

Department of Mathematics and Statistics
Math 322 Applied linear Regression
Fall 2017

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Office Hours: Monday 12:30 – 3:30, Tuesday 12:30 – 1:30; and also by appointment.

Class time & location: 9:30 – 10:45 am; Tuesday (Burruss 33) & Thursday (Roop 127).

Text Book: A Second Course in Statistics: Regression Analysis (7th edition) by William Mendenhall & Terry Sincich. Publisher: Prentice Hall.

Prerequisites: Math 220 or Math 318 or equivalent.

Course Description: This is an introductory course of regression analysis. Regression is one the most widely used statistical technique for estimating relationships between independent (predictor or explanatory) variables and a dependent (response or outcome) variable. In this course we will cover the basic concepts and methodologies related to linear multiple regression: checking assumptions, transformations, model formulation, variable selection, multicollinearity, and diagnostics of unusual and influential data, interpretation and presentation of analysis results. We will also briefly discuss ridge and logistics regression methods.

Homework: Approximately 6/7 homework assignments will be given during the semester. The recommended software package for the course is **R**. Homework should be neat and stapled with all work should be shown. Only include relevant computer outputs. Students are allowed to discuss homework assignments, but everyone should do his/her own programming and turn in their own homework.

Project: Students will participate in groups of 3 to do a project. The project would entail analysis of a multivariate data set with emphasis on model selection process (identification, estimation, diagnostics, prediction; writing and presenting the analysis report).

Midterm Exams: October 19 and November 16

Final Exam: Final exam is comprehensive will be announced later.

Grading: Midterm exams: 40%, **Project:** 10%, **Homework:** 20%,
Final exam: 30%

Grading Policy: 97 & up : A+ 87 to 89 : B+ 77 to 79 : C+ 67 to 69 : D+
93 to 96 : A 83 to 86 : B 73 to 76 : C 63 to 66 : D
90 to 92 : A- 80 to 82 : B- 70 to 72 : C- 60 to 62 : D-
Below 60 : F

Academic Integrity: All students are expected to read and be familiar with the James Madison University's Academic Integrity Code. All charges of cheating or other academic offenses will be taken with utmost seriousness.

Important link: www.jmu.edu/syllabus (copy & paste on a browser).

Addendum

Goals of the Course

1. To provide knowledge of the theory and application of statistics appropriate for (1) an entry level statistics position in business, industry, or government which requires collaboration with a statistician or (2) for graduate work in biomedical, social-behavioral and management sciences as well as education.
 - a. Using the principles of survey and experimental design for gathering data.
 - b. Organizing data graphically and numerically.
 - c. Being proficient in the use of computer software to solve problems and analyze data.
 - d. Using stochastic principles to model problems, develop solutions.
 - e. Understanding the concept of sampling variability and its relevance in inference.
 - f. Using confidence intervals and tests of significance in interpreting data.
 - g. Using stochastic principles to assess the significance of data.
 - h. Effective communication of conclusions from data.

Nature of the Course Content

MATH 322. Applied Linear Regression.

3 credits. *Offered fall and spring.*

Introduction to basic concepts and methods in regression analysis and the application of these models to real-life situations. *Prerequisite: MATH 220, MATH 318 or equivalent*