

# MATHEMATICS (MAT)

## **MAT051 / Number Sense I**

### **1 Credit / 1.0 Periods for Lecture**

Primary emphasis on conceptual understanding of whole numbers, integers and mathematical operations. Use systems of measure and Pythagorean Theorem. Focus on mathematical language, connections, patterns and reasoning. Prerequisites: None.

**Division:** Mathematics

## **MAT052 / Number Sense II**

### **1 Credit / 1.0 Periods for Lecture**

Primary emphasis on conceptual understanding of decimals and fractions, and decimal and fraction addition and subtraction. Solving problems involving decimals and fractions. Focus on mathematical language, connections, patterns and reasoning. Prerequisites: A grade of C or better in MAT051, or an appropriate district placement.

**Division:** Mathematics

## **MAT053 / Multiplicative and Proportional Reasoning**

### **1 Credit / 1.0 Periods for Lecture**

Primary emphasis on conceptual understanding of decimals and fractions, and decimal and fraction multiplication and division. Solving problems involving decimals, fractions, and percentages. Focus on additive and multiplicative reasoning including proportionality and similarity. Prerequisites: A grade of C or better in each of the following courses: (MAT051 and MAT052), or an appropriate district placement.

**Division:** Mathematics

## **MAT054 / Geometry**

### **1 Credit / 1.0 Periods for Lecture**

Primary emphasis on conceptual understanding of and solving problems involving angles and geometric figures. Use of systems of measure, similarity, proportionality and the Pythagorean theorem. Prerequisites: A grade of "C" or better, or satisfactory Math Diagnostic Assessment Score for MAT051, MAT052 and MAT053. Corequisites: MAT055, or MAT056, or MAT057.

**Division:** Mathematics

## **MAT055 / Algebraic Structures**

### **1 Credit / 1.0 Periods for Lecture**

Emphasis on meanings related to variable, equality, inequality, equivalence. The use of additive and multiplicative reasoning in solving linear equations and inequalities in one variable. Validation of solution(s) through a reasonable mathematical defense. Transfer and apply knowledge through a process of sense making and reasonableness in mathematical problems and practical application situations.

Prerequisites: A grade of C or better in each of the following courses: (MAT051, MAT052, and MAT053), or a grade of C or better for MAT08+, or an appropriate district placement.

**Division:** Mathematics

## **MAT056 / Functions I**

### **1 Credit / 1.0 Periods for Lecture**

Recognize patterns and organize data to represent situations where output is related to input. Understand the concept of function and be able to represent functions in multiple ways, including tables, algebraic rules, graphs and contextual situations, and make connections among these representations. Prerequisites: A grade of C or better in each of the following courses: (MAT051, MAT052, MAT053, and MAT055), OR a grade of C or better in (MAT055 and MAT08+), OR an appropriate district placement.

**Division:** Mathematics

## **MAT057 / Functions II**

### **1 Credit / 1.0 Periods for Lecture**

Read, represent, and interpret linear function relationships numerically, analytically, graphically and verbally and connect the different representations. Model and solve real world problems involving constant rate of change. Prerequisites: A grade of C or better in each of the following courses: (MAT051, MAT052, MAT053, MAT055, and MAT056), OR a grade of C or better in (MAT055, MAT056, and MAT08+), OR an appropriate district placement.

**Division:** Mathematics

## **MAT082 / Basic Arithmetic**

### **3 Credits / 3.0 Periods for Lecture**

Primary emphasis on conceptual understanding of and solving problems involving whole numbers, integers, mathematical operations, decimals, decimal operations, fractions, percentages, angles and geometric figures. Use of systems of measure, similarity, proportionality and the Pythagorean theorem. Focus on mathematical language, connections, patterns and reasoning, and additive and multiplicative reasoning.

Prerequisites: None. Course Notes: Student may receive credit for only one of the following: (MAT051 and MAT052 and MAT053), OR MAT081, OR MAT082, OR MAT085.

**Division:** Mathematics

## **MAT092 / Introductory Algebra**

### **3 Credits / 3.0 Periods for Lecture**

Emphasis on meanings related to variable, equality, inequality, equivalence. The use of additive and multiplicative reasoning in solving linear equations and inequalities in one variable. Validation of solution(s) through a reasonable mathematical defense. Transfer and apply knowledge through a process of sense making and reasonableness in mathematical problems and practical application situations. Recognize patterns and organize data to represent situations where output is related to input. Understand the concept of function and be able to represent functions in multiple ways, including tables, algebraic rules, graphs and contextual situations, and make connections among these representations. Read, represent, and interpret linear function relationships numerically, analytically, graphically and verbally and connect the different representations. Model and solve real world problems involving constant rate of change. Prerequisites: A grade of C or better in each of the following courses: (MAT051, MAT052, and MAT053), OR a grade of C or better in MAT08+, OR an appropriate district placement. Course Notes: Student may receive credit for only one of the following: (MAT055 and MAT056 and MAT057), OR MAT090, OR MAT091, OR MAT092, OR MAT095, OR MAT096.

**Division:** Mathematics

## **MAT108 / Tutored Mathematics**

### **2 Credits / 2.0 Periods for Lecture**

Structured tutorial assistance and math study skills to help students achieve success in a mathematics course in which they are concurrently enrolled. Mathematics study skills emphasized. Prerequisites: None. Corequisites: MAT051 or higher OR MAT15+, OR permission of Department or Division Chair. Course Notes: MAT108 may be repeated for a total of ten (10) credits.

**Division:** Mathematics

**MAT112 / Mathematical Concepts and Applications****3 Credits / 3.0 Periods for Lecture**

A problem solving approach to mathematics as it applies to real-life situations. Development, use and communication of mathematical concepts and applications that relate to measurement, percentage, practical geometry, statistics, finance, and unit conversions.

Prerequisites: None.

Division: Mathematics

**MAT114 / College Algebra Prep****4 Credits / 4.0 Periods for Lecture**

Proper use of function notation, average rate of change of functions, and evaluating arithmetic and algebraic expressions. Analysis of linear and quadratic equations, and their applications; graphs of linear and quadratic functions; operations on polynomial expressions. Prerequisites: None. Course Notes: MAT114 students may receive credit for only one of the following: MAT114, OR MAT115.

Division: Mathematics

**MAT115 / College Algebra Prep****5 Credits / 5.0 Periods for Lecture**

Proper use of function notation, average rate of change of functions, and evaluating arithmetic and algebraic expressions. Analysis of linear and quadratic equations, and their applications; graphs of linear and quadratic functions; operations on polynomial expressions. Prerequisites: None. Course Notes: MAT115 students may receive credit for only one of the following: MAT114, OR MAT115.

Division: Mathematics

**MAT120 / Intermediate Algebra****5 Credits / 5.0 Periods for Lecture**

Analysis of rational, radical, quadratic and exponential equations, functions and applications; graphs of radical, quadratic and exponential functions; operations on polynomial, rational, and radical expressions.

Prerequisites: A grade of C or better in each of the following courses: (MAT055, MAT056, and MAT057), OR a grade of C or better in MAT09+, OR an appropriate district placement. Course Notes: Students may receive credit for only one of the following: MAT120, OR MAT121, OR MAT122 OR MAT126.

Division: Mathematics

**MAT121 / Intermediate Algebra****4 Credits / 4.0 Periods for Lecture**

Analysis of rational, radical, quadratic and exponential equations, functions and applications; graphs of radical, quadratic and exponential functions; operations on polynomial, rational, and radical expressions.

Prerequisites: A grade of C or better in each of the following courses: (MAT055, MAT056, and MAT057), OR a grade of C or better in MAT09+, OR an appropriate district placement. Course Notes: Students may receive credit for only one of the following: MAT120, OR MAT121, OR MAT122 OR MAT126.

Division: Mathematics

**MAT122 / Intermediate Algebra****3 Credits / 3.0 Periods for Lecture**

Analysis of rational, radical, quadratic and exponential equations, functions and applications; graphs of radical, quadratic and exponential functions; operations on polynomial, rational, and radical expressions.

Prerequisites: A grade of B or better in each of the following courses: (MAT055, MAT056, and MAT057), OR a grade of B or better in MAT09+, OR an appropriate district placement. Course Notes: Students may receive credit for only one of the following: MAT120, OR MAT121, OR MAT122 OR MAT126.

Division: Mathematics

**MAT126 / Intermediate Algebra with Review****6 Credits / 6.0 Periods for Lecture**

Analysis of rational, radical, quadratic and exponential equations, functions and applications; graphs of radical, quadratic and exponential functions; operations on polynomial, rational, and radical expressions.

Prerequisites: None. Course Notes: Students may receive credit for only one of the following: MAT120, OR MAT121, OR MAT122, OR MAT126.

This course is designed for students that do not qualify for MAT120, MAT121, or MAT122, but need MAT12+ Intermediate Algebra to fulfill a degree requirement OR intend to complete MAT15+ College Algebra for their degree path. Review of MAT08+ Basic Arithmetic and/or MAT09+ Introductory Algebra as needed.

Division: Mathematics

**MAT140 / College Mathematics****5 Credits / 5.0 Periods for Lecture**

Working knowledge of college-level mathematics and its applications to real-life problems. Emphasis on understanding mathematical concepts and their applications. Topics include proportional reasoning, modeling, finance, probability, and statistics. Prerequisites: An appropriate District placement, or a grade of C or better in (MAT052, MAT053, and MAT055), or (MAT055, MAT056, and MAT057), or MAT085, or MAT09+, or MAT103, or MAT114, or MAT115, or MAT12+. Course Notes: Students may receive credit for only one of the following: MAT140, MAT141, MAT142, MAT145, or MAT146.



SUN# MAT 1142

Fulfills: Mathematics [MA]; Mathematics [MA]-in combo

Division: Mathematics



**MAT141 / College Mathematics****4 Credits / 4.0 Periods for Lecture**

Working knowledge of college-level mathematics and its applications to real-life problems. Emphasis on understanding mathematical concepts and their applications. Topics include proportional reasoning, modeling, finance, probability, and statistics. Prerequisites: An appropriate District placement, or a grade of C or better in (MAT052, MAT053, and MAT055), or (MAT055, MAT056, and MAT057), or MAT085, or MAT09+, or MAT103, or MAT114, or MAT115, or MAT12+. Course Notes: MAT141 students may receive credit for only one of the following: MAT140, MAT141, MAT142, MAT145, or MAT146.



SUN# MAT 1142

**Fulfills:** Mathematics [MA]; Mathematics [MA]-in combo

**Division:** Mathematics

**MAT142 / College Mathematics****3 Credits / 3.0 Periods for Lecture**

Working knowledge of college-level mathematics and its applications to real-life problems. Emphasis on understanding mathematical concepts and their applications. Topics include proportional reasoning, modeling, finance, probability, and statistics. Prerequisites: An appropriate District placement, or a grade of C or better in (MAT052, MAT053, and MAT055), or (MAT055, MAT056, and MAT057), or MAT085, or MAT09+, or MAT103, or MAT114, or MAT115, or MAT12+. Course Notes: MAT142 students may receive credit for only one of the following: MAT140, MAT141, MAT142, MAT145, or MAT146.



SUN# MAT 1142

**Fulfills:** Mathematics [MA]; Mathematics [MA]-in combo

**Division:** Mathematics



**MAT145 / College Mathematics with Review****5 Credits / 5.0 Periods for Lecture**

Working knowledge of college-level mathematics and its applications to real-life problems. Emphasis on understanding mathematical concepts and their applications. Topics include proportional reasoning, modeling, finance, probability, and statistics, along with review of arithmetic and introductory algebra, as needed. Prerequisites: None. Course Notes: MAT145 students may receive credit for only one of the following: MAT140, MAT141, MAT142, MAT145, or MAT146. This course is designed for students that do not qualify for MAT141 or MAT142, but intend to complete MAT14+ College Mathematics for their degree path. Review of Basic Arithmetic and Introductory Algebra as needed.



