

| Course | Student Learning Outcomes | Method(s) of Assessment |
|---|--|---|
| Computer Science | | |
| CSCI 123 F Intro to Programming Concepts in C++ | Upon successful completion of CSCI 123 F Intro to Prog Concepts in C++, the student will be able to design and implement Abstract Data Types using C++ classes. | Exam questions and programming projects |
| CSCI 133 F Data Structures in C++ | Upon successful completion of CSCI 133 F Data Structures in C++, the student will be able to design and implement Abstract Data Types using C++ to write computer programs that use classic data structures and algorithms. | Exam questions and programming projects |
| CSCI 223 F C Language for Math & Science | Upon successful completion of CSCI 223 F C Language for Math & Science, the student will be able to design and implement programs that leverage the specialized low-level aspects of the C programming language, such as pointers, bitwise manipulation and memory management. | Exam questions and programming projects |
| CSCI 241 F Comp Org & Assembly Lang Prog | Upon successful completion of CSCI 241 F Comp Org & Assembly Lang Prog, the student will be able to analyze the architecture and use the instruction set of one or more processing platforms (e.g., Intel), and to write computer programs using the native instructions for a target processor. | Exam questions and programming projects |

| Course | Student Learning Outcomes | Method(s) of Assessment |
|--------------------------------|---|------------------------------|
| Mathematics | | |
| MATH 004 F Basic Mathematics I | Upon successful completion of MATH 004 F Basic Mathematics I, the student will be able to perform basic arithmetic operations on whole numbers and fractions. | Common questions or problems |

| | | |
|---------------------------------|---|------------------------------|
| | Upon successful completion of MATH 004 F Basic Mathematics I, the student will be able to analyze and solve real-life and real-data problems using the basic arithmetic operations on whole numbers and fractions. | Common questions or problems |
| MATH 006 F Basic Mathematics II | Upon successful completion of MATH 006 F Basic Mathematics II, the student will be able to perform basic arithmetic operations with decimals and percents. | Common questions or problems |
| | Upon successful completion of MATH 006 F Basic Mathematics II, the student will be able to analyze and solve real-life and real-data problems using the basic arithmetic operations on decimals and percents. | Common questions or problems |
| MATH 010 F Basic Mathematics | Upon successful completion of MATH 010 F Basic Mathematics, the student will be able to perform basic arithmetic operations on whole numbers, fractions, decimals, and percents. | Common questions or problems |
| | Upon successful completion of MATH 010 F Basic Mathematics, the student will be able to analyze and solve real-life and real-data problems using the basic arithmetic operations. | Common questions or problems |
| MATH 015 F Pre-Algebra | Upon successful completion of MATH 015 F Pre-algebra, the student will be able to perform various operations on integers, fractions, or decimals, and be able to simplify algebraic expressions involving integers, fractions, or decimals. | Common questions or problems |
| | Upon successful completion of MATH 015 F Pre-algebra, the student will be able to solve basic linear equations and verbal problems that require simple mathematical models. | Common questions or problems |

| | | |
|----------------------------------|---|------------------------------|
| | Upon successful completion of MATH 015 F Pre-algebra, the student will be able to perform operations on polynomials such as addition, subtraction, multiplication, or factoring out the greatest common factor. | Common questions or problems |
| MATH 020 F Elementary Algebra | Upon successful completion of MATH 020 F Elementary Algebra, the student will be able to identify an equation as linear, quadratic or rational and solve the equation using an appropriate method. | Common questions or problems |
| | Upon successful completion of MATH 020 F Elementary Algebra, the student will be able to perform operations on and simplify polynomials, rational expressions, or radical expressions at an introductory level. | Common questions or problems |
| | Upon successful completion of MATH 020 F Elementary Algebra, the student will be able to perform factoring of polynomials. | Common questions or problems |
| | Upon successful completion of MATH 020 F Elementary Algebra, the student will be able to construct the graph of a linear equation and identify its slope. | Common questions or problems |
| | Upon successful completion of MATH 030 F Plane Geometry, the student will be able to write a geometric proof using definitions, postulates, theorems and corollaries of Euclidean Geometry. | Common questions or problems |
| MATH 030 F Plane Geometry | Upon successful completion of MATH 030 F Plane Geometry, the student will be able to create a basic geometric construction. | Common questions or problems |

