Northern Michigan University
Mathematics & Computer Science Department
MA350-01 (81212) Methods and Materials in Teaching Secondary Mathematics
MA350A-01 (82413) Middle School Math Experience
MA350B-01 (82414) High School Math Experience
TR 1:00 – 2:40pm, JXJ 3313

Instructor: Dr. Carol Bell   **Office:** Jamrich 2212
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Office Hours: MW 1:00 – 3:00, or by appointment

Prerequisites:
Admission to Methods Phase of Teacher Education, MA252, MA312, and MA331.
Co-requisites: MA350A, MA350B (you will complete either a MS or HS experience)

Course Description:
Designed to acquaint prospective secondary teachers with contemporary methods and materials employed in the teaching of mathematics in the secondary school.

Course Objectives:
Upon successful completion of this course, teacher candidates should be able to:
1. Examine the changing emphasis of the curriculum as described in current and relevant publications such NCTM's "Principles and Standards for School Mathematics."
2. Use the Michigan Standards for Mathematics to develop grades 7-12 mathematics concepts.
3. Use hard copy and electronic sources to find ideas to enhance teaching and learning.
4. Use a variety of teaching strategies for mathematical topics at the middle school and high school levels. This includes the use of supplementary materials (e.g., manipulatives) and technology to enhance teaching and learning.
5. Know issues related to teaching diverse learners and be prepared to meet the needs of these students.
6. Use formative and summative assessment methods in teaching mathematics and apply appropriate remediation.
7. Develop skills in short and long-range planning for teaching middle/high school.

MA350 Learning Outcomes:
- Select and use appropriate enrichment, remediation or reinforcement activities, and technology to enhance student learning.
- Design lessons that demonstrate the ability to incorporate research, technology, standards (state and national), and best practices.
- Demonstrate proficiency in conceptual understanding of specific mathematics content, concepts and procedures as well as the process of doing mathematics.

Evaluation of these learning outcomes done through assignments and fieldwork experiences.

Assessment Format: Specific information on each assessment is below.

- **Attendance (5%):** You must attend every class period. Your attendance grade will be reduced if you are late or leave early. Be an active learner by participating and asking questions. This will also help you to focus your attention on this class. Come prepared for class by making sure the assignments are done. Students who are unable to attend class for various reasons must notify the instructor. When a class period is missed, students should create a plan for staying on top of the material or catching up with missed work. Present or not, students are responsible for all course work.

  Religious and Spiritual Observances: *Faculty, staff, and students practice a variety of religious and spiritual traditions, which enhance the diversity of our campus community. NMU acknowledges that scheduling conflicts between required academic activities and religious and spiritual obligations are inevitable. Additionally, we recognize that some religious and spiritual obligations extend for multiple days and/or start at sundown of one day and extend through sundown of another day. In the event of conflicts, I will make every effort to help students avoid any negative academic consequences of observing religious and spiritual obligations. Students should consider the implications of missing class due to religious and spiritual obligations and should take into consideration these impacts when making decisions regarding any other absences during the term.*

  When an exam, assignment, or class conflicts with a religious or spiritual obligation, students are responsible for notifying me <u>at least one week</u> in advance of the date(s). You are not exempt from meeting course requirements or completing assignments in a timely manner as determined by this instructor.

- **Participation (10%):** There will be several participation assignments in which you will, for example, teach a mathematical concept, explain a solution to a problem, or share an ice-breaker activity.

- **Mini-lessons (25%):** These assignments will help deepen your knowledge of middle school and high school mathematics concepts based on the Michigan Mathematics Standards. You will identify resources to help in teaching the concepts and create mini-lessons that show the development of the concepts.

- **Lesson Plans/Written Test/Interactive Notebook (40%):** A variety of lesson plans will be completed that coincide with the State of Michigan Mathematics Standards and the NCTM Principles and Standards. You will also create your own test based on a chapter from a textbook and create an interactive notebook.

- **Unit Plan (20%):** You will develop a unit plan consisting of five lesson plans for a particular middle school or high school grade. Each lesson in your unit plan should follow a similar lesson format. I suggest you build off one of the previous lessons completed this semester, such as the one you taught during your fieldwork experience in the schools. This is a unit plan so the lessons must build off of one another. Your last lesson in the unit plan may <u>not</u> be a unit test; however, it could be a culminating

project that assesses students' knowledge of the topics learned from the four lessons you developed.

As teachers, you will communicate with students, parents, administrators, and others in correct and proper English. Therefore, such things as grammar, spelling, punctuation, and syntax are considered in the evaluation of your written work.

Grading Scale (%): Your course grade will be weighted according to the percentages outlined under Assessment Format. Corresponding grades based on a percentage are below.

100 – 93.0: A	86.4 – 82.5: B	76.4 – 72.5: C	66.4 – 62.5: D
92.9 – 89.5: A-	82.4 – 79.5: B-	72.4 – 69.5: C-	62.4 – 59.5: D-
89.4 – 86.5: B+	79.4 – 76.5: C+	69.4 – 66.5: D+	59.4 – 0: F

NMU's Non-Discrimination Statement
Northern Michigan University does not unlawfully discriminate on the basis of race, color, religion, sex, national origin, age, height, weight, marital status, familial status, handicap/disability, sexual orientation, or veteran status in employment or the provision of services, and provides, upon request, reasonable accommodation including auxiliary aids and services necessary to afford individuals with disabilities an equal opportunity to participate in all programs and activities.

