

Miami-Dade Community College
MAE 3332: Teaching Secondary School Algebra

Course Description:

This course involves an analysis of the content of secondary school algebra courses. Activities related to the effective teaching of these courses include designing lesson plans, evaluating learning materials and resources, and exploring a variety of teaching strategies to accommodate diverse needs of a multicultural student population. Field experience, which includes classroom observations and involvement with the teaching-learning process, is required. The course addresses specific Sunshine State Standards, subject matter competencies, and pedagogy pertinent to the discipline and required for certification. *Three Credits*

Prerequisite: MAC 2312 or departmental approval.

Course Competencies:

Competency 1: The student will demonstrate effectiveness in teaching secondary school algebra courses by:

- a. exploring the use of various teaching tools such as manipulatives, computer software, graphing calculators, multimedia, the internet, etc.
- b. exploring the use of various teaching strategies such as lecture, collaborative learning, project based discovery learning, etc.
- c. preparing and evaluating lesson plans on topics in secondary school algebra.
- d. presenting lessons using various teaching strategies.

Competency 2: The student will demonstrate knowledge of the content of secondary school algebra courses by:

- a. analyzing the National Council of Teachers of Mathematics principles and standards that apply to secondary school algebra.
- b. presenting and/or observing presentations on properties of operations on rational numbers, irrational numbers, and complex numbers.
- c. presenting and/or observing presentations on processes for solving linear equations and inequalities in one variable.
- d. presenting and/or observing presentations on properties of graphs of linear equations in two variables.
- e. presenting and/or observing presentations on processes for solving systems of linear equations.

- f. presenting and/or observing presentations on processes for performing operations on polynomials, including properties of exponents.
- g. presenting and/or observing presentations on processes for factoring polynomials.
- h. presenting and/or observing presentations on processes for solving quadratic equations and inequalities.
- i. presenting and/or observing presentations on properties of graphs of quadratic functions.
- j. presenting and/or observing presentations on the processes for performing operations with rational expressions and solving rational equations.
- k. presenting and/or observing presentations on the processes for performing operations with radical expressions and solving radical equations.
- l. presenting and/or observing presentations on the properties of exponential and logarithmic functions.
- m. presenting and/or observing presentations applying solving skills to real-world applications of algebra.

Competency 3:

The student will demonstrate knowledge of evaluation and assessment techniques by:

- a. exploring validity and reliability issues related to different types of evaluation and assessment instruments.
- b. preparing an examination on an algebra unit.
- c. grading a sample algebra examination.
- d. exploring various techniques for collecting information for assessment and evaluation purposes.
- e. preparing and evaluating an assessment instrument other than an examination; assessment instruments could include portfolios, student presentations, team projects, etc.

Competency 4:

The student will successfully complete field experience by:

- a. completing a required number of hours observing a secondary school algebra classroom.
- b. completing a required number of hours interacting with students as a resource to the secondary school algebra classroom teacher.