Course Syllabus: MA 322
Methods of Teaching Secondary School Mathematics
Rivier College

Fall, 2004, 3 credits,
MA 322: Tuesday, 6:30 – 9:00 PM

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T 2 - 2:30 (Mem); 4:00 - 6:30; W 2:30 - 6:30; R 2 - 2:30 (Mem)  
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Brief Course Description
In this course students study and practice the teaching activities of a secondary mathematics  
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teacher within the frameworks of the NH Frameworks for Mathematics 5 - 8 and 9 - 12, NH Grade  
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Level Expectations in Mathematics (GLEs); NCTM Principles and Standards of School Mathematics  
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(PSSM); and the NCTM Professional Standards for Teaching Mathematics. Topics  
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include the secondary mathematics curriculum, goals and objectives of instruction, planning and  
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conducting mathematics instruction, history of mathematics education in the USA, student assessment,  
conducting mathematics instruction, history of mathematics education in the USA, student assessment,
teacher evaluation, and the use of mathematical resources. Students will become familiar with and use as resources state, regional, and national professional journals. Students  
familiar with and use as resources state, regional, and national professional journals. Students
will observe and analyze classroom instruction in regional middle and high schools.

Required Course Textbooks and materials
Email address and access to the campus network. You can get a free email address from  
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Information Technology (IT) in Sylvia Trottier Hall. As a Rivier student, email and high-speed internet access are available to you on campus in Regina library and the Sylvia  
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Trottier computer labs.

Learning Group. ISBN 086641740
Johnson, D. (1986). Making minutes count even more: A sequel to every minute counts.. Palo  
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Alto, CA; Pearson Learning Group. ISBN 0866513035
Pearson Learning Group. ISBN 0886510818

Membership in the National Council of Teachers of Mathematics (NCTM). You are required to  
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receive and read the email news briefings, newsletters, and one of the monthly journals. The Mathematics Teacher is the high school journal and Teaching Mathematics in the Middle School  
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is the middle school journal. Go to www.nctm.org

You are required to purchase a hard copy of PSSM, if you do not already have one.  
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Order directly from NCTM or from an internet-based second-hand bookseller. This book is required for all pedagogy courses in the MAT-Math curriculum. You are expected to  
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bring this text to every class meeting.

NHMathEd listserv. You are expected to join and regularly read notices on this email listservice. 
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You can be placed on the NHMathEd List sending a message with subject: subscribe to:  
You can be placed on the NHMathEd List sending a message with subject: subscribe to:
NHMathEd-request@listserv.plymouth.edu

618-30820-2. This booklet is a pocket guide. All written work for the MAT-Math program is required to be written following the APA Guidelines. This includes complete references
and citations in APA style. If you prefer, you may a used complete book in any edition from 1998.


TI-83, TI-83+ or comparable graphing calculator.


Course Goal:
The course goal is to help students develop proficiency in instructional theory and practice. Students are expected to develop their ability to apply their knowledge of how children learn mathematics, to use appropriate instructional practices, to create an environment which promotes learning, to use appropriate assessment techniques, and to utilize appropriate resources.

Course Objectives:
Students will be expected to demonstrate their ability to merge their knowledge of mathematics with their knowledge of teaching in ways that help them:
1. Correlate the middle and high school mathematics curriculum with the perspective of the NCTM Principles and Standards for School Mathematics.
2. Apply ways to better understand how their students understand mathematics.
3. Write lesson plans that document their ability to teach mathematics content using methods consistent with those described in the NCTM Professional Standards for Teaching Mathematics.
4. Promote the processes of problem solving, reasoning, communicating, representing, and connecting mathematical concepts and principles.
5. Assess and evaluate students in realistic and authentic ways.
6. Apply their understanding of student differences and needs in the classroom to promote quality mathematics for all students.
7. Evaluate, adapt, and use published resources to enhance the learning and teaching of mathematics.
10. Demonstrate a working knowledge of important national and state documents.
11. Understand the recent history of mathematics education and how previous documents and developments in the field have contributed to the current national and state educational goals and standards and the NCTM Principles and Standards.
12. Observe secondary mathematics classes with an ability to identify, comprehend, and analyze the observed teaching goals, objectives, methods and practices.

