MTH 277 Math for Elementary Teachers I

Brenda Rhone
UNITED TRIBES TECHNICAL COLLEGE

COURSE INFORMATION

This course is the first in a series of three courses designed to develop the necessary foundations in mathematics for prospective elementary teachers. Topics will include North Dakota Standards for teaching mathematics, sets, system of numeration, natural numbers, integers, number theory and rational numbers. Throughout the course, the five process standards recommended by the National Council of Teachers of Mathematics Principles and Standards (problem solving, reasoning, communication, connections, and representation) will be emphasized.

Credits: 3

CLASS INFORMATION

Section Number:
Term: Spring Year: 2025 Start Date: 1/14/2025 End Date: 5/2/2025

INSTRUCTOR

Brenda Rhone
Email: brhone@uttc.edu

Office Phone: 701-221-1788
Office Location: Education Building - Office 121
Office Hours:
See instructor schedule
Quenna Eisenzimmer is the instructor for this course.

TEXTBOOKS

Bassarear, T. & Moss, M. (2019). *Mathematics for Elementary School Teachers*. Boston, MA: Cengage Learning.

INSTITUTIONAL LEARNER OUTCOMES

Quantitative & Scientific Reasoning: Develop solutions to mathematical and scientific problems.

PROGRAM OUTCOMES

Demonstrate understanding of central concepts to connect with and advance student learning.
Monitor learner progress by using multiple methods of assessment.

EXTERNAL STANDARDS

Council for the Accreditation of Educator Programs (CAEP) Standards

Target Standards

CAEP Standard 1: Content and Pedagogical Knowledge

The provider ensures that candidates develop an understanding of the critical concepts and principles of their discipline and facilitates candidates' reflection of their personal biases to increase their understanding and practice of equity, diversity, and inclusion. The provider is intentional in the development of their curriculum and clinical experiences for candidates to demonstrate their ability to effectively work with diverse P-12 students and their families.

R1.2 Content The provider ensures candidates are able to apply their knowledge of content at the appropriate progression levels.

InTASC Standards

Target Standards

InTASC Standard #3: Learning Environments

The teacher candidate works with others to create environments that support individual and collaborative learning, and that encourage positive social interaction, active engagement in learning, and self-motivation.

InTASC Standard #4: Content Knowledge

The teacher candidate understands the central concepts, tools of inquiry, and structures of the discipline(s) he or she teaches and creates learning experiences that make these aspects of the discipline accessible and meaningful for learners to assure mastery of the content.

North Dakota Program Approval and Teacher Education Standards

Target Standards

50015 Elementary Education:

STANDARD 2 – Understanding and Applying Content and Curricular Knowledge for Teaching

Candidates demonstrate and apply understandings of major concepts, skills, and practices, as they interpret disciplinary curricular standards and related expectations within and across literacy, mathematics, science, social studies, art, and physical education.

Components

50015.2c Major Math Concepts- Candidates demonstrate and apply understandings of major mathematics concepts, algorithms, procedures, applications and mathematical practices in varied contexts, and connections within and among mathematical domains.

COURSE OBJECTIVES

1. Demonstrate mathematical thinking and reasoning skills.
2. Demonstrate problem-solving techniques and strategies.
3. Analyze relationships between number properties, operations, and algorithms for the four basic operations involving integers, rational numbers, and real numbers.
4. Explore a variety of concrete and visual representations that identify the connections between operations and algorithms.
5. Apply the use of technology in mathematical education.

GRADING INFORMATION

The Teacher Education Department expects all assignments to be completed on the due data and time. Assignments will be accepted for half credit five instructional days after the due date. After this, assignments will receive a zero. Presentations are considered formal assessments and follow UTTC formal assessment policy.

A. GRADING SCALE

Grade	Percentage
A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	Below 60%

B. COMMUNICATION

Email is the official means of communication at UTTC. Information Technology (IT) will assign all students an official UTTC email address. All correspondence from the College to the student will be sent to the student's UTTC email address. Students are expected to check their email regularly and are responsible for all information sent to them via their UTTC email address. Faculty expect students to use their official email address for all instructional purposes, including communicating with the faculty.

