MATHEMATICS

MAT 018 LRNNG SUPPORT-INTRO STATISTICS
3 Lecture 0 Lab 3 Credit Hours(s)
Learning Support for Introductory Statistics is a corequisite course which will include the following: 1) Mathematical skills and fundamental statistical concepts necessary for success in Introductory Statistics - MAT 118; 2) College success skills; 3) Activities/assignments designed to address students' affective needs. Note: MAT 018 is a credit-equivalent course. Equivalent credits do not satisfy degree requirements and are not calculated in a student's grade point average, but they do incur tuition charges and do count towards full-time/part-time status.
Corequisite: MAT 118
Prerequisite: Placement level 1 (see DCC Math Placement Table).

MAT 094 INTRODUCTION TO ALGEBRA
2 Lecture 0 Lab 2 Credit Hours(s)
This course is designed for students taking Supported Intermediate Algebra (MAT 098). The topics will support the concepts studied in MAT 098 as well as develop essential skills needed to be successful in MAT 098. Topics covered include operations with exponents, integers, fractions, and decimals; scientific notation; polynomials; solving equations; an introduction to functions; and linear functions. College success skills imparted in the course include how to use the technology platforms associated with the Introduction to Algebra and Supported Intermediate Algebra courses, self-advocacy, goal setting, planning, time management, mindset, and math study skills.
NOTE: MAT 094 is a credit-equivalent course. Equivalent credits do not satisfy degree requirements and are not calculated in a student's grade point average, but they do incur tuition charges and they do count towards full-time/part-time status.
Prerequisite: Placement level 1 (see DCC Math Placement Table)
Corequisite: MAT 098 Supported Intermediate Algebra. Students enrolled in MAT 094 Introduction to Algebra must also be enrolled in MAT 098.

MAT 098 SUPPORTED INTERMEDIATE ALGEBRA
3 Lecture 0 Lab 3 Credit Hours(s)
MAT 098 is intended for students who must bring their mathematics proficiency to the level necessary for entrance into MAT 110, MAT 184, or MAT 107. This course cannot be used to satisfy the mathematics requirement of the Associate in Arts degree program. MAT 109 will fulfill the mathematics requirement for many student in Associate of Arts degree programs. Topics include: Graphing; Functions; Linear Functions; Exponential Functions; Quadratic Functions; Factoring; Solving Equations symbolically, graphically and numerically; and an introduction to Systems of Linear Equations. The TI-83, or TI-83 Plus, or TI-84, or TI-84 Plus is required.
NOTE: MAT 098 is a credit-equivalent course. Equivalent credits do not satisfy degree requirements and are not calculated in a student's grade point average, but they do incur tuition charges and they do count towards full-time/part-time status.
Prerequisite: Placement level 1 (see DCC Math Placement Table)
Corequisite: MAT 094 Introduction to Algebra. Students enrolled in MAT 098 Supported Intermediate Algebra must also be enrolled in MAT 094.

MAT 099 INTERMEDIATE ALGEBRA
3 Lecture 0 Lab 3 Credit Hours(s)
MAT099 is intended for students who must bring their mathematics proficiency to the level necessary for entrance into MAT110, 184, or 107. This course cannot be used to satisfy the mathematics requirement of the Associate in Art degree program. MAT109 will fulfill the mathematics requirement for many students in Associate of Arts degree programs. Topics include: Functions, Linear Functions, Quadratic Functions, Exponential Functions, Solving Equations symbolically and graphically and numerically, Systems of Linear Equations, Factoring and Graphing. The TI-83, or TI-83 Plus, or TI-84 or TI-84 Plus is required.
Prerequisite: Placement level 2 (see DCC Math Placement Table)

MAT 107 MATHEMATICS FOR ELEM TEACHERS
3 Lecture 0 Lab 3 Credit Hours(s)
This course meets the Math requirement for students who are enrolled in the Liberal Arts and Sciences: Education, Early Childhood Education (Birth - Grade 2) and Childhood Education (Grade 1-6) dual certification with SUNY New Paltz, A.S. degree program and who plan to transfer to SUNY New Paltz. The emphasis is on problem-solving as it relates to the number system. Probability and statistics are also introduced.
Prerequisites: Placement level 3 (see Math Placement Table) OR DCC Intermediate Algebra with C or higher, OR MAT 131 with C or higher.

MAT 109 SURVEY OF MATHEMATICS
3 Lecture 0 Lab 3 Credit Hours(s)
Upon completion of this course students will have demonstrated the quantitative reasoning skills necessary for non-technical careers. Students will demonstrate this utilizing multimedia technology. The skills they will be able to demonstrate include the ability to understand and interpret mathematical meaning in various applied contexts, geometry as it relates to basic polygons and triangles, elementary probability and statistics, personal finance, and various historical and social implications

of mathematics. Student are required to learn and demonstrate their understanding of MS Excel.