Anyone having civil rights inquiries may contact the Equal Opportunity Office, 502 Cohodas Hall, telephone number 906-227-2420.

ADA Statement:
If you have a need for disability-related accommodations or services, please inform the Coordinators of Disability Services in the Dean of Students Office at 2001 C. B. Hedgcock Building (906-227-1737 or disability@nmu.edu). Reasonable and effective accommodations and services will be provided to students if requests are made in a timely manner, with appropriate documentation, in accordance with federal, state, and university guidelines.

Statement of Respect:
My classroom is a place where you will be treated with respect. In this course, each voice has something of value to contribute. Please take care to respect the different experiences, beliefs, and values expressed by students, faculty and staff. Each member of this class is expected to contribute to a respectful, welcoming, and inclusive environment for every other member of the class, including the instructor.

Important Deadlines (Full Semester Class):
- Last day to add a class – Thursday, August 28, 5:00pm
- Last day to drop with 100% refund and no grade – Tuesday, September 2, 5:00pm
- Last day to drop with a W grade – Friday, December 5, 5:00pm
  If you withdraw, please remember to withdraw from all three courses.

MA350A Middle School Math Experience

Course Description:
A clinically-based exploration of middle school mathematics curriculum with an emphasis on middle school students' development of algebraic and geometric ideas across a broad range of mathematics content, including number and operations, measurement, and statistics and probability.

Course Objectives:
Teacher candidates will develop their knowledge into planning and resource acquisition in preparation for demonstrating these standards.
- Building and drawing on relationships with middle school students to support their mathematics learning.
- Choosing, interpreting, and talking with representations in order to connect students' conceptual knowledge and procedural fluency.
- Posing questions to uncover adolescent's mathematical competence and reinforce the mathematical practices in their approaches and explanations.
- Performing clear mathematical explanations of various mathematical concepts connecting terminology, examples, non-examples, and models.

Learning Outcomes:
- Students will identify resources for teaching middle school mathematics and use them to develop a variety of concepts.
- Students will engage middle school students in one-on-one and small group conversations about a mathematical problem, posing questions to elicit adolescents' thinking.
- Students will facilitate whole class activities that incorporate the mathematical practices.

Assessment Format:
1. **Clinical Experience Reflections (50%):** These assignments are reflective summaries of your clinical experiences in the field. When you write your reflections, describe what you did and learned during your experience (e.g., what strategies did you use to help the students, what mathematics did you teach and learn, how did the session help you grow as a professional).

2. **Plan and Teach a Lesson (50%):** As a final project, you will collaborate with the cooperating classroom teacher to plan and teach a mathematics lesson that incorporates the mathematical practices. In the planning of this lesson, you will address how you will explain the concept and identify the mathematical practices that are appropriate. After this lesson, you will write a reflective summary about your interactions with the middle school students and your interpretation of the teaching and learning that transpired.

MA350B High School Math Experience

Course Description:
A clinically-based exploration of high school mathematics curriculum with an emphasis on developing high school students' abilities to visualize, describe, and analyze situations in mathematical terms across a broad range of mathematics content, including algebra, geometry, statistics, probability, and discrete mathematics.

Course Objectives:
Teacher candidates will develop their knowledge into planning and resource acquisition in preparation for demonstrating these standards.
- Building and drawing on relationships with high school students to support their mathematics learning.
- Choosing, interpreting, and talking with representations in order to connect students' conceptual knowledge and procedural fluency.
- Posing questions to uncover adolescent's mathematical competence and reinforce the mathematical practices in their approaches and explanations.
- Performing clear mathematical explanations of various mathematical concepts connecting terminology, examples, non-examples, and models.

Learning Outcomes:
- Students will identify resources for teaching high school mathematics and use them to develop a variety of concepts.
- Students will engage high school students in one-on-one and small group conversations about a mathematical problem, posing questions to elicit adolescents' thinking.
- Students will facilitate whole class activities that incorporate the mathematical practices.

Assessment Format:
1. **Clinical Experience Reflections (50%):** These assignments are reflective summaries of your clinical experiences in the field. When you write your reflections, describe what you did and learned during your experience (e.g., what strategies did you use to help the students, what mathematics did you teach and learn, how did the session help you grow as a professional).

2. **Plan and Teach a Lesson (50%):** As a final project, you will collaborate with the cooperating classroom teacher to plan and teach a mathematics lesson that incorporates the mathematical practices. In the planning of this lesson, you will address how you will explain the concept and identify the mathematical practices that are appropriate. After this lesson, you will write a reflective summary about your interactions with the high school students and your interpretation of the teaching and learning that transpired.

Grading Scale (%): Your course grade for MA350A/B will be weighted according to the percentages outlined under Assessment Format. Corresponding grades based on a percentage are below.

100 – 93.0: A	86.4 – 82.5: B	76.4 – 72.5: C	66.4 – 62.5: D
92.9 – 89.5: A-	82.4 – 79.5: B-	72.4 – 69.5: C-	62.4 – 59.5: D-
89.4 – 86.5: B+	79.4 – 76.5: C+	69.4 – 66.5: D+	59.4 – 0: F

Note: For the fall 2025 semester, you will have a clinical experience at either the middle school or high school level. The School of Education will help in getting you a classroom assignment. It is easiest to complete your clinical experience while you are in the field for an education course that requires fieldwork.

You will receive a grade for either MA350A or MA350B based on the level at which you are placed. Your grade for the other course will be the same as the grade you receive for MA350.