement instruction to meet curriculum goals.	All activities in the class
2	Build your capacity to teach mathematics in ways that leverage students' diverse strengths to explore important mathematical ideas and support all students to engage in authentic mathematical work by unpacking NCTM standards and developing the competencies to teach the TEKS.	All activities in the class
3	Learn the specific mathematical topics and mathematical processes for teaching through exploring how students learn, engaging in instructional activities, and reflecting on your learning.	All activities in the class
4	We will also connect mathematical content strands with mathematics to pedagogy, developing our capacity to enact ambitious and equitable teaching practices.	All activities in the class
5	Explore and use technology to appropriately teach and prepare students to use mathematics according to the statewide curriculum (TEKS).	All activities in the class
6	Understand and use numbers (structure, operations, and algorithms), patterns, functions, algebraic thinking, problem-solving strategies, and data analysis to teach the statewide curriculum (TEKS). Understand the relationship between the different symbolic representations.	All activities in the class
7	Understand assessment and use a variety of formal and informal assessment techniques to guide instruction and support student progress.	All activities in the class

You will need regular access to a computer, stable and consistent internet access, Blackboard, and your UTEP email account. There is no required text. Selected book chapters will be provided by the instructor as part of each week's readings, in addition to references to online articles and websites from various sources. A partial list of example references and resources is provided in Blackboard.

NO Text Required

Selective Chapters and readings will be provided by the instructor as part of every week Readings.

Required Readings and Resources:

English Language Proficiency (ELPS) Standards:

<http://ritter.tea.state.tx.us/rules/tac/chapter074/ch074a.html#74.4>

Principles and Standards for School Mathematics Executive Summary

https://www.nctm.org/uploadedFiles/Standards_and_Positions/PSSM_ExecutiveSummary.pdf

Constructivism: <https://www.funderstanding.com/theory/constructivism/>

Lev Vygotsky and Social Cognition

<https://www.funderstanding.com/category/theory/vygotskysocial-cognition/>

Student Assessment

<https://tea.texas.gov/student-assessment>

STAAR Mathematics Resources

<https://tea.texas.gov/student-assessment/testing/staar/staarmathematics-Resources>

STAAR Interim assessments

<https://tea.texas.gov/student-assessment/testing/staar/staarinterim-Assessments>

Texas Education Agency (TEA): <http://www.tea.state.tx.us/index.aspx>

Texas Examinations of Educator (TExES) Standards: <http://www.texas.ets.org/texas/>

Texas Essential Knowledge and Skills (TEKS) <http://www.tea.state.tx.us/index2.aspx?id=6148>

Texas Essential Knowledge and Skills (TEKS_Mathematics)

<http://www.tea.state.tx.us/teks/#grade>

TExES Preparation Manual_Mathematics 4-8 (115):

<https://www.tx.nesinc.com/Content/Docs/115PrepManual.pdf>

Texas English Language Proficiency (TELPAS) Standards:

<http://www.tea.state.tx.us/student.assessment/ell/telpas/>

National Council for Teachers of Mathematics (NCTM) publications (most journals are available for free via UTEP electronic Library Databases.

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 (free download)

<https://nap.nationalacademies.org/catalog/11101/how-students-learn-mathematics-in-the-classroom>

<https://nap.nationalacademies.org/catalog/10126/how-students-learn-history-mathematics-and-science-in-the-classroom>

- Book "Adding It Up: Helping Children Learn Mathematics". You can read it online (free download)

<https://nap.nationalacademies.org/catalog/10434/helping-children-learn-mathematics>

COURSE ASSIGNMENTS AND GRADING

The schedule of assignments and classroom discussions may change over the course of the semester. These modifications will be based on the specific needs of students in the course and will not exceed the difficulty or the due dates of the originally proposed assignment. Any changes to the syllabus will be announced in class and through Blackboard. Every student is responsible for these changes and should regularly check Blackboard for updated content, assignments, and announcements.

