

Youngstown State University
Department of Mathematics and Statistics

Course Outline for Mathematics 2651
Mathematics for Early Childhood Education I

Text: Understanding the Math You Teach – Content and Methods for Prekindergarten through Grade 4. Anita C Burris, Pearson – Merrill – Prentice Hall

Website: http://wps.prenhall.com/chet_burris_understand_1

Course Credit: 3 s.h.

Course Prerequisite: Math 1501 or at least level 3 on the Mathematics Placement Exam.

Students with Disabilities: In accordance with University procedure, if you have a documented disability and require accommodations to obtain equal access in this course, please contact the Office of Equal Opportunity and Disability Services at the beginning of the semester or when given an assignment for which an accommodation is required. Students with disabilities must verify their eligibility through the Office of Disability Service in Wick House (330) 941-1372 intake procedure.

Objectives: One primary objective for the courses in this sequence is for students to be capable and confident in their ability to reason, explain, and solve problems relating to the broad spectrum of mathematics content that is either part of or underlies today's Pre-K - grade 3 curriculum. Another primary objective is for students to learn ways to facilitate young children's learning. More specifically, for Math 2651 students will:

1. Understand a variety of strategies and techniques for problem solving.
2. Understand how young children learn mathematics, and learn how to plan and implement developmentally appropriate learning activities.
3. Understand various strategies to introduce place value concepts and number sense to young children.
4. Understand a variety of algorithms for addition, subtraction, multiplication, and division of whole numbers. This includes understanding how and why the algorithms work and how to present the material in such a manner that their students will develop meaning for the operations.
5. Understand fundamental concepts of number theory useful in the development of operations on rational numbers.
6. Understand concepts and algorithms of the Rational Number System.

Themes that will be interwoven throughout the course include problem solving and logical thinking, use of manipulatives and appropriate technology, cooperative learning, and construction of activities and exercises developmentally appropriate for young children.

Course Assignments: The individual instructor will determine the emphasis given to the sections of the text listed below, but in some form the topics of these sections will comprise the assignments of the course.

Major Topics of the Course:

- Chapter 2 Problem Solving – (Sections 2.1 and 2.2 only).
- Chapter 3: Early Concepts of Mathematics
- Chapter 4: Place Value and Numeration Systems
- Chapter 5: Concepts and Operations of Addition and Subtraction
- Chapter 6: Concepts and Operations of Multiplication and Division
- Chapter 7: Number Theory Concepts and Operations
- Chapter 8: Fractions – (Sections 8.1 and 8.2 only)

Additional Topics will be selected from the following Chapters:

- Chapter 1: Teaching Early Childhood Mathematics
- Appendix A: A.2 – Integer Arithmetic, A.3 – Scientific Notation, A.7 – Logic
- Appendix B: Technology in Teaching

Assessment: Students will be assessed through a variety of means including tests, quizzes, homework, oral presentations and demonstrations, and written projects. The specific mix of assessment tools will be left to the instructor. Students will be expected to:

1. Demonstrate their ability to solve problems related to the mathematics content covered in the course.
2. Demonstrate their ability to represent fundamental mathematical concepts and ideas in a variety of ways using symbols, diagrams, pictures, charts, and manipulatives.
3. Demonstrate their ability to connect the mathematics covered in the course to applications of mathematics and to related topics and subjects.
4. Demonstrate their ability to reason with the mathematical ideas of the course in explanations and short proofs.
5. Demonstrate their ability to create problems, exercises, and learning experiences appropriate for elementary school children.

Need Help? Stop in the Mathematics Assistance Center, Cushwa Hall, Room 3090, to inquire about the free services available for this course.

Semester: Summer 2007 - first 6-week term

Last Day to Withdraw with a "W": Thursday, June 14, 2007