MA 602
Assessment and Evaluation in Mathematics Education

RIVIER COLLEGE

Spring 2006: Wednesdays 6:30pm-9:00pm  Memorial Building: Room 301

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Course Description: This course is a formal study of basic and advanced concepts of Mathematics Education with an emphasis on Assessment and Evaluation. The course of study advances students’ knowledge, skills, and behaviors in mathematics education. The course is intended to expose students to theoretical frameworks and evaluative schemes used in mathematics education, examine factors that influence learning, and actively engage students in mathematical learning experiences. The class will explore the natural course of mathematics education through a variety of learning experiences and evaluative methods that require students to be active agents, central to the learning process. This course is designed to be consistent with the Principles and Standards of the National Council of Teachers of Mathematics.

Learning Outcomes: Students will be able to demonstrate knowledge, skills and behaviors in assessment and evaluation in mathematics education by:

- developing an understanding of the theoretical relationships between curriculum, pedagogy, and belief systems within a problem solving educational orientation;
- developing an understanding of content, process, and evaluative standards in mathematics education;
- navigating the problem solving process through mathematical learning experiences;
- solving and/or designing learning experiences that integrate process standards and learning theory into the curriculum;
- developing an understanding of the natural order of mathematical reasoning and its appearance in an evaluative system;
using reasoning, communication, connections, and representation in a problem-solving framework to advance mathematical power;

solving and/or creating learning experiences that develop reasoning and logic within a problem solving educational orientation;

developing an understanding of the role of technology and other instruments related to mathematics curriculum, pedagogy, and evaluation.

**Methodology and Course Outline:**

Various teaching styles (e.g., direct instruction, guided discovery, independent and cooperative group work, or student presentations) will be used to engage multiple learning styles. Genuine Assessment and Evaluative techniques will be used in teaching and learning a variety of mathematics content. Evaluative schemes will be embedded within learning experiences.


2.8 Theory into Practice. Solutions presented by students. Small group learning Family of Curves assignment. Pipeline Problem.

2.15 Virtual Manipulatives assignment Part 1 due. Discuss readings. Student self evaluation techniques. The mathematics of change learning experience.


3.15 Mathematical Induction.. Best Grapher mathematics software. Instructional tasks.


4.5 **Research Essay (or Webquest) due.** Poster Activity. Assessment plans.


4.19 Learning Styles using 4MAT and Multiple Intelligences.

4.26 **Journal 2 and homework due. Two Mathematics Lessons due.** Summary of Assessment tools.

5.3 Final lesson plan and presentation due. Please make enough copies of your lesson to share with your classmates. Classroom observation reports due.

This course outline represents an attempt to provide an overview of a semester-long course of study. Modifications to this chronology and topical outline may occur because of temporal constraints and/or upon mutual negotiation provided the intended learning outcomes are not compromised. More detailed descriptions of extended learning experiences, journals, essays, and lesson plans will be provided.

**Course Requirements and Expectations:**

Our goal as a mathematics class is to establish an environment of mutual respect that maximizes learning. Students will demonstrate knowledge, skills and behaviors in mathematics education through a variety of means, which will include spoken and written responses. These will include, but are not limited to, classroom activities, homework, a research essay, journal entries, formal classroom observations, presentations of virtual manipulatives, as well as the design and delivery of a mathematics lesson that incorporates technology or tools.

The nature of this course is interactive. Active involvement includes discussion and mastery of the tasks and learning outcomes related to the purposes, goals, and objectives of this course. Students will examine, critique, and revise their own work as well as the work of others. Absences negatively affect class participation and often impair the quality of student work. Therefore students are expected to be active participants and attend all classes. (10%)

Homework is assigned regularly and must be done accurately and completely in an organized manner that is mathematically rational and easily readable. (20%)
A research-based essay or reflection that presents either the historical antecedents or a personal comment on contemporary issues surrounding mathematics assessment, or a reflection of a Mathematics Webquest will offer students an opportunity to examine and share relevant information.

(10%)

A journal that contains reflective writings of the problem solving process of extended learning experiences will provide students with an opportunity to critically analyze, synthesize, and make judgments about process standards.

(10%)

Each student will schedule three observations of mathematics classroom instruction and write a report of process standards and evaluation techniques used during instruction.

(15%)

Each student will examine five virtual manipulative learning experiences (one from each content standard) and share necessary declarative and procedural knowledge.

(20%)

Each student will design and present three mathematical lessons as a component of a complete unit of study. The unit and lesson should include the identification of intended audience, a list of necessary materials, a purpose statement, learning objectives, teaching methodology, and an evaluative scheme. The learning experience should address multiple learning styles and be consistent with the National Council of Teacher of Mathematics’ vision of achieving mathematical power.

(15%)

n.b., Problems are often prevented by communication. If a situation exists or occurs that needs attention, whether personal or academic, please initiate discussion so that accommodations or solutions can be determined and implemented.

Reading List/Resources:


