

MAC-MATHEMATICS-CALC & PRECALC

MAC 1105 College Algebra (3 Credits)

In this course, students will develop problem solving skills, critical thinking, computational proficiency, and contextual fluency through the study of equations, functions, and their graphs. Emphasis will be placed on quadratic, exponential, and logarithmic functions. Topics will include solving equations and inequalities, definition and properties of a function, domain and range, transformations of graphs, operations on functions, composite and inverse functions, basic polynomial and rational functions, exponential and logarithmic functions, and applications. MAC 1105 cannot be taken for credit if MAC 1105C or MAC 1106 have been successfully completed. Student Learning Outcomes: -Students will solve an equation or an inequality using an appropriate technique. -Students will define and describe functions, their properties, and graphs. -Students will manipulate functions to simplify expressions and find new functions. -Students will use transformations to write an equation for a function and to graph a function. -Students will model and solve real world problems using functions.

Prerequisite: C or higher in MAT 1033 or appropriate placement score

General Education, Area IV: Mathematics

MAC 1105C College Algebra with Integrated Review (4 Credits)

In this course, students will develop problem solving skills, critical thinking, computational proficiency, and contextual fluency through the study of equations, functions, and their graphs. Emphasis will be placed on quadratic, exponential, and logarithmic functions. Topics will include solving equations and inequalities, definition and properties of a function, domain and range, transformations of graphs, operations on functions, composite and inverse functions, basic polynomial and rational functions, exponential and logarithmic functions, and applications. This course is a corequisite course where fundamental concepts from intermediate algebra are integrated into college algebra. Students who successfully complete MAC 1105C cannot take MAC 1105 or MAC 1106. Student Learning Outcomes: -Students will solve an equation or an inequality using an appropriate technique. -Students will define and describe functions, their properties, and graphs. -Students will manipulate functions to simplify expressions and find new functions. -Students will use transformations to write an equation for a function and to graph a function. -Students will model and solve real world problems using functions. -Students will Demonstrate, during the lab portion of the course, knowledge of operations and properties when working with mathematical expressions including simplifying exponential and rational expressions and factoring polynomials.

Prerequisite: C or higher in MAT 1033 or appropriate placement score.

General Education, Area IV: Mathematics

MAC 1106 Combined College Algebra/Precalculus (5 Credits)

Functions & relations inc domain & range, ops on functions, inverse functions, polynomial, rational, & other alg functions--properties and graphs; polynomials, absolute value, rational equations/inequalities; exponential/logarithmic functions--properties & graphs; solving systems of equations/inequalities, matrices, determinants, piecewise-defined functions; conic sections; sequences/series; appl such as curve fitting, modeling, optimization, exp/log growth & decay; mathematical induction; binomial theorem & apps. Students who successfully complete MAC 1105C cannot take MAC 1105 or MAC 1106 for credit.

Prerequisite: A in MAT 1033 or appropriate placement score

General Education, Area IV: Mathematics

MAC 1114 Trigonometry (3 Credits)

This is a calculus preparatory course in trigonometry that, in conjunction with MAC 1140 (Precalculus Algebra), is designed to provide the student with the trigonometric skills necessary for MAC 2311 (Calculus with Analytic Geometry I). Major topics include: trigonometric functions, their properties and graphs; inverse trigonometric functions, their properties and graphs; right triangle trigonometry; trigonometric identities; trigonometric equations; the law of sines and the law of cosines; polar coordinates; vectors; and parametric equations.

Prerequisite: C or higher in MAC 1105, MAC 1105C, or MAC 1106 or appropriate placement score

General Education, Area IV: Mathematics

MAC 1140 Precalculus Algebra (4 Credits)

This is a calculus preparatory course in college algebra and analytic geometry that, in conjunction with MAC 1114 (Trigonometry), is designed to provide the student with the algebraic skills necessary for MAC 2311 (Calculus with Analytic Geometry I). Major topics include: polynomial and rational functions, their properties and graphs; polynomial and rational inequalities; exponential and logarithmic functions, their properties and graphs; piecewise defined functions; inverse functions; systems of linear and nonlinear equations; conic sections; matrices and determinants; sequences and series; mathematical induction and the binomial theorem. Note: A graphing calculator is required. Students who have completed MAC 1106 cannot take MAC 1140 for credit.

Prerequisite: C or higher in MAC 1105 or MAC 1105C or appropriate placement score

General Education, Area IV: Mathematics

MAC 1932 Special Topics in Mathematics (1 Credit)

This course is a study of topics designed to enhance the students' understanding of mathematics. The course will be graded as Satisfactory or Unsatisfactory. No letter grades will be given. Prerequisite: Documented consent of instructor.

MAC 2233 Calculus for Business (3 Credits)

A course in elementary differentiation and integration designed to meet the needs of students planning to major in biology, business, economics, psychology, and sociology. Note: A graphing calculator is required.

Prerequisite: C of higher in MAC 1105, MAC 1105C, or MAC 1106 or appropriate placement score

General Education, Area IV: Mathematics

MAC 2311 Calculus with Analytic Geometry I (4 Credits)

In this course, students will develop problem solving skills, critical thinking, computational proficiency, and contextual fluency through the study of limits, derivatives, and definite and indefinite integrals of functions of one variable, including algebraic, exponential, logarithmic, and trigonometric functions, and applications. Topics will include limits, continuity, differentiation and rates of change, optimization, curve sketching, and introduction to integration and area. Student Learning Outcomes: -Students will calculate a limit, derivative, or integral using appropriate techniques. -Students will determine the continuity and differentiability of a function. -Students will use limits and derivatives to analyze relationships between the equation of a function and its graph. -Students will apply differentiation techniques to model and solve real world problems. -Students will use integrals and the Fundamental Theorem of Calculus to analyze the relationship between the integral of a function and the related area.

Prerequisite: C or higher in MAC 1114 and MAC 1140 or C or higher in MAC 1106 and MAC 1114

General Education, Area IV: Mathematics

MAC 2312 Calculus with Analytic Geometry II (4 Credits)

This is the second course in a three-semester sequence. (Topics are listed under MAC 2311.) Note: A graphing calculator is required.

Prerequisite: C or higher in MAC 2311

General Education, Area IV: Mathematics

MAC 2313 Calculus with Analytic Geometry III (4 Credits)

This is the third course in a three-semester sequence. Note: A graphing calculator is required.

Prerequisite: C or higher in MAC 2312

General Education, Area IV: Mathematics