

**4QA3**  
**Operations Modelling & Analysis**  
**Winter 2024 Course Outline**

**Operations Area**  
**DeGroote School of Business**  
**McMaster University**

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***COURSE OBJECTIVE***

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*Describe the objectives of the course and how these will be fulfilled through the coursework.*

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***INSTRUCTOR AND CONTACT INFORMATION***

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**Mon 2:30 -5:20 PM**

**Dr. Chandra Raman**

Instructor

[vegnarac@mcmaster.ca](mailto:vegnarac@mcmaster.ca)

Office: Virtual

Office Hours: Fri 1-4 pm

Tel: (905) 525-9140 x99999

Class Location: see mosaic

**Student TA**

**FATIMA ULUBAYOVA**

[ulubayof@mcmaster.ca](mailto:ulubayof@mcmaster.ca)

Office: DSB 218

Office Hours: Fri 1-3pm

Tel: (905) 525-9140 x27438

**Course website: [http:// avenue.mcmaster.ca](http://avenue.mcmaster.ca)**

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***COURSE ELEMENTS***

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Credit Value: 3	Leadership: Yes	IT skills: No	Global view: Yes
A2L: Yes	Ethics: No	Numeracy: Yes	Written skills: No
Participation: Yes	Innovation: Yes	Group work: Yes	Oral skills: Yes
Evidence-based: Yes	Experiential: No	Final Exam: No	Guest speaker(s): Yes

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## ***COURSE DESCRIPTION***

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Production and operations management (POM) is the profession that designs, plans and operates production systems to achieve the goals of the organization. Goals are to provide 4 certain products (i.e., goods and services) to certain customers in certain geographical areas. Production systems take labour, material, and equipment and, through a conversion process, produce these products (i.e., goods and services). Topics to be covered include designing products, designing and locating facilities, quality control, project planning, supply chain management, forecasting customer demands, and production and inventory management.

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## ***LEARNING OUTCOMES***

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Upon successful completion of this course, students will be able to complete the following key tasks:

Upon completion of this course, students will be able to complete the following key tasks:

- Understand the strategic importance of operations.
- Use advanced mathematical techniques based on calculus, probability, statistics and optimization to model and solve operations problems.

See the section Course Schedule below for the topics to be covered

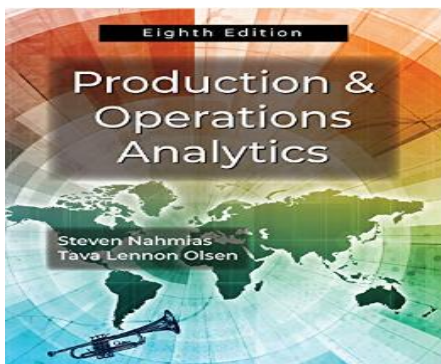
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## ***COURSE MATERIALS AND READINGS***

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-Required Text @ Mac Bookstore

- **Production and Operations Analytics, 8th Edition** by Steven Nahmias and Tava Lennon Olsen, Waveland Press, Long Grove, Ill. 2021
- Please visit the A2L module “Textbook information” for purchase options.
- This book is also available as an eBook from VitalSource.
- We will use **Excel Solver** in this course
- Calculators -use McMaster standard calculator, etc



**COURSE OVERVIEW AND ASSESSMENT**

**See below.**

- The “assignments” will be on A2L in word document format.
- The components of the course grade will be weighted as follows.
- Four quizzes @5%, MT 35%, Final 45%
- Assignments will have 5 calculation problems
- Tentative dates for assignments are as follows:
  - A1: February 3<sup>rd</sup> 11.59PM
  - A2: February 17<sup>th</sup> 11.59PM
  - A3: March 17<sup>th</sup> 11.59 PM
  - A4: March 31<sup>st</sup> 11.59 PM

Component	Weight	Date and Times	Duration
<b>Four Assignments</b>	<b>20%</b>	<b>As mentioned above</b>	<b>As per Schedule</b>
<b>Midterm Exam</b>	<b>40%</b>	<b>TBA</b>	<b>2.5 HRS</b>
<b>Final Exam</b>	<b>40%</b>	<b>TBA</b>	<b>2.5HRS</b>

**Grade Conversion:**

- Missed tests/exams will receive a grade of zero unless the student has submitted and been approved for a Notification of Absence or MSAF.
- Late assignments will be penalized 50% for each day they are late.
- Your final grade will be calculated as follows:
- At the end of the course your overall percentage grade will be converted, and you will receive one of the letter grades listed in the table below.
- In 2023, I use the McMaster grade scale as follows.

Letter Grade	Range	Letter Grade	Range
<b>A+</b>	<b>90-100</b>	<b>C+</b>	<b>67-69</b>
<b>A+</b>	<b>89-89</b>	<b>C+</b>	<b>63-66</b>
<b>A-</b>	<b>80-84</b>	<b>C-</b>	<b>60-62</b>
<b>B+</b>	<b>77-79</b>	<b>D+</b>	<b>57-59</b>
<b>B</b>	<b>73-76</b>	<b>D+</b>	<b>53-56</b>
<b>B-</b>	<b>70-72</b>	<b>D-</b>	<b>50-52</b>
		<b>F</b>	<b>0-49</b>

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## ***COURSE DELIVERABLES***

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### ***Assignment # 1 and #2 on topics covered before midterm***

This assignment each is worth **5%** of your final grade and will be marked individually.

