Lower Division Mathematics Courses

Math 5: Pre-calculus

Preparation for calculus. Analyzing data by means of functions (linear, quadradic, polynomial, logarithmic, exponential and trigonometric) and graphs with an emphasis on mathematical modeling of real-world applications.

Math 11: Calculus I

An introduction to differential and integral calculus of functions of one variable, including exponential, logarithmic and trigonometric functions. Emphasis is put on conceptual understanding and applying mathematical concepts to real-world problems such as approximation and optimization.

Math 12: Calculus II

Continuation of MATH 11. An introduction to integral calculus of functions of one variable and differential equations. Emphasis is put on conceptual understanding and applying mathematical concepts to analyze problems in biology, economics, business, and other fields.

Math 15: Introduction to Scientific Data Analysis

Fundamental analytical and computational skills to find, assemble and evaluate information, and to teach the basics of data analysis and modeling using spreadsheets, statistical tool, scripting languages, and high-level mathematical languages. *This course is not for students from School of Engineering.*

Co-requisite: Math 5.

Math 18: Statistics for Scientific Data Analysis

Analytical and computational methods for statistical analysis of data. Descriptive statistics, graphical representations of data, correlation, regression, causation, experiment design, introductory probability, random variables, sampling distributions, inference and significance.

Pre-requisite: Math 5 and Math 15.

Math 21: Calculus I for Physical Sciences and Engineering

An introduction to differential and integral calculus of functions of one variable. Elementary functions such as the exponential and the natural logarithm, rates of change and the derivative with applications to natural sciences and engineering.

Pre-requisites: Passing score on calculus readiness placement test, or score of 3 or higher on AP Calculus AB exam or grade of C- or higher in Math 5.

Math 22: Calculus II for Physical Sciences and Engineering

Continuation of MATH 21. Analytical and numerical techniques of integration with applications, infinite sequences and series, first order ordinary differential equations.

Pre-requisites: Score of 4 or higher on AP Calculus AB exam OR Score of 3 or higher on AP Calculus BC exam OR grade of C- or better in MATH 21 or ICP 1

Math 23: Vector Calculus

Calculus of several variables. Parametric equations and polar coordinates, algebra and geometry of vectors and matrices, partial derivatives, multiple integrals and introduction to theorems of Green, Gauss and Stokes.

Pre-requisite: Math 22

Math 24: Linear Algebra and Differential Equations

Introduces ordinary differential equations, systems of linear equations, matrices, determinants, vector spaces, linear transformations and linear systems of differential equations.

Pre-requisite: Math 22

Math 32: Probability and Statistics

Concepts of probability and statistics. Conditional probability, independence, random variables, distribution functions, descriptive statistics, transformations, sampling errors, confidence intervals, least squares and maximum likelihood. Exploratory data analysis and interactive computing.

Pre-requisite: Math 21 or ICP 1