

Course Syllabus

Week 1 – Introduction to Data Science

Week 2 – Statistical Thinking

- Examples of Statistical Thinking
- Numerical Data, Summary Statistics
- From Population to Sampled Data
- Different Types of Biases
- Introduction to Probability
- Introduction to Statistical Inference

Week 3 – Statistical Thinking 2

- Association and Dependence
- Association and Causation
- Conditional Probability and Bayes Rule
- Simpsons Paradox, Confounding
- Introduction to Linear Regression
- Special Regression Models

Week 4 – Exploratory Data Analysis and Visualization

- Goals of statistical graphics and data visualization
- Graphs of Data
- Graphs of Fitted Models
- Graphs to Check Fitted Models
- What makes a good graph?
- Principles of graphics

Week 5 – Introduction to Bayesian Modeling

- Bayesian inference: combining models and data in a forecasting problem
- Bayesian hierarchical modeling for studying public opinion
- Bayesian modeling for Big Data