More information about each assignment is available on Blackboard, under the Discussion Folder for the week it is due. Please keep your assignments organized. It will serve to work on the final reflection/self-evaluation of your thinking as it evolves over the semester.

Your final letter grade for the course will be based on your accumulated points, as shown in the following table:

Letter Grade	A	B	C	D	F
Point total	100-90	89-80	79-70	69-60	59-0

Attendance and Participation (25% of the grade)

This is an online course; virtual attendance is required. Attendance is determined by class participation online. Participation on Blackboard is provided in Evaluation Blackboard Dashboard. The record of attendance is taken daily.

During first week of class, students are required to access the Blackboard Thursday through Saturday, and always check their Blackboard email, and reply to the Blackboard email messages they received.

During other weeks students are required to access the Blackboard at least on Monday, Wednesday and Saturday, and always check their Blackboard email, and reply to the Blackboard email messages they received.

Please, remember that all the students are required to work individually, and your solutions/explanations should be written in your own words. Misspelled words in your submissions are not acceptable. You are required to use free version of Grammarly.com to check your email messages, postings, math solutions and reflections.

NO LATE WORK is allowed. Students who violate rules of the class will be dropped by instructor.

Blackboard discussions/BlackBoard email submissions (25 % of the grade)

For this online course, students will be required to participate in Blackboard discussion board. For discussion board participation, I encourage you to write 100-150 words in your post in response to the provided guiding questions. You should also reply (at least 25 words for each response) to the entries of at least one of your peers for each assigned discussion (unless noted otherwise). Refer to the discussion board and course content to further details on each assignment.

The deadline for postings is 11:50 pm MST every Saturday. Replies to your peers are due by 11:50 pm MST every Saturday.

Written Reflection Papers/Written Lesson Plans (25 % of the grade)

Students will be asked to synthesize what you are reading and integrate it with the classroom activities in relation to the guiding topic connected to secondary teaching and learning. Weekly reflections specifications: APA format (preferred), 12-point font, New Times Roman, Double Spaced, (specific number of words), save as .docx.

The deadline for postings is 11:59 pm MST every Saturday.

Math Detailed Solutions (25 % of the grade)

Students will be required to take work on activities to address specific math concepts.

The deadline for postings is 11:50 pm MST Saturday (on the assigned week).

Final Reflection/ self-evaluation guidelines

You will reflect and consider the extent to which you:

- Solve mathematical problems
- actively engaged and participated in class activities
- made connections between readings, NCTM and TEKS standards
- challenged yourself to go beyond what felt comfortable or familiar
- grew in your capacity to support all students to engage in authentic learning experience
- grew in your capacity to cultivate every student's identity as a valued intellectual contributor to a learning community
- advocate for your own learning
- fulfilled your obligations as a responsible professional
- understand TEKS standards as the core of your teaching practices
- learned about yourself, as a learner and a teacher

Final reflections specifications: APA format, 12-point font, New Times Roman, Double Spaced, 4-5 pages, save as .docx.

The deadline for postings of Final reflections is Dec. 14, 11:50 pm MST, the date will be sent to you via BlackBoard email.

TECHNOLOGY REQUIREMENTS

Blackboard information

An online collaborative environment, Blackboard (available from "My UTEP.EDU" at <https://my.utep.edu>) is used to provide course interactions, and each participant must be able to use their UTEP Blackboard account. You MUST have both a UTEP email address and password to take this course -- this is because the online course environment, Blackboard utilizes your UTEP email username and password. Because the course is taught in a fully online manner, you cannot effectively participate without access to the online course environment.

The instructor will not accept projects or course materials that are not submitted through the UTEP Blackboard system

Blackboard. The <https://my.utep.edu/My> link gives you access to ALL UTEP online functions: Blackboard, Goldmine, and Webmail, among others. If you have trouble, the UTEP Information

Systems help desk number is 915-747-4357 - (747-HELP), and online at

<https://www.utep.edu/technologysupport/>.

