# MAT 141 Model Syllabus
## Mathematics and Statistics
## Quantitative and Logical Reasoning
(Approved March 2010)

**Course Catalog Description**:  **MAT 141. Concepts of Mathematics: Numbers, Operations, and Problem Solving (3)** Prerequisite: Satisfactory performance on the UNCW mathematics placement test or MAT 105. A conceptual examination of mathematics content that is aligned with elementary and middle grades curriculum. Topics include the real number system and related operations.

**Goals:** The purpose of MAT 141 is to develop a better understanding of the areas of mathematics that are covered in the standard course curriculum of kindergarten through 8th grade. Content focuses on the concepts of problem solving, logical reasoning, sets, number theory, whole numbers, integers, rational numbers, and decimal numbers. Students will extend their ability to understand and use mathematics in ways that have them move beyond trying to get a correct answer to that of a future-teacher who understands the content and sees the connections between topics. As future elementary or middle grades teachers, in addition to being able to *do* mathematics, students are expected to *explain* mathematics. There is an emphasis on the NCTM Principles and Standards for School Mathematics and the North Carolina Mathematics Standard Course of Study. We will look at multiple representations of topics, connections between topics, and problem solving. Where appropriate, technology is used to support content and improve student proficiency with technology and problem solving.

MAT 141 will count for the Mathematics and Statistics requirement in University Studies by supporting all the Common Student Learning Outcomes  (MS) for that category.  If another course is used to meet the Mathematics and Statistics requirement of University Studies, MAT 141 may count for the Quantitative and Logical Reasoning requirement by supporting all the Common Student Learning Outcomes (QRE) for Quantitative and Logical Reasoning.

**Course Student Learning Objectives:**

1.  Students demonstrate knowledge of logical reasoning, sets, number theory, whole numbers, integers, rational numbers, and decimal numbers.

    a.  Represent and communicate about content in different ways, through visual, verbal, and numerical methods (MS 1, 3, GRE 1, 2, 3).
    b.  Summarize topics with a short verbal explanation and explain why various procedures and formulas are appropriate, rather than only providing example problems (MS 3, GRE 2, 3)
    c.  Pose and solve mathematical problems (MS 1, 2, GRE 1).

2.  Students work effectively, both individually and in groups, to solve mathematical problems (MS 3, GRE 3).

3. Students demonstrate ability to use technological tools appropriate for elementary and middle grades teaching in ways that support content and enhance problem-solving situations (MS 2, GRE 2).

Topics to be covered:

1. Problem Solving

2. Introduction to Sets

3. Whole Numbers: Operations, Properties, and Computation

4. Number Theory

5. Integers: Operations, Properties, and Computation

6. Fractions: Operations, Properties, and Computation

7. Decimals: Rational and Irrational

8. Ratio, Proportion, and Percent

9. Algebraic Reasoning