

SCM 7320 – Supply Chain Analytics Spring 2018

Bauer College of Business
University of Houston
Department of Decision and Information Systems

Location: MH 128 **Time:** Wednesday 6:00-9:00pm

Instructor: Eylem Tekin, Ph.D.

Office: Melcher Hall 260-D

Phone: (713) 743 2767

Office Hours: 1:00-3:00pm Tuesday or by appointment

Email: etekin@bauer.uh.edu

COURSE DESCRIPTION

This course is designed to help students master the analytical tools and techniques within optimization and simulation that are useful in designing and managing supply chains. In the first part of the course, students will learn how to formulate and solve prescriptive optimization models using linear, integer and mixed integer programs. The emphasis will be on how these models can be used in some fundamental supply chain applications such as transportation, capacity allocation, production planning, network flow, aggregate planning, sales & operations planning, and network design. The second part of the course will focus on simulation and basics of queueing models to help students better manage processes and operations in supply chains. Students will learn to fit distributions to processes when there is uncertainty present, generate output distributions using simulation models given the distributions of inputs, and analyse and interpret the results of Monte Carlo and discrete-event simulations. They will also learn about concepts such as process variability, Little's law, capacity, utilization, bottlenecks through basic queueing simulations, and will be able to quantify the impact of variability in supply chain operations. In addition to using Excel Solver, students will learn to use AMPL (A Modeling Language for Mathematical Programming – www.ampl.com) for solving optimization problems, and AnyLogic (www.anylogic.com) for discrete-event simulation.

COURSE MATERIALS

Classes will consist of lecturing and interactive learning exercises. We will cover material from the following textbooks and several cases from different journals. All course materials including lecture slides, reading materials, learning exercises will be posted on Blackboard. Students should also be prepared to take notes, and work on their laptop computers to develop and run optimization/simulation models during lectures.

Reference Textbooks:

- Introduction to Operations Research, 10th Edition, Hillier and Lieberman, McGraw Hill Education, 2015.
- Operations Research: Applications and Algorithms, 4th Edition, Winston, Cengage Learning, 2003.
- Supply Chain Management: Strategy, Planning, and Operation, 6th Edition, Chopra and Meindl, Prentice Hall, 2015.

- Designing and Managing the Supply Chain: Concepts, Strategies and Case Studies, 3rd Edition, Simchi-Levi, Kaminsky and Simchi-Levi, McGraw Hill Education, 2007.

COURSE EVALUATION

Exam 1 (In class)	30% (March 7)
Exam 2 (Take Home)	30% (April 27-30)
Homework Assignments	30%
Class Participation	10%

No grade will be changed after **one week** from the date the work is returned in class. It is your responsibility to check the accuracy of your grades and report any discrepancy at once.

Grading Scale:

A	92-100%
A-	90-91%
B+	88-89%
B	82-87%
B-	80-81%
C+	78-79%
C	72-77%
C-	70-71%
D+	68-69%
D	62-67%
D-	60-61%
F	below 60%

COURSE GUIDELINES

Class Attendance: It is strongly recommended that you attend all classes, arrive on time for each class, and prepare to leave after class has been dismissed. Active participation in class is also expected. Students are responsible for all material presented, assigned, or collected during class, regardless of whether absent or present.

Blackboard: Course materials, announcements, grades or changes to the course outline will be posted on Blackboard Learn. It is the student's responsibility to check Blackboard before every class period for important announcements, class notes, emails, grades and changes to the course schedule.

Technology in class: Please turn off all cell phones before entering class. Ringing phones and beeping pagers are distracting to other students and the instructor. During class time, students are allowed to use their laptop computers for class business only (not for email, web surfing, etc.).

Preparation for class: Reading assignments and study problems will be posted on Blackboard on a regular basis. It is essential that students complete these assignments prior to attending a class session.

Keep in mind that the purpose of the assignments is to help you to learn the material. If you do the assignments on your own, you can develop the skills needed in this course and perform well in the

exams. I am here to help you learn this material. I strongly encourage that you all participate in class, and do not hesitate to ask any questions you might have about the material both in class and during my office hours.

