

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

Winter 2009

Instructor: Dr. Teri Willard

Meeting Time: 2:00 – 3:50, Tu, Th + 10
practicum hours to be arranged (8
am to noon, only)

Office: Bouillon Hall, Room 114

Phone: 963-2142

email: willardt@cwu.edu

Meeting Place: Science, Room 115

Office Hours: M, Tu, Th, F; 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: 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 several projects/assignments.

Calendar: You will receive a calendar of events and due dates. This is subject to change due to extenuating circumstances.

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) **I changed my mind – return to bookstore!** 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, binder or report cover for Unit Plan

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!

Part I: In school experience: 300 points [Individual grade/partially group]

Present and Prepare an Integrated Lesson/Unit with Your Team (100): You will deliver and assess your team's lesson at the Excel Alternative High School at CWU. (≈ 1 hour)

Observe and provide feedback on another team's Integrated Lesson: (25): You will attend, observe, and provide feedback to a team on their lesson. (≈ 1 hour)

Participate, observe, teach, etc., for 8 hours at the Excel Alternative High School (175): You will professionally attend the school and complete a journal as prescribed. The journal will be done individually, but you can go to the school in pairs.

Part II: In-Class Work: 100 points [Individual and group grade]

Assorted class assignments (50): – During the quarter, various assignments/activities will be assigned in and out of class. If you are not in class when points are awarded, these cannot be made up. If the assignment is take-home, you can hand these in on the due date for points. This is an individual grade.

Integrated Math/Science Lesson Plan (30): In collaboration with a science student(s) from SCED 324, you will prepare a 50-minute lesson and brief assessment integrating mathematics and science. You will hand in these materials January 27. I will provide feedback and you will present the lesson to our class (see below). This is a group grade.

Integrated Math/Science Lesson Plan Presentation (20): You will present the lesson described above to part or all of the class on Feb. 3 or 5 as assigned. At the end of your presentation, you will receive feedback on the lesson. This is a group grade.

Part III: Unit Plan: 200 points [Individual grade]

Unit Plan (175 points) You will be prepare a unit plan that will include no less than six lessons. ($x \geq 6!$) Please see the notebook and handout regarding this plan for more details and the scoring guide. Consider using your integrated math/science lesson, IF the content area can be adjusted to fit your unit!

Draft Lesson for Unit (25 points) You will turn in one of the lesson plans and your TOC for feedback prior to completing the entire unit.

Part IV: Live Text Portfolio: 50 points [Individual grade]

Live Text Portfolio: During the last two weeks of the quarter, you will enter your unit plan and all required reflections/papers on the plan and other relevant class assignments into your LiveText portfolio. All of these can be found in your Live Text portfolio online. During the quarter keep electronic or hard copies of all activities, articles, observations, lessons, and your unit plan.

Grades: total points = 650 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. 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.