

SPRING 2019 - STAT 302 D100

ANALYSIS OF EXPERIMENTAL AND OBSERVATIONAL DATA (3)*Class Number: 3414 Delivery Method: In Person***COURSE TIMES + LOCATION:**Tu 11:30 AM – 1:20 PM
SSCB 9200, BurnabyTh 11:30 AM – 12:20 PM
SSCB 9200, Burnaby**EXAM TIMES + LOCATION:**Apr 16, 2019
12:00 PM – 3:00 PM
RCB IMAGTH, Burnaby**INSTRUCTOR:**

Jorge Rodriguez

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Office: AQ 5069

Office Hours: Tuesdays 1:30-2:30 Except: Jan 29, Feb 26, Mar 26

PREREQUISITES:

Any STAT course (except STAT 100) or BUEC 232.

Description

CALENDAR DESCRIPTION:

The standard techniques of multiple regression analysis, analysis of variance, and analysis of covariance, and their role in observational and experimental studies. This course may not be used to satisfy the upper division requirements of the Statistics major or honours program. Quantitative.

COURSE DETAILS:**Lab Instructor: Marie Loughin****Course Outline:****TOPICS****1. Introduction to Regression Analysis**

Simple regression, regression and causality, assumptions of linear regression, measuring adequacy of assumptions, estimation of error variance, inferences concerning slope and intercept, inferences concerning the simple regression line, interpretation of estimated regression lines, prediction with regression line.

2. Correlation and its Relationship to Regression

Definition of the correlation coefficient, R, measures of association, the bivariate normal distribution, what R does not measure, estimation and testing with R.

3. Analysis of Variance

One- and two-way analysis of variance, the analysis of variance table and related tests, fixed and random effects, multiple comparison procedures and contrasts.

4. Multiple Regression Analysis

Using more than one independent variable, graphical considerations for this problem, assumptions, collinearity, estimation of the best

regression equation, analysis of variance table, overall and partial F tests.

5. The General Linear Model

Multiple regression and analysis of variance as special cases of the general linear model. The general procedure for constructing F-tests by fitting restricted models. Applications to analysis of covariance and comparison of two regression models.

6. Correlations: Multiple, Partial and Multiple-Partial

Correlation matrix, multiple correlation coefficient, the multivariate normal distribution, partial correlation coefficient, F-tests for multiple and partial correlations.

7. Analysis of Residuals

Checking the assumptions of the regression and analysis of variance models, effects of departures from the assumptions, transformations of the response and predictor variables.

Grading

Participation	5%
Assignments	15%
Midterm	30%
Final	50%

NOTES:

Above grading is subject to change.

Materials

MATERIALS + SUPPLIES:

R can be accessed via Jupyter, an online platform, at <https://sfu.syzygy.ca/>. Alternatively, R Studio and R statistical software can be downloaded free of charge from <https://www.rstudio.com/> and <https://cran.r-project.org/>, respectively.

REQUIRED READING:

STAT2: Building Models for a World of Data. Author: Ann R. Cannon. Publisher: Freeman
ISBN: 978-1-4641-5047-0

DEPARTMENT UNDERGRADUATE NOTES:

Students with Disabilities:

Students requiring accommodations as a result of disability must contact the Centre for Accessible Learning 778-782-3112 or csdo@sfu.ca

Tutor Requests:

Students looking for a Tutor should visit <http://www.stat.sfu.ca/teaching/need-a-tutor-.html>. We accept no responsibility for the consequences of any actions taken related to tutors.

REGISTRAR NOTES:

SFU's Academic Integrity web site <http://www.sfu.ca/students/academicintegrity.html> is filled with information on what is meant by academic dishonesty, where you can find resources to help with your studies and the consequences of cheating. Check out the site for more information and videos that help explain the issues in plain English.

Each student is responsible for his or her conduct as it affects the University community. Academic dishonesty, in whatever form, is ultimately destructive of the values of the University. Furthermore, it is unfair and discouraging to the majority of students who pursue their studies honestly. Scholarly integrity is required of all members of the University. <http://www.sfu.ca/policies/gazette/student/s10-01.html>