MAT 110 APP BASED COLLEGE ALGEBRA
3 Lecture 0 Lab 3 Credit Hours(s)
ubicThis course satisfies the SUNY General Education mathematics requirement and is the prerequisite for Business Calculus (MAT210). Topics include applications of linear, reciprocal, exponential, logarithmic,cubic, and quadratic functions; composition and inverses of functions; systems of equations; regression; and piecewise equations. Students will solve equations both algebraically, numerically, and graphically. Students will use Microsoft Excel extensively throughout the course. No previous knowledge of Excel is required. Not for students who intend to take MAT185, 221, 222 or 223.
Prerequisites: Placement level 3 (see DCC Math Placement Table), OR DCC Intermediate Algebra with C or higher, OR MAT 131 with C or higher.

MAT 117 GEOM FOR ELEM SCHL TEACHRS II
3 Lecture 0 Lab 3 Credit Hours(s)
This course is a requirement for students in Early Childhood Education (Birth-Grade 2) and Childhood Education (Grade 1-6) programs. It emphasizes background information for the teaching of elementary school geometry. Topics include spacial visualization, measurement, coordinate geometry, similarity and congruence, and transformational geometry. Students learn mathematical theory and application, and experience the role of elementary school students through a variety of classroom activities and demonstrations.
Prerequisite: MAT 107 with a grade of C or better

MAT 118 ELEMENTARY STATISTICS
3 Lecture 0 Lab 3 Credit Hours(s)
Satisfies the mathematics requirement of the Associate in Arts degree program. Basic statistical procedures are developed. Topics include descriptive statistics, hypothesis testing, and confidence intervals and regression using both simulation and a theory-based approach. Technology will be used regularly throughout the course.
Prerequisites: Placement level 2 (see DCC Math Placement Table) OR ENG 101 placement level or higher, OR High School GPA of 3.0 (83) or higher.

MAT 131 TECHNICAL MATHEMATICS I
3 Lecture 0 Lab 3 Credit Hours(s)
This course satisfies the math requirement for the Applied Academic Certificate in ACR. It is designed for those students who need to improve their math proficiency for entrance into MAT 132. Topics include: review of operations on whole numbers, fractions, and decimals; operations using signed numbers; exponents and roots; scientific notation; unit analysis; percentage; algebraic expressions; factoring; linear equations; literal equations; geometry of the triangle, circle and regular polygons; measurement conversions; and introduction to basic trigonometry. Use of a scientific calculator is required.

MAT 132 TECHNICAL MATHEMATICS II
3 Lecture 0 Lab 3 Credit Hours(s)
This course satisfies the mathematics requirement for students in ARC, CNS, FIR and FTP. Students enrolled in the above curricula may receive credit for MAT 132 or MAT 110, but not both. Topics include a review of right triangle trigonometry, law of sines and cosines, vectors, factoring, literal, fractional and quadratic equations and applications. Use of a scientific calculator is required.
Prerequisites: Placement level 3 (see DCC Math Placement Table), OR MAT 131 with C or higher.

MAT 184 COLLEGE ALGEBRA & TRIG
3 Lecture 0 Lab 3 Credit Hours(s)
Satisfies the mathematics requirement of the Associate in Arts degree program, and is intended to prepare students for MAT185 (Precalculus). Topics include equations and inequalities, graphing techniques, analysis of a variety of functions, and triangle trigonometry including the Laws of Sines and Cosines.
Prerequisites: Placement level 3 (see DCC Math Placement Table), OR MAT 099 with a C or higher.

MAT 185 PRECALCULUS
4 Lecture 0 Lab 4 Credit Hours(s)
This course is intended primarily for students planning to take calculus. Topics include a study of functions, specifically: linear, polynomial, rational, trigonometric, exponential, logarithmic, and inverse functions. Modeling and data analysis techniques are also employed. Conceptual understanding is emphasized and algebraic skills are reinforced throughout the course
Prerequisites: Placement level 4 (see DCC Math Placement Table), OR MAT 184 with C or higher, or MAT 132 with C or higher, OR MAT 110 with A- or higher.

MAT 186 INTRODUCTION TO DATA SCIENCE
4 Lecture 0 Lab 4 Credit Hours(s)
This course introduces the basic ideas and techniques of data science including: exploratory data analysis; experimental design and sampling; relationships between one and several variables including single and multiple regression and two way tables; sampling distributions; inferential statistics for means, proportions, and regression coefficients; simple ANOVA. The course

includes a computer component using the software package R.
Prerequisite: Placement level 4 (see DCC Math Placement Table) or MAT 184 with a grade of C or better.

