

# COURSES

## MATHEMATICS

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### **MAT-003 Transition Math**

**Lec 0 Lab 6 Clinic 0 Credit 3**

This course provides an opportunity to customize foundational math content in specific math areas and will include developing a growth mindset. Topics include developing the academic habits, learning strategies, social skills, and growth mindset necessary to be successful in mathematics. Upon completion, students should be able to build a stronger foundation for success in their gateway level math courses by obtaining skills through a variety of instructional strategies with emphasis placed on the most essential prerequisite knowledge.

**Co-Requisites:** None

**Pre-Requisites:** None

### **MAT-110 Mathematical Measurement and Literacy**

**Lec 2 Lab 2 Clinic 0 Credit 3**

This course provides an activity-based approach that develops measurement skills and mathematical literacy using technology to solve problems for non-math intensive programs. Topics include unit conversions and estimation within a variety of measurement systems; ratio and proportion; basic geometric concepts; financial literacy; and statistics including measures of central tendency, dispersion, and charting of data. Upon completion, students should be able to demonstrate the use of mathematics and technology to solve practical problems, and to analyze and communicate results.

**Co-Requisites:** None

**Pre-Requisites:** MAT-003

**Competencies:** Demonstrate estimation skills and justify results. Use dimensional analysis to convert units of measurement. Employ fractions, percentages and proportions to solve contextual problems. Compute geometric measurements of perimeter, area, volume and angles. Use technology to analyze and interpret elements of personal finance. Compare and contrast measures of center and measures of dispersion. Interpret tables, charts, and graphs and communicate results.

### **MAT-143 Quantitative Literacy**

**Lec 2 Lab 2 Clinic 0 Credit 3**

This course is designed to engage students in complex and realistic situations involving the mathematical phenomena of quantity, change and relationship, and uncertainty through project- and activity-based assessment. Emphasis is placed on authentic contexts which will introduce the concepts of numeracy, proportional reasoning, dimensional analysis, rates of growth, personal finance, consumer statistics, practical probabilities, and mathematics for citizenship. Upon completion, students should be able to utilize quantitative information as consumers and to make personal, professional, and civic decisions by decoding, interpreting, using, and communicating quantitative information found in modern media and encountered in everyday life.

**Co-Requisites:** None

**Pre-Requisites:** MAT-003

**Competencies:** Judge the reasonableness of results using estimation, logical processes, and a proper understanding of quantity. Utilize proportional reasoning to solve contextual problems and make conversions involving various units of measurement. Identify, interpret, and compare linear and exponential rates of growth to make predictions and informed decisions based on data and graphs. Differentiate between simple and compound interest and analyze the long-term effects of saving, investing, and borrowing. Describe, analyze, and interpret statistical information such as graphs, tables, and summarized data to draw appropriate conclusions when presented with actual statistical studies. Determine probabilities and expected values and use them to assess risk and make informed decisions. Analyze civic and/or societal issues and critique decisions using relevant mathematics.

### **MAT-152 Statistical Methods I**

**Lec 3 Lab 2 Clinic 0 Credit 4**

This course provides a project-based approach to introductory statistics with an emphasis on using real-world data and statistical literacy. Topics include descriptive statistics, correlation and regression, basic probability, discrete and continuous probability distributions, confidence intervals and hypothesis testing. Upon completion, students should be able to use appropriate technology to describe important characteristics of a data set, draw inferences about a population from sample data, and interpret and communicate results.

**Co-Requisites:** None

**Pre-Requisites:** MAT-003

**Competencies:** Organize, display, calculate, and interpret descriptive statistics. Apply basic rules of probability. Identify and apply appropriate probability distributions. Perform regression analysis. Analyze sample data to draw inferences about a population parameter. Communicate results through a variety of media.

### **MAT-171 Precalculus Algebra**

**Lec 3 Lab 2 Clinic 0 Credit 4**

This course is designed to develop topics which are fundamental to the study of Calculus. Emphasis is placed on solving equations and inequalities, solving systems of equations and inequalities, and analysis of functions (absolute value, radical, polynomial, rational,

exponential, and logarithmic) in multiple representations. Upon completion, students should be able to select and use appropriate models and techniques for finding solutions to algebra-related problems with and without technology.

**Co-Requisites:** None

**Pre-Requisites:** MAT-003

**Competencies:** Use analytical, graphical, and numerical representations to solve absolute value, radical, polynomial, rational, exponential, and logarithmic equations with both real and complex solutions. Use analytical, graphical, and numerical representations to solve absolute value, polynomial and rational inequalities with real solutions. Use analytical, graphical, and numerical representations to analyze absolute value, radical, polynomial, rational, exponential and logarithmic functions with both and real complex zeros. Use multiple methods to solve problems involving systems of equations and apply to decomposing partial fractions. Construct the composition and inverse of functions. Use polynomial, exponential and logarithmic functions to model various real world situations in order to analyze, draw conclusions, and make predictions.

### **MAT-172 Precalculus Trigonometry**

**Lec 3 Lab 2 Clinic 0 Credit 4**

This course is designed to develop an understanding of topics which are fundamental to the study of Calculus. Emphasis is placed on the analysis of trigonometric functions in multiple representations, right and oblique triangles, vectors, polar coordinates, conic sections, and parametric equations. Upon completion, students should be able to select and use appropriate models and techniques for finding solutions to trigonometry-related problems with and without technology.

**Co-Requisites:** None

**Pre-Requisites:** MAT-171

### **MAT-271 Calculus I**

**Lec 3 Lab 2 Clinic 0 Credit 4**

This course is designed to develop the topics of differential and integral calculus. Emphasis is placed on limits, continuity, derivatives and integrals of algebraic and transcendental functions of one variable. Upon completion, students should be able to select and use appropriate models and techniques for finding solutions to derivative-related problems with and without technology.

**Co-Requisites:** None

**Pre-Requisites:** One: MAT-172 or MAT-175

### **MAT-272 Calculus II**

**Lec 3 Lab 2 Clinic 0 Credit 4**

This course is designed to develop advanced topics of differential and integral calculus. Emphasis is placed on the applications of definite integrals, techniques of integration, indeterminate forms, improper integrals, infinite series, conic sections, parametric equations, polar coordinates, and differential equations. Upon completion, students should be able to select and use appropriate models and techniques for finding solutions to integral-related problems with and without technology.

**Co-Requisites:** None

**Pre-Requisites:** MAT-271

### **MAT-273 Calculus III**

**Lec 3 Lab 2 Clinic 0 Credit 4**

This course is designed to develop the topics of multivariate calculus. Emphasis is placed on multivariate functions, partial derivatives, multiple integration, solid analytical geometry, vector valued functions, and line and surface integrals. Upon completion, students should be able to select and use appropriate models and techniques for finding the solution to multivariate-related problems with and without technology.

**Co-Requisites:** None

**Pre-Requisites:** MAT-272

### **MAT-285 Differential Equations**

**Lec 2 Lab 2 Clinic 0 Credit 3**

This course provides an introduction to topics involving ordinary differential equations. Emphasis is placed on the development of abstract concepts and applications for first-order and linear higher-order differential equations, systems of differential equations, numerical methods, series solutions, eigenvalues and eigenvectors, and Laplace transforms. Upon completion, students should be able to demonstrate understanding of the theoretical concepts and select and use appropriate models and techniques for finding solutions to differential equations-related problems with and without technology.

**Co-Requisites:** None

**Pre-Requisites:** MAT-272