Educ 547 Curriculum and Direct Instruction: Math

3 semester credit hours, graduate course

Description: The topic of how to effectively teach children to do mathematics has becomes an issue of national importance. Providing teachers with the information needed to design supplemental mathematics instruction and to evaluate and modify commercially developed math programs is essential. This course gives teachers systematic procedures and teaching strategies to augment instruction. This course discusses the history and components of the direct instruction approach to teaching mathematics, as well as relevant and current research skills and techniques required for effective mathematics instruction, including strategies for pacing lessons, correcting errors, and diagnosing and remedying error patterns. Also included are instructional sequence suggestions and assessment charts for primary, intermediate, and remedial teachers, which serve as diagnostic tests or as a basis for constructing goals and objectives for students.

Goals and Objectives: This course is designed to prepare students to identify good, effective mathematics programs and to evaluate and modify these programs. In addition, this course provides relevant and current research skills and techniques Required for effective mathematics instruction. Students will learn effective ways to assess student skill levels as well as ways to teach mathematics explicitly and systematically.

The course objectives will enable the student to do the following:

1. State, define, and delineate a well designed scope and sequence in the key areas of mathematics instruction.

2. Use informal and formal mathematics assessments to identify skill needs, determine curricular placements, group students for instruction, and monitor student progress.

3. Select appropriate strategies to teach new mathematics skills as well as provide meaningful practice and necessary remediation for previously taught skills.

4. Identify strategies for pacing lessons, correcting errors, and diagnosing and remedying error patterns.

5. Evaluate, select, and modify commercial mathematics programs and educational software.

6. Plan instruction based on assessment data, design lesson plans, and prepare materials for mathematics instruction.

7. Carry out small group or one to one mathematics instruction.

Recommended Text: Stein, Marcy; Kinder, Diane; Silbert, Jerry & Carnine, Douglas W. (2006). DESIGNING EFFECTIVE MATHEMATICS INSTRUCTION: A DIRECT INSTRUCTION APPROACH (4th edition). Prentice Hall/Pearson.

Course Content:

- a. Introduction to the systematic, direct, explicit teaching of mathematics
- b. Mathematics curriculum evaluation framework
- c. Research relevant to mathematics instruction
- d. Skills and concepts:

Counting

Symbol identification and place value

Basic facts

Addition

Subtraction

Multiplication Division

Problem solving

Fractions

Decimals

Percent and ratio

Telling time

Money

Measurement

Mathematics study skills: graphs, charts, maps, and statistics

Geometry

Pre-algebra

e. Strategies for pacing lessons, correcting errors, and diagnosing and remedying error patterns

f. Instructional sequence and assessment charts for primary, intermediate and remedial instruction

Course Requirements:

- Weekly quizzes on readings. Students will complete an online quiz over the assigned readings. The quiz must be completed by class time of the week it is scheduled.
- Midterm and comprehensive final exam.
- Students will be required to assess a student using math assessment measures covered in class. Observations and assessments must be summarized, and suggestions for instruction provided. Specific guidelines will be provided during the course of this class as material necessary to carry out the project is covered in class.
- For the student assessed in the previous project, you will create a series of lessons (30 minutes maximum) designed to teach skills identified in the assessment as being in need of instruction. Again, specific guidelines will be provided during the class as material necessary to carry out the project is covered in class.

Reviewed 07/12