OM 435: Business Process Analysis and Simulation
Spring 2019 Course Syllabus
Dr. Hang Ren

Class Location: Peterson Hall 2413
Class Session: Tuesday 7:20-10:00pm (except March 12)
Office: Enterprise Hall 152
Office Hours: Tuesday 6-7pm (or by appointment)
Office Phone: 703-993-1980
Email: hren5@gmu.edu
System Dynamics Methods: A Quick Introduction by Craig Kirkwood (denoted by CK)
Software: ExtendSim Student 10
Microsoft Excel
Course Website: On Blackboard (BB)

Course Description

Every firm needs to manage a variety of processes that consist of activities with different functions owned by different departments. Each process needs to be effective and efficient on the whole, yet managers typically focus on their own departments and miss opportunities for process improvement. This course introduces concepts and tools used in designing, modeling, analyzing, and improving business processes. Analytical tools such as process analysis, queueing analysis, and inventory analysis are discussed, and process simulation methods using ExtendSim are introduced. Hands-on

1Only available on Windows system
experiences (a group project and in-class examples) are provided for students to apply analytical and simulation skills to solve real-world problems.

Approach to Learning

This course is geared for the business professional engaged in decision making or decision support. The emphasis is on business applications rather than rigorous mathematics. Technical discussions are motivated through numerous examples. The format is lectures presenting methodology through numerous simple and fully explained examples. Discussions and questions are highly encouraged.

Prerequisites

- Grade of C or higher in OM303
- Proficiency in elementary algebra, calculus, probability, and geometry
- Familiarity with MS Word, Excel, and PowerPoint
- Access to ExtendSim Student 10 in and after class

Deficiencies should be self-remediated early in the semester.

Undergraduate Program Learning Goals

Goals addressed in this course are in bold:

- Our students will be competent in their discipline.
- Our students will be aware of the uses of technology in business.
- Our students will be effective communicators.
- Our students will have an interdisciplinary perspective.
- Our students will be knowledgeable about global business and trade.
- Our students will recognize the importance of ethical decisions.
- Our students will be knowledgeable about the legal environment of business.
- Our students will be knowledgeable about team dynamics and the characteristics of effective teams.
- Our students will understand the value of diversity and the importance of managing diversity in the context of business.

Special Course Objectives

From this course, the individual student shall be able to:
• Document a real-world business process into a process flowchart
• Analyze a business process and estimate its performance measures, such as capacity, throughput time, and work-in-process
• Develop computer simulation models for a business process and effectively use these simulation models and computer animations to investigate and demonstrate what-if scenarios
• Understand the statistical aspects of simulation methodology and know how to conduct input and output statistics analyses
• Identify inefficiency and ineffectiveness in a business process and propose adequate minor changes or major redesigns to improve the process
• Propose business solutions in written and verbal forms for process improvement and process design projects

Slides and Simulation Files

I will be posting the slides and spreadsheets that we will discuss in class on Blackboard. However, they will not be complete and will require your attention during lectures to complete them and add explanatory notes. You will find it useful to print them out prior to class and take notes on them during class. We will also go through in-class examples and exercises, and I will post the solutions (usually ExtendSim files) on Blackboard after class. I will regularly send out emails through Blackboard. Please make sure you are checking all messages and taking the appropriate actions. If you are not receiving my emails, please let me know as soon as possible.

Grading Policy

Grading for the course will be based on two exams, a group project, and in-class/online quizzes. Participation can make a difference if you are borderline between two grades to boost your grade. The course grade will be out of 100 points. The breakdown is as follows. Your total point score out of 100 determines your final letter grade. There will be no extra credit.

<table>
<thead>
<tr>
<th>Percentage</th>
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<tbody>
<tr>
<td>Midterm Exam</td>
<td>30%</td>
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<tr>
<td>Final Exam</td>
<td>30%</td>
</tr>
<tr>
<td>Group Project</td>
<td>30%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>10%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
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Grading Scale: A = 90-100; B = 80-89.99; C = 70-79.99; D = 60-69.99; F = below 59.99. Final cumulated scores of the class will be analyzed to determine if an adjustment or curve is necessary. No curve will be applied before the final cumulated scores are out. A curve will only help you. Therefore, if you have a 90 or more you will get an A in the class - I won’t curve to raise the minimum requirements for grades, only lower them if necessary. Depending on the distribution of the grades I may or may not use the +/- system.
Exams

There are two in-class exams: one midterm and one final. The final exam is non-cumulative (i.e., only new materials haven’t been tested in the midterm exam are covered). The scheduled exam date and covered materials for each exam can be found on the last page of this course syllabus.

