



Students requiring accommodations as a result of disability, must contact the Centre for Students with Disabilities 604-291-3112 or csdo@sfu.ca

Instructor: [Dr. Joan Hu](#)

Prerequisite:

STAT 285 and MATH 251

Textbook:

Applied Linear Statistical Models (w/student CD) (5th Edition) by Kutner, Nachtsheim, Neter, Li. Publisher: McGraw-Hill/Irwin

Calendar Description:

Theory and application of linear regression. Normal distribution theory. Hypothesis tests and confidence intervals. Model selection. Model diagnostics. Introduction to weighted least squares and generalized linear models. **Quantitative**

Outline:

1. Linear models: Definition, simple and multiple linear regression models, ANOVA models. Incorporating different types of predictor variables and their interactions in the model. Matrix notation.
2. Estimation methods: Least-squares, maximum likelihood. Algebraic and geometrical interpretations.
3. Properties of least-squares estimators: Mean, variance, and covariance of least-squares estimators. Expected value of residual sum of squares.
4. Diagnostic tools: Residual plots, multicollinearity, outliers, influential observations, goodness-of-fit tests.
- 5.