STUDENT OUTREACH SEMINAR

DEPARTMENT OF STATISTICS

Tuesday, September 6th

Venue: Hutcheson 409
3:30 – 4:30 pm

Presenter: Ian Johnson

Quantitative Portfolio Management

We can treat stocks as random variables and can assign them expected values, standard deviations, and covariances. Based on these values, we can calculate the expected return and volatility of any portfolio constructed with these securities. This summer I worked at a hedge fund which specializes in quantitative portfolio management, specifically a market neutral fund which both buys and "shorts" stocks. Using regression techniques, a portfolio manager will attempt to find "factors" that explain stock movement, build a model, and rank stocks. The end process is a universe of expected stock returns. Combined with a covariance matrix, and transaction costs, we can use quadratic programming techniques or "mean-variance" optimization subject to both linear and non-linear constraints, and maximize an objective function. The end result is a portfolio of stocks that will maximize return for the amount of risk taken.

In this talk I will show how statistics can be applied to financial markets detailing the above topics.
I will also detail my research concerning an optimization project I worked upon.