MA 601 Current Issues in Mathematics Education

Syllabus

Instructor: Dr. Darien Lauten

Brief Course Description

The focus in this course is on the secondary school mathematics curriculum. You will study secondary mathematics textbooks, assess curriculum materials using published instruments, and compare and contrast the mathematical content covered and how it is presented within the framework provided by the NCTM "Principles and Standards of School Mathematics." You will read current documents about how and what mathematics is taught in the US and internationally and study results of international comparisons of student learning. You will become familiar with educational policy at the national, state, and district level, how you can influence policy decisions, and how policy decisions affect students and teachers at the local level.

Required Course Textbooks and materials


Membership in the professional organization, National Council of Teachers of Mathematics. You are required to receive and read the email news briefings, the newsletters, and a monthly journal.

NCTM. (2000) Principles and Standards of School Mathematics (PSSM). Reston, V A: NCTM. Secondary school Algebra I, Geometry, Algebra II, and Precalculus textbooks. I will lend you one of each of these textbooks. Get your copies from the back of my car before class on Wed., Jan. 24. My car is a red Volvo station wagon that will be parked in the Ed Center lot between the Ed Center and Sylvia Trottier Hall.

Core curriculum materials developed through NSF funding. These will be on reserve in Regina Library. You will be required to use them in the library.

Email address and access to internet. You can get a free email address from IT on campus. As a Rivier student, email and high-speed internet access is available to you on campus in Regina library and the Sylvia Trottier computer lab.

Course Goals The purpose of this course is to deepen students understanding of the American secondary mathematics curriculum and the issues surrounding the teaching of mathematics.

Objectives You will have an opportunity to deepen your understanding of: Mathematics currently taught in American high schools

Secondary school mathematics curriculum materials including core curricula and mathematics curricula developed with National Science support

International comparisons of students' mathematics achievement How to assess mathematics textbooks and curriculum materials
National, state, and local policy decisions and how they affect students and teachers

**Conduct of course** The course will be conducted in a seminar format. You will be expected to join in class discussions, occasionally assume a leadership role in conducting the class, facilitate the exchange of ideas, and encourage all class participants to engage in class discussions.

**Teaching Strategies** As teachers or future teachers of mathematics, course participants will:

- Review secondary school mathematics as presented in the current textbooks
- Lead and engage in large and small group discussions and activities

Use email and the WWW to access and read course material and information. Many reading assignments will consist of web links rather than pieces of paper. If you lack access to a modem fast enough to suit you and you want print copies of course material, go to Regina library, access the web pages and print copies there.

- Seek out print, credible internet sources, and other sources about current issues in mathematics education and bring them to the attention of the class
- Seek out and read the literature surrounding international comparisons of student learning and how educational constituencies are addressing the issues
- Seek out information to develop a deeper understanding of national mathematics education policy decisions and how they affect local school districts
- Use published assessment instruments to evaluate mathematics curriculum materials as assigned
- Align curriculum materials with PSSM.
- Assess their own learning and that of other course participants according to agreed upon assessment tools

**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.

**Assessment**

Weekly quizzes on the mathematics studied. There will be no makeup quizzes. Two quiz grades will be dropped. Quiz questions will reflect the frameworks provided in PSSM and will reflect "middle level" material.

- Completion of weekly mathematics problem sets
- Infrequent essays or notes on material read or discussed in class
- Assignments in which you align curriculum materials with the PSSM
- Assessment of curriculum materials using published evaluation instruments
- Evidence through class discussions of your understanding and mastery of course objectives.
**Course Requirements and Expectations.** You are expected to actively engage in all class discussions and small group work. Come to class prepared to discuss all assigned readings.

Complete all assignments. More specific details will be available as needed. Engage in peer and self-assessment.

Assume a leadership role in organizing, facilitating, seeking out information for, and engaging others in class discussions and activities

Maintain a loose-leaf notebook (portfolio) 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

Attend all class meetings. Attendance will be taken. If you miss class, you are responsible for submitting assigned work on the date due, getting the notes from a classmate, and making up all missed work. If you must be excused from class, please inform me ahead, if possible, by note, e-mail, or phone message. Please arrange ahead for someone to collect handouts for you.

Regularly (every few days or so) check your email for messages about the course and access the internet for assignments at specified locations.

**Methods of Assessment and Computation of grade**

The following are tentative percentages. Final percentages will be negotiated with the class.

*Quizzes 20%*

*Essays, curriculum assessments, and other assignments 20%*

*Weekly problem set assignments 20%*

*Participation and engagement in and occasional leadership of classroom activities and discussions 25%*

*Self assessment 15%*

**Tentative Course Outline**

Dates Preparation and class discussion

W Jan. 15

W Jan. 22 Chapters 1 -6 in UCSMP Algebra 1 textbook

- Problem set
  - Join NCTM. Make sure you receive the NCTM newsletter via email. If you are not currently a member, go to www.nctm.org and join as a student member (by phone, web, or fax). Order the NCTM Principles and Standards of School Mathematics (PSSM). If you can figure out how to get PSSM in the price of NCTM membership send the class participants an email message to tell them how.
  - Join and read the NHMathEd listserve. See www.nhtm.org for directions on how to join the list serve Order the free ENC journal by going to www.enc.org and ordering it.
W Jan. 29 Chapters 6- end in UCSMP Algebra 1 textbook
   Problem set
   Alignment of Algebra 1 content with PSSM
   National, state, and local education policies (first of regular discussions). Check
   all media sources. Read the 1997 White Paper to then Education Secretary Riley
   Listen for President Bush's education policy. Pay attention to how block grants
   (Eisenhower funds) to the states will be distributed.

W Feb. 5 Chapters 1- 6 in Algebra 2 textbook
   Alignment of Algebra 2 content with PSSM
   The TIMSS Report. Collect newspaper articles about the results of TIMSS-R. Become
   familiar with TIMSS, read the links on http://nces.ed.gov/timss/

W Feb. 12 Chapters 7- 11 in Algebra 2 textbook
   Alignment of Algebra 2 content with PSSM
   The "Math Wars". Go to http://mathematicallycorrect.com and learn more about the
   group Mathematically Correct. Spend time going to and reading the links on the site. It is
   a well-designed site with excellent links.

W Feb 19 Chapters 15 -17 in Algebra 2 textbook
   Alignment of trigonometry content with PSSM

W Feb 26 No class. Winter break

W. March 5 Chapters 1 -6 in Geometry textbook
   Alignment of Geometry content with PSSM
   The Glenn Commission Report: "Before-It's Too Late". I've ordered copies. You
   can read the "executive summary" at

W March 12 Chapters 7 -12 in Geometry textbook
   Alignment of Geometry content with PSSM
   W March 19 Chapters 13 -end in Geometry textbook
   Alignment of Geometry content with PSSM
   Li in Ma's "Knowing and Teaching Element Mathematics"

W March 26 Chapters 1 -6 in Precalculus textbook
   Alignment of precalculus content with PSSM
   Evaluation of Curriculum Materials
   W April 2 Evaluation of Curriculum Materials

W April 9 Chapters 7 -12 in Precalculus textbook
   Alignment of precalculus content with PSSM
   Evaluation of Curriculum Materials

W April 16 Chapters 13- 16 in Precalculus textbook
   Alignment of precalculus content with PSSM

W April 23 Calculus Handout