Winter 2019

SS4844B/9544B Statistical Consulting & MDA9144B Data Consulting

1. General Course Information

Lectures: Mondays, Wednesdays and Fridays, 3:30 – 4:30 pm, North Campus Building 284
Tutorials: NA
Prerequisites: Students should have a working knowledge of linear regression techniques and should have, or be taking, a course in generalized linear models. The ability to carry our analyses in R is essential. Knowledge of experimental design and survey sampling issues is useful, but not required. Additional course specific prerequisites are as follows:

- SS4844B: Statistical Sciences 3859A/B with at least 60%. This course is restricted to students enrolled in the Hon. Spec. module in Data Science.
- SS9544B: Enrollment in a graduate program offered by the Department of Statistical and Actuarial Sciences.
- MDA9144B: Enrollment in the Master of Data Analytics program.

Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

2. Instructor Information

Instructor: Douglas Woolford, Associate Professor
Office: WSC 233
Email*: dwoolfor@uwo.ca
Phone: (519) 661-2111 ext. 88326
Office Hours: Wednesdays from 1:30 – 2:30 pm, Thursdays from 10:30 – 11:30 am, or as announced in class/on OWL and by appointment

*Students must use their Western (@uwo.ca) email addresses when contacting the instructor.

3. Course Description

An introduction to the interpersonal techniques of statistical consulting, including methodologies for data analysis common to many consulting problems and ethics, in the context of the cycle of Problem, Plan, Data, Analysis and Conclusion. A large portion of the course will be conducted in a seminar format with student participation.

It is intended that students will gain first-hand experience in the consulting process.

On successful completion of this course, students shall have:

- A working knowledge of ethics in the context of data analytics, including familiarity with the Statistical Society of Canada's guidelines on the ethical practice of statistics, practice these ethics in their own analyses, and recognize situations where these ethical practices were not used.
- The ability to identify the data analytics problem based on a general description of a problem in a field of research and ask appropriate questions to help characterize the problem in order to recommend analytics methods.
- The ability to work productively in team settings to apply data analytics to solve a problem or investigate a hypothesis.
- The ability to prepare and present non-technical reports and presentations to communicate the information gained through the analysis of data.

4. Course Materials

There is no assigned textbook for the course. Some related supplementary references that I have found helpful are listed below. Some journal articles and other reading material will be made available via OWL.

- Alley, M. (2003). *The craft of scientific presentations: Critical Steps to Succeed and Critical Errors to Avoid.* Springer.
- Alley, M. (1996). *The craft of scientific writing.* Springer.
- Cabrera, J., & McDougall, A. (2013). Statistical consulting. Springer.
- Derr, J. (2000). *Statistical consulting: A guide to effective communication*. Duxbury Thomson Learning.
- Gandrud, C. (2016). *Reproducible research with R and R studio.* Chapman and Hall/CRC.
- Kapterev, A. (2011). *Presentation secrets: Do what you never thought possible with your presentations.* John Wiley & Sons.
- Kloppenborg, T. (2014). *Contemporary project management.* Nelson Education.
- Stodden, V., Leisch, F., & Peng, R. D. (Eds.). (2014). *Implementing reproducible research.* CRC Press.

Website: Students should check OWL (http://owl.uwo.ca) on a regular basis for news and updates. This is the primary method by which information will be disseminated to all students in the class. Students are responsible for checking OWL on a regular basis.

Intellectual Property Statement: Course material developed by your instructor is the intellectual property of your instructor and is made available to students enrolled in this course for their personal use in this course. Sharing, posting or selling this material to third parties (i.e., to people outside of those in this course, or to companies, websites, organizations, associations, etc.) is considered an infringement of intellectual property rights.

5. Methods of Evaluation

1. You will be required to complete five assignments.
    - Assignments will be due approximately every 2 weeks.

2. You will be required to write short reflective reports related to each of the guest speakers.
    - Guest speakers are currently scheduled for January 16, January 28 and March 13.
    - This schedule may be subject to change and additional speakers may be added.
    - Reports for each guest speaker are due at the start of class, one week after each visit.

3. You will be put in a mock consulting situation and asked to play the role of the consultant.
    - The mock consulting situations will be carried out in mid-to-late March.
    - Times will be arranged with the instructor and/or Dr. Bellhouse who may assist with conducting these mock consulting situations.