### ***Assignment # 3 and #4 on topics covered after midterm***

This assignment each is worth **5%** of your final grade and will be marked individually.

### **Midterm Exam:**

Midterm exam will cover all chapters covered till midterm and the duration of the exam will be for 2.5 hours and will carry a weight of 40%.

### ***Final Exam***

Final Exam will cover all chapters covered after midterm and the duration of the exam will be for 2.5 hours and will carry a weight of 40%.

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## ***COMMUNICATION AND FEEDBACK***

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Students who wish to correspond with instructors or TAs directly via email must send messages that originate from their official McMaster University email account. This protects the confidentiality and sensitivity of information as well as confirms the identity of the student. Emails regarding course issues should NOT be sent to the Area Administrative Assistants. All students must receive feedback regarding their progress prior to the final date by which a student may cancel the course without failure by default.

Instructors may solicit feedback via an informal course review with students by Week #4 to allow time for modifications in curriculum delivery.

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## ***REQUESTING RELIEF FOR MISSED ACADEMIC WORK***

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In the event of an absence for medical or other reasons, students should review and follow the Academic Regulation in the Undergraduate Calendar [“Requests for Relief for Missed Academic Term Work”](#) and the link below;

<http://ug.degroote.mcmaster.ca/forms-and-resources/missed-course-work-policy/>

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## ***ACADEMIC INTEGRITY***

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You are expected to exhibit honesty and use ethical behavior in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity. **It is your responsibility to understand what constitutes academic dishonesty.**

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behavior can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: “Grade of F assigned for academic dishonesty”), and/or suspension or expulsion from the university.

For information on the various types of academic dishonesty please refer to the [Academic Integrity Policy](https://secretariat.mcmaster.ca/university-policies-procedures-guidelines/), located at <https://secretariat.mcmaster.ca/university-policies-procedures-guidelines/>

The following illustrates only three forms of academic dishonesty:

- plagiarism, e.g. the submission of work that is not one’s own or for which other credit has been obtained.
- improper collaboration in group work.
- copying or using unauthorized aids in tests and examinations.

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## ***AUTHENTICITY/PLAGIARISM DETECTION***

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**Some courses may** use a web-based service (Turnitin.com) to reveal authenticity and ownership of student submitted work. For courses using such software, students will be expected to submit their work electronically either directly to Turnitin.com or via an online learning platform (e.g. A2L, etc.) using plagiarism detection (a service supported by Turnitin.com) so it can be checked for academic dishonesty.

Students who do not wish their work to be submitted through the plagiarism detection software must inform the Instructor before the assignment is due. No penalty will be assigned to a student who does not submit work to the plagiarism detection software.

**All submitted work is subject to normal verification that standards of academic integrity have been upheld** (e.g., on-line search, other software, etc.). For more details about McMaster’s use of Turnitin.com please go to [www.mcmaster.ca/academicintegrity](http://www.mcmaster.ca/academicintegrity).

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## ***COURSES WITH AN ON-LINE ELEMENT***

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**Some courses may** use on-line elements (e.g. email, Avenue to Learn (A2L), web pages, TopHat, MS Teams, etc.). Students should be aware that, when they access the electronic components of a course using these elements, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course.

The available information is dependent on the technology used. Continuation in a course that uses on-line elements will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure please discuss this with the course instructor.

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### **ONLINE PROCTORING**

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**Some courses may** use online proctoring software for tests and exams. This software may require students to turn on their video camera, present identification, monitor and record their computer activities, and/or lock/restrict their browser or other applications/software during tests or exams. This software may be required to be installed before the test/exam begins.

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### **CONDUCT EXPECTATIONS**

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As a McMaster student, you have the right to experience, and the responsibility to demonstrate, respectful and dignified interactions within all of our living, learning and working communities. These expectations are described in the [Code of Student Rights & Responsibilities](#) (the “Code”). All students share the responsibility of maintaining a positive environment for the academic and personal growth of all McMaster community members, **whether in person or online**.

It is essential that students be mindful of their interactions online, as the Code remains in effect in virtual learning environments. The Code applies to any interactions that adversely affect, disrupt, or

interfere with reasonable participation in university activities. Student disruptions or behaviors that interfere with university functions on online platforms (e.g. use of Avenue 2 Learn, WebEx or Zoom for delivery), will be taken very seriously and will be investigated. Outcomes may include restriction or removal of the involved students’ access to these platforms.

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### **ACADEMIC ACCOMMODATION OF STUDENTS WITH DISABILITIES**

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Students with disabilities who require academic accommodation must contact [Student Accessibility Services](#) (SAS) at 905-525-9140 ext. 28652 or [sas@mcmaster.ca](mailto:sas@mcmaster.ca) to make arrangements with a Program Coordinator. For further information, consult McMaster University's [Academic Accommodation of Students with Disabilities](#) policy.