SUN# MAT 1142

**Fulfills:** Mathematics [MA]; Mathematics [MA]-in combo**Division:** Mathematics**MAT146 / College Mathematics with Review****6 Credits / 6.0 Periods for Lecture**

Working knowledge of college-level mathematics and its applications to real-life problems. Emphasis on understanding mathematical concepts and their applications. Topics include proportional reasoning, modeling, finance, probability, and statistics, along with review of arithmetic and introductory algebra, as needed. Prerequisites: None. Course Notes: MAT146 students may receive credit for only one of the following: MAT140, MAT141, MAT142, MAT145, or MAT146. This course is designed for students that do not qualify for MAT141 or MAT142, but intend to complete MAT14+ College Mathematics for their degree path. Review of Basic Arithmetic and Introductory Algebra as needed.



SUN# MAT 1142

**Fulfills:** Mathematics [MA]; Mathematics [MA]-in combo**Division:** Mathematics**MAT150 / College Algebra/Functions****5 Credits / 5.0 Periods for Lecture**

Analysis and interpretation of the behavior and nature of functions including linear, quadratic, higher-order polynomials, rational, exponential, logarithmic, power, absolute value, and piecewise-defined functions; systems of equations, using multiple methods including matrices, and modeling and solving real world problems. Prerequisites: A grade of C or better in MAT095, or MAT096, or MAT114, or MAT115, or MAT12+, OR an appropriate district placement for MAT15+ OR permission of Department or Division Chair. Course Notes: Students may receive credit for only one of the following: MAT150, OR MAT151, OR MAT152, OR MAT155, OR MAT156.

**Division:** Mathematics

**MAT151 / College Algebra/Functions****4 Credits / 4.0 Periods for Lecture**

Analysis and interpretation of the behavior and nature of functions including linear, quadratic, higher-order polynomials, rational, exponential, logarithmic, power, absolute value, and piecewise-defined functions; systems of equations, using multiple methods including matrices, and modeling and solving real world problems. Prerequisites: A grade of C or better in MAT095, or MAT096, or MAT114, or MAT115, or MAT12+, OR an appropriate district placement for MAT15+, OR permission of Department or Division Chair. Course Notes: Students may receive credit for only one of the following: MAT150, OR MAT151, OR MAT152, OR MAT155, OR MAT156.

**Division:** Mathematics

**MAT152 / College Algebra/Functions****3 Credits / 3.0 Periods for Lecture**

Analysis and interpretation of the behavior and nature of functions including linear, quadratic, higher-order polynomials, rational, exponential, logarithmic, power, absolute value, and piecewise-defined functions; systems of equations, using multiple methods including matrices, and modeling and solving real world problems. Prerequisites: A grade of C or better in MAT095, or MAT096, or MAT114, or MAT115, or MAT12+, OR an appropriate district placement for MAT15+, OR permission of Department or Division Chair. Course Notes: Students may receive credit for only one of the following: MAT150, OR MAT151, OR MAT152, OR MAT155, OR MAT156.

**Division:** Mathematics

**MAT155 / College Algebra/Functions with Review****5 Credits / 5.0 Periods for Lecture**

Analysis and interpretation of the behavior and nature of functions including linear, quadratic, higher-order polynomials, rational, exponential, logarithmic, power, absolute value, and piecewise-defined functions; systems of equations, using multiple methods including matrices, and modeling and solving real world problems. Prerequisites: A grade of C or better in (MAT055, MAT056, and MAT057), or MAT09+, or MAT114, or MAT115, or an appropriate district placement for MAT120 or MAT121 or MAT122, or permission of Department/Division Chair. Course Notes: Students may receive credit for only one of the following: MAT150, OR MAT151, OR MAT152, OR MAT155, OR MAT156. This course is designed for students that do not qualify for MAT150 or MAT151 or MAT152, but intend to complete MAT15+ College Algebra for their degree path. Review of MAT12+ Intermediate Algebra as needed.

