

STAT 497/498: Capstone Group Project in Statistics

Instructors:

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Credits:

Fall: 4 credits

Winter: 4 credits

Day/Time:

Fall: TR 4:00-5:50 pm

Winter: MW 4:00-5:50 pm

Course Overview:

STAT 497 & STAT 498 is the capstone project sequence for senior statistics majors. This course gives students the opportunity to apply statistical theories and methods learned throughout their undergraduate program to a real-world group project. The course involves:

1. Collaborating with industry sponsors to identify and define a statistical problem.
2. Developing hypotheses and statistical models to address the problem.
3. Collecting and analyzing data using advanced statistical techniques.
4. Implementing and testing models or methods.
5. Evaluating the results based on statistical criteria.
6. Documenting and presenting findings.
7. Managing the project to ensure timely completion and high-quality deliverables.

Course-Specific Learning Outcomes:

Upon successful completion of this course, students will be able to:

1. Work with sponsors to define a statistical problem and develop a research plan.

2. Design and implement appropriate statistical methods and models.
3. Analyze data and evaluate model performance using statistical measures.
4. Manage project resources effectively to meet deadlines and goals.
5. Address ethical issues related to data privacy, bias, and reporting.
6. Communicate results through written reports and oral presentations.
7. Function effectively within a team to produce a comprehensive statistical analysis.

ABET Program Outcomes:

This course supports the following ABET outcomes:

- Ability to apply knowledge of mathematics, science, and engineering to solve complex problems.
- Ability to function on multidisciplinary teams.
- Ability to communicate effectively with both technical and non-technical audiences.
- Understanding of professional and ethical responsibilities.
- Recognition of the need for, and ability to engage in, lifelong learning.

WIC Program Outcomes:

Students will:

1. Develop critical thinking and content knowledge in statistics through regular writing exercises.
2. Demonstrate an understanding of audience expectations, genres, and conventions in statistical communication.
3. Produce a comprehensive report of at least 2000 words, demonstrating the ability to revise and improve based on feedback.

Key Deadlines:

Team Charter & Presentation: 50 points - Due: Oct 10

Background Report: 200 points - Due: Oct 24

Preliminary Proposal: 200 points - Due: Nov 14

Final Proposal: 250 points - Due: Dec 9

Project Notebook: 50 points - Due: Dec 12

Assignments:

1. Group Charter and Presentation (50 points):

- A contract between team members detailing expectations, roles, and project goals.

2. Project Notebook (50 points):

- A log of all project-related activities and decisions.

3. Background Report (200 points):

- Detailed analysis of the problem domain and current approaches.

4. Preliminary Proposal (200 points):

- Initial design and methodology for the project.

5. Final Proposal (250 points):

- A comprehensive report detailing the chosen methods and expected outcomes.

6. Weekly Presentations (100 points):

- Regular updates on project progress and upcoming milestones.

7. Project Contribution (150 points):

- Individual contribution to the team and project.

8. Project Results (375 points):

- Evaluation of the final project deliverables and outcomes.