MATH 406 | ALGEBRA FOR TEACHERS | Winter 2019
TTh 6:30 - 8:20 PM

Professor:	Dr. Chris Black
Office:	HEC #268 Des Moines Center, Building 29
Office Hours:	T/Th 3:30 - 4:00 pm and by arrangement
Email :	blackc@cwu.edu. Email is the most reliable way to reach me.

Required Materials:	Graphing calculator, preferably TI-84 or TI-83. 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.

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: representions 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:	25%
Tests:	40%
Final Exam:	30%
Professionalism:	5%

Homework:

Homework assignments include traditional pencil-and-paper problems, mini-projects, and labs. Written homework assignments are due at the beginning of class each Thursday. Homework problems will be assigned from the course handouts. Homework makes up 25% of your course grade.

Tests:

There will be two 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 two tests comprise 40% of your total course grade.

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

Final Exam:

The final exam is scheduled for Thursday, 3/14/2019, from 4:20 - 6:10 pm. This will be a comprehensive exam covering the basic concepts of the course, and focusing on the contents of the Functions and Modeling module. The final exam comprises 30% 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:

Students with disabilities wishing to use academic adjustments in their CWU classes must be registered with Disability Services (DS). Information about the DS intake process may be obtained by emailing cds@cwu.edu or calling (509) 963-2171. Qualified students with disabilities may establish academic adjustments in this class by either sending me their official on-line accommodation request or speaking with me to establish the manner in which requested adjustments will be delivered.