Management Science II
BUS 9812B – Winter 2018

(subject to change)

Instructor:

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Course Logistics:

Location: 3102
Hours: Mondays 3:00pm – 6:00pm

The class meets once a week for 3 hours. Each 3 hour class is divided into two parts. Generally, in the first part the instructor will lead a lecture/discussion based on the technical topic. In the second part the class will engage in an article discussion (often based on the technical topic covered in the first part or class exercises). Students are expected to have read both the assigned chapter and article reading before each class, and be prepared to engage in the class-discussion.

Course Description:

This is part of the Management Science foundation series; the first part of the series is Bus 9802. In this two course series, students will learn technical topics including optimization, linear programming, stochastic processes, game theory, dynamic programming, non-linear programming, integer programming. In addition, students will also learn applications of the techniques and tools (e.g. revenue management), and how to identify, formulate, and investigate a research problem which can be analyzed through the tools under each technical topic.

Topics covered:

Dynamic programming, Stochastic Processes, Revenue Management, Statistics, Probability, and Bayesian Methods.

Grading:
20% Class Contribution
20% Assignment Questions
30% Leading Article Discussion
30% Report & Presentation: Research Proposal

Grading component description:

Class Contribution: Students are expected to actively participate and contribute to the class-room discussion. Students are therefore required to have read the required reading and prepared questions and discussion points to share with their classmates.

Assignment Questions: Each week students will be given a set of 3-4 questions from Hillier & Lieberman. Students are required to turn in the assignments within 1 week. Late assignments are not accepted and the student will receive a zero for that week.

Leading Article Discussion: Each week we will discuss an applied research article (see list below). Students will sign-up to lead two 60 minute class-discussions per term. The discussion should include a description of the problem, motivation, brief literature review, model framework, assumptions, analysis/results explanation, and future work or extensions.

Term Report & Presentations: Each student will write a 5-8 page term report, and give a 20 minute presentation at the end of the term. The objective of the spring term report is to write a research project proposal on a problem of choice (ideally related to the literature review from the previous term). The proposal should include a problem description/motivation, research questions/objective, model framework and assumptions, and how the analysis will address the research questions. A 1-2 page interim report is due mid-way through the term.

PLAGIARISM:
Students must write their essays and assignments (at Ivey this includes case exams and reports) in their own words. Whenever students take an idea, or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence (see Scholastic Offense Policy in the Western Academic Calendar).

All required papers (at Ivey this includes case exams and reports) 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 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 (hyperlink www.turnitin.com).

For more information see:
http://www.uwo.ca/univsec/handbook/appeals/scholastic_discipline_grad.pdf

Health and Wellness:

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.

To help you learn more about mental health, Western has developed an interactive mental health learning module, found here: http://www.health.uwo.ca/mental_health/module.html. This module is 30 minutes in length and provides participants with a basic understanding of mental health issues and of available campus and community resources. Topics include stress, anxiety, depression, suicide and eating disorders. After successful completion of the module, participants receive a certificate confirming their participation.

Course Material: (the listed material are all REQUIRED)

Baesens, Bart "Analytics in a Big Data World: The Essential Guide to Data Science and its Applications"

Hillier & Lieberman "Introduction to Operations Research" (9th Edition)

Talluri and Van Ryzin "Theory and Practice of Revenue Management" (should be available in soft-copy via the library) – we will only cover Chapter 1 and 2.

MIT OpenCourseWare. The Poisson Process (Chapter 2). http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-262-discrete-stochastic-processes-spring-2011/course-notes/MIT6_262S11_chap02.pdf

UCLA Statistics Online Computational Resource "Probability and Statistics EBook", http://wiki.stat.ucla.edu/socr/index.php/EBook

COURSE OUTLINE:

Topics will be chosen from the following list. Topics may be added or delete depending on interest.

- Statistics and Probability: Predictive Analytics, Linear and Logistic Regression, Neural Networks, Cluster Analysis
- Survival Analysis
- The Poisson Process
- Markov Chains
- Dynamic Programming
- Revenue Management
- Auction Theory
- Bayesian Methods