

## MAT - MATHEMATICS (MAT)

### **MAT 011 Developmental Mathematics Basics Workshop 1 SHC**

This course provides support for mastery of MAT 031 competencies (e.g. may include, but is not limited to, laboratory work, computerized instruction and/or projects).

Prerequisites: Appropriate placement test scores.

Corequisites: MAT 031.

Lecture Hours: 1

Lab/Clinical Hours: 0

### **MAT 012 Developmental Mathematics Workshop 1 SHC**

This course provides support for mastery of MAT 032 competencies (e.g. may include, but is not limited to, laboratory work, computerized instruction, and/or projects).

Prerequisites: Appropriate placement test scores.

Corequisites: MAT 032.

Lecture Hours: 1

Lab/Clinical Hours: 0

### **MAT 031 Developmental Math Basics 3 SHC**

This course includes the study of whole numbers, fractions, decimals, ratios, and proportions. Concepts are applied to real-world problem solving.

Prerequisites: Appropriate placement test scores.

Corequisites: MAT 011.

Lecture Hours: 3

Lab/Clinical Hours: 0

### **MAT 032 Developmental Mathematics 3 SHC**

This course includes the study of integers, rational numbers, percents, basic statistics, measurement, geometry, and basic algebra concepts. Application skills are emphasized.

Prerequisites: Appropriate placement test scores.

Corequisites: MAT 012.

Lecture Hours: 3

Lab/Clinical Hours: 0

### **MAT 101 Beginning Algebra 3 SHC**

This course includes the study of rational numbers and their applications, operations with algebraic expressions, linear equations and applications, linear inequalities, graphs of linear equations, operations with exponents and polynomials, and factoring. Note: Students who successfully complete this course should not enroll in MAT 152.

Prerequisites: MAT 012 and MAT 032 or appropriate placement test scores.

Lecture Hours: 3

Lab/Clinical Hours: 0

### **MAT 102 Intermediate Algebra 3 SHC**

This course includes the study of linear systems and applications; quadratic expressions, equations, functions and graphs; and rational and radical expressions and functions.

Prerequisites: Minimum grade of C in MAT 152 or MAT 101 or appropriate placement scores.

Lecture Hours: 3

Lab/Clinical Hours: 0

### **MAT 110 College Algebra 3 SHC**

This course includes the following topics: polynomial, rational, logarithmic, and exponential functions; inequalities; systems of equations and inequalities; matrices, determinants; and solutions of higher degree polynomials.

Prerequisites: Minimum grade of C in MAT 102 or appropriate placement scores.

Lecture Hours: 3

Lab/Clinical Hours: 0

### **MAT 111 College Trigonometry 3 SHC**

This course includes the following topics: trigonometric functions, trigonometric identities, solution of right and oblique triangles, solution of trigonometric equations, polar coordinates; complex numbers including Demoivre's theorem, vectors, conic sections, sequences and series, and parametric equations.

Prerequisites: Minimum grade of C in MAT 110.

Lecture Hours: 3

Lab/Clinical Hours: 0

### **MAT 120 Probability and Statistics 3 SHC**

This course includes the following topics: introductory probability and statistics including organization of data, sample space concepts, random variables, counting problems, binomial and normal distribution, central limit theorem, confidence intervals and test hypotheses for large and small samples, types I and II errors, linear regression and correlation.

Prerequisites: Minimum grade of C in MAT 152 or MAT 101 or appropriate placement scores.

Lecture Hours: 3

Lab/Clinical Hours: 0

### **MAT 122 Finite College Mathematics 3 SHC**

This course includes the following topics: logic; sets; Venn diagrams; counting problems; probability; matrices; systems of equations; linear programming; including the simplex method and applications; graphs; and networks.

Prerequisites: Minimum grade of C in MAT 152 or MAT 101 or appropriate placement scores.

Lecture Hours: 3

Lab/Clinical Hours: 0

### **MAT 123 Contemporary College Mathematics 3 SHC**

This course provides an appreciation and understanding of the mathematics underlying several topics in contemporary society. Topics may include voting methods, apportionment problems, Euler and Hamilton circuits, population growth and fractals.

