# STA 4950 – Capstone in Statistics and Data Science
# Spring 2026

***Course Description:*** This teamwork-based culminating experience synthesizes methods and skills acquired in statistics and data science courses by working on a data-focused project provided by a partnering institution. Each group will present the results of their analyses in a written report, a poster presentation, and an oral presentation.

**Required Prerequisites:** STA 4210 & 3 additional credits in STA 4XXX & (BS or BA STA or DAT major or STA minor or ACS minor)

**Instructor**: Dr. Elizabeth Johnson
**Office**: 116-A Griffin-Floyd Hall
**Email**: ejohnson5@ufl.edu
**Telephone**: 352-273-2971

**Class Meeting Times**:

Day: Tuesday
Time: Period 6-7 (12:50 – 2:45 PM)
Location: TUR 2346

Day: Wednesday
Time: Periods 8 (3:00-3:50 PM)
Location: TUR 2336

***Course Goals:*** This course is a unifying experience that links statistical concepts across courses and provides a framework for conducting independent research. Students will further develop their skills in exploring data, building, and fitting models, investigating model assumptions, interpreting results, and reporting findings to various stakeholders.

***Learning Outcomes:*** Upon successful completion of this course students will:

- 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.
- Enhance competency when using statistical software.

**Selected Readings and Resources*:***

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) 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

Hadley Wickham and Garrett Grolemund , 2017. R for Data Science, O'Reilly, Addison Wesley Download free pdf at Welcome | R for Data Science (had.co.nz)

Miller, Jane E., The Chicago Guide to Writing About Multivariate Analysis, second edition, Chicago, 2013

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

**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.

### Individual assignments:

***Professional Talks*:** Students will attend or view three approved professional presentations and write a one-page summary including a reflection on the strengths and weaknesses of the presentation. These talks should be on ***topics or concepts used in their research project***.

***Project Critiques*:** It is very important to watch the work of your peers so each student will be required to provide constructive comments on two other group project initial presentations.

***Class discussions and reflections***: Reading assignments will be posted covering topics such as data ethics, professionalism, presentation skills, and communication. You are expected to participate in all in-class exercises and discussions by completing the required readings or activities and submitting any required reflection statements.

### Team-based assignments:

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

***Project Presentations:*** Two formal project updates will be given during the semester to provide information on the progress of the project. Each team member will be required to create and present three or four slides of steps taken so far and the next steps. The project updates should address each individual's contribution to the group's overall goal. A final presentation consisting of at most 15 slides will be given at the end of the semester.

***Research Paper***: A report of no more than 20 pages describing the results of each project that includes the following:

- The research question(s).
- Background/significance of the research.
- The methods used to obtain and analyze the data.
- The results of the analysis (tables, charts, graphs, significance, confidence intervals, descriptive text).
- A discussion of the research, the limitations of the current research, reasonableness of any assumptions made, possibilities of future work/studies that should be conducted, etc.
- Title page and a one-paragraph abstract of the entire project with a recommended length of no more than 150 words.

***Poster***: Each project team will submit a single slide electronic poster presentation which is a one-page presentation that tells a story about their set of data. Guidelines for construction of a poster presentation can be found at: https://ww2.amstat.org/meetings/qdet2/presentationtips.cfm

***Project Code:*** Each group will submit any relevant code formatted from R Markdown, Jupyter Notebooks, GitHub or a similar format.

***Grading Scheme:***

| | |
|---|---|
| Individual Assignments: | |
| Professional Talks (3@5% each) | 15% |
| Project Critiques (2@3% each) | 6% |
| Class discussions/Attendance | 4% |
| | |
| Team-based Assignments: | |
| Bi-weekly Status Reports (5@1%) | 5% |
| Presentation #1- Research Questions and EDA | 5% |
| Presentation #2 - Data Analysis | 5% |
| Final Presentation | 10% |
| Research Paper | 20% |
| Poster | 10% |
| 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

"This course complies with all UF academic policies. For information on those polices and for resources for students, please see this link."

(The direct link is https://syllabus.ufl.edu/syllabus-policy/uf-syllabus-policy-links/.)

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, see link above.

There is no "extra credit" or forgiven grades – you are responsible for all your work done (or left undone).

If you have a question concerning a graded assignment, you should notify me within seven days after a graded assignment is posted to schedule a meeting.

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

Additional make-up policy requests:

- Every effort should be made to complete the assignment/exam during the assigned period. Only extreme situations will warrant a make-up. Contact the instructor prior to the exam – or as soon as you realize you will be unable to take the exam at the scheduled time. Each case will be reviewed individually. Valid and detailed documentation is a prerequisite for scheduling a make-up under such extenuating circumstances.
- Every effort will be made to make up any missed exam within a week of the assignment deadline. The 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.
- The UF Religious Holidays Policy is available using the link above.
- Please reference the most recent Academic Calendar for official holidays and drop dates, 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.

Honor Code on Exams**:** You are required to abide by the University of Florida Student Honor Code. Any violation of the academic integrity expected of you will result in a minimum academic sanction of **a failing grade on the assignment or assessment.** Any alleged violations of the Student Honor Code will result in a referral to Student Conduct and Conflict Resolution. Please review the Student Honor Code and Student Conduct Code at sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/

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, https://umatter.ufl.edu/ offers care related resources and programs focused on health, safety, and holistic well-being.

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.

**Typical Course Schedule – varies by project topic. See Canvas for Due Dates**

| | Topic | Assignment |
|---|---|---|
| Week 1 | Introduction to the course and data projects. Formation of the project teams. | |
| Week 2 | Developing a project plan; strategies for working on a team-based project | Draft project plan due<br><br>Weekly Status Reports |
| Week 3 | Variable types and descriptive measures | Professional Talk Critique #1 |
| Week 4 | Library information session. Writing technical reports and literature reviews | Revised project plan due<br><br>Weekly Status Reports |
| Week 5 | Choosing tools for presenting numbers—tables, charts, and prose | |
| Week 6 | Choosing tools for presenting numbers—tables, charts, and prose<br>Presentation #1 | Weekly Status Reports<br>Project Critique #1 |
| Week 7 | How to effectively include graphs and tables in a report | Professional Talk Critique #2 |
| Week 8 | Planning a speech and creating effective slides | Weekly Status Reports |
| Week 9 | Presenting statistical results to lay audiences | Project Critique #2 |
| Week 10 | Preparing and presenting research posters | Professional Talk Critique #3<br><br>Weekly Status Reports |
| Week 11 | Presentation #2 | Project Critique #2 |
| Week 12 | Project work | Poster due |
| Week 13 | e-Poster presentation | Draft final report due |
| Week 14 | Project work | |
| Week 15 | Final Project Presentations | Final Written Report due<br>Submit computer code |