**Division:** Mathematics

**MAT156 / College Algebra/Functions with Review****6 Credits / 6.0 Periods for Lecture**

Analysis and interpretation of the behavior and nature of functions including linear, quadratic, higher-order polynomials, rational, exponential, logarithmic, power, absolute value, and piecewise-defined functions; systems of equations, using multiple methods including matrices, and modeling and solving real world problems, along with review of intermediate algebra, as needed. Prerequisites: A grade of C or better in each of the following: (MAT055, MAT056, and MAT057), OR MAT09+ or MAT114 or MAT115, OR an appropriate district placement for MAT120 or MAT121 or MAT122, OR permission of Department or Division Chair. Course Notes: Students may receive credit for only one of the following: MAT150, OR MAT151, OR MAT152, OR MAT155, OR MAT156. This course is designed for students that do not qualify for MAT150 or MAT151 or MAT152, but intend to complete MAT15+ College Algebra for their degree path. Review of MAT12+ Intermediate Algebra as needed.

**Division:** Mathematics

**MAT172 / Finite Mathematics****3 Credits / 3.0 Periods for Lecture**

An introduction to the mathematics required for the study of social and behavioral sciences. Includes combinatorics, probability, descriptive statistics, matrix algebra, linear programming and the mathematics of finance. Includes applications of technology in problem-solving. Prerequisites: A grade of C or better in MAT15+, OR MAT187, OR an appropriate district placement.

**Fulfills:** Mathematics [MA]; Mathematics [MA]-in combo

**Division:** Mathematics

**MAT182 / Plane Trigonometry****3 Credits / 3.0 Periods for Lecture**

A study of measures of angles, properties of graphs of trigonometric functions, fundamental identities, addition and half-angle formulas, inverse trigonometric functions, solutions of trigonometric equations, complex numbers and properties of triangle solution. May receive credit for only one of the following: MAT182 or MAT187. Prerequisites: A grade of C or better in MAT15+, OR an appropriate district placement. Corequisites: MAT15+. Course Notes: General Education Designation: Mathematics - [MA] in combination with: MAT150 or MAT151 or MAT152 or MAT155 or MAT156. MAT182 students may receive credit for only one of the following: MAT182 or MAT187.

**Fulfills:** Mathematics [MA]; Mathematics [MA]-in combo

**Division:** Mathematics

**MAT187 / Precalculus****5 Credits / 5.0 Periods for Lecture**

Topics in algebra and trigonometry in preparation for calculus. Prerequisites: A grade of C or better in MAT15+, or an appropriate district placement. Course Notes: Students may receive credit for only one of the following: MAT182 OR MAT187.

**Division:** Mathematics

**MAT188 / Precalculus****4 Credits / 4.0 Periods for Lecture**

Topics in algebra and trigonometry in preparation for calculus. Prerequisites: A grade of C or better in MAT15+, or an appropriate district placement.

**Division:** Mathematics

**MAT206 / Elements of Statistics**

**3 Credits / 3.0 Periods for Lecture**

Basic concepts and applications of statistics, including data description, estimation and hypothesis tests. Prerequisites: A grade of C or better in MAT14+, or MAT15+, or MAT187, or equivalent, or an appropriate District placement, or permission of Department/Division Chair.



SUN# MAT 1160

**Fulfills:** Computer/Statistics/Quantitative Applications [CS]; Computer/Stats/Quantitative Apps [CS]-in combo

**Division:** Mathematics

**MAT212 / Brief Calculus**

**3 Credits / 3.0 Periods for Lecture**

Introduction to the theory, techniques and applications of the differential and integral calculus of functions with problems related to business, life, and the social sciences. Prerequisites: A grade of C or better in MAT15+, or MAT187, or an appropriate District placement. Course Notes: Students may receive credit for only one of the following: MAT212 or MAT213.



SUN# MAT 2212

**Fulfills:** Mathematics [MA]; Mathematics [MA]-in combo

**Division:** Mathematics



**MAT213 / Brief Calculus****4 Credits / 4.0 Periods for Lecture**

Introduction to the theory, techniques, and applications of the differential and integral calculus of functions with problems related to business, life, and the social sciences. Prerequisites: A grade of C or better in MAT15+, or MAT187, or an appropriate District placement. Course Notes: Students may receive credit for only one of the following: MAT212 or MAT213.



