

Professor: Dr. Chris Black
Office: HEC #268 Des Moines Center
Office Hours: WF 3:30 - 4:15 pm and by arrangement
Email : blackc@cwu.edu. Email is the most reliable way to reach me.

Required Graphing calculator, preferably TI-84 or TI-83.
Materials: Handouts provided by the professor.

GOALS FOR COURSE:

Upon successful completion of this course, MATH 406 students will be able to:

- ... use algebra to investigate, represent and solve problems, including using algebraic expressions, equations, inequalities, and systems of equations and inequalities;
 - ... use multiple representations of functional relationships including graphs, tables, expressions and models;
 - ... analyze, extend, and generalize sequences, using both recursive and explicit forms;
 - ... use and explain patterns of change in proportional, linear, inversely proportional, quadratic and exponential functions;
 - ... reason using the language of formal logic;
 - ... actively participate in the classroom dialogue, both as an individual and as a member of a small group, and be an active partner during in-class work.
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ABOUT THIS COURSE:

This course will focus on the development of algebraic thinking. Content may include algebraic reasoning, solving equations and inequalities, identifying, extending and generalizing patterns, sequences and series, algebraic systems, functions, elementary models, algebraic modeling in geometry, polynomial algebra, the division and Euclidean algorithms, and modular arithmetic. Class activities will involve appropriate technology including manipulatives and investigations of underlying mathematical structure in the exploration of algebraic concepts.

PROBABLE COURSE TOPICS:

- ▷ Logic: statements, negation, quantifiers, arguments, truth tables, Boolean algebra, conditional statements
- ▷ Expressions & Equations: square roots and radical expressions, exponents, solving equations, linear equations, systems of linear equations, quadratic equations & completing the square, solving radical equations
- ▷ Functions & Modeling: representations of functions; linear functions; first and second differences; piecewise-defined functions; quadratic functions and parabolas; exponential functions and their graphs; modeling with linear, quadratic and exponential functions; linear, quadratic and exponential regression

COURSE EXPECTATIONS:

Being successful in a mathematics class generally requires good study habits, hard work & patience while attempting problem sets, and proper time management. Each student is expected to attend every class meeting, to read and think about the assigned readings, to complete homework problems and other assignments in a timely manner, and to seek the assistance of the instructor when difficulties are encountered.

GRADING:

Homework & in-class activities:	25%
Tests:	30%
Mastery Quizzes:	20%
Final Exam:	20%
Professionalism:	5%

HOMEWORK & IN-CLASS ACTIVITIES:

Homework assignments include traditional pencil-and-paper problems, mini-projects, and labs. Written homework assignments are due at the beginning of class each Friday. Homework problems will be assigned from the course handouts. Some of our in-class activities & projects may also be graded in this category, which makes up 25% of your course grade.

TESTS:

There will be three tests in the course, administered in the first hour of class. (New material will be presented in the remaining hour of the class period.) Dates for these tests will be announced in class. Scores on these three tests comprise 30% of your total course grade.

1. Test #1 covers the Logic module.
2. Test #2 covers the module on Expressions and Equations.
3. Test #3 covers the module on Functions and Modeling.

MASTERY QUIZZES:

Mastery quizzes will administered throughout the quarter, beginning after the first module. These 15-minute quizzes can be retaken as often as needed until mastery of the topic is demonstrated. The first attempt will be administered during class, and it is your responsibility to arrange for a retake when necessary. Mastery is indicated by a quiz with no more than one incorrect response. The mastery tests measure procedural fluency in the following topics:

1. The Euclidean algorithm and rational numbers
2. Square roots and radical expressions
3. Exponential expressions
4. Lines and linear equations
5. Systems of linear equations
6. Quadratic equations, completing the square, and the quadratic formula
7. Solving radical equations
8. Graphing linear and quadratic functions; forms for the equation of a parabola
9. Exponential functions and their graphs; growth factors.

FINAL EXAM:

The final exam is scheduled for Wednesday, 12/6/2017, from 4:30 - 6:20 pm. This will be a comprehensive exam covering the basic concepts of the course. The final exam comprises 20% of your total course grade.

PROFESSIONALISM:

Students in the teacher preparation programs have one foot in the world of students and the other foot in the world of professional teachers. Professionalism includes time management, responsible behavior, attention to detail, engagement, attendance, and treating fellow students and the professor with respect.

HONOR AND RESPECT:

Each of us should consider our placement at this institution to be a privilege. We need to have respect for one another, and for ourselves. In light of these facts, cheating in any form will not be tolerated. You are encouraged to work together on homework problems, however anything you turn in with your name on it should have been written by you alone. In a course where much of your grade is determined by your proof writing, plagiarism is a concern. The word "plagiarize" is defined by Merriam-Webster as "to steal and pass off (the ideas or words of another) as one's own: use (another's production) without crediting the source." This is a very serious offense and jeopardizes your position in a teacher preparation program.

DISABILITY SERVICES:

If you have a disability and require accommodations for this course, please speak with me privately as soon as possible so that your needs may be appropriately met. If you have not already done so, you will need to register with Disability Services. You can register with Disability Services at <http://www.cwu.edu/disability-support/quick-links>. If you have any questions or concerns, you can contact Adam Haizlip, Interim Associate Director for Westside Student Life, at 206-439-3800 extension 3818 or email Adam.Haizlip@cwu.edu.