Alternative means of submitting work in case of technical issues

If Blackboard is down and you cannot get into our course site to post work by the required due date, you should email helpdesk@utep.edu, receive case number assigned to you and email this case number to me via regular UTEP email.

ALL coursework should be posted in our BB 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 me IMMEDIATELY WITH AN ATTACHMENT OF YOUR WORK. When you do this, I 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. I will then check with the Technology staff at UTEP to determine when Blackboard was out. If you email me indicating that you did not post your coursework because Blackboard is down, but you do not send me your work as an attachment in the message, you will not receive credit for your work.

File Names for submitted work

File names for documents submitted by students should follow these guidelines: (1) No spaces in the names, (2) appropriate file extensions such as docx or pptx for the file type, (3) "Lastnamefirstname_exercisename.xxx". Failure to follow these requirements impedes the ability to download and exchange documents among course participants and will result in a reduced grade, or even no grade. For example, having a space in a file name will often lead to a file that is incompletely uploaded or downloaded, or that is turned in as an unidentifiable file. That is a complication of web servers, not a course issue. Replacing all spaces with an underscore (_) or a dash (-) avoids this problem.

Plagiarism Checking Software

We shall be using an originality checking service to evaluate the level of originality in papers written in this course. Students are required to abide by the UTEP Plagiarism and copyright policies as stated in the Academic Policies section below.

Academic Policies

SCHOLASTIC INTEGRITY. Academic dishonesty is prohibited and is considered a violation of the

UTEP Handbook of Operating Procedures. It includes, but is not limited to, cheating, plagiarism, and collusion. Cheating may involve copying from or providing information to another student, possessing unauthorized materials during a test, or falsifying research data on laboratory reports. Plagiarism occurs when someone intentionally or knowingly represents the words or ideas of another as ones' own. Collusion involves collaborating with another person to commit any academically dishonest act. Any act of academic dishonesty attempted by a UTEP student is unacceptable and will not be tolerated. All suspected violations of academic integrity at the University of Texas at El Paso must be reported to the Office of Student Conduct and Conflict Resolution (OSCCR) for possible disciplinary action.

Student work will be checked for plagiarism via a software tool, and the re-use of extensive passages of text, whether cited or not, constitutes plagiarism. Work turned in will be checked

for originality, and all work must pass an evaluation of writing originality.

UTEP Resources

Below are a few of the UTEP's resources to aid students' success.

Student Success Help Desk

https://www.utep.edu/advising/student_resources/student-success-helpdesk.html

UTEP Academic Advising Center

<https://www.utep.edu/advising/>

Tutoring Services

<https://www.utep.edu/tutoring/>

Office of Student Financial Aid

<https://www.utep.edu/studentaffairs/financialaid/contact-us/index.html>

More Student Resources

<https://www.utep.edu/student-affairs/resources/>

University Writing Center (UWC): Submit papers here for assistance with writing style and formatting, ask a tutor for help and explore other writing resources.

<https://www.utep.edu/uwc/>

Counseling and Psychological Services

<https://www.utep.edu/student-affairs/counsel/resources/>

Accommodations Policy

The University is committed to providing reasonable accommodations and auxiliary services to students, staff, faculty, job applicants, applicants for admissions, and other beneficiaries of University programs, services and activities with documented disabilities in order to provide them with equal opportunities to participate in programs, services, and activities in compliance with sections 503 and 504 of the Rehabilitation Act of 1973, as amended, and the Americans with Disabilities Act (ADA) of 1990 and the Americans with Disabilities Act Amendments Act (ADAAA) of 2008. Reasonable accommodations will be made unless it is determined that doing so would cause undue hardship on the University. Students requesting an accommodation based on a disability must register with the [UTEP Center for Accommodations and Support Services \(CASS\)](#). Contact the Center for Accommodations and Support Services at 915-747-5148, or email them at cass@utep.edu, or apply for accommodations online via the CASS portal at

