

MATHEMATICS, PROBLEM SOLVING, AND TEACHING

MATH 486 | SPRING QUARTER 2016

INSTRUCTOR:

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COURSE DESCRIPTION AND RATIONALE:

Hiebert and others describe one of the essential principles for mathematics instruction as building understanding in mathematics through problems. Instruction ought to allow students to wonder why things are, to inquire, to search for solutions, and to resolve incongruities. In a problem-based approach, students are expected to solve problems or make sense of mathematical situations. Ideally students need to explore problems, make conjectures, and draw generalizations about mathematics concepts and processes. Students can also make connections between mathematical ideas that are familiar to them by solving new problems in a variety of different settings. Although no one claims the existence of one correct way to teach, using good problems to plan instruction with the focus on student thinking and reasoning is one strategy that holds promise. The new emphasis on modeling in the Common Core State Standards for Math (CCSS-Math) aligns with this movement of problem-based mathematical instruction.

This course aligns with the demonstrating proficiency of the Middle Level Mathematics Teaching standards for the state of Washington. In this course you will demonstrate your proficiency in at least three different types of evidence. You will also work with a classroom from 20 – 30 hours during the quarter. At the end of the course you will document your mathematical proficiency on your Middle Level Mathematics Teaching Livetext Portfolio.

COURSE GOALS:

- Teacher candidates will show their mathematical knowledge mastery of algebra and probability and statistics content domains of the state endorsement standards for middle level mathematics.
- Teachers candidates will be able to use and teach the mathematical practices of the state endorsement standards for middle level mathematics.
- Teacher candidates will design relevant and interdisciplinary learning activities that engage students in meaningful mathematics.
- Teacher candidates will design assessment activities that align with the CCSS-Math and clearly reveal students' understanding of math concepts.
- Teacher candidates will be able to reflect on the philosophical and pedagogical practices of teaching mathematics in our present culture.

COURSE RESOURCES:

- Canvas account with enrollment in MATH 486
- LiveText account
- Handouts provided by the instructors
- CCSS Math – internet access
- Better Math Blog
- Field Experience - Finger Print clearance

ASSIGNMENTS AND EVALUATION GUIDELINES:

The instructional and assessment strategies for this course are designed to inform you of your progress in achieving the performance outcomes. The instructors will give you feedback on your progress in meeting performance outcomes.

Assignment	Points
Field Teaching Blog and Time Log	20
Algebra and Geometry Activities and Quizzes	100
Presentation of Modeling Activity (group)	15
Lesson Plan of Modeling Activity (group)	30
Lesson Plan of Modeling Activity	30
Group Blog Post of Modeling Activity	20
Blog Post of Modeling Activity	20
Planning Commentary of Modeling Activity (Group)	30
Planning Commentary of Modeling Activity	30
Field Observations (self, peer, instructor) completed and attached on Livetext Portfolio	30
Livetext Portfolio	100
Total Points	405

Candidates will be assigned tutoring/teaching positions after the first week. Candidates can expect to observe at the beginning, then support instruction of the cooperating teacher, and finally teach of at least one lesson. Expect to spend at least 20 hours working in 6 – 12 classrooms and because of this classroom time has been reduced by 10 hours.

Grading Scale

80-100% = A, 75-80% = A-, 75-70% = B+, 70-65% = B, 65-60% = B-, 60-55% = C+, 55-50% = C, 50-45% = C-, 45-40% = D+, 40-35% = D, 35-30% = D-, 30-0% = F Please see the CWU Catalog for the eligibility requirements for an incomplete (I).

Performance Expectations

All of the assignments and directions can be found in the Assignments menu of Canvas. All outcomes for the class will be assessed formatively and summatively (Livetext) and your mastery progress for each outcome can be monitored in Canvas.

COURSE POLICIES:**Instructor Feedback/Communication**

I will be reading the Discussion Boards and replying to messages occasionally. You will receive specific feedback on your Syllabus Draft and your Course Syllabus in the form of electronic comments appended to your electronic submission. I will use the Announcements tool in Blackboard to communicate changes to the course and other course information.

Suggestions for Success

Take the responsibility for your own achievement of these performance objectives. You can get individual help by e-mail or in person in my office. If at any time you have trouble-using Blackboard or do not understand an assignment make sure to contact the instructor. 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.

Student Feedback/Communication

I welcome all feedback on the course. My preferred method of communication with individual students is via email. I am also available for office hours. If you experience a legitimate emergency (according to my standards) that will prevent you from completing required coursework on time, I expect you to communicate with me at the earliest reasonable opportunity. Please state the nature of the emergency, and when you expect to turn in the coursework.

Submitting Electronic Files

All electronic files must be submitted in .doc or .pdf format. If you do not have Microsoft Word, you can download Open Office Writer for free at <http://www.openoffice.org/>. This will allow you to open the instruction files, make changes and save in .doc or .pdf.

Late and Uncompleted Work

- If extenuating circumstances exist, contact instructor.
- All course assignments must be completed to pass the course.

UNIVERSITY POLICIES:**Academic Integrity**

Academic Integrity is a standard set for this course. Students are expected to complete all of their coursework and assignments using their original words and ideas and will properly cite the words and ideas of others. Students are also expected to be honest in their interactions with the instructor. A student found to have not upheld these expectations is subject to failing this course and shall be subject to disciplinary action or sanction. The University catalog defines the term "academic dishonesty" in all its forms including, but not limited to:

- cheating on tests;
- copying from another student's test paper;
- using materials during a test not authorized by the person giving the test;
- collaboration with any other person during a test without authority;
- knowingly obtaining, using, buying, selling, transporting, or soliciting in whole or in part the contents of an unadministered test or information about an unadministered test;
- bribing any other person to obtain an unadministered test or information about an unadministered test; substitution for another student or permitting any other person to substitute for oneself to take a test;
- "plagiarism" which shall mean the appropriation of any other person's work and the unacknowledged incorporation of that work in one's own work offered for credit;
- "collusion" which shall mean the unauthorized collaboration with any other person in preparing work offered for credit.

Documented incidences of Academic Dishonesty will be referred to Office of the Vice President of Student Affairs.

Special Needs

If you have a disability that may prevent you from meeting course requirements, contact the instructor immediately to file a Student Disability Statement and to develop an Accommodation Plan. Course requirements will not be waived but reasonable accommodations will be developed to help you meet the requirements. You are expected to work with the instructor and the CWU Disability Support Specialist to develop and implement a reasonable Accommodation Plan. For contact information at Center for Disability Services (CDS) please visit <http://www.cwu.edu/~dss/cms/>.