

**University of Massachusetts at Boston
Corporate and Continuing Education**

**Critical and Creating Thinking
Mathematics Thinking Skills
CRCRTH 650
Fall 2006**

Instructor: Karen M. Crounse
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Class Time: Wednesdays 7:00 – 9:30 pm
Class Room: To Be Determined

Course Overview

How do we deeply understand mathematics concepts? In this course, we will begin with an exploration of our own backgrounds in mathematics to understand where our perceptions of mathematics began. Each subsequent class will focus on a different topic of mathematics and include an introduction, activities and a reflection piece. Methods of teaching and discussions about understanding will be highlighted. Students will also have the opportunity to familiarize themselves with innovative teaching ideas through the journal The Mathematics Teacher and will share these ideas with the class. Finally, through self-designed presentations, students will select mathematics topics of interest and teach a lesson to class for feedback. The objective of this course is for students to deepen their own understanding of mathematics as a means to strengthening their approach to teaching others.

Schedule of Classes

9/6/2006	What is a Mathematician? Number Puzzles
9/13/2006	Traditional versus Constructivist Teaching The Chef's Story Due: <u>Math Autobiography</u> and <u>Journal Reflection</u>
9/20/2006	Measures of Center Student Presentations – Article Summary Due: <u>Journal Reflection</u>
9/27/2006	Area Model - Distributive Property Student Presentations – Article Summary Due: <u>Journal Reflection</u>

10/4/2006	No Class.
10/11/2006	Linear Models – The Silent Board Game Student Presentations – Article Summary Due: <u>Journal Reflection</u>
10/18/2006	Quadratic Models – Ten Men in a Boat Student Presentations – Article Summary Due: <u>Journal Reflection</u>
10/25/2006	Area Relationships – Investigations and Tangrams Student Presentations – Article Summary Due: <u>Journal Reflection</u>
11/1/2006	Conjecture vs. Proof – Sum of Angles in Polygons Student Presentations – Article Summary Due: <u>Journal Reflection</u>
11/8/2006	Similarity – How to Shrink It? Student Presentations – Article Summary Due: <u>Journal Reflection</u>
11/15/2006	Fibonacci Sequence and the Golden Ratio Student Presentations – Article Summary Due: <u>Journal Reflection</u>
11/22/2006	To Be Determined (Based on Student Input) Due: <u>Journal Reflection</u>
11/29/2006	To Be Determined (Based on Student Input) Peer Feedback on Lesson Plan Due: <u>Journal Reflection</u>
12/6/2006	Lesson Presentations
12/13/2006	Lesson Presentations Due: <u>Lesson Summary and Reflection</u>

Assessments

Students will be assessed using the following:

Written Assignments and Presentations (detailed below)	60%
Participation and Contribution to Class Process	40%

Journal Reflections

Through reflecting on the mathematics and methods in each class, students will gain a deeper understanding of how they understand mathematics. The journal should be written as a weekly reflection of class activities and will be collected during every class. The journal should include your reaction to class activities and thoughts about your own understanding of the ideas. Your journal may be hand-written or typed; it is your choice.

Article Summaries

To become familiar with a variety of teaching ideas and methods, students will be responsible for both a written summary and an oral presentation of an article of their choice from The Mathematics Teacher. The written piece should summarize the article as well as give a personal reflection as to why the article was chosen and the student's view on the content. Students will be responsible for 2-3 article summaries throughout the semester.

Lesson Presentation

The final presentation should be in the form of a lesson; students will teach the class about a topic in mathematics. Ideas for topics can be from The Mathematics Teacher, extensions of class activities or from another source. If you have a topic in mind and need resources, please ask! I have a library of mathematics books available for use.

Lesson Summary and Reflection

This is the written portion of the Student Presentation. It is a summary of your lesson and how it engages and promotes understanding. In addition, this paper should include general reflections about class activities as a whole as well as your thoughts about understanding mathematics and how they have developed throughout the course.