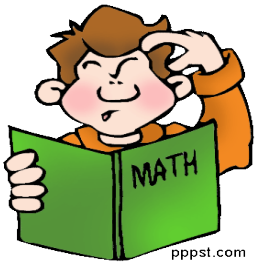
Are you interested in a graduate degree in Applied Statistics . . .



. . . but lack the mathematics background to get started?

Does the idea of taking 3 classes over a year just to get started in the Program seem like too much?

We have the solution for you!

MAT 243 will fulfill all of the prerequisite courses you need in ONE CLASS! The only prerequisite is Calculus I, Brief Calculus, or Business Calculus. MAT 243 will get you what you need to know from Calculus II, Calculus III, and Linear Algebra

---

Here are the details:

MAT 243: Calculus and Linear Algebra for Applied Statistics

Summer II 2020

Instructor: Scott Parsell

This course is designed to survey concepts from calculus and linear algebra that are relevant to the study of applied statistics. We begin with a review of essential techniques from Calculus I, such as differentiation of algebraic and exponential/logarithmic functions, the Fundamental Theorem of Calculus, and u-substitution. We then cover several important topics normally found in Calculus II, such as integration by parts, improper integrals, infinite sequences, geometric series, and Taylor series.

Having studied the key concepts of calculus in a single variable, we move on to examine their most important analogues in two and three dimensions. This Calculus III highlight reel includes partial derivatives and multiple integrals, with applications to optimization and joint densities. The final phase of the course takes a broad look at some fundamental ideas from linear algebra, such as Gaussian elimination, matrix operations, linear transformations, and eigenspaces.

The Structure: 4 credit hours, 4 main units:

I. Review of Calculus I: Basic Differentiation/Antidifferentiation in a Single Variable
   A. Limits and derivatives
   B. Derivatives of algebraic functions, exponentials, and logs
   C. The Fundamental Theorem of Calculus
   D. Integration by substitution

II. Selected Topics from Calculus II: Integration and Infinite Series
   A. Integration by parts
   B. Improper integrals; the Gamma function
   C. Infinite sequences and Series; geometric series
   D. Taylor series and approximations

III. The Pillars of Multivariable Calculus: Partial Derivatives and Multiple Integrals
   A. Vectors and dot product
   B. Partial derivatives and the gradient vector
   C. Max/min problems in two dimensions; Lagrange multipliers
   D. Multiple integrals and joint probability densities

IV. Introduction to Linear Algebra
   A. Linear Systems and Gaussian elimination
   B. Matrix operations: multiplication, inverses, determinants
   C. Linear Transformations and the Rank-Nullity Theorem
   D. Eigenvalues and Eigenvectors; diagonalization