

## **MA-MATHEMATICS**

### **MA 090 3(3-0)**

#### **Pre-Algebra**

Developmental in nature, this course is designed to strengthen the arithmetic skills of the students. Topics covered include: operation of whole numbers, fractions, percents, decimals, ratios, integers, exponents, measurement in metric system and U.S. units, an introduction to geometry, and an introduction to algebra. This course cannot be used toward any associate degree. No calculators are permitted. Normally offered each semester.

### **MA 100 4 (4-0)**

#### **Basic Algebra**

A study of the fundamental concepts and operations of algebra, polynomials, equations, and stated problems, factoring, introduction to functions and graphs, systems of linear equations, exponents, radicals, and quadratic equations. This course may be used as an elective course; however, it does not fulfill the natural science requirement for the Associate of Science degree or the MACRAO agreement as it is developmental in nature. Prerequisite: MA 090 with "C" grade or better or an appropriate score on the mathematics placement test. No calculators are permitted. Normally offered each semester.

### **MA 101 4 (4-0)**

#### **Nursing Mathematics**

This course is intended to teach the mathematical skills needed to function in the biological or medical laboratory in the clinical setting. Topics will include: fractions, decimals, percentages, ratios, prime factorization, dimensional analysis, means, medians, measurement of oral and parental drugs, calculation of pediatric dosages, preparation of solution, apothecary, household and metric systems of measurement, and conversion between the three systems. Emphasis will be on developing good problem solving skills and their applications to the field of nursing. Normally offered each semester.

### **MA 102 4 (4-0)**

#### **Introduction to Technical Math**

Topics include basic algebra formula usage, signed numbers, practical measurements, metrics and conversions, relative error, basic geometry, and right triangle trigonometry. This course is designed to meet occupational program requirements or as a preparation for MA115 for those needing more advanced mathematics. Scientific/graphing calculator. Prerequisite: MA 090 with a "C" or better or appropriate score on the mathematics placement test. Normally offered each semester.

### **MA 105 4 (4-0)**

#### **Intermediate Algebra**

A study of real numbers, algebraic expressions, exponents, complex numbers, solution of linear inequalities, quadratic equations and absolute value equations, equations of lines, conic sections, functions, exponential functions, logarithmic functions, exponential and logarithmic equations, and systems of equations. This course is designed to prepare students for MA 110 College Algebra. This course may be used as an elective course; however, it does not fulfill the natural science requirement for the Associate of Science degree or the MACRAO agreement. A scientific calculator is required. Prerequisite: MA 100 with a "C" grade or better or appropriate score in the mathematics placement test. Normally offered each semester.

### **MA 107 4 (4-0)**

#### **Liberal Arts Math**

Upon successful completion of this course, the student will understand and be able to use mathematics in a variety of practical applications, including topics in graph theory, probability, statistics, and theory of numbers, coding theory, symmetry, and financial math. These topics will be presented along with real world applications such as street networks, planning and scheduling, voting schemes, with an emphasis on problem solving. This course is designed for transfer students in the Associate of Arts program who do not need College Algebra at their transfer institution. A calculator is required. Prerequisite: MA100 with a "C" or better or appropriate placement score. Normally offered each semester.

### **MA 110 4 (4-0)**

#### **College Algebra**

A study of equations, systems of equations, inequalities, functions and their graphs, polynomial and rational functions, exponential and logarithmic functions, complex numbers, theory of equations. Prerequisite: MA 105 with a grade of "C" or better or an appropriate score on the mathematics placement test. Graphing calculator is required. Normally offered each semester.

**MA 111**                      **3 (3-0)**

**Trigonometry**

A study of the trigonometric functions, their properties, solutions of right and oblique triangles, radian measure, graphs, identities, trigonometric equations, applications, vectors in the plane, complex numbers, and polar coordinates. A graphing calculator is required. Normally offered each semester. Prerequisite: MA110 with a "C" or better or appropriate score on the mathematics placement test.

