Course Syllabus Part II
DSC 520 Statistics for Data Science

Course Resources

Course Text:
Discovering Statistics Using R. Sage Publications, 2012.
R for Everyone. Pearson Education, 2017. 2nd Edition.

Course Schedule

Book 1: Discovering Statistics Using R
Book 2: R for Everyone
DataCamp: Datacamp.com – Students will receive email with instructions

Week: Topic	Reading	Assignments
Week 1: Introduction to R	• Book 1: Chapter 1 • Book 2: Chapters 1, 2 & 4	• Course Introduction Discussion Board • DataCamp Exercise 1: Introduction to R Session; Using RStudio IDE • 1.1 Assignment: Math Operations • 1.2 Discussion: "Wow" Moments and Obstacles
Week 2: Summarizing Data; Setting up Project and Using Scripts; Domain Uses of Data	• Book 1: Chapters 2-3 • Book 2: Chapter 6	• DataCamp Exercise 2: Importing Data Part 1 & 2 • 2.1 Assignment: Test Scores • 2.2 Assignment: Weather Data • 2.3 Assignment: Weather Data • 2.4 Discussion: Article Review • 2.5 Discussion: Descriptive Statistics

Week 3: Distributions, Data Plotting & Data Assumptions	• Book 1: Chapters 4 • Book 2: Chapter 18	• DataCamp Exercise 3: Reporting with RMarkdown • 3.1 Assignment: 2014 American Community Survey • 3.2 Assignment: Student Assignment Performance Data
Week 4: Transformations & Markdowns	• Book 1: Chapter 5 • Book 2: Chapter 28	• DataCamp Exercise 4: Reporting with R Markdown • 4.1 Assignment: Student Assignment Performance Data • 4.2 Assignment: Final Project Step 1 • 4.3 Discussion: Final Project Area of Interest and Datasets
Week 5: Correlation	• Book 1: Chapter 6 • Book 2: Chapter 18: Section 18.1	• DataCamp Exercise 5: Visualizing Two Variables; Correlation • 5.1 Assignment: Student Survey • 5.2 Assignment: Washington Donations • 5.3 Assignment: Final Project Step 2 • 5.4 Discussion: Describe Your Final Project
Week 6: Simple Regression	• Book 1: Sections 7.1-7.5 • Book 2: Chapter 18, Section 18.2	• DataCamp Exercise 6: Simple Linear Regression, Interpreting Regression Models, and Model Fit • 6.1 Assignment: GSS 2016 Survey Data • 6.2 Assignment: Housing Data • 6.3 Assignment: Final Project Step 3—Data Import and Cleaning • 6.4 Discussion: Final Project Discussions

Week 7: Multiple Regression	• Book 1: Chapter 7: Sections 7.6-7.12.2 • Book 2: Chapter 19 Section 19.2 – 19.3	• DataCamp Exercise 7: Multiple and Logistic Regression • 7.1 Assignment: Housing Data • 7.2 Discussion: Collaborate and Ask Questions
Week 8: Final Project Step 4--Summary Data, Exploratory Analysis, Plots & Knowledge Gap, and Plan to Uncover New Information from Data	• None	• 8.1 Assignment: Final Project Step 4--Summary Data, Exploratory Analysis, Plots & Knowledge Gap, and Plan to Uncover New Information from Data
Week 9: Machine Learning & Clustering	• Various Readings	• 9.1 Assignment: Introduction to Machine Learning • 9.2 Assignment: Clustering
Week 10: Logistic Regression	• Book 1: Chapter 8	• 10.1 Assignment: Fit a Logistic Regression Model to the Thoracic Surgery Binary Dataset • 10.2 Assignment: Classifier Metrics • 10.3 Assignment: Fit Logistic Regression Model to Previous Dataset
Week 11: Bayesian Statistics	• Various Readings	• 11.1 Assignment: A/B Testing and Conversion Rates • 11.2 Assignment: Create a Spell Checker
Week 12: Final Projects and Class Wrap Ups	• None	• 12.1 Assignment: Final Project Step 5--Summary

Grade Breakdown/Criteria

Grade Component:	Percentage/Weight	Point Value	Number	Total Points
Assignments	40%	15-25 points ea.	18	400
Data Camp Exercises	9%	10-20 points ea.	7	90
Final Project Milestones	30%	60 points ea.	5	300
Discussion Board	21%	10-25 points ea.	9	210
Total	100%			1000

Late Work

Late work is not accepted unless arrangements are made with the instructor for special circumstances.

Participation

Students are expected to login often and contribute to the class on a regular basis, including posting to the discussion board, submitting assignments, and participating in group activities as required. If you have specific participation requirements related to your educational funding or student status, you are expected to monitor your own participation to ensure you are in compliance with those requirements.

Expectations for Students

- Students should expect to spend approximately 10-15 hours per week to complete the activities and assignments in this course [as indicated in the credit hour verification].
- Students will log in as often as needed to complete their assignments and progress through the course.
- Students will treat their classmates and the instructor with respect and courtesy.
- Students are responsible for keeping current with the reading assignments and coming to class prepared to discuss the work assigned.
- Students are responsible for knowing what assignments are due and when.
- Students will submit only their own work and will not commit plagiarism or other acts of academic dishonesty.
- Students will contact the instructor as soon as personal problems arise that may affect the student's ability to complete assignments on time.

Expectations for Faculty

- The instructor will treat all students with respect and courtesy.
- The instructor will make grading criteria clear and follow the criteria scrupulously in evaluating student work.
- The instructor will provide feedback about student work within 6 days of due dates (or 24 hours prior to the next due date)—feedback that helps the student learn and improve.
- The instructor will respond to all student messages within 48 hours.