Academic Integrity Policy: The University of Houston Academic Honesty Policy is strictly enforced by the C. T. Bauer College of Business. No violations of this policy will be tolerated in this course. A discussion of the policy is included in the University of Houston Student Handbook, <http://catalog.uh.edu/content.php?catoid=6&navoid=1025>. Students are expected to be familiar with this policy.

Any material submitted for course credit must be your own work if it is an individual-based assignment or the work of your team if it is a group-based assignment. Students are not permitted to discuss, read, etc. the work, thoughts, and ideas regarding the cases or exams with other students (or another team for group case work). If outside references are used, they must be properly referenced. Plagiarizing or copying the work done by others is a violation of the Academic Honesty Policy.

Academic misconduct is a serious threat to the integrity and value of your degree. The instructor will strictly follow the Academic Honesty Policy in areas of plagiarism, fabrication, cheating, and other forms of academic misconduct. Any academic misconduct will result a failing grade in the course, and will be reported to the university.

Copyrights: All materials generated for this class are copyrighted. Because these materials are copyrighted, you, as a registered class member, may print a copy for yourself, but do not have the right to further print, copy, and/or distribute the handouts, unless I expressly grant permission.

Disability Accommodation: The C. T. Bauer College of Business would like to help students who have disabilities achieve their highest potential. To this end, in order to receive academic accommodations, students must register with the Center for Students with Disabilities (CSD) (telephone 713-743-5400), and present approved accommodation documentation to their instructors in a timely manner.

CAPS Counselling and Psychological Services: Counselling and Psychological Services (CAPS) can help students who are having difficulties managing stress, adjusting to college, or feeling sad and hopeless. You can reach CAPS (www.uh.edu/caps) by calling 713-743-5454 during and after business hours for routine appointments or if you or someone you know is in crisis. Also, there is no appointment necessary for the “Let’s Talk” program, which is a drop-in consultation service at convenient locations and hours around campus. http://www.uh.edu/caps/outreach/lets_talk.html.

Religious Holy Days: The University of Houston respects the religious observances of students even though they may conflict with university class meetings, assignments, or examinations as outlined in the University of Houston Student Handbook. Potential conflicts with assignment due dates and examinations must be discussed with the instructor **within the first week of class** to be eligible for scheduling changes.

Makeup Policy: According to University Policy, a makeup examination will be administered only if the instructor is furnished with written evidence that a student is:

1. Participating in an activity appearing on the University Authorized Activity List and must be preceded by authorized, written, notice.
2. Confined to home or bed by physician on account of illness.
3. Bereaved by a death in his/her immediate family.
4. Participating in legal proceedings that require his/her presence.

If you miss an exam/quiz due to a valid excuse as listed above, you have to notify the instructor as soon as possible but no later than 48 hours after the scheduled exam, and provide a written evidence as soon as possible. Otherwise, you will not be allowed to take a makeup exam/quiz and you will receive a grade of ZERO (0) for that exam/quiz.

TENTATIVE COURSE SCHEDULE
SCM 7320 – Spring 2018

Week	Date	Topic
1	Jan. 24	Course Introduction / Syllabus / Policies
2	Jan. 31	Prescriptive Modelling with Linear Programming
	Jan. 31	Last day to drop
3	Feb. 7	Transportation, Assignment and Transshipment Problems
4	Feb. 14	Shortest Path, Maximum Flow, Minimum Cost Flow Problems
5	Feb. 21	Aggregate Planning, Sales & Operations Planning
6	Feb. 28	Prescriptive Modelling with Mixed Integer Programming
7	Mar. 7	Exam 1
8	Mar. 14	Spring Break
9	Mar. 21	Network Design in Supply Chains
10	Mar. 28	Descriptive Modelling with Simulation
	Apr. 3	Last Day to Drop with a 'W'
11	Apr. 4	Monte Carlo Simulation
12	Apr. 11	Queueing Models
13	Apr. 18	Discrete-Event Simulation
14	Apr. 25	Impact of Variability in Supply Chains
	Apr. 27-30	Comprehensive Take Home Exam