

Meeting: 1003, Atlanta, Georgia, SS 2A, AMS-MAA-MER Special Session on Mathematics and Education Reform, I

1003-97-636 **Daniel T. Kaplan*** (kaplan@macalester.edu), Math Dept., Macalester College, St. Paul, MN 55105. *Linking Introductory Calculus and Statistics with Multivariate Modeling.*

We have devised and deployed a new approach to teaching calculus and introductory statistics that is particularly attractive to students from biology and the social sciences. These students need to be able to reason about functions of multiple variables and relate them to data but rarely go beyond Calc I or II.

The year-long course is a common starting point for entering students, regardless of whether they have studied calculus in high school. The first half emphasizes modeling skills and differential calculus in several variables including the basic geometrical concepts of linear algebra.

The second half introduces statistical modeling in several variables. Multivariate regression and multiway analysis of variance and covariance are taught in a geometrical way that uses the formalism gained from linear algebra to build on the students' intuition. Computation is used intensively, including simulation, bootstrapping and logistic regression.

Response from the client disciplines has been strongly positive. We will describe the course's organization and present the approaches that allow introductory students with mixed backgrounds to use and understand concepts and techniques in statistical modeling that have traditionally been considered advanced. (Received September 25, 2004)