Mayville State University

EDUC 307 Mathematics Strategies for Elementary & Middle School Teachers (31793)

Fall 2025
3 Credit Hours

Course and Instructor Information

Instructor Name: Darian Sherva

Contact Information:

Office: 116 R

Email: darian.sherva@mayvillestate.edu

Work phone: 701.788.4821

Hours of Availability: Available for meetings by appointment.

Instructional Mode: Online Asynchronous

Course Dates: August 25th -October 19th, 2025

Time Zone: All times indicated throughout this syllabus reflect Central Time (CT).

Course Materials and Technologies

Required

Boaler, J. (2016). Mathematical mindsets: Unleashing students' potential through creative math, inspiring messages, and innovative teaching.

Use of Artificial Intelligence in this Course

AI tools can serve as collaborative partners in your learning journey. In this course, you are permitted to use them for brainstorming, generating outlines, or exploring alternative perspectives. As with any source, you must critically evaluate the information provided and verify its accuracy. When AI has contributed to your work, include a citation specifying the tool used and its role in your process (e.g. 'Initial concept exploration assisted by CoPilot').

Course Description

This methods course is designed to prepare early childhood and elementary teacher candidates to practice applying research-based teaching strategies in the elementary mathematics classroom. Teacher candidates will develop engaging, hands-on lessons that promote conceptual understanding of mathematics and examine current research and its implications for the classroom.

Pre-/Co-requisites: Math 103,

EDUC 250, EDUC 290

Purpose of the Course

This course aims to provide opportunities for teacher candidates to demonstrate knowledge of strategies of teaching mathematics, prepare lesson plans, demonstrate skills using math manipulatives and technology, assess skill levels of students, create a learning center, and journal about their experience teaching mathematical concepts. The main purpose of this course is to empower teacher candidates with instructional

strategies specific to facilitating deep conceptual mathematical understanding for their future students and to further prepare ensuing professionals to be able to: 1) review and experiment with theory-based instructional strategies; 2) better understand complex learning environments and how to provide for the unique needs of learners and investigate effective instructional approaches within the content area of mathematics; and 3) better understand that instructors are also motivators, managers, group leaders, counselors, and reflective persons who teach math conceptually ensuring student engagement and understanding through a growth mindset. The course is designed to prepare enrollees to be effective mathematics educators within grades 1-8 in public and private school settings. *Teacher candidates will be required to learn math concepts above the grade level that they will teach because understanding the development and application of a concept in secondary mathematics is key to understanding the foundational development of a mathematics concept which may be introduced as early as first or second grade.*

Conceptual Framework

Teacher Education courses are based upon the Conceptual Framework: Reflective Experiential Teacher. See the document 'Conceptual Framework' provided in the Teacher Education Handbook.

Course Objectives

To successfully complete this course, the learner will be expected to meet the following objectives, as aligned to Early Childhood and Elementary Education Program Approval Standards through North Dakota's Education Standards and Practices Board (ND ESPB):

1. Demonstrate an understanding of lesson planning and its connection to mathematics standards, objectives, curriculum, and assessment. (InTASC 1, 3, 5, 6, 7, 8; NDEC 5a)
2. Develop assessment procedures for evaluating students' academic needs for conceptual as well as procedural understanding of mathematics contents as described in the North Dakota Math Content Standards. (InTASC 8)
3. Acquire and model effective instructional strategies to motivate and engage students. (InTASC 7, 8)
4. Develop a lesson aligned to standards, integrated with language arts skills and practice in simulated and real-life instruction settings. (InTASC 1-8; ND ELED 2c)
5. Identify and apply multiple intelligences, learning styles, and modalities of learning to instructional planning in mathematics. (InTASC 1, 2, 3, 7, 8)
6. Communicate effectively with colleagues in a collaborative setting while providing reflective, constructive, and evaluative comments. (InTASC 1-10)
7. Model effective oral and written communication skills. (InTASC 2, 5, 9)
8. Implement techniques for promoting higher order questioning skills. (InTASC 1-6, 8)
9. Critically reflect on pre-service teaching experiences through dialogue and written journals. (InTASC 9)
10. Utilize technology to enhance instructional planning and mathematical understanding. (InTASC 7,8)
11. Display leadership abilities during teaching simulations and group projects. (InTASC 9,
12. Provide evidence of the ability to create a classroom environment which supports diverse learners (InTASC 2,3,7,8 & 9)
13. Provide reflective, constructive, and evaluative comments to peers (InTASC 9&10)

Diversity Objectives

1. Recognize assets and needs of diverse learners.
2. Understand cultural self-awareness and worldviews as they relate to teaching and learning decisions.
3. Reflect on context, multiple perspectives, actions and personal decisions as they relate to diversity.
4. Demonstrate actions consistent with the belief that all students are valued and can learn.