| | | |
|--|--|------------------------------|
| | Upon successful completion of Math 030F Plane Geometry, the student will be able to use arithmetic operations and algebraic properties to solve problems involving geometric figures and formulas. | Common questions or problems |
| MATH 040 F Intermediate Algebra | Upon successful completion of MATH 040 F Intermediate Algebra, the student will be able to identify an equation as linear, quadratic, radical, rational, exponential, or logarithmic, and solve the equation using an appropriate method. | Common questions or problems |
| | Upon successful completion of MATH 040 F Intermediate Algebra, the student will be able to produce the completely factored form of a polynomial. | Common questions or problems |
| | Upon successful completion of MATH 040 F Intermediate Algebra, the student will be able to perform operations on and simplify polynomials, rational expressions, radical expressions, logarithmic expressions, or exponential expressions at an intermediate level. | Common questions or problems |
| | Upon successful completion of MATH 040 F Intermediate Algebra, the student will be able to evaluate a function with a numerical or variable argument, and produce the graph of the function by plotting points. | Common questions or problems |
| MATH 100 F Liberal Arts Mathematics | Upon successful completion of MATH 100 F Liberal Arts Mathematics, the student will be able to use the rules of logic to determine equivalency of statements, analyze arguments and determine their validity, and draw valid conclusions from a given set of premises. | Common questions or problems |

| | | |
|--|--|------------------------------|
| | Upon successful completion of MATH 100 F Liberal Arts Mathematics, the student will be able to organize data in a meaningful way and apply the concepts of probability and statistics to a given situation in order to make relevant observations, predictions, and conclusions. | Common questions or problems |
| | Upon successful completion of MATH 100 F Liberal Arts Mathematics, the student will be able to solve geometric applications by selecting and applying appropriate formulas. | Common questions or problems |
| | Upon successful completion of MATH 100 F Liberal Arts Mathematics, the student will be able to calculate the probability of a simple or composite event. | Common questions or problems |
| | Upon successful completion of MATH 100 F Liberal Arts Mathematics, the student will be able to perform operations on sets, and use Venn diagrams to represent sets and draw conclusions about the represented sets. | Common questions or problems |
| MATH 120 F Introductory Probability and Statistics | Upon successful completion of MATH 120 F Introductory Probability and Statistics, the student will be able to collect, organize, summarize, and analyze data for presentation by conducting statistical studies. | Common questions or problems |
| | Upon successful completion of MATH 120 F Introductory Probability and Statistics, the student will be able to generalize from samples to populations, perform estimations and hypothesis tests, determine relationships among variables and make predictions based upon those results. | Common questions or problems |

| | | |
|---|---|------------------------------|
| MATH 120HF Honors Introductory Probability and Statistics | Upon successful completion of MATH 120 F Introductory Probability and Statistics, the student will be able to collect, organize, summarize, and analyze data for presentation by conducting statistical studies. | Common questions or problems |
| | Upon successful completion of MATH 120 F Introductory Probability and Statistics, the student will be able to generalize from samples to populations, perform estimations and hypothesis tests, determine relationships among variables and make predictions based upon those results. | Common questions or problems |
| MATH 129 F College Algebra for Business Calculus | Upon successful completion of MATH 129 F College Algebra for Business Calculus, the student will be able to construct a business or economics model that includes a quadratic function, illustrate the model with an appropriate graph, and analyze the model using algebraic techniques. | Common questions or problems |
| | Upon successful completion of MATH 129 F College Algebra for Business Calculus, the student will be able to solve equations, simple systems of equations, or inequalities which involve polynomial, rational, logarithmic, or exponential expressions. | Common questions or problems |
| | Upon successful completion of MATH 129 F College Algebra for Business Calculus, the student will be able to evaluate, manipulate, and graph many types of functions, including linear, polynomial, rational, exponential, and logarithmic functions. | Common questions or problems |

