

## SYLLABUS

Ed 405 Methods for Teaching Mathematics, Science, and Technology  
TUESDAYS 12:30-2:30

### ***Rationale:***

Elementary school teachers are responsible for developing in their students the skills necessary to compute, to use computation in mathematics, to read and decipher word problems, to understand basic mathematics functions and operations, to be able to make estimates appropriate to grade level, to understand plant and animal life appropriate to grade level, to understand physical and environmental properties and conservation, and to apply the basic components of the scientific inquiry.

### ***Objectives:***

For students in Education 405:

1. To understand, as appropriate to grade level, the concepts of computing whole numbers, fractions, and decimals.
2. To understand ratio and proportion.
3. To be able to use estimation in mathematics and science.
4. To understand the relationship between mathematics and science.
5. To understand the algorithms associated with measurement and probability/statistics.
6. To understand remediation activities and the different types of motivation patterns.
7. To know the various methods for individualizing instruction.
8. To understand data gathering and interpreting techniques, as appropriate to grade level.
9. To understand the uses of scientific instruments and their use for "hands on" experiences.
10. To understand the techniques used in investigating phenomena, interpreting findings, and communicating results.
11. To understand grouping techniques as appropriate to grade level.
12. To understand the use of computers as they pertain to LANS and the possibilities for global learning.
13. To develop and use simulation devices appropriate for science and mathematics.
14. To understand the basic principles of classroom management as appropriate to grade level.

***Course Requirements:***

The students will be required to complete all reading assignments; to take a mid-term and final exam; to complete four micro teaches for different grade levels using specific models of teaching, to complete a six hour practicum in the city elementary schools, and to participate in class discussions.

Grades will be given for each exam (40%), for each micro teach (30%), for the practicum (20%), and for class participation (10%).

***Texts and Materials:***

***Schedule:***

|   |       |   |
|---|-------|---|
| T | 9/3   | Lesson Planning<br>Affective and Psychomotor Taxonomies                                 |
| T | 9/10  | Problem Solving<br>Inductive and Deductive reasoning<br>Conjecture<br>Simulation Device |
| T | 9/17  | PRACTICUM   |
| T | 9/24  | Math Micro Teach - Grades 4-6<br>Simulation Device                                      |
| T | 10/1  | Questioning Techniques<br>Flanders Interaction  |
| T | 10/8  | Math Principles<br>Computer Uses<br>Review for Mid-Term                                 |
| T | 10/15 | Mid-Term Exam   |
| T | 10/22 | No Class  |
| T | 10/29 | Questioning Micro Teach<br>Science or Math (any grade)<br>Scientific Investigation      |
| T | 11/5  | PRACTICUM   |

T 11/12 Curricular Conceptions  
Models of Teaching

T 11/19 Micro Teach  
Bruener Concept Attainment Model

T 11/26 Thanksgiving????

T 12/3 PRACTICUM

T 12/10 Suchman Micro Teach  
Science  
Review For Final Exam