SUN# MAT 2212

**Fulfills:** Mathematics [MA]; Mathematics [MA]-in combo

**Division:** Mathematics

**MAT217 / Mathematical Analysis for Business****3 Credits / 3.0 Periods for Lecture**

An introduction to the mathematics required for the study of business. Includes multivariable optimization, Lagrange multipliers, linear programming, linear algebra, probability, random variables, discrete and continuous distributions. Prerequisites: A grade of C or better in MAT212, or MAT213, or MAT220, or MAT221. Course Notes: Students may receive credit for only one of the following: MAT217 or MAT218.

**Division:** Mathematics

**MAT218 / Mathematical Analysis for Business****4 Credits / 4.0 Periods for Lecture**

An introduction to the mathematics required for the study of business. Includes multivariable optimization, Lagrange multipliers, linear programming, linear algebra, probability, random variables, discrete and continuous distributions. Prerequisites: A grade of C or better in MAT212, or MAT213, or MAT220, or MAT221. Course Notes: Students may receive credit for only one of the following: MAT217 or MAT218.

**Division:** Mathematics

**MAT220 / Calculus with Analytic Geometry I****5 Credits / 5.0 Periods for Lecture**

Limits, continuity, differential and integral calculus of functions of one variable. Prerequisites: A grade of C or better in MAT187, or MAT188, or an appropriate District placement. Course Notes: MAT220 students may receive credit for only one of the following: MAT220 or MAT221.

**Division:** Mathematics

**MAT221 / Calculus with Analytic Geometry I****4 Credits / 4.0 Periods for Lecture**

Limits, continuity, differential and integral calculus of functions of one variable. Prerequisites: A grade of C or better in MAT187, or MAT188, or an appropriate District placement. Course Notes: Student may receive credit for only one of the following: MAT220 or MAT221.

**Division:** Mathematics

**MAT225 / Elementary Linear Algebra****3 Credits / 3.0 Periods for Lecture**

Introduction to matrices, systems of linear equations, determinants, vector spaces, linear transformations and eigenvalues. Emphasizes the development of computational skills. Prerequisites: A grade of C or better in MAT212 or MAT213 or MAT220 or MAT221, or equivalent.

**Division:** Mathematics

**MAT227 / Discrete Mathematical Structures****3 Credits / 3.0 Periods for Lecture**

Course emphasizes discrete mathematics connections to computer science by exposing students to foundational concepts of set theory, logic, counting, induction, proof techniques, graph theory, and algorithms. Prerequisites: A grade of C or better in MAT212, or MAT213, or MAT220, or MAT221, or permission of Department or Division Chair.



SUN# MAT 2227

**Division:** Mathematics



**MAT230 / Calculus with Analytic Geometry II****5 Credits / 5.0 Periods for Lecture**

Techniques of integration for both proper and improper integrals with applications to the physical and social sciences, elements of analytic geometry, and the analysis of sequences and series. Prerequisites: A grade of C or better in MAT220, or MAT221, or equivalent. Course Notes: Student may receive credit for only one of the following: MAT230 or MAT231.

**Division:** Mathematics

**MAT231 / Calculus with Analytic Geometry II****4 Credits / 4.0 Periods for Lecture**

Techniques of integration for both proper and improper integrals with applications to the physical and social sciences, elements of analytic geometry, and the analysis of sequences and series. Prerequisites: A grade of C or better in MAT220, or MAT221, or equivalent. Course Notes: Student may receive credit for only one of the following: MAT230 or MAT231.

**Division:** Mathematics

**MAT240 / Calculus with Analytic Geometry III****5 Credits / 5.0 Periods for Lecture**

Multivariate calculus including vectors, vector-valued functions, partial differentiation, multiple integration, and an introduction to vector fields. Prerequisites: Grade of "C" or better in MAT230 or MAT231. Course Notes: Student may receive credit for only one of the following: MAT240 or MAT241.

**Fulfills:** Mathematics [MA]; Mathematics [MA]-in combo

**Division:** Mathematics

**MAT241 / Calculus with Analytic Geometry III****4 Credits / 4.0 Periods for Lecture**

Multivariate calculus including vectors, vector-valued functions, partial differentiation, multiple integration and an introduction to vector fields. Prerequisites: Grade of "C" or better in MAT230 or MAT231. Course Notes: Student may receive credit for only one of the following: MAT240 or MAT241.



