QAC380 Introduction to Statistical Consulting

WHO SHOULD TAKE THIS COURSE
This course is designed for students who have taken a course in statistics or have developed some skills for working with data and using statistical tools to analyze data, and wish to further apply this knowledge.

ABOUT THIS COURSE
In this course, you will be exposed to realistic statistical and scientific research issues that appear in typical interactions between statisticians and researchers. The clients are real. The goal is for you to apply what you have learned in your basic statistics and data analysis courses to gain greater experience in the areas of research collaboration, data management and analysis, and writing and presenting reports on the results of the analyses. An important objective of the course is to help develop communication skills, both written and verbal, as well as the professional standards and the interpersonal skills necessary for effective statistical consulting. To this end, you will be required to provide oral and written reports throughout the semester.

WHAT YOU WILL BE DOING
You will be part of a small consulting team assigned to work on a client project for the entire course. Teams are encouraged to consult with each other in order to gain further experience with the collaborative component of statistical consulting. The instructor will create the teams to ensure a balanced range of expertise in each team. The purpose of the client's informal presentation is to provide the background of the research problem in enough detail for the class to have an initial discussion of the quantitative problem. You are expected to attend class and all client presentations, to contribute to projects, to the team's assignments, and to give occasional project status updates to the entire class.

SOME ADVICE
Class attendance and participation is required. In addition, you will each be expected to contribute equally to the project that your assigned consulting team is working on. Bi-weekly team participation evaluation forms will be completed by the students about themselves, their team members, and by the instructor for each student. These evaluation forms will be used to assign a class participation grade that will be worth 10% of your final grade.

Finally, it is the policy of Wesleyan to provide reasonable accommodations to students with documented disabilities. Students are responsible for registering with Disabilities Services, in addition to making requests known to their instructor. If you require accommodations in this class, please make an appointment with the instructor during the 1st week of the semester, so that appropriate arrangements can be made.

COURSE REQUIREMENTS
The course will revolve around research questions posed by the chosen clients, and will offer an intensive hands-on experience with the research process. Students will use and further develop skills in
1) research collaboration and client interaction; 2) ethics and issues in statistical consulting; 3) formulating testable hypotheses based on clients' research questions; 4) data management, 5) conducting descriptive and inferential statistical analyses; and 5) writing and presenting final reports to the clients.

Lectures:
Class lectures will be brief and designed to provide students with adequate substantive and practical background to successfully complete a statistical consulting project. The majority of class time will be devoted to working with your research team on the consulting project. Attendance is required.

Readings:
There is no textbook for this class. There will be required readings that can be accessed through the Moodle web site for the course. Similar to lectures, the readings are designed as brief informational tools necessary to successfully complete a statistical consulting project. In addition, there will be a link to online websites that provide excellent tutorials for the statistical methods we will be discussing in class.

The Moodle web site will also provide links to supplementary material that provide more in depth information about statistical consulting topics and statistical methods that students can access as reference material.

All assigned readings should be completed prior to the corresponding class.

Participation:
In order to be a successful statistical consulting team, all members of the team must participate equally and enthusiastically both during the class and outside of class. Therefore participation will be 10% of your overall grade for the class. The participation grade will be based on approximately bi-weekly confidential individual self-reported assessment of themselves and team members, and instructor assessments of each student. Class attendance is mandatory and will be factored into the assessment.

Individual Assignments:
There will be 3 individual assignments that should be completed by each student independently.

Research Proposal:
As part of a consulting team, students will prepare and submit a research proposal that describes the research question, the measures that will be used to address the questions, and statistical methods that could be used to address the question.

Oral Progress Reports:
During the course of the semester, students will be asked provide brief oral updates on their consulting team's progress. This will also be an opportunity to discuss any issues or problems with the entire class. Oral progress reports to the client are considered more formal and will require that the consulting
teams provide handouts or use powerpoint slides to support their report.

Written Reports:
Your team will be asked to submit 2 drafts of the final written report. The first draft will include a report on descriptive statistics and graphs and the second will be a draft of the entire report. You will be allowed to make edits based on feedback and will submit a final research report that includes the information from the research proposal (research questions and methods), descriptive analyses and graphs, results of the statistical analyses, and conclusions and implications of the results.

Final Oral Presentation:
For their final exam, consulting teams will be required to make an oral presentation of the research report to the client. Each team will be expected to prepare powerpoint slides (or poster) to support their presentation.

The final oral presentation to the client will be scheduled during the last week of classes.

Scientific Integrity:
The rules of science should be carefully upheld in everything that you do. The following behavior is absolutely unacceptable: Data fabrication, selective reporting, omission, suppression or distortion. Please be mindful that there is no such thing as a “little scientific misdemeanor”. In addition, all students will be required to sign a Confidentiality Agreement before being allowed to access the data. This agreement limits disclosure of data and results.

Commitment to the Course:
Consulting teams are expected to make marked progress each week and to come to class prepared to discuss their progress, questions and planned next steps. It is important to note that this is a course where students will need to devote a substantial amount of out of class time and that a significant portion of that time will likely require support from the instructor, team members, and classmates.

Grades:
With the exception of the individual assignments and participation grades, students will be graded as a team. That is, each team will work together on completing the assignment and all members of that team will get the same grade.

EXCEPTION: STUDENTS WHO RECEIVE MORE THAN 1 NEGATIVE EVALUATION WILL BE REQUIRED TO COMPLETE ALL REMAINING ASSIGNMENTS ON THEIR OWN. THEY WILL NOT HAVE THE SUPPORT OF THE TEAM. THEY WILL BE REQUIRED TO COMPLETE AND TURN IN ALL ASSIGNMENTS INDIVIDUALLY, AND THEY WILL BE GRADED AS INDIVIDUALS INDEPENDENT OF THEIR FORMER TEAM.

Course grades will be based on:
Individual assignments (10%)
Initial client interview outline (5%)
Oral progress reports (10%)
Research proposal (15%)
Final written research report (25%)
Final oral presentation to client (25%)
Class and team participation (10%)

 Passing Letter Grades/Percentages:

A 95-100%  B+ 88-90%  C+ 78-80%  D+ 68-70%
A- 91-94%  B 85-87%  C 75-77%  D 65-67%
B- 81-84%  C- 71-74%  D- 60-64%