MATHEMATICS (MAT) - ROCK COUNTY

Courses

MAT 90 BASIC MATHEMATICS 3 Units

Designed for students with minimum algebra background or who have been away from mathematics for several years. Subject areas to be covered include arithmetic of whole numbers, fractions and decimals, ratios and percents, and basic algebraic concepts. Prepares the student for Elementary Algebra.

MAT 91 ELEMENTARY ALGEBRA 4 Units

Intended for students with little or no previous algebra. Topics include the real number system and operations with real numbers and algebraic expressions, linear equations and inequalities, polynomials, factoring, and introduction to quadratic equations. PREREQ: C OR BETTER IN MAT 090

MAT 95 ELEMENTARY ALGEBRA 3 Units

Intended for students with little or no previous algebra. This course is the first course in a two-course sequence (with MAT 103) for math, science, business, nursing, and engineering students. This sequence satisfies the preparation for pre-algebra requirements. Students will be able to evaluate, construct, and communicate arguments using quantitative methods and formal reasoning.

MAT 97 ELEMENTARY ALGEBRA 4 Units

Intended for students with little or no previous algebra. Topics include the real number system and operations with real numbers and algebraic expressions, linear equations and inequalities, polynomials, factoring, and Introduction to quadratic equations.

MAT 103 INTERMEDIATE ALGEBRA 3 Units

This course is the second of a two-course sequence for Math, Science, Business, Nursing, and Engineering students. Review of Number Systems. Coordinate Geometry, and Properties of Integer and Rational Exponents; Radicals; Polynomials; Introduction to Elementary Functions; Arithmetic of Numbers, Polynomials, Radicals, and Elementary Functions; Solving Linear and Quadratic Equations and Inequalities; Modeling. PREREQ: (PRIOR COMPLETION WITH C OR BETTER IN (MAT 91 OR MAT 95)) OR (CONCURRENT ENROLLMENT IN MAT 95)

MAT 105 INTRODUCTION TO COLLEGE ALGEBRA 4 Units

Emphasizes algebraic techniques with polynomials, fractional expressions, exponents and radicals, linear and quadratic equations, and inequalities. Introduction to functions, their graphs, and analytic geometry.

PREREQ: C OR BETTER IN MAT 91

MAT 108 QUANTITATIVE REASONING 3 Units

This course is intended to develop analytic reasoning and the ability to solve quantitative problems. Topics to be covered include construction and interpretation of graphs, functional relationships, descriptive statistics, geometry and spatial visualization, the math of finance, exponential growth, and basic probability. Appropriate use of units and dimensions, estimates, mathematical notation, and available technology will be emphasized throughout the course. PREREQ: C OR BETTER IN MAT 091

MAT 110 COLLEGE ALGEBRA 3 Units

Definition of function and sequence; linear and nonlinear functions and graphs including logarithmic and exponential functions; systems of linear equations and Gauss-Jordan method; theory of polynomial equations; conic sections and optional topics such as mathematical induction, matrix solution of linear systems and Cramer's rule.

PREREQ: C OR BETTER IN (MAT 103 OR MAT 105 OR MAT 108 OR MATH 139)

MAT 113 TRIGONOMETRY 2 Units

Trigonometric functions, their basic properties and graphs, identities, inverse trigonometric functions, solving trigonometric equations, solutions of triangles.

PREREQ: PRIOR COMPLETION WITH C OR BETTER OR CONCURRENT ENROLLMENT IN MAT 110

MAT 117 ELEMENTARY STATISTICS 3 Units

The primary aim of the course is a basic understanding and use of statistical concepts and methods to facilitate study and research in other disciplines. Includes measures of central tendency, measures of variability, grouped data, the normal distribution, central limit theorem, hypothesis testing, estimation, T-distribution and chi square test. PREREQ: C OR BETTER IN (MAT 103 OR MAT 105 OR MAT 108) UNREQ: A STUDENT MAY EARN CREDIT FOR ONLY ONE OF MAT 117 OR MAT 317

MAT 210 TOPICS IN FINITE MATHEMATICS 3 Units

Matrices, linear programming and applications, probability, Markov chains, and mathematics of finance.

PREREQ: C OR BETTER IN (MAT 105 OR MAT 108) OR PLACEMENT BASED ON PLACEMENT TEST SCORE

MAT 211 CALCULUS 5 Units

Primarily for students in business, the social sciences and biological sciences who wish to acquire some knowledge of the techniques and applications of calculus. Topics include concepts, techniques, and applications of differential and integral calculus including multivariate calculus. Students who are preparing to major in mathematics, engineering, or physical sciences should enroll in the MAT 221 - MAT 222 sequence. Students may not earn more than six credits by taking both MAT 211 and MAT 221.

