

Course Syllabus Math 324 (4 credits)
Methods and Materials in Mathematics-Secondary
Winter 2008

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Meeting Time: 2:00 – 3:20, Tu, Th
Meeting Place: Science, Room 115
Office Hours: M, Tu, Th 11:00–12:00, Tu, Th
1:00 – 2:00; or by appointment

Course Details

Course Description: The prerequisites are Math 299E, EDCS 311, and permission of the instructor. Prospective teachers will learn and use the methods and materials needed to help students learn mathematics with emphasis on the use of manipulatives, problem solving, cooperative learning, and communication. In this course, you will complete your mathematics education electronic portfolio in LiveText to meet all the program, NCATE, NCTM, CTL's Conceptual Framework, and Washington State Standards for secondary mathematics teachers.

Important Note: For the first time, this course will be partially taught in conjunction with SCED 324, Science Education in the Secondary Schools. At times during the quarter, students in this class will meet with students in SCED 324 and collaborate on at least one assignment.

Course Rationale: To meet the expectations for mathematics education, a shift in content, instruction and assessment practices is crucial. The *Principles and Standards for School Mathematics* (NCTM, 2000) outlines the specific changes needed in pre-service mathematics education. "Prospective teachers must be taught in a manner similar to how they are to teach--by exploring, conjecturing, communicating, reasoning, and so forth." In addition, "all teachers need an understanding of both the historical development and current application of mathematics. Furthermore, they should be familiar with the power of technology." This course employs the constructivist model of learning in which students, in interactions with their physical and social environments, create knowledge.

Required (1) textbook: *Teaching Mathematics in Secondary and Middle School*, Cangelosi;

Resources: (2) handouts and Internet sites;

(3) *Principles and Standards for School Mathematics* by the National Council of Teachers of Mathematics (NCTM). It is available online at www.nctm.org. (You can get a trial membership for free for 90–days.);

(4) Live Text: You will need to purchase this for your own use.

Supplies: calculator, 2 – 3 colored pocket portfolios (folders); I recommend a 3–ring binder for keeping important papers and information throughout the quarter.

Learner Outcomes

Candidates will support a positive disposition toward mathematical processes and mathematical learning through

1. attention to equity;
2. use of stimulating curricula;
3. effective teaching methods;
4. commitment to learning with understanding; and
5. use of multiple assessments.

Candidates will possess a deep understanding of how students learn mathematics and of the pedagogical knowledge specific to mathematics teaching and learning by

1. selecting, using, and determining suitability of the wide variety of available mathematics curricula and teaching materials for all students, including those with special needs such as the gifted, challenged and speakers of other languages;
2. selecting and using appropriate concrete materials for learning mathematics;
3. using multiple strategies, including listening to and understanding the ways students think about mathematics, in order to assess students' mathematical knowledge;
4. planning lessons, units and courses that address appropriate learning goals, including those that address local, state, and national mathematics standards and legislative mandates;
5. participating in professional mathematics organizations and using their print and on-line resources;
6. demonstrating knowledge of research results in the teaching and learning of mathematics;
7. using knowledge of different types of instructional strategies in planning mathematics lessons;
8. demonstrating the ability to lead classes in mathematical problem solving and in developing in-depth conceptual understanding, and to help students develop and test generalizations; and
9. developing lessons that use technology's potential for building understanding of mathematical concepts and developing important mathematical ideas.

Work and Assessment

Please remember that organization, neatness, and legibility count!

Disposition Papers (100 points) There are five, 20–point disposition papers to complete in your electronic portfolio. (The description in the portfolio begins: “Artifact – Disposition ...”) These papers will be written responses to questions related to class discussion, textbook activities, research articles, and Internet sites. Remember to cite your sources to support your conclusions. You will have one opportunity to revise the paper after comments are made by the instructor. These revised papers will be entered into the e-portfolio. Points will be deducted if papers are late, not revised on time, or incomplete.

Integrated Math/Science Lesson Plan (30 points) In collaboration with a science student(s) from SCED 324, you will prepare a 40–minute lesson that will integrate mathematics and science. You will hand in a written plan one week prior to your presentation. I will provide feedback on the lesson and you will present the lesson to the class (see below). This is a group grade.

Integrated Math/Science Lesson Plan Presentation (20 pts): You will present the lesson described above to part or all of the class. At the end of your presentation, you will receive feedback on the lesson.

Math Lesson in the Field (50 points) In groups of 2–3, you will prepare and present a lesson to middle or high school students in the public school. This will be part of a day–long field trip to that school and you will be required to attend for the day. The lesson plan will be pre–approved (20 points for lesson plan) and the presentation will be worth and additional 30 points.

Field Trip (50 points) You will participate in a day–long field trip to an area school. There will be several choices of days for this trip, but members of the class will be going in groups.

Unit Plan (200 points) You will be preparing a unit plan that will include no less than six lessons. Please see the handout regarding this plan for more details and the scoring guide.

Portfolio: (100 points) During the last two weeks of the quarter, you will enter your disposition papers and unit plan into your LiveText portfolio. During the quarter keep electronic or hard copies of all activities, articles, observations, lessons, and your unit plan. The five disposition papers and your unit plan are the e-portfolio artifacts. Then you will write a persuasive reflective paragraph aligned with each of the 14 standards convincing your instructor that you have met each standard. (In the portfolio, each of these 14 items begins “Reflection–(then the topic).”). The 100 points includes entering **all** information into your portfolio and writing the reflections.

Grades: total points = 550 from above

93- 100%	90- 92%	87- 89%	83- 86%	80- 82%	77- 79%	73- 76%	70- 72%	67- 69%	63- 66%	60- 62%	<60%
A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F

Assessment and Evaluation Guidelines:

The instructional and assessment strategies are designed to inform you of your progress in achieving the performance outcomes. The e-portfolio, unit, lesson plans, field teaching experiences, and reflection on field experiences are multiple assessments of your achievement in meeting the performance outcomes. The instructor will give you feedback on your progress in meeting the performance outcomes throughout the quarter.

Additional Topics

Attendance and Professionalism

If you are to fully benefit from this class, you must attend class. As you prepare to become a teacher, you need to become accustomed to setting a good example for students. Attendance demonstrates professionalism and dedication. High quality work and organization demonstrate professionalism, as well. Remember that you must dress and act appropriately when visiting any schools. You are a guest at the schools and it is a privilege, not a right to visit schools.

Schedule

I will keep you informed of the schedule and assignment due dates. You can record important dates on the calendar with your syllabus..

Additional Note

Students with disabilities who wish to set up academic adjustments in this class should give me a copy of their “Confirmation of Eligibility for Academic Adjustments” from the Disability Support Services Office as soon as possible so we can discuss how the approved adjustments will be implemented in this class. Students without this form should contact the Disability Support Services Office, Bouillon 205, or dssrecept@cwu.edu or 963–2171.

Good luck in this course! I hope you find it enjoyable and never hesitate to talk to me if you have any problems.