Teaching and Learning Mathematics in the Secondary School

Fall 2026

1. Course Basics

Teaching and Learning Mathematics in the Secondary School
MATH 395-1 // CRN 10558
Fall 2026

2. Instructor Information

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Office Hours

TBA (see Canvas) and by appointment. You can meet with me in my office or virtually through Zoom.

E-mail Response Policy

I am striving to maintain work-life balance, something I believe is critical for the mental well-being of educators at all levels. I will do my best to respond to all e-mails in a timely manner. Most responses will occur on weekdays during my "regular" work hours (8am-5pm EST), as my other hours are typically spent wrangling small kiddos.

3. Course Information

Course Description

Examination of national and state mathematics standards, curricular materials, and methods for teaching mathematics to secondary school students. Issues related to mathematics curriculum, instruction, and assessment of secondary school students. Class ideas applied in teaching situations.

Prerequisites

C- or better in MATH 250, and MATH 311 or 310, and MATH 345 or 360, and C or better in MATH 393; a minimum grade-point average of 2.5 in all mathematics courses that are to be applied to the major; admittance to teacher education; and permission to enroll in 300/400-level professional education courses.

Course Rationale

This course serves as the culminating professional experience for preservice secondary mathematics teachers prior to their immersion in student teaching. It provides appropriate opportunities for them to utilize the knowledge acquired in prior mathematics and mathematics education courses and to apply this knowledge in practical situations related to teaching secondary school mathematics. At the conclusion of the course, students should have an informed vision of mathematics and mathematics teaching that will enable them to move confidently into student teaching, obtain licensure, and enjoy successful professional careers.

Course Objectives

The primary objective of this course is to introduce preservice teachers to the methods, materials, and issues related to teaching mathematics in the secondary school. Another objective is to help these students understand the multiple professional responsibilities of a teacher of mathematics by involving them in direct classroom teaching experiences.

Students will be able to:

- Use national and state standards to guide curricular, instructional, and assessment decisions.
- Use contemporary learning theories, related to mathematics education, to make curricular, instructional, and assessment decisions.
- Analyze curriculum materials appropriate for use in the secondary school mathematics classroom.
- Determine the appropriate use of student curriculum materials and teachers' editions of secondary school textbooks to teach specific mathematical topics.
- Determine the appropriate use of physical, pictorial, and abstract models to teach specific mathematical concepts.
- Determine the appropriate use of technological tools, including software, to teach specific mathematical concepts.
- Utilize supplemental resource materials in planning for secondary school mathematics instruction.
- Determine the appropriate use of various instructional formats for effective mathematics instruction.
- Write mathematics lesson plans for selected topics in the secondary school mathematics curriculum.
- Recognize various practical applications of topics found in the secondary school mathematics curriculum.
- Identify ways in which lessons can be adapted for students with special needs.
- Implement lesson plans by teaching peers or secondary school students.
- Reflect on their experiences in planning and teaching mathematics lessons.
- Determine appropriate assessment tasks and activities for specific mathematical topics in the secondary school curriculum.
- Refine and present their personal philosophy of mathematics education.

Course Content

Standards for Teaching Secondary School Mathematics

- In-depth analysis of *Principles and Standards for School Mathematics* (2000) published by the National Council of Teachers of Mathematics (grades 9-12).

- In-depth analysis of the *Common Core State Standards for School Mathematics* (2010) published by the National Governors Association Center for Best Practices and the Council of Chief State School Officers (grades 9-12).
- In-depth analysis of *Indiana Academic Standards for Mathematics* (2020) published by the Indiana Department of Education (grades 9-12).
- Discussion, as appropriate, of evolving national and international standards related to mathematics from a historical perspective.
- Discussion of the role of the teacher as a professional and of the importance of involvement in professional organizations (e.g., NCTM, ICTM).

Curriculum Materials

- Analysis and comparison of traditional and contemporary mathematics curriculum materials for grades 9-12.
- Examination of various supplemental materials for teaching secondary mathematics.