MAT 210 CALCULUS W/ BUS APPLICATIONS
4 Lecture 0 Lab 4 Credit Hours(s)
A survey of the basic concepts and operations of calculus with business and management applications. Designed for students in the Business Administration Transfer program and should not be taken by mathematics and science majors. Students will use Microsoft Excel extensively throughout the course. No previous knowledge of Excel is required.
Prerequisite: Placement level 4 (see DCC Math Placement Table), or DCC MAT 110 with C or higher, or MAT 184 with C or higher, or MAT 132 with C or higher.

MAT 214 DISCRETE MATH USING PROOFS
3 Lecture 0 Lab 3 Credit Hours(s)
Intended primarily for students in the CPS, EDM, or LAM curriculum. Students will be introduced to mathematical reasoning and proof techniques through topics in discrete mathematics. The topics selected for this course will be from areas of logic, set theory, combinatorics, number theory and functions. Direct and indirect proof methods will be covered along with the technique of mathematical induction.
Prerequisite: MAT 221 with a C or better.

MAT 215 INTRO TO LINEAR ALGEBRA
3 Lecture 0 Lab 3 Credit Hours(s)
A basic introduction to linear algebra. Topics include vector spaces, systems of linear equations, matrices and determinants and linear transformations. Required for prospective mathematics majors.
Prerequisite: MAT 222 with a grade of C or better.

MAT 221 CALCULUS I
4 Lecture 0 Lab 4 Credit Hours(s)
This course is the first of a three-semester sequence developing calculus for the student majoring in engineering, mathematics, or the sciences. Topics include the derivative, limits, continuity, differentiability, the definite integral, the Fundamental Theorem of Calculus, techniques of differentiation (including for transcendental functions), applications of differentiation, mathematical modeling and computer applications.
Prerequisites: MAT 185 with a grade of at least C, OR high school precalculus with a grade of at least 70, OR permission of the department.

MAT 222 CALCULUS II
4 Lecture 0 Lab 4 Credit Hours(s)
This course is the second of a three-semester sequence developing calculus for the student majoring in engineering, mathematics or the sciences. Topics include the Fundamental Theorems of calculus, definite and indefinite integrals, techniques of integration, improper integrals, applications of integration, sequences, series and Taylor series, differential equations, mathematical modeling and computer applications.
Prerequisite: MAT 221 with a grade of C or better, or permission of the department.

MAT 223 CALCULUS III
4 Lecture 0 Lab 4 Credit Hours(s)
A continuation of MAT 222. Topics include vectors in the plane, solid analytic geometry, functions of several variables, partial differentiation, multiple integration, line integrals and vector fields, and Green's Theorem. Use of appropriate technology is required.
Prerequisite: MAT 222 with a grade of C or better or advanced placement with the permission of the department.

MAT 224 DIFFERENTIAL EQUATIONS
4 Lecture 0 Lab 4 Credit Hours(s)
An introductory course in differential equations for students in mathematics, engineering and the sciences. Topics include the theory, solution and estimation of first and second order differential equations, systems of differential equations, the Laplace transform, and applications of differential equations.
Pre- or corequisite: MAT 223

MAT 230 PROBABILITY AND STATISTICS
3 Lecture 0 Lab 3 Credit Hours(s)
This course is an introduction to probability theory intended for students in mathematics. Topics include general probability rules; Bayes' Theorem; discrete and continuous random variables; discrete and continuous probability distributions; The Law of Large Numbers; and The Central Limit Theorem.
Prerequisite: MAT 222 with a grade of C or better.

MAT 271 SPECIAL STUDY PROJECT I
1 Lecture 0 Lab 1 Credit Hours(s)
A special learning experience designed by one or more students with the cooperation and approval of a faculty member. Proposed study plans require departmental approval. Projects may be based on reading, research, community service, work experience, or other activities that advance the student's knowledge and competence in the field of mathematics or related areas. The student's time commitment to the project will be approximately 35-50 hours.

MAT 272 SPECIAL STUDY PROJECT II
2 Lecture 0 Lab 2 Credit Hours(s)

Similar to MAT 271, except that the student's time commitment to the project will be approximately 70-90 hours.

MAT 273 SPECIAL STUDY PROJECT III
3 Lecture 0 Lab 3 Credit Hours(s)
Similar to MAT 271, except that the student's time commitment to the project will be approximately 105-135 hours.