

**METHODS FOR TEACHING
ELEMENTARY AND MIDDLE SCHOOL
MATHEMATICS**

Urban Teacher Education Program
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SESAME Instructor; *Methods for Teaching Middle School Mathematics.*

Middle Level Curriculum, Philosophy, and Instructional Methods.

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Urban Teacher Education Program (*UTEP*)

ACHIEVE, Math Advisory Panel

METHODS FOR TEACHING ELEMENTARY AND MIDDLE SCHOOL MATHEMATICS

Description: This course will introduce students to the basics of K - 9 mathematics education concepts. Emphasis is given to understanding the mathematical thinking and problem-solving strategies used by students in grades K - 9, to the use of assessment to drive instruction, and to the design of appropriate instructional models to meet the needs of students in individual, small group, and whole group mathematics teaching contexts.

Course Objectives

Upon completion of the course and coursework students will be able to:

- Apply *Illinois Learning Standards*, *Mathematics Content Standards*, and the *Illinois Mathematics Assessment Framework*, with classroom assessments and performance descriptors, when developing learning and assessment strategies for students of mathematics.
- Successfully participate in and identify mathematics learning experiences that model best practices for teaching mathematics in classroom settings; including direct instruction, manipulative-assisted learning, cross-topic, and cross-curricular methodologies.
- Observe and analyze mathematics teaching and assessment practice using video and field experiences.
- Create models for learning mathematics for students in grades K-8.
- Design and administer learning and assessment models for use in summer field experiences.
- Review the historical and international context of current mathematics education pedagogy.
- Identify and review seminal national and international mathematics education research, and use to inform decision-making to improve classroom practice.

CONTENT of CLASS SESSIONS

Class #1

Pedagogy: History and overview of NCTM's Principles and Standards for School Mathematics
Practicum: Polygonal Numbers I

Class #2

Practicum: Polygonal Numbers II with Literature Connection
Pedagogy: Assessment I

Class #3

Pedagogy: Assessment II
Practicum: Preparation for Field Experience I

Class 4

Professional Practices Core Group Task 1
Pedagogy: Problem-Based Mathematics Instruction
Practicum: Problem Solving with Partners, including Presentations

Class 5

Professional Practices Core Group Task 2
Pedagogy: Cognitive Science and Mathematics Education Research
Practicum: Practice through Games, Problem-Based Triangle Game
Preparation for Field Experience #2

Class 6

Professional Practices Core Group Task 3
Pedagogy: International Comparison of Mathematics Standards
Practicum: Rational Arithmetic/Fraction Concepts using manipulative-assisted instruction

Class 7

Professional Practices Core Group Task #4
Practicum: Video Case Analysis and Discussion to Inform Teaching Practice
Lesson Planning
Preparation for Field Experience #3

Class 8

Pedagogy: Curriculum
Practicum: Pre-Algebra
Operation on Integers using direct instruction, including Student Work and Video Case
Analysis and Discussion to Inform Teaching Practice

Class 9

Performance Assessment: Field Task III Presentations and Analysis
Practicum: Geometry to Algebra Activities, including Student Work and Video Case Analysis and
Discussion to Inform Teaching Practice