# Math 324 Course Syllabus

## Method and Materials in Mathematics-Secondary (4 credits)

## Winter 2007

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

**Course Rationale:** To meet the expectations for mathematics education a shift in content, instruction and assessment practices are 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.

Part of our mission is to accommodate for differences among students in order to help all students learn to high levels. Excellent assessment practices are stressed; all assessment and instructional activity are integrated and used to promote better communication between the teachers and the students. Students create and teach whole units. Part of the lesson plan includes an explanation of the assessment practices. After the lesson is taught student get feedback through peer, self, and instructor's comments (constructive comments). Students are introduced and encouraged to become involved in the professional community of mathematics educators. This is done by becoming familiar with and encouraged to join state and national professional organization such as NCTM and WSMC.

**Text:** Teaching Mathematics in Secondary and Middle School by James S. Cangelosi, Handouts from instructor, Blackboard (http://courses.cwu.edu/), and Livetext.

**Learner Outcomes**

Candidates support a positive disposition toward mathematical processes and mathematical learning:

1. Attention to equity
2. Use of stimulating curricula
3. Effective teaching
4. Commitment to learning with understanding
5. Use of various assessments

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

1. Selects, uses, and determines 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. Selects and uses appropriate concrete materials for learning mathematics.
3. Uses multiple strategies, including listening to and understanding the ways students think about mathematics, to assess students' mathematical knowledge.
4. Plans lessons, units and courses that address appropriate learning goals, including those that address local, state, and national mathematics standards and legislative mandates.

5. Participates in professional mathematics organizations and uses their print and on-line resources.
6. Demonstrates knowledge of research results in the teaching and learning of mathematics.
7. Uses knowledge of different types of instructional strategies in planning mathematics lessons.
8. Demonstrates the ability to lead classes in mathematical problem solving and in developing in-depth conceptual understanding, and to help students develop and test generalizations.
9. Develop lessons that use technology's potential for building understanding of mathematical concepts and developing important mathematical ideas.

**Assessment and Evaluation Guidelines:** The course's instructional and assessment strategies are designed to inform the students on their progress in achieving these performance outcomes. The e-portfolio, unit, lesson plans, field teaching experiences, and reflection on field experiences give multiple assessments of your achievement in meeting the performance outcomes. The instructors will give the students feedback on their progress in meeting the performance outcomes through out the quarter.

**Professionalism:** Teaching professionalism is always treating people with respect, being on time, and being prepared. Therefore, you must come to class on time and prepared. Also when at schools you must treat the students and other teachers with respect, be on time, and be well prepared. It is very important to be at your school at least 10 minutes before your scheduled class (remember you must check in at the office when entering the school). If your instructor feels you have not acted professionally, you will get one verbal warning; the next infraction will result in being dropped from the course.
**Portfolio:** Your five disposition papers and unit will be revised into a portfolio in the last two weeks of the course. During the quarter keep electronic or hard copies of all activities, articles, observations, lessons, and the unit will be organized into the Math 324 section of your e-portfolio (100 points). Use the five disposition papers and your unit as the e-portfolio artifacts. Create a persuasive reflective paragraph aligned with each of the 14 standards convincing your instructor that you have mastered each standard.
**Lesson Plans:** Four individual and one group lesson plans will be submitted until they are done correctly. Each lesson plan must be done correctly to pass the course.
**Teach Lessons:** Teach at least one lesson (hopefully more). A self-assessment reflection needs to be written assessing your performance each time you teach (20 each).
**Peer Assessment:** *(I don't think you can do this one)* You will assess your peers on the lesson plan that is created and taught as a group (10 points).
**Unit:** A complete mathematics unit will be constructed and explained in your e-portfolio on livetext. This unit will include 8 activities (100 points).
**Papers:** Five disposition papers will be assigned related to the five disposition standards. 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. These papers will be graded on the appropriate or due over with the main emphasis on changes from instructor comments. These revised papers will be used in the e-portfolio; points will be taken off if they are late or incomplete. (10 points each)

**Grading:** Grades will be determined by the following percents:
93-100% = A, 90-93% = A-, 87-90% = B+, 83-87% = B, 80-83% = B- , 77-80% = C+, 73-77% = C, 70-73% = C-, 67-70% = D+, 63-67% = D, 60-63%, 0-60% = F.

**Schedule/Rules:** The instructor has a class schedule for the quarter but it is subject to change depending on the needs of the students. If a student misses class, it is their responsibility to find out what was covered announced or assigned. In case of emergencies, it is their responsibility to contact the instructor as soon as possible. If a course deadline was missed, assessment alternatives are left up to the discretion of the instructor.

**How to succeed:** Take the responsibility for your own achievement of these performance objectives. Use the activities, assignments, assessments and people such as the instructor to insure that you understand the mathematical teaching concepts and can demonstrated this understanding in the form of the performance objectives.

Students who have special needs or disabilities that may affect their ability to access information and or material presented in this course are encouraged to contact the office of student assistance on campus 963-2171.