C. ATTENDANCE

Students at UTTC are expected to participate in all of their class sessions and are expected to communicate with their instructors regarding any emergencies that cause them to miss class. Regardless of the circumstances, the student is responsible for obtaining any information missed because of the absence and completing any outstanding assignments. The student may refer to the course assignments in My.UTTC.edu, contact another student enrolled in the course, or meet with the course instructor during office hours to get the missing information. Attendance is entered as "Present", "Absent-Unexcused", or "Excused" (college-sanctioned absences).

D. LATE ASSIGNMENT SUBMISSIONS

UTTC supports and fosters the student's responsibility for completing and submitting assignments on or before scheduled due dates and times. If an assignment is due, the student should make every effort to submit the assignment on time. Occasionally, a student may experience an unexpected life event that results in the submission of late work. Communication is the key. Instructors are more than willing to work with students in the event of an emergency if the student communicates with them before the date and time the assignment is due to make other arrangements.

Late assignment deadlines will vary among departments but will not exceed more than five (5) business days after which the assignment was initially due. Assignment due dates, late assignment deadlines, and late assignment penalties are outlined in course syllabi. Assignments not submitted by the initial deadline date will be reflected in the course gradebook as a zero (0) until the assignment has been submitted. The amount of points deducted for late work is at the discretion of the instructor. Assignments submitted via E-mail will not be accepted under any circumstances and will receive a grade of zero.

E. MISSED TEST, EXAMS AND QUIZZES (FORMAL ASSESSMENTS)

Students may not make up a missed test, exam or quiz without a valid reason for their absence (illness, family emergency). It is the student's responsibility to contact their instructors before the absence, or within 24 hours after missing the formal assessment. The instructor will review the reason the student missed and determine if the circumstance justifies the student being allowed to take the formal assessment. Approved make-up assessments must be taken outside of the student's regular class schedule and during a time and location agreed upon between the student and instructor. Students are not to miss another class in order to make-up an assessment for another course. If the student fails to show on the date and time of the makeup assessment, the student will not be permitted to reschedule the makeup and the assessment and will earn a 0% grade.

F. THUNDER ALERT SYSTEM

UTTC's Thunder Alert System (TAS) is a proactive, communication-driven support system that provides timely identification and interventions to work with individual students to assist in generating plans to overcome challenges to college success. The system assists UTTC students by linking them to faculty and staff who can provide and connect students to available resources and strategies. The Thunder Alert serves as an opportunity for students to take ownership of their success and empower them to accomplish academic and personal goals. The system helps faculty and academic advisors connect and communicate with students as issues arise. The additional cross-wide partnerships create a culture of collaboration focused on the best interest of UTTC students.

Academic-related concerns such as attendance, missing assignments, or classroom behavior will result in a Thunder Alert being issued by faculty. When a Thunder Alert is issued, the student will receive an email requesting them to make arrangements to follow up with the instructor and/or their academic advisor. Students receiving a Thunder Alert should make the necessary arrangements to set up and meet with faculty as soon as possible to generate a plan of success.

G. ACADEMIC HONESTY

Students are expected to complete their own work. Academic dishonesty includes plagiarism; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using course materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to dishonestly obtain grades, honors, awards, or professional endorsement; altering, forging, misrepresenting, or misusing an academic record; or fabricating or falsifying data,

research procedures, or data analysis. Refer to Academic Affairs policies and procedures handbook for further information.

ARTIFICIAL INTELLIGENCE (AI) USE POLICY

Use of generative AI is subject to individual course instructor discretion. Instructors have the authority to:

- Authorize or restrict AI assistance partially or fully
- Define specific limits for individual assignments
- Establish course-wide AI usage policies
- AI use must be explicitly defined and approved by course instructors.
- Generative AI should not:
    - Replace original student work
    - Compromise the evaluation of student learning outcomes
    - Undermine the academic integrity of assignments

Misuse of AI will be considered plagiarism and is subject to consequences outlined in the Student Academic Honesty policy. Examples of AI misuse include:

- Generating entire writing assignments (essays, discussion posts) using AI
- Completing mathematical calculations using AI when computational skills are a learning objective
- Claiming credit for AI-generated content (art, music, program code)
- Using AI in ways not explicitly authorized by the instructor

When in doubt, students are encouraged to consult directly with their course instructors regarding the appropriate use of generative AI.

H. STUDENTS WITH DISABILITIES

United Tribes Technical College recognizes its responsibility for making reasonable accommodations to ensure there is no discrimination on the basis of a disability. The Disabilities Support Services coordinates reasonable accommodations, support services, and appropriate referrals for the purpose of removing barriers and providing an equitable learning environment. If you have a disability, please contact the Disabilities Services (DS) office at (701) 221-1456 or email at dss@uttc.edu.

