Mathematics 67-104 College Algebra (XM)
Spring 2020 MWF Swart 13
11:30-12:30 (sect.006) **12:40-1:40** (sect. 008)

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Office Hours: 1:40-2:30 Monday, Wednesday, and Friday. I am also available other times by appointment. Please contact me via email to set up an appointment.

Course Catalog Description: Equations and inequalities; graphs, functions and models; polynomial and rational functions; exponential and logarithmic functions. May not receive credit for both Mathematics 104 and 108. This course along with Mathematics 106 will count for Mathematics 108.

Prerequisite: Mathematics 103 with minimum grade of C or better, or placement.

Textbook: *Understanding College Algebra,* by Eric Kuennen. Available as a course manual from the UWO Bookstore.

Additional Course Materials Needed: In addition to your textbook, you will need a notebook or paper for scratch work, a stapler, colored pens or pencils, graph paper, and a graphing calculator or graphing calculator app such as Desmos or GeoGebra for use in class and on the homework. To develop a sound knowledge of fundamental concepts graphing calculators, phones, and laptops will not be allowed on exams.

USP Explore XM Essential Learning Outcomes: Math 104 is an Explore course within the Nature category of UW Oshkosh's University Studies Program. As part of a liberal education, explore courses support a broader understanding of the physical and natural world and develop transferable skills, like problem solving, which may be utilized in daily and professional life. Math 104 emphasizes the following intellectual and practical skills:

- Identification and objective evaluation of theories and assumptions
- Critical and creative thinking
- Written and oral communication
- Quantitative literacy

Departmental Learning Outcomes: The goal of this course is to give students appreciation of mathematics and algebraic tools they need in order to be successful in other mathematics and science courses. It focuses on problem solving, critical thinking and learning basic concepts in algebra. Upon successful completion of the course, students are expected, but are not limited, to have the ability to do the following:

- Be able to communicate graphically, numerically, and algebraically in the notation and vocabulary of college algebra
- Display a basic understanding of the general concepts of functions, relations, equations, and inequalities

- Be competent in working with linear and quadratic functions in theory and application
- Be able to show a basic understanding of inverse functions by showing a proficiency in working with their properties
- Be able to identify the properties of polynomials of different degrees and rational functions
- Have an understanding of how the roots of a polynomial determine its factorization
- Display a working knowledge of the definitions and manipulation of exponential and logarithmic functions and equations
- Be able to model and predict situations using algebra

Course Outline:

Unit 1: Foundations of Algebra
Unit 2: Equations
Unit 3: Analyzing Functions
Unit 4: Rational, Exponential, Logarithmic, and Inverse Functions

Format and Attendance Policy: In this course we will do mathematics every day. This means that we will think about problems, conjecture, reason, and make arguments. We will learn to communicate our ideas using the language of mathematics, and we will learn to listen and evaluate the mathematical thinking of others. Most class time will be spent solving interesting problems in small groups and discussing problem solving ideas and solutions as a class. Sometimes you will be asked to write up those ideas and solutions for me. Sometimes we will just discuss them. However, you are always expected to think about the problems, participate in their solutions, and communicate your ideas with others. Because it is so important for your own learning and the learning of your fellow classmates, I expect that you will attend and fully participate in class. If you must miss class for any reason, it is your responsibility to inform me in a timely manner, and to understand the material that you missed due to your absence. Your course grade may suffer if you miss too many class periods.

Making Mistakes: It is my firm belief that mistakes are valuable learning experiences. It is expected that you will make mistakes in this class. I encourage you to share not only your successes with our class during discussion time, but also share your mistakes you made along the way. Often, we learn more from seeing an incorrect solution and analyzing it, than we learn from seeing correct solutions.

Grading: Grades will be determined based upon how well you demonstrate your understanding in six key "Big Ideas". Your final grade will be determined by your overall performance, which is the weighted average of your performance on each Big Idea as follows:

20% Properties of Functions	15% Representations of Functions
40% Expressions, Equations, and Inequalities	10% Relationships between Functions
5% Contributing to our Mathematical Community	10% Attention to Precision

The chart below lists each specific Big Idea and specific expectations for each idea.

