

STAT 425  
Statistical Modeling I

## FA '21 Tentative Lectures' Plan

### *Week 1: 08/23 - 08/27*

- Lecture 0: Introduction to STAT 425  
Lecture 1: Introduction to Regression Analysis  
Lecture 2: Simple Linear Regression

Deliverables: Lecture 2 Quiz

### *Week 2: 08/30 - 09/03*

- Lecture 3: Statistical Properties of LS Estimators  
Lecture 4: Multiple Linear Regression (Part I)

Deliverables: Lectures 3, 4 Quizzes; Homework 1

### *Week 3: 09/06 - 09/10*

- Lecture 5: Multiple Linear Regression (Part II)  
Lecture 6: Multiple Linear Regression (Part III)

Deliverables: Lectures 5, 6 Quizzes; Homework 2

### *Week 4: 09/13 - 09/17*

- Lecture 7: Multiple Linear Regression (Part IV)  
Lecture 8: Diagnostics (Part I)

Deliverables: Lectures 7, 8 Quizzes; Homework 3

### *Week 5: 09/20 - 09/24*

- Lecture 9: Diagnostics (Part II)  
Lecture 10: Collinearity

Deliverables: Lectures 9, 10 Quizzes; Homework 4

**Week 6: 09/27\* - 10/01**

Lecture 11: Generalized Least Squares

Lecture 12: Lack-of-Fit Tests

Deliverables: Lectures 11, 12 Quizzes; Homework 5

\* 09/27 is Labor Day

**Week 7: 10/04 - 10/08**

Midterm 1 Review

Midterm 1 Thursday 10/07 @ 5.00-7.00pm  
(tentative – more details will follow)

**Week 8: 10/11 - 10/15**

Lecture 13: Polynomial Regression & Splines Regression

Lecture 14: Non-parametric Regression

Deliverables: Lectures 13, 14 Quizzes

**Week 9: 10/18 - 10/22**

Lecture 15: ANCOVA

Lecture 16: Variables Selection

Deliverables: Lectures 15, 16 Quizzes; Case study 1

**Week 10: 10/25 - 10/29**

Lecture 17: Principal Components Regression

Lecture 18: Ridge & Lasso Regression

Deliverables: Lectures 17, 18 Quizzes; Homework 6

**Week 11: 11/01 - 11/05**

Lecture 19: One-way ANOVA (Part I)

Lecture 20: One Way ANOVA (Part II)

Deliverables: Lectures 19, 20 Quizzes; Homework 7

*Week 12: 11/08 - 11/12*

Lecture 21: Two Way ANOVA

Lecture 22: Two Way ANOVA Special Cases

Deliverables: Lectures 21, 22 Quizzes; Homework 8

*Week 13: 11/15 - 11/19*

Midterm 2 Review

Midterm 2 Thursday 11/18 @ 5.00-7.00pm  
(tentative – more details will follow)

*Week X: 11/22 – 11/26 – Thanksgiving Break**Week 14: 11/29 - 12/03*

Lecture 23: Introduction to DoE

Lecture 24: Block Designs

Deliverables: Lectures 23, 24 Quizzes  
Case Study 2 (only for 4-credit students)

*Week 15: 12/06 - 12/08*

Lecture 25: Linear Models with Random Effects

Deliverables: Lecture 25 Quiz; Homework 9

*Finals Week: 12/10 – 12/17*

Deliverables: Final Project  
No final exam!