**MA 115**                      **4 (4-0)**

**Technical**

**Algebra & Trigonometry I**

Topics include: A review of geometry, linear and quadratic equations, determinants, systems of equations, exponents, radicals, scientific notation, functions and graphs, trigonometry, vectors, radians measure, and technical formulas. This course is intended as a capstone course for technical students. Not intended for students requiring additional math courses. Prerequisite: MA 102 with a "C" or better or appropriate score on the mathematics placement test. Graphing calculator is required. Normally offered each semester.

**MA 125**                      **4 (4-0)**

**Technical**

**Algebra & Trigonometry II**

Advanced technical problems including trigonometry, exponential functions, J-operators, polars, higher degree equations, series, some analytic geometry, and introductory calculus. Graphing calculator is required. Prerequisite: MA 115 with a "C" or better or appropriate score on the mathematics placement test. Offered on demand.

**MA 130**                      **4 (4-0)**

**Mathematics for**

**Elementary Teachers I**

Introduction to logic and problem solving set theory, numeration systems, fundamental concepts and structures of numbers and mathematics. Course is designed for elementary education students. Prerequisites: MA 105 with a "C" or better or appropriate score on mathematics placement test. Normally offered in the winter semester.

**MA 141**                      **5 (5-0)**

**Analytical**

**Geometry and Calculus I**

Functions and graphs, limits, differentiation of algebraic and trigonometric functions, exponential, and logarithmic functions, applications, the Mean Value theorem, definite and indefinite integrals, and the Fundamental Theorem of integral calculus. Prerequisites: MA 110 and MA 111 (or high school trigonometry) with a "C" or better or appropriate score on mathematics placement test. Qualified students may enroll in MA 111 and MA 141 during the same semester. Graphing calculator required. Normally offered each semester.

**MA 142**                      **5 (5-0)**

**Analytical**

**Geometry and Calculus II**

Continuation of MA 141 with techniques of integration; exponential, logarithmic, inverse trigonometric and hyperbolic functions, vectors; L'Hospital's Rule; improper integrals, sequences and series. Prerequisite: MA 141 with a "C" or better average. Graphing calculator required. Normally offered in the winter semester.

**MA 210**                      **4 (4-0)**

**Introduction to Statistics**

A computer supported study of descriptive statistics, statistical inference, probability distribution, sampling, estimation, testing hypotheses, correlation, and regression. Prerequisite: MA 105 or MA 107 with a "C" or better or appropriate score on the mathematics placement test. Scientific/graphing calculator required. Normally offered each semester.

**MA 225**                      **4 (4-0)**

**Technical Calculus**

Topics will include limits, inequalities, inverse function, maximum, minimum, area under the curve, motion in a plane, and practical problems solved with derivatives and integrals with emphasis on technical applications. Graphing calculator is required. Prerequisite: MA 125 or permission of instructor. Normally offered on demand.

**MA 243**                      **5 (5-0)**

**Analytical Geometry and Calculus III**

Continuation of MA 142 with topics including analytical geometry and three dimensional space, conics, spherical, polar, cylindrical coordinates, partial derivatives, multiple integration, and line integrals. Prerequisite: MA 142 with a "C" or better. Graphing calculator required. Normally offered in fall.

**MA 244**                      **3 (3-0)**

**Differential Equations**

Topics will include first order equations, linear and nonlinear equations, separation of variables, integration factors, exact equations, Bernoulli equations, variation of parameters, reduction of order, differential operators, LaPlace transforms, applications, and solving systems of differential equations. Graphing calculator required. Prerequisite: MA 243 with a "C" or better. Normally offered in the winter semester.

**MA 250**                      **3 (3-0)**

**Introduction to Linear Algebra**

Upon successful completion of this course, a student should understand systems of equations, vectors and vector notation, matrices and matrix algebra, orthogonality, determinants, subspaces, eigenvalues, and eigenvectors. Prerequisites: MA 141 with a "C" or better. Normally offered in the winter.