



SS4844B/9544B Statistical Consulting & MDA9144B Data Consulting Winter 2021



Although this academic year might be different, Western University is committed to a **thriving campus**. We encourage you to check out the [Digital Student Experience](#) website to manage your academics and well-being. Additionally, the following link provides available resources to support students on and off campus: <https://www.uwo.ca/health/>.

Technical Requirements and Important Dates:



Stable internet connection



Laptop or computer



Working microphone



Working webcam



Classes Start	Reading Week	Classes End	Study day(s)	Exam Period
January 11	February 15 - 19	April 12	April 13	April 14 – 30

*March 15, 2021: Last day to drop a second-term half course or a second-term full course without penalty

1. Course Information

Lectures and Readings

Online asynchronous lectures along with suggested readings will be posted on OWL. Students are expected to regularly engage with this material. Engagement is assessed through weekly forums/discussion activities.

- These resources will be posted weekly by 4:30 pm on Mondays.
- The official lecture times of Mondays from 2:30 – 4:30 pm and Wednesdays from 3:30 – 4:30 pm are reserved for individual, group and/or team meetings in the event that an alternative, mutually agreeable time cannot be identified.
- All times listed are local to London, Ontario, Canada.

Labs and Tutorials

There are no labs or tutorials.

Prerequisites

Students should have a background in statistical modelling and inference including working knowledge of linear regression techniques and should have, or be taking, a course in generalized linear models. The ability to carry out analyses in R is essential. Knowledge of experimental design, survey sampling issues and other data modelling methods (either model-based or algorithmic-based) is useful, but not required. Additional course-specific prerequisites are as follows:

- SS4844B: SS3859A/B with at least 60%, and registration in the fourth year of the Honors Specialization in Data Science module or the Honors Specialization in Statistics module.
- SS9544B: Enrollment in a graduate program offered by the Department of Statistical and Actuarial Sciences.
- MDA9144B: Enrollment in the Master of Data Analytics program.

Other Notes

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

Dr. Douglas Woolford



Office: WSC 221
Phone: 519-661-2111 ext. 88326
Email*: dwoolfor@uwo.ca
Office Hours: As announced in class/on OWL and by appointment, to be held remotely using Zoom videoconferencing software.

Notes:

- Email is the best way to contact me because I will not be on campus regularly this semester. When doing so, please use your Western (@uwo.ca) email address.
- Emails will typically be responded to within one business day.
- When requesting an appointment to meet, please suggest at least 3 different times, listed in your order of preference. This should help us efficiently find a mutually agreeable time to meet.

3. Course Syllabus, Schedule, and Delivery Mode

Calendar 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.

Course-Level Learning Outcomes

On successful completion of this course, students shall have:

- Gained first-hand experience in data consulting for a client.
- A working understanding of the data consulting process.
- The ability to ask appropriate questions to identify and characterize the data analytics problem based on a general description of the problem provided by an end-user/collaborating partner and then recommend analytics methods to approach a data modelling solution to the problem.
- The ability to prepare and present reports and presentations to communicate the information gained through the analysis of data in both technical and non-technical language.
- The ability to work productively in team settings using data analytics to solve a problem or investigate a hypothesis.
- A working knowledge of ethics in the context of data analytics, including the following:
 - A familiarity with the Statistical Society of Canada's guidelines on the ethical practice of statistics;
 - A familiarity with the concept of data governance;
 - An understanding of the need to practice ethical data analyses;
 - The ability to recognize situations where ethical data analysis practices were not followed;
- An understanding of the components to conduct a robust data analysis and the ability to document an analysis so that it is reproducible.
- An introduction to other professional skills that are desirable traits of a successful data analytics professional, such as project management, effectively participating in meetings in a variety of in-person and electronic settings, non-verbal communication, compensation and negotiation.

Online Participation and Engagement



- This is a fully remote class being delivered online.
- You are expected to participate and engage with content as much as possible.
- Your active and interactive attendance and input online is a course requirement: complete all assigned tasks and readings and participate in online discussions.

4. Course Materials

References

There is no assigned textbook for the course. Some related supplementary references that I have found helpful are listed below. Additional references/resources will be made available via the course website on OWL, as needed.

- 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.
- Fisher, R., Ury, W. L., & Patton, B. (2011). *Getting to Yes: Negotiating Agreement Without Giving In*. Penguin Books.
- 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.
- Ury, W. (2007). *Getting Past No: Negotiating in Difficult Situations*. Bantam.

