CSci 343: Fundamentals of Data Science
Class Syllabus - Fall 2018

Instructor

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Teaching Assistant

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2:30PM – 4:00PM on Tuesdays
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Class Meeting

Tuesday & Thursday 1:00PM – 2:15PM Weir Hall, Room 235

Prerequisite

CSci 112, CSci 203, or CSci 251

Description

Data science is the study of discovering knowledge from data. This course explores the field using a broad perspective. Topics include data collection and integration, exploratory data analysis, descriptive statistics, prediction and regression, evaluating and communicating results. Significant programming is required.

Textbook

Joel Grus, *Data Science from Scratch: First Principles with Python*. 2015. O'Reilly Press.

Topics Covered

For this class, we plan to cover the follow topics: Basic Statistical Analysis, Hypothesis Testing, Data Distributions, Sentiment Analysis, Image Analysis, Data Modeling, Genetic Algorithms, Linear Regression, Polynomial Regression, Logistic Regression, Nearest Neighbor Approximation, Decision Trees, Neural Networks. This list is contingent on how far and how quickly we progress in lecture. The objective of this course is to enable you to learn and gain proficiency in the application of basic data analysis, visualization, and modeling.

Grading Policy

Programming Challenges, Tests, Quizzes, Readings, etc. (collectively referred to as Challenges) will be assessed on a points basis. As you successfully face Challenges, you will be awarded Experience Points (referred to as XP). Challenges will be issued approximately weekly and cover the readings, chapters, assignments, independent student research, and lecture material. **There will be no make-up Challenges for any reason**. Programming Challenges have a point value of 250XP and are graded based on two criteria: time taken to correctly complete the assignment (200XP) and the understandability & readability of the submitted code (50XP). There is a submission window of 6 weekdays for each Programming Challenge (and weekends don't count as being late!). Here is the breakdown of points for each day of the submission window:

Day 1: 200XP
Day 2: 180XP
Day 3: 160XP
Day 4: 140XP
Day 5: 120XP
Day 6: 100XP

If you submit your Programming Challenge solution after the submission window has closed, you

may only receive points for the second grading criteria (understandability & readability) and receive a maximum of 50XP. NEVER SKIP SUBMITTING AN ASSIGNMENT! As you will learn in this class, most things exist on a gradient. Your Challenge grades are no different. The only way to get 0XP is to *not submit anything*. Partial credit will always be awarded as long as you adhere to the above guidelines and make a good faith effort. See the section on *Submitting Programming Challenges* for the specific guidelines on submitting your challenges.

All other challenges are worth 100XP each unless otherwise specified.

Bonus XP will be awarded throughout the semester. Sources of bonus XP will be assigned by the instructor and may include optional assignments, in-class participation, engagement in out of class activities, or research activities.

Your final grade will be calculated as a percentage of the total XP (excluding bonus points) available during the semester. A letter grade of A, B, C, D, or F will be assigned based on this percentage (no plus/minus).

Submitting Programming Challenges

You may begin making your solution to a programming challenge as soon as it is posted. Once the submission window for the challenge opens, you have 6 days to demonstrate your working solution to the TA. You can either demonstrate your solution during the TA's office hours or schedule a time to meet with the TA. The opening of the submission window is not a "due date". You are expected to have completed the assignment (and asked for any needed help) prior to the submission window. Once you have successfully demonstrated your solution, you must upload it to Blackboard within 24 hours. Otherwise, your grade will be assessed based on the next the day within the submission window that it was uploaded. Questions and emails to the instructor about a programming challenge must be submitted before 5PM the day before the submission window opens.

Class Attendance

Attendance is mandatory for this course. Attendance is taken at the beginning of class. If you come in late, you must notify the instructor at the end of class. Otherwise, you will be counted as absent. There are no make-up challenges. You may make arrangements to submit programming challenge solutions early. If you miss 3 days or less, you will earn a *drop-quiz*. This *drop-quiz* will allow you to replace your lowest quiz grade with the average of your remaining quizzes.

It is important to note, that the university has a policy of verifying that all students have attended class during the first two weeks of the semester. If you are not counted as present during the first two weeks, this may affect enrollment and financial aid. Since this class requires you to be present for all meetings, this should not be a problem for you. However, understand that all classes at the university have to perform this verification procedure. As such, it is vitally important that you notify the instructor (after class has ended) if you were late to class.

Academic Misconduct

This is a data science class – a class that combines computers, programming, and statistical analysis. We use these tools to check for cheating and plagiarism. Your challenge solutions will be statistically analyzed and compared with the solutions of your classmates and submissions from previous semesters. This is an automated process. Let me be candid about this… The analysis software is REALLY good. It's almost creepy how good it is at catching people. You don't want to try cheating. It will catch you. Plus, it complicates both of our lives. Keep life simple. Earn your points (even if they are small). Seriously, you will be better off not demo-ing your code than turning in something that is not your own work.

The academic discipline policy of the University of Mississippi will be strictly followed in this course. Violation of the policy may result in anything from failure on an assignment to expulsion from the course, depending on the severity of the violation. The student should refer to the "M" book for general definitions of academic misconduct.

Course Specific Academic Honesty Rules

You are encouraged to work together on homework problems. All challenges, tests, quizzes, and graded programming assignments (including bonus assignments) are to be individual work unless noted otherwise in the assignment.

Students can discuss general strategies for programming assignments using examples from the book or lecture. Students may not share code (verbally, in writing, or electronically) for a programming assignment. This includes all direct or indirect communications. Never show your code to anyone except the TA or the instructor. Never look at another student's code. If a student uses code from any source other than the textbook, he or she must mention the source in the program as comments (and also in any assigned report). Both sharing code with another student and failing to mention the origin of code taken from another source will constitute plagiarism. **Any** student involved in plagiarism will be reported.

Email

Every student will be required to use his/her official email address that is *student_webid*@go.olemiss.edu. All email communications will be made using this address. It is not uncommon for additional instructions or guidance to be sent by email, so check your email often. Students will be responsible for any instructions sent by email more than 24 hours old. The instructor checks email at least every 24 hours (and often more frequently than that) so email is the best way to contact the instructor.

Student Disability Services

It is University policy to provide, on a flexible and individual basis, reasonable accommodations to students who have disabilities that may affect their ability to participate in course activities or meet course requirements. Students with disabilities are encouraged to contact their instructors to discuss their individual needs for accommodations.

Students should contact the Office of Student Disability Services (http://sds.olemiss.edu/) in 234 Martindale to inquire about the services available and how to request them. Students must submit an Instructor Notification of Classroom Accommodation form to each instructor before direct classroom accommodations will be provided. This must be done on a timely basis, at the beginning of the semester or at least one week before needed, so that appropriate accommodations can be arranged.

Emergency Information

http://emergency.olemiss.edu provides information about campus-related emergencies due to weather or other circumstances. Know what you will do in the event of an emergency. Read RebAlert texts and emails, and respond accordingly. RebAlerts allow the university to communicate essential information to the campus community when a disaster occurs.

Subject to Change

All the dates, descriptions, locations, and other information on this syllabus are subject to change. Updates will be posted on the course website