MthEd 604: Research on Mathematics Teaching and Teachers

Syllabus, Spring 2010

Professor:	Dr. Joanne Lobato, Professor, Dept. of Mathematics and Statistics
Meeting Time	Thursdays 5:30-8:15, GMCS 325
Office Hours:	Thursdays, 4-5 pm GMCS 569 and by appointment.
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CRMSE Office: Meetings by appointment will usually be held at my office in CRMSE (Center for Research in Mathematics & Science Education).

***Directions to CRMSE*:** Heading north on College Ave., go right on Alvarado Road (just before Highway 8). The first office building you come to is 6475 Alvarado Road. You'll see a sign for a Medical Center. Park in the main lot. Go into the building on your right – the one with the café. My office is upstairs and to the right, in Suite 206, Room 42.

Prerequisites: MthEd 603 and consent of instructor or graduate advisor.

Course materials & expenses:

- All readings and homework assignments will be posted on Blackboard (by noon Friday each week). To access Blackboard, go to www.sdsu.edu. Select Current Students. Under SDSU Online, select Blackboard Courses. Once you are in blackboard, select the "user login" button on the far left of the screen. You can use you Red ID number as your username to log in. Then the password is the password associated with your Red ID. Readings will be posted under Course Documents and Homework will be posted under Assignments.
- There may be a small expense associated with preparing photocopies for other class members of materials needed for class presentations.

Course Description

Content Goals. The main purpose of this graduate seminar is to for students to gain insight into the mathematics education research in three areas: (a) teaching practices, (b) teacher attributes such as teacher knowledge and beliefs, and (c) teacher learning. The course will begin by exploring the research on a variety of pedagogical practices (including international comparisons of classroom practices), and the implications of various learning theories for teaching mathematics. Next, we will discuss key components of knowledge for teaching, how that knowledge is organized and accessed, and the relationship between teachers' knowledge and their instructional practices. Finally, we will investigate teacher learning, that is, how teachers develop the knowledge needed for teaching, by considering various models of professional development as well as approaches to training prospective teachers.

Process Goals. Another important objective of this class is to provide opportunities for students to develop as writers and communicators. Deep processing of the readings is facilitated by efforts to summarize the main points of research papers, characterize and illustrate key constructs, answer focus questions, and connect the readings with other papers and with personal

experiences. Additionally, students will complete regular "Practical Explorations," in which they explore an important idea from a research paper through some personal experience, e.g., by reflecting on their own teaching, trying ideas out with students, constructing mathematical examples or illustrations, analyzing videos of mathematics teaching, and so on. Finally, the mid-term and final exam will provide master's students with an opportunity to prepare for the MATS comprehensive exam and doctoral students for the MSED second year exam.

Relevance. Reading mathematics education research papers can be challenging and can seem esoteric and removed from the day-to-day demands that teachers face. While this class is not a methods class or a "how to" course, it is very relevant to the practice of teaching. If students immerse themselves in the readings, discussions, and class assignments, they can be transformed to think differently about teaching and learning, which in turn, can positively affect the ways that they plan for, implement, and reflect upon their future teaching experiences. Furthermore, most of the issues that we investigate will be connected to vignettes, videos, and examples from real classrooms. Students will be invited to connect their personal experiences as teachers to the issues that are explored each week.

Course Requirements

Evaluation (approximate)

Weekly Written Assignments	40%
Practical Explorations (7-8)	20%
Mini Presentations (3-4)	10%
Midterm	15%
Final	15%

Readings & Written Assignments. Prior to class each week, students are expected to complete the assigned readings (typically 1 research paper and sometimes 2) and prepare either written responses to focus questions or a written summary. All work must be submitted at the *start* of the next class period.

Practical Explorations. Students will be expected to complete regular "Practical Explorations", in which they will explore a main idea from a research paper through some personal experience, e.g., by reflecting on their own teaching, trying ideas out with students, constructing mathematical examples or illustrations, analyzing videos of mathematics teaching, and so on. Each practical exploration must be submitted at the start of class on the due date.

Mini Presentations. Each student will make several presentations in class during the semester, consisting of a response to a question from a written assignment, a practical exploration, or a summary of a paper. Detailed information will be provided later. For some presentations, students will be asked to provide a photocopy of their written materials for each class member.

Exams. The midterm will cover the readings and discussions for Part 1 of the course, and the final exam will be comprehensive. Both will be written take-home exams. The format of each exam will be similar to an MATS comprehensive exam question for master's students and will be similar to an essay from the MSED second year exam for doctoral students.

No late assignments will be accepted except in the case of a documented illness or emergency. In the latter case, the deadline needs to be negotiated with the professor.

Grades will be based on the following grading scale:

A	93-100%	Excellent	A-	90-92%	Very Good
B+	88 -89%	Good	B	83-87%	Acceptable
B-	80-82%	Barely Acceptable	C	70-79%	Poor
F	Below 70%	Fail (no credit)			

Attendance & Participation

- Attendance is essential in this class because many ideas that will be developed during class discussions cannot be easily captured or assessed by written assignments or exams. Consequently, your final class grade will be deducted 1/2 of one letter grade for every absence. The only exceptions are documented (and non-regular) emergencies, in which case you are required to contact me. Students are responsible for all missed materials handed out in class.
- Tardiness is not tolerated and can adversely affect your grade. We will begin promptly at 5:30 pm
- Students are expected to participate in discussion on the readings in the usual manner of graduate seminars. Up to one letter grade will be deducted for poor participation.

Accommodations for students with disabilities. Any student with a documented disability is welcome to contact me early in the semester to work out reasonable accommodations to support your success in this course. Students should first contact Student Disability Services, Calpulli Center, Suite 3101 (third floor) 594-6473 http://www.sa.sdsu.edu/sds/ .

Code of Academic Conduct on Examinations and Assignments. The SDSU Center for Student Rights and Responsibilities coordinates the discipline process and establishes standards and procedures in accordance with regulations contained in Sections 41301-41304 of Title 5 of The California Code of Regulations, and procedures contained in Executive Order 628, Student Disciplinary Procedures for The California State University. Cheating, plagiarism, and other forms of academic dishonesty that are intended to gain unfair academic advantage are grounds upon which student discipline may be based. See http://csrr.sdsu.edu/rights1.html for details.

Important Dates

Feb. 2:	Last day to drop
Feb. 4:	Last day to add or change grading options; Last day to withdraw from university without penalty fee for spring 2010
March 29-April 2:	Spring Break
May 6:	Last class
May 20:	Take home final is due by 7 pm