Instructional Methods and Materials

- Discussion, based on selected readings, of topics such as alternative views and theories of learning, motivation, instructional methods, and classroom management skills.
- Analysis and discussion of various physical, pictorial, and abstract models appropriate for use in secondary mathematics classrooms.
- Analysis and discussion of technological tools useful for teaching topics in the secondary mathematics curriculum.
- Discussion of procedures and techniques for adapting lessons for students with special needs.

Assessment

- Discussion of the assessment process (e.g., setting goals and planning, gathering evidence using multiple methods, interpreting evidence and making inferences, making decisions and taking action).
- Discussion of both formative and summative assessment.
- Analysis of the role of external assessments (e.g., standardized tests, advanced placement exams)
- Analysis of performance tasks and scoring rubrics.

Observations and Teaching

- Formal observations of experienced secondary mathematics teachers at various levels and in different classroom settings.
- Discussion and detailed writing of lesson plans.
- Supervised teaching of students in selected settings on-campus and, whenever possible and appropriate, in secondary school classrooms.

Course Modality/Structure

This course involves interactive discussion and activities in large and small groups, classroom observations, small-group teaching, and reflection.

Primary Student Learning Objective

Students will be able to plan, implement, and reflect upon instructional sequences designed to achieve learning outcomes guided by local, state, and national mathematics standards/curricula.

4. Course Materials

The following text is required for this course:

- Brahier, D. J. (2024). Teaching secondary and middle school mathematics (7th ed.). Routledge.

All other course readings (articles, book chapters, etc.) will be provided by your instructor.

All required course materials can be obtained through the Ball State First Day program. All students are automatically enrolled each semester. Please check your bsu.edu email for information about delivery of physical and digital materials. Students who wish to opt out during the **Fall 2026** semester must do so by **August 30, 2026**. Students who opt out are responsible for obtaining all required course materials on their own through the Ball State Bookstore or another retailer. If you opt out, your digital access will expire shortly after, and you will lose access to publisher-provided course content, online assignments, quizzes, and exams.

5. Course Assignments and Assessments

Participation and Professionalism

Teachers are role models and leaders in society, entrusted with the care and education of our society's young people. As you prepare to enter the teaching profession, you should strive to demonstrate the professional attitudes and conduct required of teachers, such as being present, actively participating, maintaining a positive attitude, and demonstrating honesty, integrity, perseverance, and respect for others. Attendance, participation, and professionalism certainly impact your development as a teacher and will be reflected in your overall course grade.

Course Assignments

I will try to make the purpose of each assignment clear. If you have questions about the purpose of the assignment or what is expected of you, please ask. Please proofread your work before turning it in to me. ***Unless the assignment description specifically says the use of generative AI is permitted, no generative AI may be used for assignments.***

Assignment details, including instructions, relevant readings, due dates, and grading criteria/rubrics will be posted and updated on Canvas. Please check Canvas regularly to stay informed and on track.

Table 1: Course Assignments

Category	Weight	Notes
Writing Assignments	15%	Journal entries, discussion posts, edTPA-related activities, etc.
Curriculum-Analysis Project	10%	
Assessment Project	10%	

Unit Plan/Learning Segment	15%	Lesson plans, instructional materials, and assessments; artifact for Stage 2 Planning rubric (see below)
Microteaching Demonstration	5%	Artifact for Stage 2 Instruction rubric (see below)
Fieldwork Assignments	15%	Assignments related to your practicum experience (EDSE 380)
Job Interview Simulation and Reflection	10%	
Final Project	10%	
Attendance/Participation/Professionalism	10%	Self-evaluation component
Total	**100%**	

- You will complete a number of **writing assignments** (e.g., journal entries, discussion posts, edTPA-related activities) related to the course material. Assignments will be graded for completeness and/or accuracy.
- For the **curriculum-analysis project**, you will analyze and compare/contrast traditional and contemporary mathematics curricular materials for grades 9-12.
- For the **assessment project**, you will engage in several assessment-related activities, which may include designing formative and/or summative assessments, providing effective written feedback, and developing and using rubrics to evaluate student work.
- You will develop a **unit plan/learning segment**, which is a collection of 3 to 5 consecutive mathematics lessons that have a central focus. In addition to writing lesson plans for the segment, you will also develop/select key instructional materials and assessments. (Your instructor will use the work you submit for this assignment to evaluate you in the area of planning using the Stage 2 Planning rubric. See the next section for more details.)
- You will also teach a small portion of your learning segment (**microteaching demonstration**) to your classmates, who will give you feedback on your instruction. (Your instructor will use your teaching demonstration to evaluate you in the area of instruction using the Stage 2 Instruction rubric. See the next section for more details.)
- During your EDSE 380 field experience, you will be asked to complete various **fieldwork assignments** (e.g., reflections and presentations) for MATH 395. You may also be asked to complete virtual fieldwork assignments, such as watching and analyzing video clips of mathematics teaching and learning.
- At the end of the semester, you will reflect on everything that you have learned in the course and incorporate these ideas into your **job interview simulation and reflection**.
- There will be a **final project** in the course, which will provide you with an opportunity to explore a particular area of interest within mathematics education. Specific details about this project will be discussed at a later time.
- Students are expected to attend class, actively participate, and exhibit professional behavior in class and when completing assignments (**attendance/participation/ professionalism**). Examples of professional behavior include coming prepared having read the readings, participating in class activities/discussions, paying attention (e.g., not texting or using at social media), having a positive attitude, and respecting everyone's contributions/ideas. Note that you will complete at least one self-evaluation of your attendance, participation, and professionalism in MATH 395. Your instructor will read and use your self-evaluation(s) and their own notes/observations to determine your grade in this category.

Late Work

All course assignments will have designated due dates. As a general rule, late work will only be accepted if students make prior arrangements with the course instructor. If accepted, there will be a 10% per day grade penalty for late work. (Note: This grade penalty may be waived if there are extenuating circumstances.) **All work must be turned in by the last day of the term (12/7).**

Attendance Policy

As a professional-in-training, excellent attendance should be one of your priorities. Being on time, in class, prepared, and engaged every class period illustrates and reinforces your commitment to becoming a teacher. Attendance implies that a student is both physically and mentally present.

Students who are sick should contact their instructor by e-mail and check Canvas for the class notes and assignments. It is recommended that students also talk to their classmates about any missed class session(s). Students should assume that all due dates and course requirements still apply.

Failure to communicate with the instructor about absences will affect students' Attendance/ Participation/Professionalism grade (up to 10% for each unreported/unexcused absence).

EPP-Wide Rubrics

MATH 395 students will be evaluated in the areas of planning and instruction using EPP-wide rubrics from Teachers College. These rubrics are used to show that our teacher candidates are developing essential competencies and are meeting InTASC Standards. These rubrics also play a vital role in maintaining our program accreditation.

In MATH 395, your instructor will complete the Stage 2 Planning rubric based on your unit plan/learning segment and the Stage 2 Instruction rubric based on your microteaching demonstration. Both assignments are described above. (Note that the State 2 Planning and Instruction rubrics can be found at the end of this syllabus.)

Course Grading Scale

Table 2: Course Grading Scale

Letter Grade	Range
A	100% - 94%
A-	<94% - 90%
B+	<90% - 87%
B	<87% - 84%
B-	<84% - 80%
C+	<80% - 77%
C	<77% - 74%
C-	<74% - 70%
D+	<70% - 67%
D	<67% - 64%

D-	<64% - 61%
F	<61% - 0%

6. University Policies and Statements

University Statement

We are committed to ensuring that all members of the community are welcome, through valuing the various experiences and worldviews represented at Ball State and among those we serve. We promote a culture of respect and civil discourse. If you need course adaptations or accommodations because of a disability, please contact the instructor of record as soon as possible. Ball State's Disability Services Office coordinates services for students with disabilities; documentation of a disability needs to be on file in that office before any accommodations can be provided. Disability Services can be contacted at 765-285-5293 or dsd@bsu.edu.

Freedom of Expression

In this course, we are committed to fostering a learning environment that values intellectual diversity, encourages free expression, and promotes open inquiry. As members of the Ball State Community, we treat each person in the Ball State community with civility, courtesy, compassion, and dignity and respect and learn from differences in people, ideas, and opinions. Please review Ball State University's Statement on Freedom of Expression, the resources on Ball State's Freedom of Expression webpage, and Ball State's Beneficence Pledge.