Course 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.

All course material will be posted to OWL (<http://owl.uwo.ca>). Any changes will be indicated on the OWL site and discussed with the class.

If students need assistance, they can seek support on the [OWL Help page](#). Alternatively, they can contact the [Western Technology Services Helpdesk](#). They can be contacted by phone at 519-661-3800 or ext. 83800.

[Google Chrome](#) or [Mozilla Firefox](#) are the preferred browsers to optimally use OWL; update your browsers frequently. Students interested in evaluating their internet speed, please click [here](#).

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

The overall course grade will be calculated as listed below:

Assessment	Timing or Due Date	Submit to	Weight
Online Forum Weekly Activities	Weekly/Ongoing	Discussion Forums	40%
Online Forum Engagement	See description	Discussion Forums	10%
TCPS 2: CORE	February 1	OWL Assignments	10%
Mock Consulting Situation	March 15 – April 1 Your individual meeting will be scheduled online in OWL	NA – held remotely by Zoom	10%
Writing Services Consult	Complete item 1 by March 31 Submit item 2 by March 31 Submit item 3 by April 30	OWL Assignments	10%
Virtual Field Trip & Final Report	Register for and attend a seminar by March 15 (be sure to register early) Submit final report by April 30	OWL Assignments	20%
TOTAL			100%

A description of the evaluation components are as follows:

Online Forum Weekly Activities (40%) and Online Forum Engagement (10%)

- Contribution by each and every student is a cornerstone of any active learning experience. Class involvement augments the learning experience, increases assimilation of material and stimulates the level of class discussion.
 - **Weekly Activities:** Students' contributions to this course are initiated through weekly online activities and posting. Each activity will be posted on the OWL forum/discussion. These should be completed prior to each new week/topic. When applicable, activities should include references to the readings, appropriately cited, plus any other content that is requested. Your posts should not exceed 200 words. Each post is worth 5 points. The rubric for evaluating the posts is in the OWL forum/discussion.
 - **Engagement:** In addition to completing the activities, you are also responsible for engaging with the forum/discussion postings of your classmates. You are responsible for the following*:
 1. Commenting on one other posting
 2. Responding and monitoring any discussion related to any of your postings
 *At a minimum you should have posted at least three times as part of this engagement. Your postings should not exceed 200 words and must be cited appropriately, when applicable.

TCPS 2: CORE (10%)

“The online tutorial TCPS 2: CORE (Course on Research Ethics) is an introduction to the 2nd edition of the *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS 2)*. It consists of eight modules focusing on the guidance in TCPS 2 that is applicable to all research regardless of discipline or methodology.”

<https://tcps2core.ca/welcome>

- For this component you are to complete the online tutorial TCPS 2: CORE, print your certificate of completion as a pdf, and submit that through OWL as proof of completion.
- Due February 1, 2021

Mock Consulting Situation (10%)

- You will be put in a mock consulting situation and play the role of the consultant.
- To be held from March 15 – April 1, 2021.
- Individual meeting times will be arranged with the instructor/TA.

Writing Services Consult (10%)

- Writing is a key course outcome. Every student at Western has access to writing support through its Writing Support Centre (<http://writing.uwo.ca/>).
- For this assessment, you will submit a draft of your Virtual Field Trip Reflection (as described below) to the Writing Support Centre through its “Online Writing Assistance” portal. Once you have engaged in this writing consultation, you will then consider incorporating the feedback for your final draft of the paper.
- Completion of this component involves the following items:
 1. Submission of your draft of the Virtual Field Trip Reflection using the Online Writing Assistance portal.
 2. Submitting a copy of that draft along with dated confirmation of submission to the Instructor.
 3. Including the feedback that you received from the Writing Centre as an appendix to your Final Report.

Due dates for the above items:

Item 1 is completed through the Writing Centre’s Online Submission Portal.

Item 2 is submitted through OWL Assignments and is due by March 31, 2021.

Item 3 is submitted through OWL Assignments and is due by April 30, 2021.

