

STA 4930 – Statistics and Data Science Capstone Projects

Course Description: This culminating experience will synthesize methods and ideas acquired in undergraduate courses by working in small groups on a project and presenting findings in a written report, poster presentation, and an oral presentation.

Required Prerequisites: Permission of the instructor

Instructor: Dr. Elizabeth Johnson
Office: 115-B Griffin-Floyd Hall

Email: ejohnson5@ufl.edu
Telephone: 352-273-1897

Class Meeting Times:

Day: Tuesday
Time: Periods 6&7 (12:50-2:45 PM)
Location: MAT 0009

Day: Wednesday, as needed
Time: Period 8 (3:00-3:50 PM)
Location: TUR B310 or Zoom

Course Goals: The primary goal for this course is to provide a unifying experience that links statistical concepts across courses and provides a framework for conducting independent research. We will further develop skills in exploring data, building, and fitting models, investigating model assumptions, interpreting results from statistical models, and report writing.

Learning Outcomes: After completion of this course students will be able to:

- integrate their knowledge from previous courses to conduct an original research project.
- build collaborative skills by working with professionals in related fields.
- develop effective communication (written and oral) skills by presenting the results of their research to both technical and non-technical audiences.
- demonstrate competence in using statistical software.

Selected Readings and Resources:

Selected course readings related to the study, such as journal articles, will be posted on the Canvas site.

Hadley Wickham and Garrett Golemund, 2017. R for Data Science, O'Reilly, Addison Wesley
Download free pdf at [Welcome | R for Data Science \(had.co.nz\)](https://www.had.co.nz/welcome.html)

Gareth James, et al. 2013. An Introduction to Statistical Learning with Applications in R, Springer. Free pdf download available at [An Introduction to Statistical Learning \(statlearning.com\)](https://www.statlearning.com/) Access to slides and 15 hours of lecture videos available at [In-depth introduction to machine learning in 15 hours of expert videos | R-bloggers](https://www.statlearning.com/in-depth-introduction-to-machine-learning-in-15-hours-of-expert-videos.html)

Software: R and selected R packages constitute the primary software for this class. The Comprehensive R Archive (CRAN) is the primary place to download R. RStudio is the recommend integrated development environment for using R. RStudio Download. The Free Desktop version is fine. Other software packages may also be utilized such as Python or SAS JMP Pro.

Course Assignments

Your final course grade will be based on a variety of assignment types that are described below. Due dates will be posted on the course schedule in Canvas and announced in class.

Class participation and discussions: Participation is an important component of this course. You are expected to participate in all in-class exercises and discussions by completing the required readings or activities and supporting your research team.

Weekly Team Status Report: Each group will submit a weekly project status update which will include a summary of tasks in progress, completed and planned. Form is posted on Canvas.

Background Research and Readings: This may involve activities such as: attending professional presentations, either in-person or online, finding resources in the library, or meeting with other professionals in the field of study.

Capstone Research Project: Student groups will complete their research project on their approved topic. Based upon your work, your group will write a statistical paper, usually approximately 10-15 pages, prepare a poster, and give an oral presentation to an audience of faculty and peers. See rubrics posted on Canvas.

Project Critiques: It is very important to watch the work of your peers so each student will be assigned to view two other group project videos and to provide constructive comments on each video. Discussion topics will be provided.

Student Evaluation: Student work in the course (and the relative weighting of this work in the overall grade) will consist of:

Participation/Attendance	5%
Weekly Status Reports	10%
Video Presentation #1	2%
Video Presentation #2	5%
Final Presentation	10%
Critiques	3%
Research Paper	30%
Poster	15%
Project Code	20%

The instructor reserves the right to adjust the percentages if needed.

Grading Scale:

Numeric Score	Letter Grade	Numeric Score	Letter Grade
93 – 100	A	77 – 79	C+
90 – 92	A–	71 – 76	C
87 – 89	B+	67 – 70	C–
83 – 86	B	60 – 66	D
80 – 82	B–	0 – 59	E

Course Policies

Grading Policies:

*Requirements for class attendance and make-up exams, assignments, and other work in this course as well as policies regarding absences, religious holidays, illness, and student athletes are consistent with UF Attendance Policies.

Additional make-up policy requirements:

- Every effort should be made to complete the assignment/exam during the open period. Only extreme situations will warrant a makeup. Contact the instructor prior to the exam - as soon as you realize you will be unable to take the assignment/exam at the scheduled time. Each case will be reviewed individually. Valid and detailed documentation is a prerequisite for scheduling a makeup under such extenuating circumstances.
- If you have an emergency on the day of the assignment/exam, the instructor must be contacted by midnight of the day of the assignment/exam.
- Make-up exams will be scheduled within a week from the assignment deadline. Student is responsible for attending scheduled make-up. Instructor reserves the right to utilize the UF posted final exam day as a make-up date.
- Additional Note: Being on vacation or booking a trip prior to the completion of the semester is not a valid reason to request a makeup. Please reference the most recent Academic Calendar, <https://catalog.ufl.edu/UGRD/dates-deadlines/pdfs/>.

*If you have a disability that requires academic accommodation, contact the Disability Resource Center (DRC). The DRC will provide documentation to the students who must then provide this documentation to the instructor when requesting information. You must submit this documentation prior to submitting any assignments for which you are requesting accommodation.

* Incompletes are only assigned when extraordinary circumstances (such as an accident, or extended hospitalization), arising after the date for dropping the course, prevent the student from completing the course requirements. Having a failing grade in the course is not a valid reason for requesting an Incomplete. Information on Medical Withdrawal can be found at <https://umatter.ufl.edu/> . Information on how to Drop a class can be found in UF’s Academic Catalog <https://catalog.ufl.edu/> and <https://catalog.ufl.edu/UGRD/academic-regulations/dropping-courses-withdrawals/>

Classroom Behavior: During class students should silence their cellular phones and refrain from eating, drinking, reading newspapers, doing homework, listening to music, excessive talking and all other behaviors that are distracting and disrespectful to the instructor and their fellow students.

Privacy Policy: Student records are confidential. Only information designated “UF directory information” may be released without your written consent. This applies to parents or anyone else who contacts me about your grades.

Faculty Course Evaluations: Student feedback is welcomed by the instructor and beneficial to future students in the course. Students are requested to provide feedback on the quality of instruction in this course by completing a brief confidential evaluation towards the end of the semester at <https://evaluations.ufl.edu>. Summaries of the evaluation results can be found at <https://evaluations.ufl.edu/results>.

Other University Services

U Matter, We Care: Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

***Sexual Assault Recovery Services (SARS): Student Health Center, 392-1161**

***University Police Department, 392-1111 (or 9-1-1 for emergencies), <http://www.police.ufl.edu>**

***Student Health Care Center:** Call 352-392-1161 for 24/7 information to help you find the care you need or visit the Student Health Care Center website.

***GatorWell Health Promotion Services:** For prevention services focused on optimal wellbeing, including Wellness Coaching for Academic Success, visit the GatorWell website or call 352-273-4450.

Academic Resources

E-learning technical support: Contact the UF Computing Help Desk at 352-392-4357 or via e-mail at helpdesk@ufl.edu.

Writing Studio: 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.

Student Complaints On-Campus: Visit the Student Honor Code and Student Conduct Code webpage for more information.