University Policies

Withdrawal Period

The course withdrawal period ends Wednesday, Oct. 28, 2026. Before this date, students can elect to receive a "W" for the course by completing and submitting the proper form. The instructor's permission is not required. For details, see https://www.bsu.edu/about/administrativeoffices/registrar/registration-activities/withdraw-from-classes as well as Degree Requirements and Time Limits in the current Undergraduate Catalog OR Withdrawal Procedures in the current graduate catalog.

Title IX / Sex Discrimination

Ball State University is committed to maintaining an educational environment free from sex discrimination, including sexual harassment, sexual misconduct, dating and domestic violence, and stalking. Students who experience or witness conduct that may violate University policy are encouraged to seek support and assistance. The Title IX Office can provide information about reporting options, supportive measures, and available resources. Contact the Title IX Office at 765-285-1545 or titleix@bsu.edu.

Please Note: As your instructor, I am a mandatory reporter. If you disclose information to me about conduct that may constitute sex discrimination or sexual misconduct, I am required to notify the Title IX Coordinator. The Title IX Office will reach out to discuss available resources, supportive measures, and reporting options. If you wish to speak with someone confidentially, you may contact the Counseling Center or the Center for Survivor Support.

Pregnancy and Related Conditions

Ball State University provides reasonable modifications for students affected by pregnancy, childbirth, or related medical conditions. Students seeking academic, housing, or other modifications are encouraged to contact the Title IX Office as early as possible to discuss available options and support. For assistance, contact the Title IX Office at 765-285-1545 or titleix@bsu.edu.

University Grade Appeal Policy

If you believe you received a final course grade that does not reflect your performance due to fairness or a procedural issue, you have the right to file an appeal within 5 school days after final grades are posted by the Office of the Registrar. Review the University Grade Appeal Policy and Process.]

Student Academic Ethics Policy

Honesty, trust, and personal responsibility are fundamental attributes of the university community. Academic dishonesty and other forms of academic misconduct threaten the foundation of an institution dedicated to the pursuit of knowledge and will not be tolerated. To maintain its credibility and reputation, and to equitably assign evaluations of scholastic and creative performance, Ball State University is committed to maintaining a climate that upholds and values the highest standards of academic integrity. Visit the VPAA's academic integrity website (Students tab) for resources on understanding academic integrity, citing sources properly, and avoiding inadvertent academic dishonesty. To learn about BSU's academic integrity expectations and students' rights, please read the University Student Academic Ethics Policy.

Academic integrity violations include giving or receiving an unfair academic advantage (cheating), presenting someone else's ideas or work as your own (plagiarism), and falsifying academic records. Unless otherwise indicated, you must work independently by yourself. Check with me if you are unsure whether something constitutes academic dishonesty. Examples of academic integrity violations include but are not limited to:

- Using resources not authorized by the faculty member (including devices, AI tools, hidden notes, and open books)
- Using a generative AI system or a person to complete academic assignments such as response papers, discussion posts, essays, or any other assignment when such use is not explicitly permitted by the assignment instructions or the instructor.
- Utilizing another person or a generative AI system to take a quiz, examination, or similar evaluation in place of oneself.
- Using a generative AI system for research, creative work, theses/dissertations, grant proposals, IRB-regulated work, or publication-bound work in violation of university AI policies, funder/publisher rules, IRB requirements, or discipline-specific standards.
- Presenting as one's own work the ideas, representations or words of another person or of a GenAI system without customary and proper acknowledgment of sources or of the AI tool(s) used.
- Using generative AI systems to analyze data, conduct research, or generate content that is included in an assignment (images, graphs, charts, tables, etc.) without proper documentation, citation, and attribution of this AI use.
- Using commercial study websites to find answers to graded assignments (Chegg, Course Hero, StudyPool, OneClass, etc.).

- Without the instructor's written permission, giving away, buying, or selling graded assignments class notes, exams, study guides, or other course materials to other students or to third-party vendors (Course Hero, Chegg, 24HourAnswers, etc.).
- Working with another person on any assignment other than authorized group projects.
- Sharing or allowing others to access your files, whether done with permission or not.
- Reusing your own work from another semester, course, or section.
- Sharing answers with others during exams (passing notes, texting, whispering, gesturing)
- Discussing exam questions and answers with students who have not taken the exam.
- Soliciting others to complete work for you.