Prerequisites: Minimum grade of C in MAT 152 or MAT 101 or appropriate placement scores.

Lecture Hours: 3

Lab/Clinical Hours: 0

### **MAT 130 Elementary Calculus 3 SHC**

This course includes the following topics: differentiation and integration of polynomials; rational, logarithmic and exponential functions; and interpretation and application of these processes.

Prerequisites: Minimum grade of C in MAT 110 or appropriate placement scores.

Lecture Hours: 3

Lab/Clinical Hours: 0

**MAT 140 Analytical Geometry and Calculus I 4 SHC**

This course includes the following topics: derivative and integrals of polynomials, rational, logarithmic, exponential, trigonometric and inverse trigonometric functions; curve sketching; maxima and minima of functions; related rates; work; and analytic geometry.

Prerequisites: Minimum grade of C in MAT 111 or appropriate placement scores.

Lecture Hours: 4

Lab/Clinical Hours: 0

**MAT 141 Analytical Geometry and Calculus II 4 SHC**

This course includes the following topics: continuation of calculus of one variable, to include analytic geometry; techniques of integration; volumes by integration and other applications; infinite series including Taylor series; and improper integrals.

Prerequisites: Minimum grade of C in MAT 140.

Lecture Hours: 4

Lab/Clinical Hours: 0

**MAT 152 Elementary Algebra 5 SHC**

This course includes the following topics: operations with signed numbers and algebraic expressions; solving linear equations; factoring; and an introduction to graphing. Note: Students who successfully complete this course should not enroll in MAT 101.

Prerequisites: MAT 032 and MAT 012 or appropriate placement test scores.

Lecture Hours: 5

Lab/Clinical Hours: 0

**MAT 155 Contemporary Mathematics 3 SHC**

This course includes techniques and applications of the following topics: properties of and operations with real numbers, elementary algebra, consumer mathematics, applied geometry, measurement, graph sketching and interpretations, and descriptive statistics.

Prerequisites: Minimum grade of C in MAT 032 and MAT 012 or appropriate placement scores.

Lecture Hours: 3

Lab/Clinical Hours: 0

**MAT 170 Algebra, Geometry and Trigonometry I 3 SHC**

This course includes the following topics: elementary algebra, geometry, trigonometry and advanced applications.

Prerequisites: Minimum grade of C in MAT 032 and MAT 012 or appropriate placement scores.

Lecture Hours: 3

Lab/Clinical Hours: 0

**MAT 171 Algebra, Geometry and Trigonometry II 3 SHC**

This course includes the following topics: algebra, geometry, trigonometry and advanced applications.

Prerequisites: Minimum grade of C in MAT 170.

Lecture Hours: 3

Lab/Clinical Hours: 0

**MAT 220 Advanced Statistics 3 SHC**

This course includes the following topics: estimation of parameters; formulation and testing of hypotheses; multiple and nonlinear regression; correlation; contingency tables; analysis of variance; special distributions; and introduction to non-parametric statistics.

Prerequisites: Minimum grade of C in MAT 120.

Lecture Hours: 3

Lab/Clinical Hours: 0

**MAT 240 Analytical Geometry and Calculus III 4 SHC**

This course includes the following topics: multivariable calculus, including vectors; partial derivatives and their applications to maximum and minimum problems with and without constraints; line integrals; multiple integrals in rectangular and other coordinates; and Stokes' and Green's Theorems.

Prerequisites: Minimum grade of C in MAT 141.

Lecture Hours: 4

Lab/Clinical Hours: 0

**MAT 242 Differential Equations 4 SHC**

This course includes the following topics: solution of linear and elementary nonlinear differential equations by standard methods with sufficient linear algebra to solve systems; applications; series; Laplace transform; and numerical methods.

Prerequisites: Minimum grade of C in MAT 240.

Lecture Hours: 4

Lab/Clinical Hours: 0