CANSSI Ontario Data Science ARES - Virtual Field Trip and Reflection Final Report (20%)

- Register for and attend one CANSSI Ontario Data Science, Applied Research and Education Seminar (ARES) online.
- Submit proof of registration along with a 750 word reflection (not including references) on the experience. This reflective writing should connect your experience in the ARES seminar to the course readings and, if applicable, material you have learned as part of your degree, including a reference list.
- There are multiple seminars available to choose from over the course of this term.
 - The schedule for these is available at https://canssiontario.utoronto.ca/?page_id=343
 - **DO NOT leave this to the last minute. You are strongly advised to register for a seminar well in advance of the due dates for the Writing Services Consult as described above.**
- Due dates along with suggested timing for activities:
 - Register for an ARES Seminar (the virtual Field Trip) sometime during January. Note that the seminar you register for does not have to take place in January, but you should register early on to ensure that you are able to register for the one you wish to attend. (Feel free to register for more than one if multiple events are of interest.)

- Attend an ARES Seminar (the virtual Field Trip) no later than March 15.
- No accommodations for this component will be granted. If on the date of the seminar you registered for you find yourself in the situation where you are unable to attend it, due to approved accommodation or otherwise, you should register for another seminar in the future and attend that one instead.
- Final Report is due April 30, 2021. No extensions beyond this due date will be granted.

Style Guide

A style guide (or manual) is a set of standards for the design and writing of documents that establishes a consistent style that aids in reading comprehension, provides clarity of community, and reduces bias in language. One commonly used example is the APA style guide. This is the style guide we will be using in this course. Unless otherwise specified by the instructor, students **are required to employ the APA style guide** in all written assignments. Failure to do so may result in a loss of grades.

Accommodated Evaluations

Please see the description of the CANSSI Ontario Data Science ARES virtual field trip above for specific instructions regarding accommodation for that specific assessment. Note that no extensions beyond the due date or accommodations for this will be granted because there are multiple seminars throughout the term to choose from. Failure to complete this assessment will result in a grade of 0 for that component.

Late Submissions by Graduate Students

- Assessments that are submitted late will be subject to a 20% penalty per day or portion thereof, including weekends and holidays.
- Assessments that are submitted 5 or more days late will not be graded.

Late Submissions by Undergraduate Students

- Late assessments without illness self-reports will be subject to a late penalty of 20% per day or portion thereof, and assessments that are submitted 5 or more days late will not be graded.
- Late assessments with illness self-reports should be submitted within 24 hours of submission of the last illness self-report, after which they will be subject to a late penalty of 20% per day or portion thereof, and assessments that are submitted 5 or more days late will not be graded.

All Students:

- If you are unable to meet a course requirement due to illness or other serious circumstances, you must seek approval for the absence as soon as possible.
 - For undergraduate students, approval can be granted either through a self-reporting of absence or via the Dean's Office/Academic Counselling unit of your Home Faculty. If you are a Science undergraduate student, the Academic Counselling Office of the Faculty of Science is located in NCB 280, and can be contacted at scibmsac@uwo.ca.
 - Graduate students seeking approval should seek approval for academic accommodation by discussing their situation with the course instructor and/or the Director or Graduate Chair of their graduate program.

- A mark of 0 will be assigned to any missed assessments unless requests for academic accommodation has been approved.
- The weight of any assessments that are missed due to approved accommodation will be reassigned within that given method of evaluation. If there are no other components within that method of evaluation, either a make-up assessment will be offered or the weight will be shifted to another grade component or components; the decision on how to proceed in such a situation is at the discretion of the instructor. If a make-up assessment is missed, the student will receive an INC and complete the task the next time the course is offered.

Rounding of Marks Statement

Across the Sciences Undergraduate Education programs, we strive to maintain high standards that reflect the effort that both students and faculty put into the teaching and learning experience during this course. All students will be treated equally and evaluated based only on their actual achievement. **Final grades** on this course, irrespective of the number of decimal places used in marking individual assignments and tests, will be calculated to one decimal place and rounded to the nearest integer, e.g., 74.4 becomes 74, and 74.5 becomes 75. Marks WILL NOT be bumped to the next grade or GPA, e.g. a 79 will NOT be bumped up to an 80, an 84 WILL NOT be bumped up to an 85, etc. The mark attained is the mark you achieved, and the mark assigned; requests for mark “bumping” will be denied.