Generative AI Statement

At Ball State, we use GenAI to elevate human potential, not replace it. To succeed in an AI-infused world, students must balance technical skills with durable skills, lifelong abilities such as critical thinking, ethical judgment, communication, accountability, and responsible decision-making that define a Ball State graduate. Developing these durable skills requires you as students to think carefully about:

- when AI should and should not be used;
- how to use AI responsibly;
- how to verify AI-generated information; and
- and how to remain accountable for final work.

You may use GenAI tools for some work submitted in this course. **You will be informed as to when, where, and how these tools are permitted to be used, along with guidance for attribution. Any use outside of this permission constitutes a violation of Ball State University's Student Academic Ethics Policy.** When in doubt, please ask me before using GenAI. You, the student, are always responsible for the content you submit, publish, share, or act upon, regardless of whether GenAI tools assisted in the process. For data security reasons, please use BSU-approved GenAI tools (e.g., BSU Gemini, NotebookLM), which support single sign-on (SSO) with BSU ID and password. Commonly used public GenAI tools carry a higher risk of data being shared externally. In contrast, when using BSU-approved GenAI tools, any data you input is protected within the BSU system. Instructors do not have access to BSU IT Center logs of AI tool usage, so student data shared through BSU-approved GenAI tools remain private.

Student Rights and Responsibilities

Students are expected to read, understand, and adhere to the community standards found at https://www.bsu.edu/about/administrativeoffices/student-conduct/policiesandprocedures/studentcode.

7. Student Support Services

The Learning Center

The Learning Center offers free Tutoring and Academic Coaching for many courses at Ball State. Students can make appointments for online (Zoom) or in-person (NQ 350) appointments. To make an appointment, visit myballstate.bsu.edu and click on "Navigate" in the Academic Tools section, or just go directly to bsu.navigate.eab.com.

Testing accommodations for students with disabilities are available for students who have received the appropriate documentation from Disability Services. Tests may be administered in the Learning Center.

Supplemental Instruction is available in select courses. If you have an SI leader for your course, that person will provide students with information the first week of school regarding weekly study sessions. For more information about Learning Center programming, visit bsu.edu/learningcenter or call 765-285-1006. Follow us on Instagram: BallStateLC.

The Writing Center

All writers improve with practice and feedback, so as a student in this course, you are encouraged to use the Writing Center (in Robert Bell 295 during weekdays, Bracken Library First Floor West in the evenings, or online during any of our regularly scheduled hours) to get additional feedback on your writing. The Writing Center offers free planning, feedback, and accountability sessions (in person and online) to all students composing essays, reports, reflections, research projects, web content, lesson plans, slideshows, poster presentations, resumes, and other digital or print texts. To schedule a free appointment to discuss your writing, go to bsu.edu/writingcenter. Online and in-person appointments are available; however, plan ahead because appointments book quickly!

The Basic Needs Hub

If you are having difficulty affording enough food, do not have a safe and reliable place to sleep, and/or experiencing an emergency or crisis, help is available through the Basic Needs Hub. The Basic Needs Hub has information, resources, and provides individualized support to students. To talk with a supportive staff member about your experience, receive one on one assistance, or learn more about resources, you can submit a Basic Needs Assistance Form.

The Counseling Center

The Ball State University Counseling Center offers free and confidential services to all students. The Counseling Center is located in Lucina Hall, Room 320. To schedule an appointment, you can contact us at 765-285-1736. Ball State also offers a 24/7 Crisis Line, which can be reached at 765-285-HOPE (4673). The Crisis Line is a mental health resource for those who are struggling with any mental health concerns, including thoughts of self-harm and/or suicide.

At the Ball State Counseling Center, we see students for a variety of reasons, some of which include homesickness, relationship concerns, anxiety, and depression. At your first appointment, you will work with a therapist to create a plan that will connect you with resources that best fit your needs. We assist students with getting connected to therapy at our Center as well as connecting students to self-help resources, other on-campus resources, and community-based resources. All Ball State students also have access to several on-demand, self-help resources through a variety of different platforms. All of these resources, including a direct link to our website, can be found **here**.