PREREQ: C OR BETTER IN MAT 110 OR PLACEMENT BASED ON PLACEMENT TEST SCORES

MAT 215 MATHEMATICS FOR TEACHERS I 3 Units

Students will learn principles, methods, and pedagogical techniques for teaching elementary-level mathematics, with special focus on concepts, skills, problem solving related to addition, subtraction, multiplication, and division. Students will practice lesson design for modern learners and will learn to design assessments to support the evaluation of learning. PREREQ: C OR BETTER IN (MAT 103 OR MAT 105 OR MAT 108)

MAT 216 MATHEMATICS FOR TEACHERS II 3 Units

Students will learn principles, methods, and pedagogical techniques for teaching middle-level mathematics, with special focus on concepts, skills, problem solving related to ratios and proportional relationships arithmetic of rational numbers, linear algebra and linear functions, and algebraic expressions. Students will practice lesson design for modern learners and will learn to create assessments to support the evaluation of learning.

PREREQ: C OR BETTER IN MAT 215

MAT 221 CALCULUS AND ANALYTICAL GEOMETRY I 5 Units

Analytic geometry, functions, limits and continuity, the derivative, integrals, techniques and applications of differentiation, applications of integration, logarithmic and exponential functions, and trigonometric functions. Students may not earn more than six credits by taking both MAT 211 and MAT 221.

PREREQ: C OR BETTER IN (MAT 110 AND MAT 113) OR PLACEMENT BASED ON PLACEMENT TEST SCORES

MAT 222 CALCULUS AND ANALYTICAL GEOMETRY II 5 Units

Continuation of 221. Techniques of integration, polar coordinates, conic sections, infinite series, and vectors of two and three dimensions. Note: the order of topics covered in MAT 221 and MAT 222 may depend on the text used and the instructor.

PREREQ: C OR BETTER IN MAT 221

MAT 223 CALCULUS AND ANALYTICAL GEOMETRY III 5 Units

Continuation of MAT 222. Analytic geometry of three dimensions, functions of several variables, partial differentiation, multiple integrations, and intro to differential equations.

PREREQ: C OR BETTER IN MAT 222 UNREQ: A STUDENT MAY EARN CREDIT FOR ONLY ONE OF MAT 234 OR MAT 223

MAT 234 CALCULUS OF SEVERAL VARIABLES 4 Units

Continuation of MAT 222. Analytic geometry of three dimensions, functions of several variables, and multiple integrations. This course is equivalent to MAT 223 without differential equations. PREREQ: C OR BETTER IN MAT 222 UNREQ: A STUDENT MAY EARN CREDIT FOR ONLY ONE OF MAT 234 OR MAT 223

MAT 271 ORDINARY DIFFERENTIAL EQUATIONS 3 Units

Ordinary differential equations of the first and second-order, series solutions, higher-order linear equations, the Wronskian, Laplace transform and applications, numerical methods and boundary value problems. PREREQ: C OR BETTER IN MAT 222

MAT 296 SPECIAL STUDIES Repeatable 1-3 Units

Variable topics. Group activity. Not offered regularly in the curriculum but offered on topics selected on the basis of timeliness, need, and interest, and generally in the format of regularly scheduled Catalog offerings. Repeatable only with a change of topic.

MAT 299 INDEPENDENT READING IN MATHEMATICS Repeatable 1-3 Units

PREREQ: SOPHOMORE STATUS OR CONSENT OF INSTRUCTOR

MAT 317 INTRODUCTION TO CONTEMPORARY STATISTICS 3 Units Statistics is one of the pillars of data science and a core subject of Machine Learning (ML). In this course, you will learn how to collect real-world data and analyze, and draw conclusions from that data. You will learn the concepts, and techniques used by data scientists and statisticians, including observational studies and experiments, exploratory data analysis, and inference including confidence intervals and hypothesis testing, simple regression, and correlation. PREREQ: C OR BETTER IN (MAT 103 OR MAT 105 OR MAT 108) OR PLACEMENT INTO MAT 110 UNREQ: A STUDENT MAY EARN CREDIT FOR ONLY ONE OF MAT 117 OR MAT 317

MAT 496 SPECIAL STUDIES Repeatable 1-3 Units