

STAT 3503A [35527] Regression Analysis, Fall 2021

From the Calendar:

Review of simple and multiple regression with matrices, Gauss-Markov theorem, polynomial regression, indicator variables, residual analysis, weighted least squares, variable selection techniques, nonlinear regression, correlation analysis and autocorrelation. Computer packages are used for statistical analyses.

Includes: Experiential Learning Activity
Precludes additional credit for STAT 3553.

Prerequisite(s): i) STAT 2509 or STAT 2607 or ECON 2202 or ECON 2220 or equivalent; and ii) MATH 1102 or MATH 1107 or MATH 1119 or equivalent; or permission of the School.
Lectures three hours a week and one hour laboratory.

Lectures will be at least somewhat synchronous, students are expected to be online during class time.

Instructor

Dr. Prince P Osei
School of Mathematics and Statistics

Tentative Marking Scheme:

Assignments: 30%
Weekly in-class quizzes: 20%
In class tests: 20%
Final Project: 30%
There will not be a final exam

Textbooks:

Kutner, Nachtsheim, Neter, Li, (2005) "Applied Linear Statistical Models", fifth edition

Grolemund and Wickham, (2016) "R for Data Science"
<https://r4ds.had.co.nz>

Schedule:

Tuesdays and Thursdays from 11:35am - 12:55pm. See the course page on [Brightspace](#) for class login details and resources.

Tutorials:

You are required to attend all tutorials. Tutorials begin the week of Sept 17.

Office Hours:

Immediately after class Tuesdays and Thursdays. Other times are possible to accommodate student schedules and different time zones.

For best results, use [Brightspace](#) to contact the instructor and TA.

Software:

R: <https://muug.ca/mirror/cran/> (install R first)

Rstudio: <https://rstudio.com/products/rstudio/> (install this after you have installed R)

Approximate course outline;

Week 1-2:

R for Data Science Chapter 1-3

ggplot, dplyr, and intro to tidyverse:

Week 3-4:

Applied Linear Statistical Models Chapter 1, 2

Linear regression, correlation

Week 3-4:

Applied Linear Statistical Models Chapter 5, 6, 7

Gauss-Markov Theorem, Regression review with matrices

Week 5-7:

Applied Linear Statistical Models Chapter 8-10

polynomial regression, indicator variables,

Model selection

Why p-value stepwise regression methods should never be used

Better model selection alternatives

Week 8-9

Applied Linear Statistical Models Chapter 11

weighted least squares

Week 10-13

Applied Linear Statistical Models Chapter 12, 13

Nonlinear regression, autocorrelation