Conduct of course:
The graduate-level course will be conducted in a seminar format. Students will be required to join class discussions, contributing worthwhile comments and questions that reflect their assigned readings and previous class discussions. Students are required to assume a leadership role in facilitating at least one class discussion, facilitate the exchange of ideas, actively encourage all class participants to participate in small- and large-group class discussions, seek out opportunities to work directly in small groups with all other class participants; use e-mail and the world-wide-web to access, learn required course material, and observe and reflect on secondary mathematics classes. All course-related information must be referenced and cited according to guidelines set forth in the APA Manual of Style. This course is conducted in a manner consistent with the document produced by The New Hampshire Pre-service Education Review Project. Â Consensus Model for Pre-service Teacher Education in Mathematics and Science (1997).

Assessment
Essays, summaries, outlines, or notes on material read for or discussed in class Evidence through class discussions, presentations, and written papers of your understanding and mastery of course content, goals, and objectives. There may be quizzes or tests on the pedagogy and mathematics content studied.
Attendance
You are expected to attend all class meetings. Exceptions may be discussed with the instructor with suitable make-up activities agreed upon. All course work is due on the assigned dates whether or not you are present. The instructor assumes no responsibility for making sure you receive any course material for which you were absent. Contact another class participant ahead of time to collect class materials and take notes. Make arrangements to get such materials before the next class meeting date. You are expected to return to the next class with fully prepared for the class with assignments ready.

Course Requirements and Expectations. You are expected to:
Actively engage in all class discussions and small group work.
Come to class with notes on and prepared to discuss all assigned readings.
Complete all written assignments in a timely manner.
Apply and cite concepts developed in readings to all written work, including analyses of articles, observations, and lesson plans.
Engage in peer and self-assessment.
Assume a leadership role in organizing, facilitating, seeking information and resources, and engaging others in class discussions and activities
Maintain a loose-leaf notebook that contains course handouts, your notes, and relevant materials you have collected from the internet (check sources and provide evidence of credibility), news-media, and other reliable sources
Place in your portfolio in the Regis Conference Room file evidence of your mastery of the course goals and objectives.
Attend all class meetings. Attendance will be taken. See above notes about attendance.
Regularly (every few days or so) check your email for messages about the course and access the internet for assignments at specified locations.

Assignments:
You are expected to submit all assigned work on time. If you notify me ahead of time about unexpected professional travel or other unexpected responsibilities, sick children, etc. I will consider exceptions. However, I expect to know what's going on when assignments are not submitted on time.

Tentative list of assignments:
Observation hours (PPST). You are expected to complete 25 observation hours during this semester. Of these 25, approximately 6 - 8 will be considered "structured observations."
Lesson Plans. You will be expected to write approximately 5 - 6 lesson plans and one unit plan.
Reports, summaries, and other written assignments. You will be expected to complete approximately 5 - 6 written assignments.

Methods of Assessment and Computation of grades
Observations 20%
Lesson plans 30%
Reports, summaries, and other written assignments 30%
Class work including preparation, participation, presentation of mini-lessons, and engagement in and occasional leadership of classroom activities 20%

Readings:
For articles use the on-line data base. Go to www.rivier.com. At bottom of page select Regina Library. Follow directions for accessing reviewed educational documents.

References:
The references listed at the end of each chapter of your textbook are excellent. You should familiarize yourself with the literature identified. Many of the references are available on-line through the ERIC database, accessible through the Rivier College website. The Rivier College library has an extensive collection of mathematics-education materials as does the Mathematics Conference Room on the third floor of Regis. Both collections hold numerous reviewed or
published student activities. You are expected to adapt and modify published activities for lessons you develop for classroom presentations.

**Outline of Class Sessions**
The course calendar attached to this syllabus describes how to prepare for each session.

- **Sept. 14** What does it mean to "do," to "teach," and to "learn" mathematics?
- **Sept. 21** How to plan effective lessons.
- **Sept. 28** Writing objectives and increasing student engagement in learning tasks.
- **Oct. 5** Writing rubrics and using alternative means of assessment to improve teaching and learning.
- **Oct. 12** Increasing student learning through classroom discourse and effective questioning, interviewing, and listening.
- **Oct. 19** When is cooperative learning appropriate? What makes learning tasks group-worthy and worthwhile?
- **Oct. 26** The teaching of number concepts and algebra.
- **Nov. 2** The teaching of algebra continued.
- **Nov. 9** The teaching of measurement, geometry, reasoning, and proof.
- **Nov. 16** The teaching of measurement, geometry, reasoning, and proof continued.
- **Nov. 23** The teaching of data analysis and probability. The teaching of discrete mathematics.
- **Nov. 30** Meeting the needs of all students.
- **Dec. 7** Learning theories and psychology in mathematics education.
- **Dec. 14** The first day of school. The teacher of mathematics in the school community.