Technology Objectives

1. Use technology to support planning, differentiation, implementation, and evaluation of student learning experiences

2. Engage learners in using a range of learning skills and technology tools to access, interpret, evaluate, and apply information
3. Promote learner success with using appropriate technologies for diverse learners

Program Learning Outcomes (SLOs) Addressed in this Course

As part of Mayville State's effort to demonstrate continuous improvement in achieving student learning outcomes, this course will address the following SLOs. The Academic Program Student Learning Outcomes document can be found in your course shell. It contains all learning outcomes pertaining to Essential Studies courses and all majors and minors. The document has an index, so you can quickly find the degree you are pursuing. As part of Mayville State's effort to demonstrate Mayville State University - January 13, 2020, continuous improvement in achieving student learning outcomes, this course introduces and reinforces the following SLOs:

- **SLO 1: The Learner and Learning:** Teacher candidates understand diversity in learning and developmental processes and create supportive and safe learning environments for students to thrive.
- **SLO 2: Content:** Teacher candidates understand the subject matter deeply and flexibly so they can advance their students' learning, address misconceptions, and connect ideas to everyday life.
- **SLO 3: Instructional Practice:** Teacher candidates will plan instruction, utilize effective instructional strategies and technologies, and continuously assess students for mastery and decision-making purposes.

Course Expectations

Active participation throughout all learning experiences demonstrates your interest, engagement, and dedication to the teaching profession. Your willingness to interact positively with peers and the instructor reflects well of your professional disposition. Below you will find guidelines to help create successful learning experiences:

- **Instructor/Student Communication:** Students are accountable for all academic communications sent to their Mayville State University email address. Please email me at darian.sherva@mayvillestate.edu with questions or to schedule meetings. I typically respond within 24-48 hours on weekdays.
- **Review ALL weekly materials and be prepared.** Active participation is expected. Please notify me via email of any questions, wonderings, or celebrations. It is expected that each week assignments will be completed to the best of your ability. As a pre-service teacher, your preparation demonstrates dedication to the profession.
- **Be flexible, take risks, and ask questions!** Teaching at any level requires flexibility and responsiveness to student needs. The same is expected of you in this course.
- **Adhere to the code of student conduct** found in the MSU Student Handbook. This includes academic honesty—properly cite and reference others' work, including the use of artificial intelligence. When in doubt, give credit and cite. Contact me with any academic honesty questions.

Evaluation and Grading

Evaluation in this course will consist of both formative and summative assessments. Numeric and written feedback will be provided by the instructor through the Blackboard gradebook. Assignment feedback is typically given within 1 week of the assignment due date (2 weeks for larger assignments). All feedback is provided via Blackboard. It is the learner's responsibility to meet assignment deadline dates as outlined in the syllabus. Adhering to deadlines demonstrates the learner's ability to display disposition required for the teaching profession. This course adheres to the following grading scale:

100-94%=A 93-87%=B 86-80% = C 79-70% = D 69-0% = F

To successfully complete this course, your attendance and active participation is required and reflects positively on your disposition as an educator. Participation in assignments, group activities, and class discussions add to the quality of your learning experience. Assignments not submitted by the due date and time will earn a zero in the Blackboard gradebook. Teacher candidate may submit missing assignments up to the last day of class in Week 8 and must notify the instructor via email that assignments have been submitted. One point will be deducted for each day the assignment is late. **If you know you will be gone or an assignment will be late, notify the instructor before the date of class and/or the assignment is due.** There will be no extra credit offered for this course. Starfish will be used to report unsuccessful submissions of course assignments and kudos to those who are meeting and exceeding expectations. Please pay attention to those updates.

Enrollment Verification

The U.S. Department of Education requires instructors of online courses to provide an activity which will validate student enrollment in this course. The only way to verify that a student has been in this course is if he, she, or they perform an action in the LMS, such as completing an assignment or taking a quiz. Logging into the LMS is **NOT** considered active course participation. Please complete the designated enrollment verification activity by the date indicated. If it is not complete your enrollment in this course will be at risk.

Important Student Information

In the Help & Resources for Students section of the Blackboard Institution Page, you can view and download the Important Student Information document for the current academic year. It includes information about:

- ✓ Land Acknowledgement Statement
- ✓ Academic Grievance Concerns and Instructor English Proficiency
- ✓ NetTutor - Online Tutoring Program
- ✓ Starfish - Student Success System
- ✓ Students with Documented Disabilities
- ✓ Student Learning Outcomes / Essential Learning Outcomes
- ✓ Academic Honesty
- ✓ Emergency Notification
- ✓ Continuity of Academic Instruction for a Pandemic or Emergency
- ✓ Family Educational Rights and Privacy Act of 1974 (FERPA)
- ✓ Diversity Statement (Title IX)

Course Timeline/Schedule

***Weekly Assignments* are due each Sunday evening by 11:59 P.M. unless specified otherwise.** Due dates for all assignments and activities are specified in Blackboard. Please reach out BEFORE the due date if you have any questions or wonderings.

Week	Topic(s)	Assignment(s) Due Sundays by 11:59 P.M. unless otherwise noted in Bb.
#1	**Intro to math and instructional strategies** -Syllabus and Course Overview -Online Verification Activity -Teaching Math Videos (Linked in Bb, Week 1)	-Syllabus Online Verification Activity -Intro Video with 3 Peer Comments -Standards Scavenger Hunt

	-ND State Standards Video and Assignment -Ch. 1 Reading and Notes	**Due 8/31 by 11:59 P.M.**
#2	**Launching and assessing math** -Launching Math Tasks -Pre/post assessment -Ch. 2 and 3	-Chapter Reading Notes -Discussion Board: Conceptual -Pre-assessment Task **Due 9/07 by 11:59 P.M.**
#3	**Math tasks and number talks** -Number Talk Launch -Peer Number Talk Lesson: BIG PART OF WEEK! Aim to connect and complete THIS week if possible!! -Website Exploration -Ch. 4	-Discussion Board -Chapter Reading Notes -Number/Data Talk Peer Lesson Plan **(Due Week 5)** **Due 9/14 by 11:59 P.M.**
#4	**Teaching in action** -Cont. Number/Data Talk Lesson -Flexibility with Numbers -Matching Math Standards -Supplemental Reading: Ch. 1, BTCM (Link in Bb, Week 5)*	-Cont. Number/Data Talk Peer Lesson -Chapter Reading Notes -Discussion Board: Ah-ha **Due 9/21 by 11:59 P.M.**
#5	**Thinking classroom** -"Gretchen" Tasks and Parent Video - www.mathlearningcenter.org/app -Ch. 5 (Week 4/5 Reading Reflection Due End of Week 6)*	-Gretchen Feedback Assignment -Gretchen Parent Video (2 min.) -Discussion Board: Reading Reflection **Due 9/28 by 11:59 P.M.**
#6	**Rich math tasks and activities** -Exploring Math Tasks and Classroom Activities -Learning Center -Week 4 and 5 Reading Reflection Task* -Math Lesson Plan (Focus on conceptual state standard!!)	-Week 4 and 5 Reading Reflection* **Due 10/05 by 11:59 P.M.** -Start Learning Center **DUE WEEK 7** -Start Final Lesson Plan **DUE WEEK 8 – Can upload earlier!**
#7	**Planning to teach, planning to learn** -Math Lesson (Work on) -Virtual Learning Video -Sponge Activities -Learning Center -Ch. 8	**Working on Math Lesson, Virtual Learning Video, AND Learning Center. Email Darian with ANY questions or wonderings asap!** -Chapter Reading Notes *(revisit idea of assessment from Week 2 when thinking about Math Lesson)* **Due 10/12 by 11:59 P.M.**
#8	**Celebrate our teaching and learning!** -LEARNING CENTERS DUE 10/12 -Ch. 9 This week is to celebrate our learning centers with each other, finalize our math lessons, and record our virtual learning videos.	-Math Lesson -Virtual Learning Video -Explore learning centers, make peer comments, celebrate our learning! **Due 10/19 by 11:59 P.M.**