**Makeup exams will not be given.** IF YOU CANNOT TAKE THE FINAL AT THE TIME SHOWN, DO NOT REGISTER FOR THIS CLASS. NO MAKEUPS WILL BE GIVEN without a valid, per university policy, documented excuse. Students missing a scheduled exam due to an official GMU event must prearrange an alternate time to take the exam at least two weeks prior to the scheduled exam date. Other excused absences (for health reasons, etc.) must be documented, and the grade missed will be the average of the other exam scores. All other cases will receive a grade of zero for the missed exam. **All exams are closed book, closed notes, individual efforts.** You must bring a blank Scantron and #2 pencils to each exam. All necessary formulas and Tables will be provided. To help students understand the material and prepare for the exams, practice problems will be assigned. Students are expected to have their own Scantron sheet and calculator for each exam. Cell phones, smartphones, laptops, smartwatches, tablets, pagers, and other transmitting devices are not permitted during the exam at any time. These devices may not be used as a calculator and must be powered off during the exam. Violation of these rules constitutes an Honor Code violation. If there is an emergency situation that requires a transmitting device to be active, please contact the proctor prior to the exam.

Group Project

The purpose of this group project is for students to analyze and improve real-world business operations by applying business process analysis and simulation techniques learned in this course. This project exposes students to important business process modeling and design steps. Students will need to: 1) investigate a real-world business operations, 2) identify the corresponding business process in use, 3) measure the performance of the existing business process, 4) suggest an alternative business process design, and 5) evaluate the improvement of the newly suggested business process design. The group project consists of multiple deliverables, and detailed instructions are provided in a separate document.

Quizzes

Quizzes will be given either online before class (the submission deadline will typically be at one minute before the class starts) or at the beginning of class and will generally take no longer than 10-15 minutes to complete. I will announce the class in which a quiz will be given, at least one class in advance. The quiz topic will be announced as well as where or how you can find the materials needed to answer the question(s). The quizzes may be based on reading the lecture-note slides, the additional reading handed out in class, or an activity we did in class. If the quiz is administered in-class and you arrive late, then you might not have enough time to complete it. **Makeup quizzes will not be given.** However, you will be able to drop your lowest 20% of the quizzes we take. For example, if there are 10 quizzes you will be able to drop your 2 lowest quizzes. Please note that I will not be using Blackboard to announce upcoming quizzes (i.e., announcement of an upcoming quiz will occur only during regular class meetings). **All quizzes are closed book, closed notes, individual efforts. Formula sheets are not allowed during the quizzes.**
Homework Assignments

To help you understand the material and prepare for the exams, homework problems will be assigned and solutions will be provided. However, they will not be collected or graded. Note that problems in the exams will be closely related to the homework assignments and the quizzes. Please spend time solving them independent of homework solutions. I highly recommend you email me or see me if you have any questions or doubts about the homework assignments.

Attendance

Attendance is voluntary. However, as mentioned earlier, makeup quizzes will not be given. Further, there may be material mentioned in class that is not covered in the text. If you miss a class, please ask your classmates about any minor schedule change and hints on upcoming quizzes discussed in that class.

Classroom Etiquette

It is expected that you are courteous and professional to both your instructor and classmates. This includes, but is not limited to, turning off your cell phone during class. I reserve the right to ask you to leave the classroom if I consider your behavior disruptive to the delivery of the lecture or exam.

During class you are allowed to use a laptop or a tablet only for note-taking and simulation purposes. If during the class you are seen using your laptop or tablet for other purposes you will be asked to turn off your device. If you want to use a voice/video recording device as a substitute of note taking, please discuss it with me before the class.

One of the most important things is to start the class on time. Students should make every effort to be at class on time and, if late, find a seat quickly and disturb the class as little as possible.

E-mail Contact

- I communicate remotely with students only by GMU e-mail. I will not reply to voice mail messages left on my GMU office telephone.
- For security and confidentiality, I will only reply to GMU e-mail addresses. E-mail from Yahoo, Gmail, Hotmail, or other free email providers will be deleted without reply.
- I will only reply to student e-mail that is signed with your full name and that states your course and section. E-mail without this information will be deleted without reply.

Disability

Any student with special needs should bring them to the instructor’s attention no later than the second week of class. For students with any disabilities, please also contact the Office of Disability
Services (ODS) at 703-993-2474. All academic accommodations must be arranged through the ODS. For more information, please visit ODS’s home page: http://ods.gmu.edu/.

Inclement Weather & Campus Emergencies

Information regarding weather-related changes in the University’s schedule (e.g., closing or late opening) will be provided on the GMU website and via Mason Alert. Students sign up for the Mason Alert system to provide emergency information of various sorts at https://alert.gmu.edu. If campus is closed, please check Blackboard for announcements from the professor.