SUN# MAT 2241

**Fulfills:** Mathematics [MA]; Mathematics [MA]-in combo

**Division:** Mathematics

**MAT256 / Investigating Quantity: Number, Operations and Numeration Systems****4 Credits / 4.0 Periods for Lecture**

Explore number, numeration systems and operations on numbers. Techniques of problem solving with an emphasis on exploring a variety of strategies. Use a variety of visualization techniques to develop a conceptual understanding of these topics. Prerequisites: A grade of C or better in (MAT15+ or higher), or (MAT12+ and MAT14+), or [MAT14+ and (MAT114 or MAT115)], or (MAT14+ and an appropriate District placement into MAT150, MAT151, or MAT152), or permission of Department/Division Chair. Course Notes: MAT256 is designed to meet requirements for prospective elementary education teachers.

**Division:** Mathematics

**MAT257 / Investigating Geometry, Probability and Statistics****4 Credits / 4.0 Periods for Lecture**

Explores geometry, measurement, probability and statistics. Uses visualization, technologies, problem solving, reasoning and proof to develop a conceptual understanding of these topics. Prerequisites: A grade of C or better in MAT256 or permission of Department/Division Chair. Course Notes: MAT257 is designed to meet the requirements for prospective elementary education teachers.

**Division:** Mathematics



**MAT261 / Differential Equations****4 Credits / 4.0 Periods for Lecture**

Ordinary differential equations with applications including Laplace transforms with numerical methods. Prerequisites: Grade of "C" or better in MAT230, or MAT231, or equivalent.

**Division:** Mathematics

**MAT276 / Modern Differential Equations****4 Credits / 4.0 Periods for Lecture**

Introduces differential equations, theoretical and practical solution techniques with applications. Problem-solving using MATLAB. Prerequisites: A grade of C or better in MAT230 or MAT231 or permission of Department/Division Chair.

**Fulfills:** Mathematics [MA]; Mathematics [MA]-in combo

**Division:** Mathematics

**MAT277 / Modern Differential Equations****3 Credits / 3.0 Periods for Lecture**

Introduces differential equations, theoretical and practical solution techniques with applications. Problem-solving using MATLAB. Prerequisites: A grade of C or better in MAT230 or MAT231 or permission of Department/Division Chair. Course Notes: Students may receive credit for only one of the following: MAT276 or MAT277.

**Fulfills:** Mathematics [MA]; Mathematics [MA]-in combo

**Division:** Mathematics

**MAT280 / Foundational Statistics for Engineers****3 Credits / 5.0 Periods for Lecture & Lab**

Fundamentals of probability, descriptive statistics, sampling distributions, parameter estimation, tests of hypotheses, regression analysis, analysis of variance, and design of experiments. Prerequisites: A grade of C or better in MAT220, or MAT221, or equivalent.

**Crosslisted:** ECE280

**Division:** Mathematics

**MAT282AA / Service-Learning Experience in Mathematics****1 Credit / 1.0 Periods for Laboratory**

Unpaid Service-Learning (SL) experience, completed with approved community partner. Prerequisites: Permission of Instructor. Course Notes: MAT282AA may be repeated for a total of six (6) credit hours. Standard grading is available according to procedures outlined in catalog.

**Division:** Mathematics

**MAT290 / Mathematics Professional Development****1 Credit / 1.0 Periods for Lecture**

Expand subject matter content knowledge and pedagogical content knowledge of the mathematics taught at the community college and beyond through an in-depth study of at least one mathematical concept; e.g. positional numeration system or mathematical properties, and the progression of the selected concept(s) through the courses offered at the community college level and beyond. Use of a variety of instructional strategies including student-centered lesson design, inquiry-based learning, problem-based learning, review of relevant literature and so forth as well as classroom observations during which the concept is taught. Prerequisites: None.

**Division:** Mathematics

**MAT295 / Special Topics in Mathematics****1 Credit / 1.0 Periods for Lecture**

Conceptual and computational aspects of a special topic in modern mathematics. Prerequisites: Permission of Department/Division Chair.

**Division:** Mathematics