

**Department of Accounting and Business Analytics  
Alberta School of Business  
University of Alberta**

**OM 701, Section A1: Introduction to Operations Management Research  
Fall 2020, Course Outline**

**Time:** Tuesdays and Thursdays, 9:30-10:50 am Edmonton time.

**Classroom:** Not applicable—course will be delivered remotely.

**Zoom link:** To be provided later

(The meeting times and places could vary from week to week, in consultation with students.)

**Tentative final exam time and date:** 11 December 2020 (Friday) @ 9:00 a.m.

**Instructor:** Armann Ingolfsson ([Armann.ingolfsson@ualberta.ca](mailto:Armann.ingolfsson@ualberta.ca), BUS 4-30K, 780-492-7092)

eClass: log on at <https://eclass.srv.ualberta.ca/portal/>

**Course description:** This course provides a general introduction to the major research fields of operations management (OM). The focus will be on reading and evaluating current papers from prominent OM journals. The theory of science and the review process will be briefly discussed. Students are expected to have as mathematical background the equivalent of an upper-level undergraduate or first-year graduate courses in optimization and probability or stochastic modeling. This course may be appropriate for some graduate students in engineering or computing science. Prerequisite: A graduate or undergraduate course in operations management. Open to all doctoral students or with the written permission of the instructor. Approval of the Business PhD Program Director is also required for non-PhD students.

**Structure:** This course is a seminar to prepare doctoral students for pursuing academic research in the field of OM. A seminar relies on the active participation of everyone involved (students and instructors). There will be very few lectures in this course.

**Content and Evaluation:**

1. Read and discuss several important OM papers
  - a. Present a summary of each assigned paper. The summary should be in the form of slides and it should focus on the research questions that are addressed in the paper, the paper's contributions, the methodology used, and any other noteworthy aspects of the paper.
  - b. Weight: 20%, for presentation, discussion, and related assignments.
2. Read and discuss aspects of the theory of science
  - a. We will spend one or two weeks reading about and discussing the theory of science and how it is relevant to the research fields within OM. Our discussion will focus on the concept of causality and on statistical methods for making inferences about causality.

- b. Weight: 10%, for discussion and possibly an assignment.
3. Publishing OM research
    - a. In this module, students will be asked to write one referee report, to learn about the history of one published paper, and to read and discuss editorials and position statements from top OM journals.
    - b. Weight: 15%, for referee report, for discussion, and for one or more assignments.
  4. Attend several seminars in OM and possibly other fields
    - a. The student should read the paper to be presented (if available) before the seminar, attend the seminar (remotely, in most cases) and participate in the discussion, and submit a one-page report that summarizes the research questions, contributions, and methodology of the paper—similar to Item 1. In addition, the student should identify at least one related research question that has yet to be addressed. Students are expected to attend all OM seminars. If necessary, students should select other seminars to attend, in order to be able to attend at least four seminars during the term.
    - b. Weight: 15%, for one-page reports.
  5. Prepare a literature survey of recent papers in a particular area.
    - a. The students will survey top OM journals for the last one to five years and list papers that fall under a particular area, for example, health care OM or analytics and OM. The students will summarize the research questions, contributions, and methodological approach for the papers. The literature survey should include about 10 papers and it should be about 10 pages in length.
    - b. Weight: 10%
  6. Final exam
    - a. The final exam will be in December and it will cover all of the items above.
    - b. Weight: 30%.

**Schedule for Weeks 1-3****Week 1:**

Meeting on September 1: Introduction to the course.

Meeting on September 3: Sample paper discussion. Begin lecture on queueing theory.

In addition, please do the following during Week 1:

First, write a short report (2-4 paragraphs) for the following papers, which summarizes what you learned (did not know before) or found particularly interesting. This counts towards Item 3 and is due on September 15.

Agarwal, R., & Dhar, V. (2014). Big data, data science, and analytics: The opportunity and challenge for IS research. *Information Systems Research* 25(3) 443–448 doi: 10.1287/isre.2014.0546.

Cachon, G. (2012). What is interesting, in operations management? *Manufacturing & Service Operations Management* 14(2) 166–169 doi: 10.1287/msom.1110.0375.

Tang, C. S. (2015). OM Forum—Making OM Research More Relevant: “Why?” and “How?”. *Manufacturing & Service Operations Management* 18(2) 178–183 doi: 10.1287/msom.2015.0553.

Second, install the Queueing ToolPak (QTP) Excel add-in, available from <http://queueingtoolpak.org/>, and complete the two tutorials in the help file, available at <http://queueingtoolpak.org/qtp40/help40/Default.htm>. We will use QTP for one or more assignments related to Item 1. You will need to install QTP on a computer that has a 32-bit version of MS Excel for Windows. If you do not have access to such a computer then email me and we’ll figure something out. As proof that you have completed and understood the tutorials, then try to determine the following and submit by September 15:

- The average queue length in an M/M/10 queue with an average service time of 1 minute and an average of 570 arrivals per hour.
- The average queue length in an M/E<sub>2</sub>/10 queue with an average service time of 1 minute and an average of 570 arrivals per hour, where E<sub>2</sub> stands for “Erlang 2.”

**Week 2:** Meetings on September 8 and 10.

Finish lecture on queueing theory. Decide on papers to present in Week 3.

**Week 3:** Meetings on September 15 and 17.

Each student will present one paper. Every student should also read the papers that the other students are presenting, to be able to participate in the conversation.

Assignment for September 17: Browse through the titles of papers published in 2020 or 2019 in the following journals:

- Management Science<sup>1</sup>
- Operations Research
- Manufacturing & Service Operations Management
- Production and Operations Management
- Journal of Operations Management

Select five papers that, based on the titles, you would like to learn more about.

You can include papers that have been published but have not yet been assigned to a volume of the journal (these are called “articles in advance” for journals published by INFORMS).

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<sup>1</sup> Management Science publishes articles in many areas. Please focus on the following departments: big data analytics, decision analysis, healthcare management, operations management, optimization, revenue management and market analytics, and stochastic models and simulation.