| | | |
|------------------------------------|---|------------------------------|
| MATH 130 F Calculus for Business | Upon successful completion of MATH 130 F Calculus for Business, the student will be able to construct a mathematical model that includes a definite integral for various business situations and use the methods of integration to evaluate the resulting integral. | Common questions or problems |
| | Upon successful completion of MATH 130 F Calculus for Business, the student will be able to apply the methods of differential calculus to optimize functions in a cost/revenue/profit model. | Common questions or problems |
| MATH 141 F College Algebra | Upon successful completion of MATH 141 F College Algebra, the student will be able to identify and solve linear, quadratic, or higher order equations or inequalities using an appropriate method. | Common questions or problems |
| | Upon successful completion of MATH 141 F College Algebra, the student will be able to construct the graph of higher degree polynomial functions and rational functions. | Common questions or problems |
| MATH 141H F Honors College Algebra | Upon successful completion of MATH 141 F College Algebra, the student will be able to identify and solve linear, quadratic, or higher order equations or inequalities using an appropriate method. | Common questions or problems |
| | Upon successful completion of MATH 141 F College Algebra, the student will be able to construct the graph of higher degree polynomial functions and rational functions. | Common questions or problems |
| MATH 142 F Trigonometry | Upon successful completion of MATH 142 F Trigonometry, the student will be able to solve a problem involving right triangles or oblique triangles. | Common questions or problems |

| | | |
|-----------------------|--|------------------------------|
| | Upon successful completion of MATH 142 F Trigonometry, the student will be able to solve a trigonometric equation. | Common questions or problems |
| | Upon successful completion of MATH 142 F Trigonometry, the student will be able to use basic identities to verify a given trigonometric identity. | Common questions or problems |
| | Upon successful completion of MATH 142 F Trigonometry, the student will be able to construct the graph of a trigonometric function. | Common questions or problems |
| MATH 150AF Calculus I | Upon successful completion of MATH 150AF Calculus I, the student will be able to determine the value of one-sided or two-sided limits analytically or graphically. | Common questions or problems |
| | Upon successful completion of MATH 150AF Calculus I, the student will be able to analyze a function to determine an appropriate method of differentiation, and apply the method to determine the derivative. | Common questions or problems |
| | Upon successful completion of MATH 150AF Calculus I, the student will be able to analyze a function for continuity, relative extrema, intervals of increasing/decreasing, concavity, and/or points of inflection. | Common questions or problems |
| | Upon successful completion of MATH 150AF Calculus I, the student will be able to calculate the area between a curve and the coordinate axes using The Fundamental Theorem of Calculus and evaluate an integral using basic methods including substitution. | Common questions or problems |

| | | |
|---------------------------------|---|------------------------------|
| MATH 150BF Calculus II | Upon successful completion of MATH 150BF Calculus II, the student will be able to determine various geometric measurements including area of a region between curves, volume of a solid, arc length of a curve, or area of a surface of revolution by constructing and calculating a definite integral. | Common questions or problems |
| | Upon successful completion of MATH 150BF Calculus II, the student will be able to analyze an integral to determine an appropriate method of integration, and apply that method to determine the antiderivative. | Common questions or problems |
| | Upon successful completion of MATH 150BF Calculus II, the student will be able to analyze an infinite series to determine an appropriate test for convergence, and apply that test to determine whether the series converges or diverges. | Common questions or problems |
| MATH 171 F Discrete Mathematics | Upon successful completion of MATH 171 F Discrete Mathematics, the student will be able to produce a truth table in order to verify a logical equivalence. | Common questions or problems |
| | Upon successful completion of MATH 171 F Discrete Mathematics, the student will be able to perform algebraic operations in order to solve combinatorics problems and second-order recurrence relations. | Common questions or problems |
| | Upon successful completion of MATH 171 F Discrete Mathematics, the student will be able to analyze a relation and determine which of its properties will pass. | Common questions or problems |

