

STA 5939
Introduction to Statistical Consulting
FALL SEMESTER 2022

Instructor: Xu-Feng Niu
Office: 210B OSB xniu@fsu.edu
Class Hours: 4:50pm - 6:05pm MW (Room OSB 327)
Office Hours: 3:00pm - 4:00pm MW

Course description and topics: The course will focus on formulation of statistical problems from client information, the analysis of complex data sets by computer software, and practical consulting experience. Experience will be gained through actual consultation with researchers who have a real problem with relevant data. Topics of this course will include

- 1) Special experimental designs (Split-Plot, Repeated Measures);
- 2) Linear and non-linear mixed-effects models;
- 3) Generalized linear and additive models;
- 4) Multiple comparisons;
- 5) Sample size determination;
- 6) Time series data analysis.

The course will use “SAS” and “R” as the main statistical computing packages. Students in the course are required working on statistical consulting projects and will receive data to use in the class from on campus sources or from clients while working paid or unpaid internships.

Course objectives: Upon completion of this course students will be able to

- 1) Communicate effectively with future clients and form statistical problems in different situations;
- 2) Work on statistical data analysis projects independently;
- 3) Prepare progress reports and final reports of research projects;
- 4) Present statistical results clearly to clients and in conferences.

Prerequisites:

STA 5167 or STA5327 or consent of the instructor.

Course Grading:

Grading will be based on reports and presentations prepared for the consulting projects (20% for attending the Data Science workshops, 30% for the progress report and presentation, 40% for the final report and presentation, and 10% for class attendance, periodic assigned oral reports, and discussion.)

University Policies

University Attendance Policy:

Excused absences include documented illness, deaths in the family and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities. These absences will be accommodated in a way that does not arbitrarily penalize students who have a valid excuse. Consideration will also be given to students whose dependent children experience serious illness.

Academic Honor Policy:

The Florida State University Academic Honor Policy outlines the University's expectations for the integrity of students' academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to . . . be honest and truthful and . . . [to] strive for personal and institutional integrity at Florida State University. (Florida State University Academic Honor Policy, found at <http://fda.fsu.edu/Academics/Academic-Honor-Policy>.)

Americans With Disabilities Act:

Students with disabilities needing academic accommodation should:

- (1) register with and provide documentation to the Student Disability Resource Center; and
- (2) bring a letter to the instructor indicating the need for accommodation and what type. This should be done during the first week of class.

This syllabus and other class materials are available in alternative format upon request.

For more information about services available to FSU students with disabilities, contact the:

Student Disability Resource Center
874 Traditions Way
108 Student Services Building
Florida State University
Tallahassee, FL 32306-4167
(850) 644-9566 (voice)
(850) 644-8504 (TDD)
sdrc@admin.fsu.edu
<http://www.disabilitycenter.fsu.edu/>

STA 5939
Introduction to Statistical Consulting
FALL SEMESTER 2022

Course Project:

A data analysis project is required for this course. You may find a data set by yourself or through online data libraries. Topics for the project might be related to the materials you learned from this course. The length of the project is expected to be about 20 pages, including figures and tables. For the manuscript preparation of your project, Latex or Word is preferable. The written document should include:

- a clear and detailed description of the problem background and of the data associated with it.
- a precise statement of the substantive questions to be addressed by the analysis.
- a complete description of the methods used in the analysis.
- conclusions and discussion.

The written document along with a PPT presentation of your project is due 5:00pm on December 8th, Thursday of the final examination week.

Tentative Syllabus

Topic	Source
Multiple comparisons;	SAS
Special experimental designs (Split-Plot, Repeated Measures);	SAS
Sample size determination;	R
Time series data analysis;	SAS and R
Generalized Linear Models	SAS and R
Linear and non-linear mixed-effects models;	SAS and R
Projects discussion and presentations	