

## Semester course: STAT 6950 – 4 CREDIT HOURS

**Term:** Spring, 2017

**Instructor:** Matthew T. Pratola

**Email:** mpratola@stat.osu.edu

**Location:** TuTh 9:10-11:00am in Baker Systems 184

**Office Hours:** Thursdays 11:10am-12:10pm CH204D

**Text:** Sanford Weisberg (2014) *Applied Linear Regression, 4th Edition*, John Wiley & Sons, Inc.,

**Course Website:** Carmen

**Transcript Abbreviation:** Appl Statist 2

**Long course title:** Applied Statistics II

**Final Exam:** Monday May 1st, 8-9:45am

### Course description:

Simple and multiple linear regression, diagnostics, model selection, the mixed model, and generalized linear models. Intended primarily for students in the PhD program in Statistics or Biostatistics.

### Prerequisites / Co-requisites:

Stat 620 (Stat 6801 under semesters) and Stat 641 (Stat 6910 under semesters), or written permission of the instructor.

### Exclusions:

Not open to students with credit for Stat 645 (Stat 6450 under semesters)

### Topics:

- Simple linear regression
- Fitting the simple linear regression model
- Statistical inference for regression
- Diagnostics
- Multiple linear regression
- Model building and model selection
- Iteratively reweighted least squares
- Robust regression
- Mixed effects regression
- The generalized linear model

### Course Requirements:

You are responsible for all material covered in class; this includes derivation, proofs, computational techniques, etc. This is an applied course and the emphasis will be on applying concepts learned in class to real-world datasets. However, there will be a strong theoretical flavor to the ideas presented which will help you better understand the methodologies which you will employ on datasets. You are expected to be comfortable with multivariable calculus and basic matrix operations from linear algebra. I will primarily use **R** to demonstrate ideas and examples, however much of the responsibility to program solutions will be left to you.

### Homework and Assignments:

You are encouraged to discuss problems with each other in general terms, but you must write your own homework solutions and project reports. Homework and project reports must be submitted in hardcopy. Late submissions will NOT be accepted.

**Homework Due Dates:**

HW1 01/24; HW2 01/31; HW3 02/07; HW4 02/14; HW5 02/21; HW6 02/28;  
HW7 03/28; HW8 04/04; HW9\* 04/20;

\*depending on time and progression of topics.

**Midterm Exam Date:**

Midterm 03/02

**Notes:**

Homeworks are due Tuesdays *at the start of class*.

The grading scheme will be 10% Homeworks, 20% Project, 30% Midterm Exam, 40% Final Exam.

**Academic Misconduct:**

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term academic misconduct includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct <http://studentlife.osu.edu/csc/>.

**Special Accommodations:**

Students with disabilities that have been certified by the Office for Disability Services will be appropriately accommodated and should inform the instructor as soon as possible of their needs. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue, telephone 292-3307, TDD 292-0901 (or see <http://www.ods.ohio-state.edu/>).