I. TITLE IX STATEMENT

Title IX is a federal civil rights law that prohibits discrimination on the basis of sex, including sexual harassment, rape and sexual assault. United Tribes Technical College is committed to upholding the law and standards that promote respect and human dignity in a safe environment. Sexual misconduct and relationship violence in any form violates UTTC's mission, cultural values, Student Code of Conduct, and may also violate federal and state law. If you or someone you know has been impacted by sexual assault, dating and domestic violence, stalking, or sexual exploitation, UTTC has resources available on the Title IX website. you can find the appropriate resources on the UTTC campus and in the community

J. DIVERSITY AND EQUITY STATEMENT

United Tribes Technical College values diversity because it enriches the community and wealth of experiences that characterize a post-secondary education. Our students, faculty, and staff come from Tribal lands throughout the United

States and Canada. The majority of our students come from the northern plains region of the country, with 70% representing the North Dakota tribes.

UTTC recognizes that diversity is about much more than race, ethnicity or geography. Because students from many Tribal nations are represented at UTTC, from a wide range of cultural and ethnic backgrounds, students are encouraged to share their own cultural practices, traditions, and beliefs in the classroom in an effort to build an inclusive and welcoming community for all individuals and one from which we can learn from one another. We believe engagement with diverse perspectives and ideas is critical to the education and growth of all people, and we value the unique experiences and viewpoints of all of our community members.

EQUITY STATEMENT

United Tribes Technical College (UTTC) believes that access to a high-quality education in an inclusive environment is the right of all individuals and imperative for the continued advancement of a strong democracy and workforce. Equity is ensuring that all students receive what they need to be successful through the intentional design of the college experience.

K. TECHNOLOGY REQUIREMENTS

To ensure that you are using the recommended personal computer configurations, please refer to the minimal technology requirements.

ONLINE

Regular and Substantive Interaction (RSI) Statement

- This course meets the regular and substantive interaction requirements for online courses. The instructor for this online course will do the following: Monitor your academic engagement and success and contact you regarding your progress using your UTTC email.
- Regularly communicate with you through virtual meetings (Zoom) regarding course content and expectations.
- Engage in the discussion forum on a weekly basis.
- Provide detailed and personalized feedback on your papers and projects.
- Respond to student questions through UTTC email or telephone in a timely manner.

Virtual Meetings

This course is offered completely online but it does include a synchronous component in the form of Zoom meetings. A synchronous Zoom meeting refers to a meeting when all of the students and the instructor in a class come together at the same time and discuss class materials, projects, or other topics virtually using Zoom. Please note that this is not a self-paced course, one that you do on your own time and pace. There is a class schedule, and it is strictly followed. Please be aware of the dates on the course schedule for your assignments and scheduled Zoom meetings.

Netiquette Discussion Forum Guidelines

Netiquette guidelines address communication behaviors that are particular to an online environment. Below are some general netiquette guidelines for online discussion boards.

1. **Be Inclusive**. It is important to be intentional about making sure we “see” each other in an online community. You can do this by making sure that everyone has at least one response. Tip: If you are unsure who to respond to, try looking for posts that have not yet received a reply. Also, be sure to reply to people who post questions or comments to you.

2. **Be on time.** Your contributions to our discussions are important, but our learning community will not benefit from them unless you post on time. Tip: Set calendar reminders to make sure you contribute on time.
3. **Disagree respectfully.** Disagreement and different ideas are essential parts of learning, problem-solving, and creativity. However, for different ideas to be heard and shared, it is important to maintain a respectful stance even through vehement disagreement; otherwise, communication may break down. Tip: You might start the conversation with a question to clarify or get more information before you explain your different perspective. For example, "Nate, can you tell me more about what you meant when you said that meals for elderly are a poor use of community resources?" Tip: Refrain from using judgmental evaluations of what someone posted, and instead present your own perspective supported by facts and more information. For example, instead of saying, "Jacey, your discussion makes no sense", you can say, "Jacey, I didn't understand what you meant when you said the new program was not working. Can you provide more information?"
4. **Be concise.** Lengthy paragraphs are difficult for readers to digest. Keep your paragraphs short and your writing concise. Tip: Consider using bullet points to help highlight your main points or headings if your post needs to be lengthy.
5. **Stay on topic.** Off-topic comments can derail our conversation. You can post off-topic comments in our open discussion forum or one of the other communication modes we are using in the course.
6. **NO YELLING.** When you write in uppercase letters in online communication, it is usually interpreted as yelling.
7. **Add some emotion**. Sometimes it helps communicate the tone of your message when you add an emoticon. However, only do so as necessary for it can also be annoying to readers if you use too many (which is probably the opposite of your intention).
8. **Use humor carefully**. Sarcasm in particular does not translate well in an online environment. It is best to avoid the potential pitfalls of misunderstood messages.