Big Ideas	Key Expectations
B1: Properties of Functions	Determine properties of a given function including: domain, range, intercepts, zeros, end behavior, asymptotes, roots, etc.
	In a given application, use properties of functions to interpret the functions in the context of the situation.
B2: Representations of Functions	Determine if a given representation is or is not a function
	Represent functions graphically, symbolically, and numerically
	Make connections between different representations
	In a given application, determine correct functions to represent the situation and interpret results in the context of the situation.
B3: Expressions, Equations, and Inequalities	Use graphical, analytical, and numeric methods to solve equations and inequalities
	Identify algebraic properties used in simplifying expressions, equations, and inequalities
	Use algebraic properties to justify steps in simplifying expressions, equations, and inequalities
	In a given application, interpret solutions to equations and inequalities in the context of the situation.
B4: Relationships Between Functions	Compose functions, calculate inverses and transformations
	Interpret and analyze compositions, inverses, and transformations of functions
B5: Attend to Precision	Perform algebraic and arithmetic operations correctly
	Use and interpret mathematical language and mathematical terminology properly, following mathematical conventions
	Create sufficiently accurate models to correctly convey their mathematical ideas
B6: Contribute to the Mathematical Community	Complete daily homework
	Actively Participate: actively engage in small group and whole class work including listening to, respecting, and considering others' contributions; sharing own thoughts, ideas, & reasoning; asking & answering questions; and being on-task & working well with group members
	Complete assignments on time

You will have several opportunities to demonstrate your mathematical understanding. Each topic we discuss this semester and each assessment you complete will span multiple Big Ideas. We will have three exams (tentatively scheduled for March 4, April 22, and May 15). There will be approximately three problem sets to turn in as well as three announced quizzes and seven self-evaluations.

Homework questions from our book will be assigned nearly daily. These homework problems are designed to further develop your understanding of the current topic, so while you are

expected to attempt each of the assigned problems, you are not expected to demonstrate full understanding on these questions. Instead, the completion of these problems will count towards the Contributing to our Mathematical Community portion of your grade. This homework is scored in class on the date it is due. Each homework will receive 0 - 5 points. (5 points complete/full attempt, 3 point halfway complete/not full attempt, 0 points not done or absent) If you are absent on a day homework is graded or do not receive full credit for your homework, it is your responsibility to show me your completed attempt, which will earn you up to 4 points.

Based upon the weighted average of the Big Ideas, final grades will be no stricter than:

A: 93-100%	A-: 90-92%	B+: 88-89%
B: 83-87%	B-: 80-82%	C+: 78-79%
C: 72-77%	C-: 70-71%	D+: 68-69%
D: 63-67%	D-: 60-62%	F: 0-59%

You are welcome to contact me via email or during office hours to inquire about your current standing in the course. Additionally, grades will attempt to be kept on Canvas to help you keep up to date on your current progress.

Early Alert: Early Alert is a program that provides you with an Early Grade Report from faculty. Early Grade Reports will indicate if you have academic performance or attendance issues and specific steps you can take and resources available to help you improve. It is common for students to be unaware of or over-estimate their academic performance in classes so this will help you be aware early on of your progress and provide strategies for success in the classroom. You will receive an email during the 5th week of classes. It is important to read the entire email carefully.

Resources: There are many resources available to help you succeed in this course as well as thrive at UWO. If you are struggling with this course, please talk with me during office hours or make an appointment to meet outside of the scheduled times. Additionally, the following places are here to help you:

- **Center for Academic Resources**: The Center for Academic Resources (CAR) provides free tutoring for students in most undergraduate classes on campus. CAR is located in the Student Success Center, Suite 102. Check the Tutor List page on CAR's website (www.uwosh.edu/car) for a list of tutors.
- **Dean of Students Office:** If you are encountering a problem and you are not sure where to turn, contact the Dean of Students Office. Whether it is an issue in a class or a problem with your landlord, they can help with support and advocacy. The office is located in Dempsey 125 https://uwosh.edu/deanofstudents/
- **Food Assistance:** If you are in need of food assistance, your Oshkosh Student Association (OSA) runs the campus food pantry, The Cabinet. It is open to all UWO students who express a need for food assistance. It is located in the lower level of the Reeve Memorial Union. Operational hours and additional information can be found on the OSA's Services http://uwosh.edu/osa/services
- **Other Resources**: Please check out http://www.uwosh.edu/resources/ for additional resources available to you.

Academic Policies:
You are expected to behave with integrity and honor. The official UWO policy regarding academic misconduct can be found at: https://www.uwosh.edu/deanofstudents/university-policies-procedures/academic-misconduct

Students are advised to see the following URL for disclosures about essential consumer protection items required by the Students Right to Know Act of 1990: https://uwosh.edu/financialaid/consumer-information/.

The University of Wisconsin Oshkosh supports the right of all enrolled students to a full and equal educational opportunity. It is the University's policy to provide reasonable accommodations to students who have documented disabilities that may affect their ability to participate in course activities or to meet course requirements.

Students are expected to inform Instructors of the need for accommodations as soon as possible by presenting an Accommodation Plan from either the Accessibility Center, Project Success, or both. Reasonable accommodations for students with disabilities is a shared Instructor and student responsibility. The Accessibility Center is part of the Dean of Students Office and is located in 125 Dempsey Hall. For more information, email accessibilitycenter@uwosh.edu, call 920-424-3100, or visit https://www.uwosh.edu/deanofstudents/Accessibility-Center.