DS 6013 Capstone (Spring 2023)

Course Overview

Instructor Names and Contact Information:

Judy Fox, Ph.D.

Associate Professor, School of Data Science

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Join the class meeting on Friday at 1:00 – 3:00 pm EST in Room 104 of the DELL 1 building.

Subject Area and Catalog Number: Data Science DS 6013

Year and Term: 2023 Spring

Class Title: Data Science Capstone Projects

Level: Graduate

Credit Type: Graded

Class Description

It's time to apply everything you've learned in the data science program to doing challenging, messy, real-world work on a data science project. These capstone projects will challenge you in a number of important ways. You will need to work closely with your classmates, carefully managing the dynamics in your group to help the work move forward.

You will need to interact in a professional way with individuals outside our program. You will need to apply everything you know about acquiring and cleaning data, and about analyzing data. You will need to teach yourself new methods to accomplish the tasks that lay ahead of you and to overcome the problems that will get in your way. Most importantly, you will need to think creatively and practically about your research project.

What I Expect From You

Be a data scientist, not just a student: use what you know, make sound decisions, collaborate, be creative. Treat each other with respect. Communicate and collaborate. No free-loading, no going solo.

Meet with me regularly, both in these sessions and elsewhere. Keep me in the loop. Use me as a resource. Work hard, take pride in the work you do, but also think about your work-life balance as your other obligations ebb and flow.

What I Promise To Do As a Mentor

I will help you to focus your work on research questions that are both intellectually worthwhile, and realistic given our time and skill levels. I will meet with you regularly and check-in with you if I haven't heard an update from you. I will be responsive over email, and I will find times for us to speak over Zoom when you need to. I will insist that you do the work we agreed upon. I won't settle for work that is of less quality than what you are capable of.

I will suggest ways to move forward when you get stuck on one part of the project. I will offer my opinion, when asked, about methods, goals, strategies, and ways to interact with the sponsors. I will help you see the big picture during the rough moments when it may seem impossible to complete this project. We all feel that way at some point, and we'll get to a successful outcome together.

I will not give orders. This is your project, and you'll proceed in the way that seems right to you. I will not take sides in any conflicts that may occur within the group. You are responsible for maintaining a culture that fosters teamwork, just as you will be in your next job after graduation. I will not do any work for you. I can only offer advice about the best way for you to do your work.

Role of the Capstone Project Manager

The Capstone Manager is a SDS faculty member overseeing multiple capstone projects. Each Capstone Manager

- manages multiple groups to organize UVA affiliates into capstone project teams;
- manages a single Rivanna Standard allocation for all their capstone projects if needed;
- manages a single Project storage share for all their capstone projects. The manager can create subdirectories for individual projects inside that "main" share.

Course Objectives

Throughout the semester, students will:

- Collect and manage data to devise solutions to assigned research projects.
- Select, apply, and evaluate models, tools, and methods to address research projects.
- Interpret and assess results and evaluate the limitations of research findings.
- Resolve group work allocation, leadership, and cooperation issues.

Class Specific Information

Live Capstone Meetings

We will meet once a week for a two-hour live session. During the live session each team will have 30 minutes to present their project progress and present a plan for the upcoming weeks. Then the class and instructor will offer constructive criticism and feedback to help guide future work.

Students are required to attend their assigned one hour of the Live Session each week. The additional hour is optional. The idea is for you to help each other develop your projects, to give each other outside feedback. Some weeks one group will present their latest work. Other weeks we'll work on something together. We'll adjust to make this as useful as possible.

If a team member cannot attend a live session due to a valid excuse, he/she should notify the instructor and the team members. Skipping a live session without notification will result in a score of 0 for the weekly evaluation. It's no problem to be stuck with minimal progress on the Capstone Project some weeks - that's the nature of capstone work - and each group will be graded on the effort the group members have put in to the Capstone Project, not on the final results.

