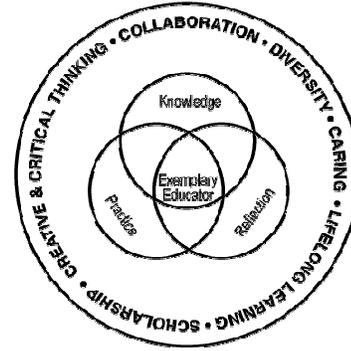


**Department of Mathematical Sciences
Northern Illinois University**

**MATH 410
Methods of Instruction in the
Mathematics Curriculum for the
Middle School**



Course Goals

In this course, you will explore the teaching of mathematics, investigating both what to teach and how to teach it. The purpose of this course is to begin inquiry into mathematics teaching and learning that will guide you in your first teaching experiences and give you tools that will enable you to continue to inquire and learn as part of your work as a teacher. Current national reforms in mathematics education (e.g., the *Principles and Standards for School Mathematics* [National Council of Teachers of Mathematics, 2000], and the *Common Core State Standards-Mathematics* [National Governors Association Center for Best Practices, Council of Chief State School Officers, 2010]) and mathematics education research recommend that middle school teachers think in new ways about the content of their instruction (what to teach) and pedagogy (how to teach). This course is intended to *launch you* as a learner and teacher of mathematics in ways that correlate with these reforms.

In this course, you will explore how students learn mathematics and what is meant by deep understanding of mathematics. You will learn how to teach mathematics so that learners see relationships and connections among mathematics topics and between mathematics and other subjects. You also will learn how to develop a learning environment that promotes learning mathematics with understanding. Specifically, you will:

- Understand the content, methods, and materials necessary to teach mathematics in the middle school.
- Learn about research on students' mathematical thinking and reform principles about teaching and learning mathematics.
- Learn how to build a learning environment that supports the teaching and learning of mathematics.
- Learn how to assess students' mathematical thinking and plan instruction based on that assessment.
- Learn to make instructional decisions about the use of curricular materials, such as textbooks, other print resources, manipulatives, and technology in the teaching of mathematics in the middle school.

Course Requirements

- Attendance, Participation, and Mathematical Disposition
- Professional Resource Assignment
- Interview of a Middle School Mathematics Teacher
- Questions for Student Interview and Report of Student Interview
- Mathematics Lesson Plan, Teaching, and Reflection on Teaching
- Reflective Writing
- Curriculum Evaluation Project
- Resource Portfolio of Class Assignments and Materials
- Exams
- Final Exam

Course Content

- Creating a Learning Community
- Reasoning with Patterns and Algebra
- The Learning of Mathematics
- Rational Numbers and Their Uses
- Planning and Instruction
- Geometry, Measurement, and Transformations
- Assessment
- Data Analysis and Probability

Course Materials

- Rubenstein, R. N., Beckmann, C. E., & Thompson, D. R. (2004). *Teaching and learning middle grades mathematics*. Hoboken, NJ: Wiley. (Note: Make sure your copy has the CD with it.)
- National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics*. Reston, VA: Author. (Note: A 120-day free access to this document is available at nctm.org)
- National Governors Association Center for Best Practices, Council of Chief State School Officers. (2010). *Common Core State Standards-Mathematics*. (Note: This document is available at <http://www.corestandards.org/the-standards/download-the-standards>)

Note: Changes and adjustments may be made to this syllabus when judged appropriate by the instructor. Such changes, should they occur, will be announced in class.

Course Lab Fee

A lab fee charged for enrollment in this course is used to replace and update materials pertaining to instruction of the course and research on instruction of the course.

Academic Conduct:

Academic honesty and mutual respect (student with student and instructor with student) are expected in this course. Academic misconduct, as defined by the Student Judicial Code, will not be tolerated.

Qualified Students with Disabilities:

Northern Illinois University abides by Section 504 of the Rehabilitation Act of 1973, which mandates reasonable accommodations be provided for qualified students with disabilities. If you have a disability and may require some type of instructional and/or exam accommodation, please contact your instructor early in the semester so that the instructor can provide or facilitate in providing accommodations you may need. If you have not already done so, you will need to register with the Disability Resource Center (DRC), the designated office on campus to provide service and administer exams with accommodations for students with disabilities. The DRC is located on the 4th floor of the NIU Health Services building (815-753-1303).