



<b>COURSE NUMBER</b> <b><u>MTHC 5150.01</u></b>	<b>COURSE TITLE</b> <u>Number Systems</u>	<b>SEMESTER &amp; YEAR</b> Spring 2008
Instructor: Andrea Rothbart		

[rothbart@webster.edu](mailto:rothbart@webster.edu)  
**Webster Hall room 248**  
**(314) 978 6976**

Course Description:

This course provides middle school teachers with a deeper understanding of the real number system. Topics covered include arithmetic algorithms in negative and whole number bases; rational and irrational numbers; number properties; and mental arithmetic;

Learning Outcomes:

The student will better understand the real number system, including mental arithmetic, arithmetic algorithms, and the expansions of rational numbers in different bases. The student will also increase his or her ability to think through mathematical problems, particularly in the areas of mathematics examined in this course, as well as the ability to articulate mathematical ideas.

Schedule of Classes:

Class 1:

Number Properties; Mental Arithmetic.

Classes 2 thru 4:

Arithmetic algorithms in whole number bases other than base 10.

Class 5:

Quiz

Classes 5 – 8: Arithmetic algorithms in base -10.

Classes 9 - 10:

Decimal expansions of rational numbers, including methods of predicting whether a decimal corresponding to a given fraction terminates or repeats, and, if the latter, when it starts repeating and the length of the repeating cycle.

Class 11: Quiz

Class 12:: Decimal expansions of rational numbers expressed in whole number bases other than 10.

Classes 13 - 14: Introduction to real numbers; irrational numbers; proof of the irrationality of the square root of two.

Class 15: Density properties of rationals and irrationals; closure properties.

Class 16: Quiz

Resources: All materials will be distributed by the instructor.

Course Evaluation is based on quizzes, homework assignments, and class participation.

This syllabus is subject to change at the discretion of the instructor. Therefore, regular attendance is required.