

Revised 2007

Ashland University
Dwight Schar College of Education
Department of Curriculum and Instruction
Course Syllabus

Graduate: Undergrad: X
Credit Hours: 3
Field/Clinical Hours: 0/4

Course Number: EDCI 432 MATH

Course title for the catalog: Teaching Mathematics Grades 7-12

Catalog description:

A course designed to provide the student with classroom instructional skills, methods and strategies in teaching mathematics in grades 7-12. To be taken concurrently with EDCI 330 Grades 7-12 Field Experience or EDCI 461 Teaching Grades 7-12.

The prerequisite (s) for this course is (are):

EDCI 230, 287, PSYC 218, or permission

The enrollment restriction (s) for this course is (are):

None

Course and field/clinical experience objectives (including knowledge, skills, disposition):

KNOWLEDGE:

The teacher education student will have knowledge of:

1. Mathematical concepts and principles usually taught in grades 7-12.
2. The relationship of mathematics to other disciplines.
3. Issue of multicultural diversity, gender, exceptionality, and at-risk students in curriculum development.
4. Current trends/research in teaching secondary school mathematics.
5. Communication skills required in teaching mathematics grades 7-12.
6. Methodology of the discipline: including instructional strategies; concrete manipulative materials used in development and exploration of grade 7-12 mathematical concepts; resource materials from which to develop problems and ideas for exploration of grades 7-12 mathematical concepts; various kinds of calculators and other instructional technologies as tools for teaching and exploration in grades 7-12; as well as how to select those best suited for a given

- teaching and learning situation.
7. Appropriate and effective methods of assessment of student understanding for the purposes of instructional feedback, general mathematics achievement, program evaluation, and related intervention strategies.
 8. How to develop and evaluate portfolios, projects, tests and other classroom assessments, qualitative and quantitative, formal and informal.
 9. Various strategies for problem solving, critical thinking and application skills for grades 7-12.
 10. NCTM (National Council of Teachers of Mathematics) positions on issues in mathematics education.
 11. Opportunities for professional relationships and growth for the mathematics teacher.
 12. School-to-work philosophy.

SKILLS:

The teacher education student will have skills to:

1. Select, integrate, and translate processes, attitudes and content of the discipline appropriate for grades 7-12 to learners with a wide range of abilities and socioeconomic and ethnic backgrounds.
2. Identify instructional goals and make appropriate and effective use of methodology of the discipline: including instructional strategies, adaptations and accommodations, resource materials, and instructional technology.
3. Identify and use various strategies for problem-solving, critical thinking and application skills appropriate for teaching grades 7-12 mathematics concepts.
4. Make appropriate and effective use of a variety of assessments of student understanding for the purpose of instructional feedback, general Mathematics achievement, program evaluation, and related intervention strategies.
5. Plan instruction and tests to parallel one another and to reflect various levels of the cognitive domain.
6. Write clear, fair items that measure stated instructional objectives.
7. Develop and evaluate portfolios, projects, tests and other classroom assessments.
8. (CLINICAL) Accurately analyze learning outcomes/teaching behaviors.
9. Use oral, written and non-verbal communication effectively and appropriately.
10. Use appropriate media and technology to enhance teaching and learning.
11. Incorporate real-world activities into the classroom.

DISPOSITIONS:

The teacher education student will:

1. Display a willingness to understand and practice appropriate classroom instructional skills, methods, and strategies in teaching mathematics in grades 7-12.
2. Value the role of the teacher in generating enthusiasm for Mathematics and for learning in general.
3. Value all students regardless of multicultural background, gender, learning style,

- and/or at-risk and/or handicapping condition.
4. Value the need to analyze learning outcomes/teaching behaviors.
 5. Value writing clear, fair items that reflect instructional objectives both in content and format.
 6. Value valid and reliable tests.
 7. Appreciate the teacher's responsibility that all students learn.
 8. Appreciate naturalistic assessments, including observation, portfolios, and other process/product assessments.
 9. Exhibit a willingness to become a life-long learner committed to professional growth.
 10. Value the importance of participation/membership in professional organizations/learned societies of the discipline.
 11. Appreciate the role of technology in the classroom.
 12. Value a collaborative approach to meeting student needs.

Suggested texts and/or references:

Brumbaugh, D. (1997). Teaching secondary mathematics., Mahwah, N.J.: Lawrence Erlbaum Associates.

Dossey, Giordano, McCrone & Weir; (2002) Mathematics methods and modeling for today's mathematics classroom. Pacific Grove, CA: Brooks/Cole.

Posamentier, A. Teaching secondary school mathematics: Techniques and enrichments units. (2nd Ed.). Columbus, OH: Merrill.

National Council of Teachers of Mathematics. Mathematics teacher.

National Council of Teachers of Mathematics. Mathematics Teaching in the Middle School.

National Council of Teachers of Mathematics. (2000) Principles and standards for school mathematics. Reston, VA: author.

Ohio Department of Education. Academic Content Standards. (2001).

Suggested instructional strategies:

Discussion, reflection, problem solving, analysis of teaching videotapes, peer teaching, exams, quizzes.

Description of field/clinical experiences:

FIELD EXPERIENCE

CLINICAL EXPERIENCE

Review of teaching videotapes/peer teaching to analyze learning outcomes/teaching behavior.

Evaluation of students:

Completion of research papers, lesson plans, peer teaching, assignments, projects.
Exams. Quizzes.

Faculty who frequently teach the course:

Faculty with certification and classroom experience in teaching mathematics 7-12.

Licensure programs in which course is required:

Integrated Mathematics 7-12

If the course is offered for either undergraduate or graduate credit, identify the respective difference in expectations: