

MATHEMATICS (MATH)

MATH-020

Foundations for Quantitative Reasoning

1 UNITS

Corequisite: MATH 120

1.0 hours lecture

Foundations for Quantitative Reasoning (QR) will focus on the skills and concepts needed for success in QR. This course is for students concurrently enrolled in QR (Math 120) at Grossmont College. Students will receive extra support in Arithmetic, Algebra, Geometry, problem solving, and study skills. This course is offered on a Pass/No Pass basis only. (Non-degree credit course)

MATH-060

Foundations for Elementary Statistics

2 UNITS

Corequisite: MATH 160

2.0 hours lecture

Foundations for Elementary Statistics focuses on the skills and concepts needed for success in Elementary Statistics. This course is for students concurrently enrolled in MATH 160 at Grossmont College. Students will receive support in arithmetic, problem solving, technology, and study skills. This course is offered on a Pass/No Pass basis only. (Non-degree credit course)

MATH-075

Foundations for College Algebra

2 UNITS

Corequisite: MATH 175

2.0 hours lecture

Support for this course focuses on the skills and concepts needed for success in College Algebra. This course is for students concurrently enrolled in College Algebra (MATH 175) at Grossmont College. Students will receive extra support in algebra, geometry, problem solving, technology, and study skills. This course is offered on a Pass/No Pass basis only. (Non-degree credit course)

MATH-076

Foundations for Precalculus

2 UNITS

Corequisite: MATH 176

2.0 hours lecture

This support course focuses on the skills and concepts needed for success in Precalculus. This course is for students concurrently enrolled in Precalculus (MATH 176) at Grossmont College. Students will receive extra support in algebra, geometry, problem solving, technology, and study skills. This course is offered on a Pass/No Pass basis only.

MATH-078

Foundations for Calculus for Business, Social, & Behavioral Sciences

2 UNITS

Corequisite: MATH 178

2.0 hours lecture

This support course focuses on the skills and concepts needed for success in Calculus for Business, Social & Behavioral Science (MATH 178). This course is for students concurrently enrolled in MATH 178 at Grossmont College. Students will receive extra support in algebra, geometry, problem solving, technology, and study skills. This course is offered on a Pass/No Pass basis only. (Non-degree credit course)

MATH-080

Foundations for Calculus & Analytic Geometry I

2 UNITS

Prerequisite: Appropriate Placement.

Corequisite: MATH 180.

2.0 hours lecture

Support for this course focuses on the skills and concepts needed for success in Calculus and Analytic Geometry I. This course is for students concurrently enrolled in Calculus I (Math 180) at Grossmont College. Students will receive extra support in algebra, analytic geometry, trigonometry, technology, and study skills. Pass/No Pass only. Non-degree applicable.

MATH-090

Elementary Algebra

5 UNITS

Recommended Preparation: "Pass" grade in MATH 088 or equivalent.

5.0 hours lecture

This course is the first of a two-course sequence in algebra intended to help prepare students for transfer level mathematics. An introduction to the following topics is included: the vocabulary of algebra, translation from English to algebra, evaluation of literal expressions, and functions. Topics covered in more depth include solving and graphing linear equations and inequalities in one and two variables; solving and graphing systems of equations in two variables; factoring; algebraic operations on polynomial, rational, and radical expressions; solving quadratics using factoring, and rational equations. This course is recommended for students with little or no recent knowledge of algebra and is offered on a Pass/No Pass basis only.

MATH-090L

Computer Tutorial Review for Elementary Algebra

1 UNITS

3.0 hours laboratory

This course uses a variety of educational tools to assist students. It could be used to strengthen prerequisite skills prior to enrolling in a specific course or to receive supplemental assistance while enrolled in an elementary algebra course. Educational tools include computer-aided tutorials, drills, and problem sets. This course is offered on a Pass/ No Pass basis only. (Nondegree credit course)

MATH-095

Math Jam for BSTEM Preparation

0 UNITS

1.0 hours laboratory

Math Jam For BSTEM Preparation is a non-credit course for students wanting a jump-start in College Algebra, Precalculus or Business Calculus. In an activity-based setting, students will practice key pre-transfer level math concepts, as well as develop essential study-skills needed to be successful in their upcoming BSTEM class. Students will also be connected to college support services to increase the likelihood of reaching their academic and career goals. This course emphasizes the community aspect of learning mathematics. This course is offered on a pass/no pass basis only.

MATH-103**Intermediate Algebra****3 UNITS**

Recommended Preparation: Knowledge of elementary algebra concepts or a "Pass" in MATH 090 or equivalent.

3.0 hours lecture

Math 103 is the second of a two-course sequence in algebra and serves as the prerequisite for a limited number of transferable mathematics courses. This course completes some topics from the first course, such as factoring and operations on rational and radical expressions, and includes the addition of new topics such as exponential and logarithmic expressions and equations, and conic sections. The concept of functions is developed including composition and inverses. Quadratic functions are covered in depth. Computational techniques developed in beginning algebra are prerequisite skills for this course. This course is appropriate for students with a knowledge of beginning algebra or who have had at least two years of high school algebra but have not used it for several years. A student can earn a maximum of (five) 5 units for taking MATH 103 and MATH 110. This course serves as a prerequisite for Math 120, Math 125, and Math 160.

MATH-108**Beginning & Intermediate Algebra for Business, Math, Science, and Engineering Majors****6 UNITS**

Recommended Preparation: Placement in MATH 090.

6.0 hours lecture

A compressed course that covers elementary algebra and in-depth coverage of intermediate algebra intended for the student who has some previous experience with algebra. This course includes topics related to a mathematical foundation for college students who are majoring in business, math, science and engineering and emphasizes the study of the behavior and characteristics of linear, quadratic, rational, radical, exponential, and logarithmic functions from graphic, numeric, analytic and applied perspectives. Graphing calculators are required for this course. This course serves as a prerequisite for Math 120, Math 125, Math 160, Math 170, Math 175, Math 176, and Math 178. A student can earn a maximum of 6 units when taking Math 103 and Math 108. Not open to students with credit in Math 110.

MATH-110**Intermediate Algebra for Business, Math, Science and Engineering Majors****5 UNITS**

Prerequisite: Appropriate placement.

Recommended Preparation: Knowledge of elementary algebra concepts or a "Pass" grade in Math 090 or equivalent.

5.0 hours lecture

Math 110 is the second of a two-course sequence in algebra. This course completes some topics from the first course, such as factoring and operations on rational and radical expressions, and includes the addition of new topics such as exponential and logarithmic expressions and equations, conic sections and an introduction to matrices and sequences and series. The concept of functions is developed including composition and inverses. Quadratic functions are covered in depth. Graphing calculators are required for this course. Computational techniques developed in beginning algebra are prerequisite skills for this course. This course is appropriate for students with a knowledge of beginning algebra or who have had at least two years of high school algebra but have not used it for several years. This course serves as a prerequisite for Math 120, Math 125, Math 150, Math 160, Math 170, Math 175, Math 176, and Math 178. A student can earn a maximum of (five) 5 units for taking MATH 103 and MATH 110.

MATH-110L**Computer Tutorial Review for Intermediate Algebra****1 UNITS**

3.0 hours laboratory

This course is designed for students who wish to review and master previously completed coursework. It should be taken to help strengthen concepts needed for the next course. This course consists of computer-aided tutorials, drills, and problem sets for the purpose of helping the student master the concepts of intermediate algebra. This course is offered on a Pass/ No Pass basis only. (Nondegree credit course)

MATH-120**Quantitative Reasoning****3 UNITS**

Prerequisite: Appropriate placement beyond intermediate algebra or equivalent.

3.0 hours lecture

This course is designed for students in majors that do not require any further mathematics courses in their curricula. Emphasis will be on the communication of mathematical ideas and problem solving pertinent to daily life. Specific topics for this course may include: Mathematics of Personal Finance and investments, Statistics, Probability, Voting Strategies, Estimations, and Measurements. (CSU/UC) (AA/AS-A3, CSU-B4, IGETC-2A)

MATH-125**Structure and Concepts of Elementary Mathematics I****3 UNITS**

Prerequisite: "C" grade or higher or "Pass" in MATH 103 or MATH 108 or MATH 110 or equivalent or appropriate placement beyond intermediate algebra.

3.0 hours lecture, 1.0 hours laboratory

Blending the mathematical topics of sets, whole numbers, numeration, number theory, integers, rational and irrational numbers, measurement, relations, functions and logic. The course will investigate the interrelationships of the above topics using a problem-solving approach. The course will also investigate appropriate use of technology in the classroom. (CSU/UC) (AA/AS-A3, CSU-B4, IGETC-2A)

MATH-126**Structure and Concepts of Elementary Mathematics II****3 UNITS**

Prerequisite: "C" grade or higher or "Pass" in MATH 125 or equivalent.

3.0 hours lecture, 1.0 hours laboratory

Blending the mathematical topics of probability, statistics, relations, graphs, measurement, coordinate geometry, plane geometry, solid geometry, logic, and number sense. The course will investigate the interrelationships of the above topics using a problem-solving approach. The course will also investigate the appropriate use of technology in the classroom. (CSU/UC) (AA/AS-A3, CSU-B4, IGETC-2A)

MATH-128**Children's Mathematical Thinking****1.5 UNITS**

Prerequisite: "C" grade or higher or "Pass" in MATH 125 or equivalent or concurrent enrollment in MATH 125.

1.5 hours lecture

An in-depth analysis of children's mathematical thinking and understanding of operations (addition, subtraction, multiplication, and division), place value and fractions. Students will observe individual children solving mathematical problems. (CSU)

MATH-150**Introduction to Computer Programming Applications in Mathematics 3 UNITS**

Prerequisite: "C" grade or higher or "Pass" in MATH 110 or equivalent.
3.0 hours lecture

Use of computers to analyze mathematical application problems and their solutions from statistics, engineering and the physical sciences. Fundamentals of structured technical programming including language commands and computational algorithms. (CSU/UC) (AA/AS-A3)

MATH-160**Elementary Statistics 4 UNITS**

Prerequisite: "C" grade or higher or "Pass" in MATH 096 or MATH 103 or MATH 108 or MATH 110 or equivalent or appropriate placement beyond intermediate algebra.

4.0 hours lecture

This course provides an introduction to descriptive statistics, probability theory and inferential statistics. Topics include data collection; summary and graphical displays of data; measures of central tendency and variability; elementary probability theory; standard procedures involving the normal, binomial, student's t, chi-square, and F distributions; confidence intervals and hypothesis testing; linear correlation and regression; and ANOVA. Students will learn technology for statistical analysis and interpret the relevance of the statistical findings.

Applications come from various fields such as biology, business, economics, education, social sciences, health science, life sciences and psychology. (C-ID MATH 110) (CSU/UC) (AA/AS-A3, CSU-B4, IGETC-2A)

MATH-170**Analytic Trigonometry 3 UNITS**

Prerequisite: "C" grade or higher or "Pass" in MATH 108 or MATH 110 or equivalent or appropriate placement beyond intermediate algebra. Note: MATH 103 is not equivalent to MATH 110.
3.0 hours lecture

A theoretical approach to the study of the trigonometric functions with emphasis upon circular functions, trigonometric identities, trigonometric equations, graphical methods, inverse functions, vectors and applications, complex numbers, and solving triangles with applications. Passing both MATH 170 and MATH 175 is equivalent to passing MATH 176. A student will earn a total of 7 units for passing both MATH 170 and MATH 175. A student will only earn 6 units if they pass both MATH 170 and MATH 176. (CSU) (AA/AS-A3, CSU-B4)

MATH-175**College Algebra 4 UNITS**

Prerequisite: "C" grade or higher or "Pass" in MATH 108 or MATH 110 or equivalent or appropriate placement beyond intermediate algebra. Note: MATH 103 is not equivalent to MATH 110.

4.0 hours lecture

Graphic, numeric, and analytic approaches to the study of precalculus concepts from college algebra. Application of appropriate technology including but not limited to graphic utilities to model, analyze, and interpret a collection of data or to solve real-world application problems from a wide variety of disciplines. Topics include the real number system; algebraic exponential, and logarithmic functions and their inverses; graphing techniques for polynomial and rational functions; complex numbers; theory of equations; partial fractions; mathematical induction; sequences and series; matrices; and the binomial theorem. Passing both MATH 170 and MATH 175 is equivalent to passing MATH 176. A student will earn a total of 7 units for MATH 170 and MATH 175. A student will only earn 6 units if the pass both MATH 175 and MATH 176. (CSU/UC) (AA/AS-A3, CSU-B4, IGETC-2A)