Honor Code

Students are obligated to strict adherence to the University honor system and code as stated in the University Catalog. You are bound by the code to neither receive nor furnish any assistance of any kind by any means on any graded assignment, test, or quiz. Specifically:

- All work submitted for a grade, including tests, quizzes, and homework, are to be completed individually, on your own, and alone. Copying quiz or test answers from another student and/or allowing your answers to be copied by another student are strictly and absolutely forbidden.

- Communication and collaboration, or suspicion thereof, of any kind between students during tests and quizzes is strictly and absolutely forbidden.

- Using an impermissible aid on any quiz or test such as unauthorized notes or electronic devices with Internet or peer-to-peer connectivity is strictly and absolutely forbidden.

- Any evidence or suspicion of collaboration on graded material will be construed as an honor code violation.

- Removing an exam from the classroom and sharing information about exams with other students is strictly and absolutely forbidden.

- Unless the instructor has authorized use of such material, using quiz/test material from classes that were offered by the same instructor in previous semesters is also considered a violation.

Any violations of the honor code will result in an immediate filing of formal charges with the University Honor Committee which will be aggressively pursued with great vigor. For more information on the University’s Honor Code, please visit http://oai.gmu.edu/the-mason-honor-code/. The list with The School of Business Recommendations for Honor Code Violations can be found on Blackboard, in the Syllabus section of the class.

Useful Resources

- ExtendSim Documentation: https://www.extendsim.com/documentation
- ExtendSim Q&A: https://www.extendsim.com/support/troubleshooting
- University Catalog: http://catalog.gmu.edu/
- University Policies: http://universitypolicy.gmu.edu/

Updated Sunday 27th January, 2019
- Calendar of Religious Holidays and Observations: 
  http://ulife.gmu.edu/calendar/religious-holiday-calendar/
- Office of Diversity, Inclusion and Multicultural Education: https://odime.gmu.edu/
- University Registrar (Calendars): http://registrar.gmu.edu/calendars/
- Counseling and Psychological Services: http://caps.gmu.edu/
- Learning Services: http://caps.gmu.edu/learning-services/
- University Career Services: http://careers.gmu.edu/
- The Writing Center: http://writingcenter.gmu.edu/
- University Libraries: http://library.gmu.edu/
- InfoGuides (Business): http://infoguides.gmu.edu/business
- School of Business, George Mason University: http://business.gmu.edu/
- ISOM Area, School of Business, George Mason University: 
  http://business.gmu.edu/academic-departments/isom/

Tentative Schedule

The following schedule is tentative. In general, even if the specific date of coverage may change slightly, the order of coverage should remain as presented below. Modifications may be made as the semester progresses and the appropriate changes will be announced in class.

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic (Tentative)</th>
<th>Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>22-Jan</td>
<td>Introduction</td>
<td>LM 1</td>
</tr>
<tr>
<td>29-Jan</td>
<td>Process Analysis I</td>
<td>LM 4-5</td>
</tr>
<tr>
<td>05-Feb</td>
<td>Process Analysis II</td>
<td>LM 5</td>
</tr>
<tr>
<td>12-Feb</td>
<td>Queueing and Inventory Analysis</td>
<td>LM 6</td>
</tr>
<tr>
<td>19-Feb</td>
<td>Software Overview I</td>
<td>LM 7 &amp; 9.3-9.4</td>
</tr>
<tr>
<td>26-Feb</td>
<td>Software Overview II</td>
<td>LM 8.1-8.6</td>
</tr>
<tr>
<td>05-Mar</td>
<td>Midterm Exam</td>
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<tr>
<td>12-Mar</td>
<td>Spring Break (No Class)</td>
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<tr>
<td>19-Mar</td>
<td>Resources &amp; Cost</td>
<td>LM 8.7-8.9</td>
</tr>
<tr>
<td>26-Mar</td>
<td>Advanced Processes</td>
<td>LM 8.10-8.13</td>
</tr>
<tr>
<td>02-Apr</td>
<td>Data Analysis</td>
<td>LM 9.1-9.2 &amp; 9.5</td>
</tr>
<tr>
<td>09-Apr</td>
<td>System Dynamics I</td>
<td>CK 1-4</td>
</tr>
<tr>
<td>16-Apr</td>
<td>System Dynamics II</td>
<td>CK 5</td>
</tr>
<tr>
<td>23-Apr</td>
<td>Group Project Presentation</td>
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<td>30-Apr</td>
<td>Review for Final Exam</td>
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<tr>
<td>14-May</td>
<td>Final Exam @ 7:30 pm - 10:15 pm</td>
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Updated Sunday 27\textsuperscript{th} January, 2019