<https://www.utep.edu/student-affairs/cass/>

Useful Resource Links

UTEP MS Office and other free software for UTEP students

https://www.utep.edu/technologysupport/ServiceCatalog/SOFT_AllSoftware.html

UTEP MS Office free for students link

https://www.utep.edu/technologysupport/ServiceCatalog/SOFTWARE_PAGES/soft_microsoftoffice365.html

APA 7 Formatting Style Guide at the OWL at Purdue

https://owl.purdue.edu/owl/research_and_citation/apa_style/apa_formatting_and_style_guide/general_format.html

NETIQUETTE

In an online classroom, our primary means of communication is written. The written language has many advantages: more opportunity for reasoned thought, more ability to go in-depth, and more time to think through an issue before posting a comment. However, written communication also has certain disadvantages, such a lack of the face-to-face signaling that occurs through body language, intonation, pausing, facial expressions, and gestures. As a result, please be aware of the possibility of miscommunication and compose your comments in a positive, supportive, and constructive manner and consider the following:

- Remember that your posts are public. All class participants will be reading any postings.
- Respect and courtesy must always be provided to classmates and to instructor.
- Make a point to be kind and respectful in your comments—even if you disagree with someone. No harassment or inappropriate postings will be tolerated.
- When reaching to someone else’s message, address the ideas, not the person and stay on-topic. Post only what anyone would comfortably state in a F2F situation.
- Blackboard is not a public internet venue; all postings to it should be considered private and confidential. Whatever is posted on in these online spaces is intended for classmates and professor only. Please do not copy documents and paste them to a publicly accessible website, blog, or other space. If students wish to do so, they have the ethical obligation to first request the permission of the writer(s).
- Submit files the right way. If you do not follow instructions, you’re taking the risk that your instructor won’t be able to find or open your assignment. Save yourself and your instructor a headache and read their instructions carefully before submitting.

Calendar

DATE	TOPICS	DUE ASSIGNMENTS
Week 1	Class Introductions	Specific instructions are provided via Discussion “ Week 1 ” on Blackboard
Week 2	National and State standards	Specific instructions are provided via Discussion “ Week 2 ” on Blackboard
Week 3	Mathematics activities, connection to teaching and learning	Specific instructions are provided via Discussion “ Week 3 ” on Blackboard
Week 4	Mathematics activities, connection to teaching and learning	Specific instructions are provided via Discussion “ Week 4 ” on Blackboard
Week 5	Mathematics activities, connection to teaching and learning	Specific instructions are provided via Discussion “ Week 5 ” on Blackboard
Week 6	Mathematics activities, connection to teaching and learning	Specific instructions are provided via Discussion “ Week 6 ” on Blackboard
Week 7	Mathematics activities, connection to teaching and learning	Specific instructions are provided via Discussion “ Week 7 ” on Blackboard
Week 8	Mathematics activities, connection to teaching and learning	Specific instructions are provided via Discussion “ Week 8 ” on Blackboard

Week 9	Mathematics activities, connection to teaching and learning	Specific instructions are provided via Discussion “Week 19” on Blackboard
Week 10	Mathematics activities, connection to teaching and learning	Specific instructions are provided via Discussion “Week 10” on Blackboard
Week 11	Mathematics activities, connection to teaching and learning	Specific instructions are provided via Discussion “Week 11” on Blackboard
Week 12	Mathematics activities, connection to teaching and learning	Specific instructions are provided via Discussion “Week 12” on Blackboard
Week 13	Mathematics activities, connection to teaching and learning	Specific instructions are provided via Discussion “Week 13” on Blackboard
Week 14	Mathematics activities, connection to teaching and learning	Specific instructions are provided via Discussion “Week 14” on Blackboard
Week 15	Mathematics activities, connection to teaching and learning	Specific instructions are provided via Discussion “Week 15” on Blackboard
Week 16	Mathematics activities, connection to teaching and learning, reflection.	Specific instructions are provided via Discussion “Week 16Finals” on Blackboard

This syllabus is subject to change.

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