MATH-176**Precalculus: Functions and Graphs 6 UNITS**

Prerequisite: Appropriate Placement or Intermediate Algebra.
6.0 hours lecture

Unification of college algebra and analytical trigonometry based on the function concept. Topics include properties of real number system, inequalities, theory of equations, the study of functions including with emphasis on circular, and inverses, trigonometric identities, trigonometric equations, graphical methods, solving triangles with applications, mathematical induction, sequences and series, matrices, and binomial theorem. Passing MATH 176 is equivalent to passing both MATH 170 and MATH 175. A student will earn 6 units for passing 176 or a total of 7 units for passing both MATH 170 and MATH 175. (CSU/UC) (AA/AS-A3, CSU-B4, IGETC-2A)

MATH-178**Calculus for Business, Social and Behavioral Sciences 4 UNITS**

Prerequisite: "C" grade or higher in MATH 108 or MATH 110 or equivalent or appropriate placement beyond intermediate algebra. Note: MATH 103 is not equivalent to MATH 110.

Recommended Preparation: "C" grade or higher or "Pass" in MATH 175 or equivalent.

4.0 hours lecture

An introduction to differential and integral calculus with applications specifically designed for business, social and behavioral sciences. Functions studied include polynomials, rationals, exponentials and logarithms. (C-ID MATH 140) (CSU/UC) (AA/AS-A3, CSU-B4, IGETC-2A)

MATH-180**Analytic Geometry and Calculus I 5 UNITS**

Prerequisite: "C" grade or higher or "Pass" in MATH 170 and MATH 175 or MATH 176 or equivalent.
5.0 hours lecture

A first course in differential and integral calculus of a single variable; functions; limits and continuity; techniques and applications of differentiation and integration; Fundamental Theorem of Calculus. Primarily for science, technology, engineering and mathematics majors. (C-ID MATH 210) (CSU/UC) (AA/AS-A3, CSU-B4, IGETC-2A)

MATH-245**Discrete Mathematics 3 UNITS**

Prerequisite: "C" grade or higher or "Pass" in MATH 280 or equivalent.
3.0 hours lecture

Introduction to discrete mathematics. Topics to include sets, relations, summations, elementary counting techniques, recurrence relations, logic and proofs. This course is appropriate for mathematics and computer science majors. (CSU/UC) (AA/AS-A3, CSU-B4, IGETC-2A)

MATH-280**Analytic Geometry and Calculus II 4 UNITS**

Prerequisite: "C" grade or higher or "Pass" in MATH 180 or equivalent.
4.0 hours lecture

A second course in differential and integral calculus of a single variable: integration; techniques of integration; infinite sequences and series; polar and parametric equation; conics. Primarily for Science, Technology, Engineering and Math majors. (C-ID MATH 900S with MATH 180) (CSU/UC) (AA/AS-A3, CSU-B4, IGETC-2A)

MATH-281

Multivariable Calculus **4 UNITS**

Prerequisite: "C" grade or higher or "Pass" in MATH 280 or equivalent.

4.0 hours lecture

Math 281 is the third of a three-course sequence in calculus. Topics include vector valued functions, calculus of functions of more than one variable, partial derivatives, multiple integration, Green's Theorem, Stokes' Theorem, and divergence Theorem. (C-ID MATH 230) (CSU/UC) (AA/AS-A3, CSU-B4, IGETC-2A)

MATH-284

Linear Algebra **3 UNITS**

Prerequisite: "C" grade or higher or "Pass" in MATH 280 or equivalent.

3.0 hours lecture

This course develops the techniques and theory needed to solve and classify systems of linear equations. Solution techniques include row operations, Gaussian elimination, and matrix algebra. Investigates the properties of vectors in two and three dimensions, leading to the notion of an abstract vector space. Vector space and matrix theory are presented including topics such as inner products, norms, orthogonality, eigenvalues, eigenspaces, and linear transformations. Selected applications of linear algebra are included. (C-ID MATH 250) (CSU/UC) (AA/AS-A3, CSU-B4, IGETC-2A)

MATH-285

Differential Equations **3 UNITS**

Prerequisite: "C" grade or higher or "Pass" in MATH 280 or equivalent.

3.0 hours lecture

The course is an introduction to ordinary differential equations including both quantitative and qualitative methods as well as applications from a variety of disciplines. Introduces the theoretical aspects of differential equations and systems of equations, including establishing when solutions exist and various techniques for obtaining solutions (series solutions, Laplace transforms, separation of variables, variation of parameters. etc.) (C-ID MATH 250) (CSU/UC) (AA/AS-A3, CSU-B4, IGETC-2A)