Schedule

We will follow this schedule (Tentative):

Week	Date	Module	Activity
01	01/20	0	Live session / Overview
02	01/27	1	Live session / Project Proposal
03	02/03	2	Live session / Report meeting with the client
04	02/10	3	Live session
05	02/17	4	Live session
06	02/24	5	Live session / Progress Report 1 / See Assignments
07	03/03	6	Live session
08	03/10	-	Spring break - no live session
09	03/17	7	Live session
10	03/24	8	Live session
11	03/31	9	Live session / Progress Report 2 / See Assignments
12	04/07	10	Live session

13	04/14	11	Live session
14	04/21	12	Live session
15	04/28	13	Live session / Final Presentation / Assignments

Progress Reports

Students working on their capstone projects are required to complete two progress reports during the semester. Progress reports should identify and document previous tasks, progress completed, difficulties encountered, and future tasks. Students should complete progress reports using a shared Google document.

Research Progress Presentation

At the end of the course, students will present a Research Progress Presentation. This presentation should contain a summary of work to date including questions, problems and objective identification, data collection and/or compilation, data processing, data structure and management, and exploratory data analysis. Students are expected to cite key literature where appropriate. After each presentation, the class will offer constructive criticism and feedback to help guide future work.

Teams

Teams will be used as the central channel for course collaboration. Please use Teams to post questions regarding project problems, objective identification, data collection and/or compilation, data processing, data structure and management, and exploratory data analysis.

Grades

The course grade will be determined by the following:

Component	Percent of total grade	Points
Live Session Participation	40%	12 sessions x 10 points each = 120 totalpoints
Progress Reports	26.7%	2 reports x 40 points each = 80 total points
Final Project Presentation/Report	33.3%	100 points

Total	100%	300 total points

UVA Policies

SDS Grading Policies

The standing of a graduate student in each course is indicated by one of the following grades: A+, A, A-; B+, B, B-; C+, C, C-; D+, D, D-; F. B- is the lowest satisfactory grade for graduate credit. The grading scale is A+ (>98%), A (>95%), A- (90-95%), B+ (87-90%), B (83-87%), B- (80-83%).

Attendance

Students are expected to attend all class sessions. Instructors establish attendance and participation requirements for each of their courses. Class requirements, regardless of delivery mode, are not waived due to a student's absence from class. Instructors will require students to make up any missed coursework and may deny credit to any student whose absences are excessive. Instructors must keep an attendance record for each student enrolled in the course to document attendance and participation in the class.

University Email Policies

Students are expected to check their official UVa email addresses on a frequent and consistent basis to remain informed of University communications, as certain communications may be time sensitive. Students who fail to check their email on a regular basis are responsible for any resulting consequences.

Mid-Term and End-of-Class Evaluations

Students may be expected to participate in an online mid-term evaluation. Students are expected to complete the online end-of-class evaluation. As the semester comes to a close, students will receive an email with instructions for completing this. Student feedback will be very valuable to the school, the instructor, and future students. We ask that all students please complete these evaluations in a timely manner. Please be assured that the information you submit online will be anonymous and kept confidential.

University of Virginia Honor System

All work should be pledged in the spirit of the Honor System at the University of Virginia. The instructor will indicate which assignments and activities are to be done individually and which permit collaboration. The following pledge should be written out at the end of all quizzes, examinations, individual assignments and papers: "I pledge that I have neither given nor received help on this examination (quiz, assignment, etc.)". The pledge must be signed by the student. For more information, visit www.virginia.edu/honor.

Special Needs

It is my goal to create a learning experience that is as accessible as possible. If you anticipate any issues related to the format, materials, or requirements of this course, please meet with me outside of class so we can explore potential options. Students with disabilities may also wish to work with the Student Disability Access Center to discuss a range of options to removing barriers in this course, including official accommodations. Please visit their website for information on this process and to apply for services online: sdac.studenthealth.virginia.edu. If you have already been approved for accommodations through SDAC, please send me your accommodation letter and meet with me so we can develop an implementation plan together.

Technical Support

Technical Support Contacts

UVa Rivanna: hpc-support@virginia.edu

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