

Business 9882 – Special Topics in Management Science: Applications of Statistical Analysis

Winter 2021

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Tuesdays 8:00 am – 11:00 am
Location: Zoom
(12 Sessions)

INTRODUCTION TBD

COURSE DESCRIPTION

This course will cover graduate level research articles involving either fully or partially empirical analysis.

COURSE OBJECTIVES

The design of this course is to introduce students to a range of statistical analysis used to solve or analyze real world phenomena and problems. The objective is to provide students an appreciation for: (i) what makes problems/phenomena interesting from a research and practical perspective; (ii) how to decide on the appropriate type of statistical methodology to apply to a given problem; and (iii) how to interpret the real world relevance and insight from the statistical analysis.

The focus of the course is on the application of the statistical analysis and not on the theoretical developments or foundations of the statistical frameworks discussed. However, some discussion on the statistical theory is expected to be included. Each class centers on one article to allow for a deep and rigorous discussion. Students are expected to do extensive research around each articles and provide insights beyond what is stated in the articles.

COURSE ACTIVITIES / GRADING / METHODS OF EVALUATION / EXPECTATIONS / CLASS CONTRIBUTION / ATTENDANCE

Class Contribution (50%) – Depending on class-size each student will lead 1-2 class discussions. Students are expected to come fully prepared and contribute to the discussion of the paper.

Final Term Project (50%) – Students will conduct an individual final project. The objective is to find a data-set of interest and conduct a sound and rigorous statistical analysis. Students will provide two interim presentations – a Descriptive and a Predictive Analytics – and one final presentation, and submit a final term paper. Details provided in class.

MATERIALS / REQUIRED READING

The course centers on a set of published research articles from journals within Management Science, Statistics and Econometrics. See list below. No formal text-book is provided. Students are expected to find and read any relevant technical background they need to understand the articles.

COURSE SCHEDULE /SESSION PACKS

The tentative schedule is listed below.

LEARNING TOOLS AND RESOURCES

Western libraries should have any text-book required to understand the background information covered in the articles.

ACADEMIC OFFENCES: PLAGIARISM AND ACADEMIC INTEGRITY

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_grad.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>).

SUPPORT SERVICES: HEALTH AND WELLNESS

Students who are in emotional/mental distress should refer to Mental Health@Western <http://www.uwo.ca/uwocom/mentalhealth/> for a complete list of options about how to obtain help.

As part of a successful graduate student experience at Western, we encourage students to make their health and wellness a priority. Western provides several on campus health-related services to help you achieve optimum health and engage in healthy living while pursuing your graduate degree. For example, to support physical activity, all students, as part of their registration, receive membership in Western's Campus Recreation Centre. Numerous cultural events are offered throughout the year. Please check out

the Faculty of Music web page <http://www.music.uwo.ca>, and our own McIntosh Gallery <http://www.mcintoshgallery.ca>. Information regarding health- and wellness-related services available to students may be found at <http://www.health.uwo.ca>.

Students seeking help regarding mental health concerns are advised to speak to someone they feel comfortable confiding in, such as their faculty supervisor, their program director (graduate chair), or other relevant administrators in their unit. Campus mental health resources may be found at http://www.health.uwo.ca/mental_health/resources.html.

STUDENT ACCESSIBILITY SERVICES

Western is committed to achieving barrier-free accessibility for all its members, including graduate students. As part of this commitment, Western provides a variety of services devoted to promoting, advocating, and accommodating persons with disabilities in their respective graduate program.

Graduate students with disabilities (for example, chronic illnesses, mental health conditions, mobility impairments) are encouraged to register with Student Accessibility Services, a confidential service designed to support graduate and undergraduate students through their academic program. With the appropriate documentation, the student will work with both SAS and their graduate programs (normally their Graduate Chair and/or Course instructor) to ensure that appropriate academic accommodations to program requirements are arranged. These accommodations include individual counselling, alternative formatted literature, accessible campus transportation, learning strategy instruction, writing exams and assistive technology instruction. For more information, see <http://www.sdc.uwo.ca/ssd>

TENTATIVE SCHEDULE – SUBJECT TO CHANGE

#Class	Date	Topic	Articles	Link
1	Jan 12	Introduction & Data Modeling	OLGC Finds Its Match (A) and (B); Anderson & Wilson; Ivey Publishing 9B09E014, 9B09E015	Professor will provide copies.
2	Jan 19	Data Modeling	The number of undocumented immigrants in the United States: Estimates based on demographic modeling with data from 1990 to 2016; Fazel-Zarandi, Feinstein, & Kaplan; PLoS ONE 13(9), 2018	https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0201193
3	Jan 26	Linear Regression – with Fixed Effects	Star Turnover and the Value of Human Capital—Evidence from Broadway Shows; Han & Ravid; Management Science Vol 66(2), 2020	https://pubsonline.informs.org/doi/10.1287/mnsc.2018.3177
4	Feb 2	Presentations	Find a data-set and present Descriptive Analytics	
5	Feb 9	GLM	Zero-Inflated Poisson Regression, With an Application to Defects in Manufacturing; Lambert; Technometrics Vol 34(1), 1992	https://www.tandfonline.com/doi/abs/10.1080/00401706.1992.10485228
6	Feb 16	GLM	Estimating intermediate price transitions in online auctions; Odegaard & Puterman; Applied Stochastic Models in Business and Industry, Vol 28 (6), 2012	https://onlinelibrary.wiley.com/doi/abs/10.1002/asmb.928
7	Feb 23	Panel Data Regression	The Impact of Legalized Abortion on Crime; Donohue & Levitt; Quart J Econ, Vol 116 (2), 2001	https://academic.oup.com/qje/article-abstract/116/2/379/1904158?redirectedFrom=fulltext

8	Mar 2	Presentations	Continuation from the data-set analysis and present Predictive Analytics	
9	Mar 9	Synthetic Control	Synthetic Control Methods for Comparative Case Studies: Estimating the Effect of California's Tobacco Control Program; Abadie, Diamond & Hainmueller; JASA Vol 105 (490), 2010	https://amstat.tandfonline.com/doi/abs/10.1198/jasa.2009.ap08746
10	Mar 16	Randomized trials	Randomized experiments from non-random selection in U.S. House elections; Lee; J. Econometrics Vol 142 (2), 2008	https://www.sciencedirect.com/science/article/abs/pii/S0304407607001121
11	Mar 23	Statistical Pitfalls	1) Why Most Published Research Findings Are False; Ioannidis; PLoS MEDICINE, 2005 2) Research Commentary— Too Big to Fail: Large Samples and the p-Value Problem; Lin, Lucas Jr & Shmueli; ISR Vol 24(4), 2013	https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.0020124 https://pubsonline.informs.org/doi/abs/10.1287/isre.2013.0480
12	Mar 30	Final Presentations	Presentation of Final Term project	