4. You will be divided into teams to carry out a major consulting project over the term.
    - A description of this major consulting project that includes some supplementary related files will be posted on the course website on OWL.
    - An external client is providing the problem and the data. This client will interact with the class on a regular basis through tele/video-conferences and in-person visits that will occur during some of the lectures.
    - Each student will be required to sign a data sharing agreement and follow the terms of that data sharing agreement and an electronic intellectual property license to complete this major consulting project.
    - Teams will make several oral presentations related to their analysis over the term.
    - Teams must also submit a final written report on the consulting project. This report is due at 12:00 noon on Monday, April 15.

5. You will be evaluated on your class participation.
    - Students are expected to attend all classes and in-class guest speaker events.
    - Students are also expected to come to class ready to actively participate in discussions with the instructor and their classmates, comment/conduct peer evaluations of other team's presentations, and to interact with the client.

The overall course grade will be calculated as listed below:

Method of evaluation 1:	20%
Method of evaluation 2:	15%
Method of evaluation 3:	10%
Method of evaluation 4:	40%
Method of evaluation 5:	15%
Total:	100%

6. Accommodation and Accessibility

If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or supporting documentation to the Academic Counselling Office of your home faculty as soon as possible. If you are a Science student, the Academic Counselling Office of the Faculty of Science is located in NCB 280, and can be contacted at scibmsac@uwo.ca.

For further information, please consult the university's medical illness policy at http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf.

Accommodation will be handled on a case-by-case basis by the instructor. For example, if a student has received academic accommodation, missed components may be excused so that the course grade is reweighted or an alternate assessment(s) may be required. If academic accommodation is not received (i.e., the reason for missing the component is not deemed valid) then a mark of 0 will be assigned to that component of the course grade.

7. Academic Policies

The website for Registrarial Services is http://www.registrar.uwo.ca.

In accordance with policy, http://www.uwo.ca/its/identity/activatenonstudent.html, the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at his/her official university address is attended to in a timely manner.

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.

Preparing Assignments: Submitted assignments may be subject to up to 50% penalty if the following instructions are not followed:

- Use 8.5 x 11 standard "letter" paper only.
- Answer questions in order.
- Answer questions neatly and clearly. If you do your assignment in pencil, be sure that the lead is dark enough so that your writing can be easily read.
- Written assignments must be typed, in 12 point font with 1-inch margins.
- Code for data analysis is to be provided as an appendix unless otherwise indicated.
- When submitting a hard-copy, staple pages together in the upper left-hand corner (do not use paper clips, duotangs, etc). Electronic copies of reports or presentations must be submitted as a pdf file to a dropbox on OWL, unless otherwise indicated.

Late Assignments: Unless indicated otherwise, assignments are to be handed in at the start of class on the day they are due. Assignments submitted late may be subject to a 20-percentage point penalty per day (including weekends and holidays). Assignments submitted 5 or more days late will not be graded.

Checking Marked Work: In the event of a question regarding a mark or a final grade, students are responsible for retaining and presenting any graded materials that were returned to the student during the term. Students have one week from the date the material was returned in class to report any apparent error in the marking and appeal their grade. No marks will be changed after that time. The instructor reserves the right to remark the entire assignment, lab, quiz, test, project or exam.

Privacy: The names of student(s) may be divulged in the classroom to other members of the class. Individuals who are concerned about such disclosures should contact the course instructor to identify whether there are any possible alternatives.

Grades: Marks will not be disclosed or discussed by email or telephone. This included final grades. Students who wish to discuss their final grade are welcome to come see me during my office hours or to contact met to set up an appointment to meet.

8. Support Services

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Student Accessibility Services (SAS) at 661-2147 if you have any questions regarding accommodations.

The policy on Accommodation for Students with Disabilities can be found here:
http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_disabilities.pdf

The policy on Accommodation for Religious Holidays can be found here:
http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_religious.pdf

Learning-skills counsellors at the Student Development Centre (http://www.sdc.uwo.ca) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Students who are in emotional/mental distress should refer to Mental Health@Western (http://www.health.uwo.ca/mental_health) for a complete list of options about how to obtain help.

Additional student-run support services are offered by the USC, http://westernusc.ca/services.