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### ***ACADEMIC ACCOMMODATION FOR RELIGIOUS, INDIGENOUS OR SPIRITUAL OBSERVANCES (RISO)***

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Students requiring academic accommodation based on religious, indigenous or spiritual observances should follow the procedures set out in the [RISO](#) policy. Students should submit their request to their Faculty Office **normally within 10 working days** of the beginning of term in which they anticipate a need for accommodation or to the Registrar's Office prior to their examinations. Students should also contact their instructors as soon as possible to make alternative arrangements for classes, assignments, and tests.

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### ***COPYRIGHT AND RECORDING***

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Students are advised that lectures, demonstrations, performances, and any other course material provided by an instructor include copyright protected works. The Copyright Act and copyright law protect every original literary, dramatic, musical and artistic work, **including lectures** by University instructors.

The recording of lectures, tutorials, or other methods of instruction may occur during a course. Recording may be done by either the instructor for the purpose of authorized distribution, or by a student for the purpose of personal study. Students should be aware that their voice and/or image may be recorded by others during the class. Please speak with the instructor if this is a concern for you.

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### ***EXTREME CIRCUMSTANCES***

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The University reserves the right to change the dates and deadlines for any or all courses in extreme circumstances (e.g., severe weather, labour disruptions, etc.). Changes will be communicated through regular McMaster communication channels, such as McMaster Daily News, A2L and/or McMaster email.

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### ***RESEARCH USING HUMAN SUBJECTS***

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All researchers conducting research that involves human participants, their records or their biological material are required to receive approval from one of McMaster's Research Ethics Boards before (a) they can recruit participants and (b) collect or access their data. Failure to comply with relevant policies is a research misconduct matter. Contact these boards for further information about your requirements and the application process.

McMaster Research Ethics Board (General board): <https://reo.mcmaster.ca/>

Hamilton Integrated Research Ethics Board (Medical board): <http://www.hireb.ca/>

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### ***ACKNOWLEDGEMENT OF COURSE POLICIES***

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Your enrolment in **4QA3**, Operations Modelling and Analytics will be considered to be an implicit acknowledgement of the course policies outlined above, or of any other that may be announced during lecture and/or on A2L. **It is your responsibility to read this course outline, to familiarize yourself with the course policies and to act accordingly.**

Lack of awareness of the course policies **cannot be invoked** at any point during this course for failure to meet them. It is your responsibility to ask for clarification on any policies that you do not understand.



**COURSE SCHEDULE**

**4QA3  
Operations Modelling and Analysis  
Winter 2024 Course Schedule**

<b>4QA3- Operations Modelling and Analysis Winter 2024</b>				
Week	Lecture	Topic	Text Reference	Assignments
1 (Jan 08)	1	Strategy & Competition	<b>Ch1: Strategy and Competition</b>	
		Optimization Supplement(Sales and Operations Planning)	Sec 1.1 to 1.3(Self Reading) S1.1-S1.9 Linear and Integer Programming	
2(Jan 15)	2	Forecasting	<b>Ch2: Forecasting</b> 2.1-2.10	
3(Jan 22)	3	Sales and Operations Planning	<b>Ch3: Sales and Operations Planning</b> 3.4-3.6	Assignment1
4(Jan 29)	4	Facility Layout	<b>Ch 7: Supply Chain Analytics</b> 7.1 to 7.3 Appendix 1A-1B	
5(Feb 5)	5	Logistics	<b>Ch 7: Supply Chain Analytics</b> 7.6 -7.9	
		Financial Analysis	Appendix 7A	Assignment2
6 (Feb 12)	6	Quality Control	<b>Ch10: Quality and Assurance</b>	
7 (Feb 19)	7	Family Day Holiday	10.1 -10.6 and 10.9	
<b>Recess</b>		<b>Monday, February 19 to Sunday, February 25</b> <b>MID TERM EXAM 2 nd March 12.00 to 2.30pm</b>		
8 (Feb 26)	8	Inventory Control Subject to Known Demand	<b>CH4:Inventory Control Subject to Known Demand</b> 4.1 -4.10	
9 (Mar 04)	9	Inventory Control Subject to Uncertain Demand	<b>CH 5:Inventory Control Subject to Uncertain Demand</b> 5.1-5.8	
10(Mar 11)	10	Service Operations Management	<b>CH8:Service Operations Management</b> 8.2 -8.5 Appendix8:s.2	Assignment3
11(Mar 18)	11	Project Scheduling	<b>Ch12: Project Scheduling</b> 12.1 -12.6	
12(Mar 25)	12	Operations Scheduling	<b>Ch11:Operations Scheduling</b> 11.1 -11.7 and 11.10	Assignment4
13 (Apr 1)	13	MRP and JIT	<b>Ch9: Production Control System Push</b> 9.1-9.3 and 9.5-9.6	
		<b>Final Exam</b>		