MAC 1140 Course Calendar Summer B 2021

*Calendar is subject to change

Date	Topic	Objectives	OpenStax Section
6/28	Real Numbers	• Represent and classify real numbers. • Order real numbers and use inequalities. • Find the absolute values of real numbers and find the distance between two real numbers. • Evaluate algebraic expressions. • Use the basic rules of properties of algebra.	
6/29	Exponentials And Radicals	• Use properties of exponents • Use scientific notation to present real numbers • Use properties of radicals • Simplify and combine radical expressions • Rationalize denominators and numerators • Use properties of rational exponents	
6/30	Polynomials and factoring	• Write polynomials in standard form • Add, subtract, multiply polynomials • Use special products to multiply polynomials	

		• Factor out common actors from polynomials • Factor special polynomial forms • Factor trinomials as the product of two binomials Factor polynomials by grouping	
7/1	**Rational expressions**	• Find domains of algebraic expressions • Simplify rational expressions • Add, subtract, multiply, and divide rational expressions • Simplify complex Quiz 1	
7/2	**Solving equations**	• Rewrite difference quotients • Identify distinct types of equations • Solve linear equations in one variable and rational equations that lead to linear equations • Solve quadratic equations by factoring, extracting square roots, completing the square, and using the quadratic formula. • Solve polynomial equations of degree three or greater • Solve radical equations • Solve absolute value equations • Use common formulas to solve real-life problems.	

7/6	Linear inequalities	• completing the square • Represent solutions of linear inequalities in one variable. • Use properties of inequalities to write equivalent inequalities • Solve linear inequalities in one variable. • Solve absolute value inequalities • Use linear inequalities to model and solve real-life problems • Exam 1 review	
7/7(END OF EXAM 1 MATERIAL)	**Algebraic Errors**	• Avoid common algebraic errors • Recognize and use algebraic techniques that are common in calculus. • Exam 1 review if time permits	
7/9	**Rectangular coordinates.**	• Plot points in the cartesian plane. • Use the distance formula to find the distance between two points. • Use the midpoint formula to find the midpoint of a line segment. • Use a coordinate plane to model and solve real-life problems	
7/12	**Graphs**	• Sketch graphs of equations • Find x- and y-intercepts of graphs of equations	

		• Use symmetry to sketch graphs of equations • Write equations of circles • Quiz 2	
7/13	**Linear equations**	• Write equations of circles. • Use slope to graph linear equations in two variables. Find the slope of a line given two points on the line. • Write linear equations in two variables. • Use slope to identify parallel and perpendicular lines. • Use slope and linear equations to two variables to model and solve real-life problems.	**2.1**
7/14	**Functions**	• Determine whether relations between two variables are functions and use function notation • Find the domains of functions. • Use functions to model and solve real-life problems • Evaluate difference quotient.	**1.1**
7/15	**Analyzing graphs of functions**	• Use the Vertical Line Test for functions. • Find the zeros of functions. • Determine intervals on which functions are increasing or decreasing. • Determine relative minimum and	**1.3**

		- relative maximum values of functions. - Determine the average rate of change of a function. - Identify even and odd functions.	
7/16	**A library of functions and transformations of functions**	- Identify and graph linear and squaring functions. - Identify and graph cubic, square root, and reciprocal functions. - Identify and graph step and other piece-wise-defined functions. - Recognize graphs of parent functions. - Use vertical line and horizontal shifts to sketch graphs of functions. - Use reflections to sketch graphs of functions. - Use nonrigid transformations to sketch graphs of functions.	**1.5**
7/19	**Combinations of functions**	- Add, subtract, multiply, and divide functions. - Find the compositions of one function with another function. - Use combinations and compositions of functions to model and solve real-life problems - Quiz 3	**1.4**
7/20	**Inverse functions**	Find inverse functions informally and	**1.7**

		• verify that two functions are inverse functions of each other. • Use graphs to verify that two functions are inverse functions of each other. • Use the horizontal line test to determine whether functions are one-to-one. • Find inverse functions algebraically.	
7/21	**Quadratic functions**	• Analyze graphs of functions. • Write quadratic functions in standard form and use the results to sketch their graphs. • Find minimum and maximum values of quadratic functions in real-life applications.	**3.2**
7/22	**Exam 2 Review**	All concepts introduced after exam 1.	
7/23	**Polynomial functions of higher degree and division of polynomials**	• Use transformations to sketch graphs of polynomial functions • Use the leading coefficient test to determine the end behaviors of graphs of polynomial functions. • Find real zeros of polynomial functions and use them as sketching aids. • Use the Intermediate Value Theorem to help	**3.4, 3.5**

			locate real zeros of polynomial functions. • Use long division to divide polynomials by other polynomials • Use synthetic division to divide polynomials by binomials of the form (x-k) • Use the remainder Theorem and the Factor Theorem. • Quiz 3	
7/26	**Complex numbers**	• Use the imaginary unit I to write complex numbers. • Add, subtract, and multiply complex numbers. • Use complex conjugates to write the quotient of two complex numbers in standard form. • Find complex solutions of quadratic equations. • Quiz 4	**3.1**	
7/27	**zeros of polynomial functions**	• Use the Fundamental Theorem of Algebra to determine number of zeros of polynomial functions. • Fid rational zeros of polynomial functions. • Find complex zeros using conjugate pairs. • Find zeros of polynomials by factoring. • Use Descartes's Rule of Signs and	**3.6**	

		the Upper and Lower Bound Rules to find zeros of polynomials in real-life applications.	
7/28	**Rational functions**	• Find domains of rational functions. • Find vertical and horizontal asymptotes of graphs of rational functions. • Sketch graphs of rational functions. • Sketch graphs of rational functions that have slant asymptotes. • Use rational functions to model and solve real-life problems.	**3.7**
7/29	**Nonlinear inequalities**	• Solve polynomial inequalities • Solve rational inequalities • Use nonlinear inequalities to model and solve real-life problems.	
7/30	**Linear and nonlinear systems of equations**	• Use the method of substitution to solve systems of linear equations in two variables. • Use the method of substitution to solve systems of nonlinear equations in two variables. • Use a graphical method to solve systems of equations in two variables. • Use systems of equations to model and solve real-life problems.	**9.1, 9.3**

8/2	Exponential functions	• Recognize and evaluate exponential functions with base a. • Graph exponential functions and use the One-to-One property. • Recognize, evaluate, and graph exponential functions with base e. • Use exponential functions to model and solve real-life problems. • Quiz 5	4.1, 4,2
8/3	Logarithmic functions	• Recognize and evaluate functions with base a. • Graph logarithmic functions. • Recognize, evaluate, and graph natural logarithmic functions. • Use logarithmic functions to model and solve real-life problems.	4.3
8/4	Properties of logarithms and Exponential and logarithmic equations	• Use the change-of base formula to rewrite and evaluate logarithmic expressions. • Use properties of logarithms to evaluate or rewrite logarithmic expressions. Use properties of logarithms to expand or condense logarithmic expressions. • Use logarithmic functions to model	4.5

		and solve real-life problems. • Solve simple exponential and logarithmic equations. • Solve more complicated exponential equations. • Solve more complicated logarithmic equations. • Use exponential and logarithmic equations to model and solve real-life problems.	
8/5(Last day)	**Final exam Review Day**	• Quiz 6 • Final exam review	