| | | |
|---|--|------------------------------|
| MATH 172 F Graph Theory and Linear | Upon successful completion of Math 172 Graph Theory and Linear Algebra, the student will be able to analyze a graph to identify its parts and determine to which graph categories it belongs. | Common questions or problems |
| | Upon successful completion of MATH 172 F Graph Theory and Linear Algebra, the student will be able to perform operations on matrices to solve a system of linear equations. | Common questions or problems |
| | Upon successful completion of MATH 172 F Graph Theory and Linear Algebra, the student will be able to perform operations on matrices to determine the linear span of a set of vectors, the range and kernel of a linear transformation, and the rotated quadratic form of a general quadratic equation in several variables. | Common questions or problems |
| MATH 203 F Mathematics for Future Elementary Teachers | Upon successful completion of MATH 203 F Mathematics for Future Elementary Teachers, the student will be able to describe alternative algorithms for the basic arithmetic operations in addition to the standard algorithms. | Common questions or problems |
| | Upon successful completion of MATH 203 F Mathematics for Future Elementary Teachers, the student will be able to differentiate between an "exercise" (work requiring the application of a routine procedure) and a "problem" (work requiring some original step to solve), and identify various problem-solving techniques. | Common questions or problems |

| | | |
|--|--|------------------------------|
| | Upon successful completion of MATH 203 F Mathematics for Future Elementary Teachers, the student will be able to respond to sample work from elementary students, identifying where students have misunderstood or confused math concepts. | Common questions or problems |
| MATH 250AF Multivariable Calculus | Upon successful completion of MATH 250AF Multivariable Calculus, the student will be able to analyze a vector-valued function and produce the associated vector-valued or scalar functions that describe the motion which it defines. | Common questions or problems |
| | Upon successful completion of MATH 250AF Multivariable Calculus, the student will be able to perform partial differentiation to find extrema of multivariable functions. | Common questions or problems |
| | Upon successful completion of MATH 250AF Multivariable Calculus, the student will be able to construct and evaluate double integrals in both rectangular and polar coordinates in order to solve applied problems involving area, mass, volume, or other physical phenomena. | Common questions or problems |
| MATH 250BF Linear Algebra and Differential Equations | Upon successful completion of MATH 250BF Linear Algebra and Differential Equations, the student will be able to perform elementary row operations on matrices in order to analyze the types of solutions and determine the solutions of a system of linear equations. | Common questions or problems |

| | | |
|--|--|--|
| | Upon successful completion of MATH 250BF Linear Algebra and Differential Equations, the student will be able to analyze a differential equation to determine an appropriate method of solution, and apply that method to determine the solution. | Common questions or problems |
| MATH 250CF Additional Topics in Linear Algebra | Upon successful completion of MATH 250CF Additional Topics in Linear Algebra, the student will be able to perform matrix operations to solve for the range and the kernel of a linear transformation. | Common questions or problems |
| | Upon successful completion of MATH 250CF Additional Topics in Linear Algebra, the student will be able to produce an orthogonal basis by utilizing the properties of an inner product. | Common questions or problems |
| MATH 295 F Mathematics Seminar | Upon successful completion of MATH 295 F Mathematics Seminar, the student will be able to identify a collection of unsolved mathematics problems and explain what is currently known about those problems. | Oral examination of student research presentations and research papers |
| | Upon successful completion of MATH 295 F Mathematics Seminar, the student will be able to identify and explain at least two examples of mathematical structures that are not encountered in the regular math curriculum at Fullerton College and relate these structures to an unsolved mathematics problem or a new application of mathematics. | Oral examination of student research presentations and research papers |

| | | |
|--|---|----------------------------|
| MATH 299 F Mathematics Independent Study | Upon successful completion of MATH 299 F Mathematics Independent Study, the student will be able to explain how their knowledge and understanding of mathematics was increased. | Oral and/or written report |
| | Upon successful completion of MATH 299 F Mathematics Independent Study, the student will be able to identify progress made toward individual academic goals. | Oral and/or written report |