6. Accommodation and Accessibility

Accommodation Policies

Students with disabilities work with Accessible Education (formerly SSD) which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The Academic Accommodation for Students with Disabilities policy can be found at:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf

Academic Consideration for Student Absence

Undergraduate students will have up to two (2) opportunities during the regular academic year to use an on-line portal to self-report an absence during the semester, provided the following conditions are met: the absence is no more than 48 hours in duration, and the assessment for which consideration is being sought is worth 30% or less of the student’s final grade. Students are expected to contact their instructors within 24 hours of the end of the period of the self-reported absence, unless noted on the syllabus. Students are not able to use the self-reporting option in the following circumstances:

- for exams scheduled by the Office of the Registrar (e.g., December and April exams)
- absence of a duration greater than 48 hours,
- assessments worth more than 30% of the student’s final grade,
- if a student has already used the self-reporting portal twice during the academic year

The above conditions only apply to undergraduate students. Graduate students do not have the option for self-reported absences.

If the conditions for a Self-Reported Absence are *not* met, students will need to provide a Student Medical Certificate if the absence is medical, or provide appropriate documentation if there are compassionate grounds for the absence in question. Students are encouraged to contact their Faculty academic counselling office to obtain more information about the relevant documentation.

Students should also note that individual instructors are not permitted to receive documentation directly from a student, whether in support of an application for consideration on medical grounds, or for other reasons. **All documentation required for absences that are not covered by the Self-Reported Absence Policy must be submitted to the Academic Counselling office of a student's Home Faculty.**

For policy on Academic Consideration for Student Absences - Undergraduate Students in First Entry Programs, see:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Consideration_for_absences.pdf

and for the Student Medical Certificate (SMC), see:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf

Religious Accommodation

Students should consult the University's list of recognized religious holidays, and should give reasonable notice in writing, prior to the holiday, to the Instructor and an Academic Counsellor if their course requirements will be affected by a religious observance. Additional information is given in the Western Multicultural Calendar:

<https://multiculturalcalendar.com/ecal/index.php?s=c-univwo>

You may also be eligible to write the Special Exam if you are in a "Multiple Exam Situation" (see http://www.registrar.uwo.ca/examinations/exam_schedule.html).

If a student fails to write a scheduled Special Examination, the date of the next Special Examination (if granted) normally will be the scheduled date for the final exam the next time this course is offered. The maximum course load for that term will be reduced by the credit of the course(s) for which the final examination has been deferred. See Academic Calendar for details (under Special Examinations).

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.

Interactive learning sessions for this course will be recorded. The data captured during these recordings may include your image, voice recordings, chat logs and personal identifiers (name displayed on the screen). The recordings will be used for educational purposes related to this course, including evaluations. The recordings may be disclosed to other individuals participating in the course for their private or group study purposes. Please contact the instructor if you have any concerns related to session recordings.

Participants in this course are not permitted to record the sessions, except where recording is an approved accommodation, or the participant has the prior written permission of the instructor.

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.

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (<http://www.turnitin.com>).

Completion of this course will require you to have a reliable internet connection and a device that meets the system requirements for Zoom*. Information about the system requirements are available at the following link: <https://support.zoom.us/hc/en-us>.

* Please note that Zoom servers are located outside Canada. If you would prefer to use only your first name or a nickname to login to Zoom, please provide this information to the instructor in advance of the test or examination.

Professionalism & Privacy

Western students are expected to follow the [Student Code of Conduct](#). Additionally, the following expectations and professional conduct apply to this course:



- Students are expected to follow online etiquette expectations provided on OWL
- All course materials created by the instructor(s) are copyrighted and cannot be sold/shared
- Recordings are not permitted (audio or video) without explicit permission
- Permitted recordings are not to be distributed
- Students will be expected to take an academic integrity pledge before some assessments
- All recorded sessions will remain within the course site or unlisted if streamed

Copyright Statement

Please be aware that all course materials created by the instructor(s) are copyrighted and cannot be **sold/shared**. Those include materials used in tests/quizzes, midterms, and finals. Any posting/sharing of such materials in part or whole without owner's consent is considered as violation of the Copyright Act and will be considered as a scholastic offence.

In addition, online services such as Chegg are actively monitored. Any questions that are coming out during midterms and finals and are posted to an online service will be searched. Such an activity will be considered as a scholastic offence and will result in academic penalty.

8. Support Services

Please visit the Science & Basic Medical Sciences Academic Counselling webpage for information on add/drop courses, academic considerations for absences, appeals, exam conflicts, and many other academic related matters: <https://www.uwo.ca/sci/counselling/>

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 (519) 661-2147 if you have any questions regarding accommodations.

Western University is committed to a thriving campus as we deliver our courses in the mixed model of both virtual and face-to-face formats. We encourage you to check out the Digital Student Experience website to manage your academics and well-being: <https://www.uwo.ca/se/digital/>.

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>.