The Speaking Center

The Speaking Center is a free resource available to all members of the BSU community wanting to improve their public speaking abilities. We offer personalized coaching designed to help you become a more confident and effective speaker. Our trained coaches provide constructive feedback and support throughout the entire speech preparation process, whether you are in the early stages of brainstorming ideas and organizing your thoughts, or you need to practice your delivery and refine your message.

The Center is in the David Letterman Communication and Media Building, room 302. To schedule an appointment, please access us through your Navigate app or use this direct link to sign up for a time**.** Appointments are available both in person and on Zoom. Appointments are available in person, on Zoom, and in virtual reality (VR) for those interested in practicing in an immersive speaking environment.

8. Course Schedule

To support a learning experience that is responsive to the needs, interests, and pace of our class community, the course schedule may shift over the semester. The most current version of the schedule will always be available on Canvas. I encourage you to check Canvas regularly for updates and contact me if you have any questions.

9. Professional Dispositions

Becoming an effective teacher includes demonstrating professional dispositions, which include attitudes, habits of action, and commitments that foster student learning and assist in elevating the education profession, as well as in interacting with families, community members, and colleagues. The Ball State Disposition Assessment System is a systematic, consistent approach to assessing and supporting teacher candidates' disposition growth throughout their preparation. This system has two components: (1) a disposition rubric system, and (2) a disposition alert system, which provide opportunities for deliberate feedback and guidance regarding teacher candidates' disposition development. Information about the rubric, procedures, and alert policy are available on the OTES webpage. Link to policy

10. Stage 2 Rubrics (see EPP-Wide Rubrics Section)

Stage 2 Planning Rubric

Category	Does Not Meet Expectation	Meets Expectation	Exceeds Expectation
Discipline-Specific Pedagogy	The candidate's plan displays little or no understanding of the range of pedagogical approaches suitable to student learning of the content.	The teacher candidate's plan reflects familiarity with effective pedagogical approaches that are appropriate to the discipline.	The teacher candidate's plan reflects familiarity with effective pedagogical approaches appropriate to the discipline as well as attention to methods to support differentiation.
Varied levels of instructional outcomes	The outcomes represent low expectations for students and lack of rigor, and not all of these outcomes reflect important learning in the discipline	Some outcomes represent moderately high expectations and rigor. They reflect important learning in the discipline and consist of a combination of outcomes and activities.	Most outcomes represent rigorous and important learning in the discipline and are clear, are written in the form of student learning, and suggest viable methods of assessment.

Stage 2 Instruction Rubric

Category	Does Not Meet Expectation	Meets Expectation	Exceeds Expectation
Classroom Management	The candidate is unable to communicate or implement general procedures or	The candidate is able to communicate and implement general	The candidate is able to communicate and implement general

	behavior management strategies (proactive and reactive) in the context of a lesson or classroom activity.	procedures and behavior management strategies (proactive and reactive) in the context of a lesson or classroom activity.	procedures and behavior management strategies (proactive and reactive) as well as student specific modifications in the context of a lesson or classroom activity.
Multiple Forms of Instruction to Engage Learners	The candidate's organization and classroom management is limited to using either whole class or small group instruction to accomplish tasks in an objective.	The candidate frequently organizes and manages classroom instruction using variety (whole class/small group) to accomplish tasks in an objective. The varied learning is appropriate to the content and setting.	The candidate always organizes and manages classroom instruction by using various class groupings (whole, small) to accomplish tasks in an objective. Choices fit pedagogical best practices for the content or population.
Accommodations for Diverse Learners	The candidate does not demonstrate an awareness of students' learning needs.	The candidate demonstrates some awareness of students' different learning needs and accommodates their individual learning most of the time across related lessons.	The candidate demonstrates an awareness of students' different learning needs and accommodates their individual learning.

11. Subject to Change Statement

This syllabus is subject to change in the event of extenuating circumstances.

Last updated on 08/05/2026 by JKM.