COURSE CALENDAR

eek	Academic Topic Instructional Strategy	Book Chapters	Assessment (Formative – Summative
0	Start Here Module in Jenzabar		
1	Foundations for Learning Mathematics 1.1 What is Mathematics? Zoom Meeting Tuesday at 4 p.m.	Chapter 1	Mindset Discussion Forum Teachings of Our Elders Perseverance Exploration (Culture Component)
2	Foundations for Learning Mathematics 1.2 Sets	Chapter 1	Set Tech Tools Discussion Forum Set Practice Canva Venn Diagram
3	The Number System 2.1 Whole Numbers	Chapter 2	Expanded Form Discussion Forum Base 10 Block Manipulatives Practice Teachings of Our Elders Counting in Lakota (Culture Component)
4	The Number System 2.2 Fractions Zoom Meeting time to be determined	Chapter 2	Virtual Manipulatives Discussion Forum Fraction Practice

5	The Number System 2.3 Decimals, Integers, and Real Numbers	Chapter 2	Growing Math Decimals Discussion Forum (Culture Component) Intro to Decimals Create Decimal Game
6	Understanding Addition and Subtraction 3.1 Understanding Addition of Whole Numbers	Chapter 2	Growing Math Scrambled State: Ag in Math Discussion Forum Adding Whole Numbers Worksheet
7	Understanding Addition and Subtraction 3.2 Understanding Subtraction of Whole Numbers Short Lesson plan either addition or subtraction – tie it ND priority scales NDSBL ndsbl.org/resources for lower elementary Zoom Meeting time to be determined	Chapter 3	Football Math Fun Discussion Forum Subtracting Whole Numbers Worksheet K-2 Short Lesson Plan
8	Understanding Addition and Subtraction 3.3 Understanding Addition and Subtraction of Fractions	Chapter 3	Growing Math 4th Grade Lesson Plan Exploration (Culture Component) Discussion Forum Working with Fractions
9	Understanding Addition and Subtraction 3.4 Addition and Subtraction of Decimals and Integers	Chapter 3	Teaching Adding and Subtracting Decimals Discussion Forum Adding and Subtracting Decimals
10	Understanding Multiplication and Division 4.1 Understanding Multiplication of Whole Numbers Zoom Meeting time to be determined	Chapter 4	Growing Math 3rd Grade Lesson Plan Exploration/Spirit Lake Game (Culture Component) Discussion Forum Multiplication Exploration
11	Understanding Multiplication and Division 4.2 Understanding Division of Whole Numbers Short Lesson plan either addition or subtraction – tie it ND priority scales NDSBL ndsbl.org/resources for grades 3-5 elementary	Chapter 4	Growing Math 4th Grade Lesson Plan Exploration/Fish Lake Game (Culture Component) Discussion Forum Division Exploration 3-5 Short Lesson Plan
12	Understanding Multiplication and Division 4.3 Understanding Multiplication and Division of Fractions Zoom Meeting time to be determined	Chapter 4	Multiplication and Division Flashcards Multiplying and Dividing Fractions Growing Math 5th Grade Lesson Plan Exploration/Video Reflection (Culture Component)
13	Understanding Multiplication and Division 4.4 Understanding Multiplication and Division of Decimals and Integers	Chapter 4	Multiplication and Division of Decimals Poster Discussion Forum Multiply and Divide Decimals Video Tutorial Creation
14	Course Wrap-Up Peer Teach those lessons. Swap lesson plans and see if they can teach each other's lesson plan using Flip Video or a discussion forum. Need to use the lesson plan document for the Portfolio Zoom Meeting time to be determined		Teaching Lesson Reflection Discussion Forum **Final Math Learning Activities Portfolio PLO ASSESSMENT - MUST use the Short Lesson plan document for Portfolio.**