Syllabus for Math 549, Applied Sampling, Autumn 2004

Instructor: Brian Steele, Math 205B, 243-5396, steele@mso.umt.edu

Office Hours: Tuesday 1:10-2:00 PM; Wednesday, 2:10-3:00 PM; Friday, 2:10-3:00 PM

Text: S.K. Thompson, *Sampling*, Wiley, 1992.

Computer Package: We will use S+ for computations and simulations. It is available on the Math Dept. computers and perhaps in other departments. You will receive access cards for the Math Dept. lab.

Course Material: I will cover Chapters 1-8, 11-14, 16-17 in class. Additional material will be presented in student presentations.

Prerequisite: A familiarity with the ideas of estimation, standard errors, and confidence intervals is necessary. A familiarity with the ideas of independent random variables, expected value, variance and covariance of random variables, and sums of random variables is helpful. Also useful is an exposure to modeling data (e.g., regression). We will review these topics.

Grading:

Tests: Midterm and final

Homework: Several assignments during the semester, most requiring the use of the computer.

Project: You will work on a project which will be written as a report and graded, and presented in class during the last 3 weeks of the semester. Types of projects:

a) presentation and application (carried out by you) of a sampling methodology which we have not discussed in class. A good source of papers discussing new sampling techniques in biology is the *Journal of Agricultural, Biological and Environmental Statistics*;

b) develop a sampling design for a project (e.g., thesis) which you will carry out. You must be very specific and have enough information for an effective design;

c) evaluate a sampling method or compare two or more sampling methods in a small-scale test to see how theory translates to practice. This will involve at least several replications of each method.