

Mathematical Experiences for Early Childhood Educators

MATH116

Spring 2016

This course presents methods and materials of instruction for the caregivers and teachers of preschool children so they can provide mathematical experiences confidently and knowledgeably. The content focuses on the influences of Piaget, Bruner, Gagne, and the psycho-educational aspects of how children learn (especially mathematics) and progress through the stages of development put forth by Piaget. Students receive instruction in the areas of cognitive development most closely associated with mathematics, i.e., classification, one-to-one correspondence, seriation, and counting, and have the opportunity to observe and participate in model lessons and experiences. Prerequisite: MATH002 Preparation for College Math II or MATH011 Introductory Algebra; waiver by placement testing results; or departmental approval.

COURSE OUTCOMES	OUTCOMES ACTIVITIES
At the end of this course, students will be able to	
Demonstrate an understanding of how concepts are acquired and developed in mathematics in order to facilitate learning in young children.	<ol style="list-style-type: none"> 1. Define concept development. (CT,OC,R,W) 2. Compare Piaget's and Vygotsky's theories of mental development. (CT,OC,R,W) 3. Explain how young children acquire knowledge. (CT,OC,R,W) 4. Define three types of learning experiences: naturalistic, informal, and structured. (CT,OC,R,W)
Demonstrate an understanding of the basic concepts of mathematics as building blocks of knowledge at the primary level in order to provide instruction for young children.	<ol style="list-style-type: none"> 1. Develop methods and materials for the instruction of the following basic mathematical concepts: (CT,OC,QS,R,W) <ol style="list-style-type: none"> a. One-to-one correspondence, b. Number sense and counting, c. Logic and classifying, d. Comparing, e. Shape, f. Spatial sense, g. Parts and whole, h. Language and concept formation.
Devise and solve problems that promote concept development in order to replicate those concepts with young children.	<ol style="list-style-type: none"> 1. Implement problem solving as a process underlying all instruction in mathematics. (CT,OC,QS,R,W) 2. Create problem solving activities that emphasize the process rather than the final product. (CT,OC,QS,R,W)
Assess the concept development level of young children in order to provide meaningful and appropriate learning activities.	<ol style="list-style-type: none"> 1. Develop techniques of assessment through observation and interview. (CT,OC,R,W)
Use record folders and portfolios in order to record, report and evaluate students' progress.	<ol style="list-style-type: none"> 1. Create record folders and portfolios as assessment tools to provide evidence of the student's efforts, progress and achievements. (CT,R,W)
Use appropriate activities to promote further development of fundamental concepts and skills related	<ol style="list-style-type: none"> 1. Plan higher level activities in the following areas for children who are near the stage of concrete operations: (CT,OC,QS,R,W) <ol style="list-style-type: none"> a. Algebraic thinking, b. Classification,

to primary mathematics curriculum in order to enrich student's understanding.	<ul style="list-style-type: none"> c. Shape, d. Spatial relations, e. Concrete whole number operations, f. Graphs, g. Symbolic level activities, h. Quantities above 10.
Create components of a mathematics environment with regard to materials resources in order to enrich and extend experiences in the home.	1. Be knowledgeable about family involvement in the teaching of mathematics at home. (CT,OC,QS,R,W)
Make use of technology in order to provide increased opportunities for learning about science and applying mathematical skills and concepts.	<ul style="list-style-type: none"> 1. Evaluate and use age-appropriate software. (CT,TS) 2. Use the internet to locate information about specific topics and issues related to mathematics and early childhood education. (CT,TS)
Strengthen Core Competencies** in order to increase success in this and other courses and in the workplace.	Referenced above

**Indicate the Core Competencies that apply to the outcomes activities and assessment tools: Critical Thinking (CT); Technology Skills (TS); Oral Communications (OC); Quantitative Skills (QS); Reading (R); Writing (W).