

Inventory and Supply Chain Systems
EIN4343 22153
Spring 2023
Class Periods: MWF Period 6 (12:50 PM - 1:40 PM)
Location: CSE E121

Instructor

Tobias Lodemann. Email: Leibniz93@ufl.edu, Weil 450. Office Hours: M 11:30-12:30pm & F 2-3pm

Teaching Assistant

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Course Description

Deterministic and stochastic inventory models for single- and multiple-item systems. Analysis and design of logistics systems. Supply chain management and coordination. Demand forecasting.

Course Pre-Requisites / Co-Requisites

ESI3312 (Operations Research 1) and ESI4313 (Operations Research 2) with minimum grades of C.

Course Objectives

This course develops student's analytic abilities to formulate and solve inventory, logistics and supply chain problems faced by today's firms. Students learn to take a comprehensive view of complex inventory and supply chain systems. Additionally, the students develop abilities to model, optimize, and design such systems.

Course Communication

Please contact me through the course management system or through my ufl.edu email (Leibniz93@ufl.edu). If you do contact me via email, please note the course name in the subject line.

Materials and Supply Fees

N/A

Required Textbooks and Software

- Lecture Notes
 - Title: EIN4343 Lecture Notes
 - Author: Dr. Elif Akçalı
 - Available at Course Site
- Supplemental Reading
 - Throughout the semester a number of essays/articles from contemporary business literature will be posted on the course website that you will be asked to read for follow-up class discussions.

Recommended Materials

N/A

Professional Component (ABET)

This course contributes to the following PEOs:

1. Can become successful professionals in industrial and systems engineering or other disciplines
2. Can acquire advanced knowledge through continuing education or advanced degree programs

Relation to Program Outcomes (ABET)

Outcome	Coverage*
1. An ability to identify, formulate, and solve engineering problems by applying principles of engineering, science, and mathematics.	High
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	Medium
3. An ability to communicate effectively with a range of audiences.	
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	Low
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	Low
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.	Medium

*Coverage is given as high, medium, or low. An empty box indicates that this outcome is not covered or assessed in the course.

Course Schedule

This is a tentative outline. The instructor reserves the right to make changes as he sees necessary.

Week	Date	Topic	In-Class	Assignments (Due Date)
1	1/9	Introduction: Syllabus and Motivation		
	1/11	Inventory Management: Preliminaries		
	1/13	Inventory Management: ABC Analysis		
2	1/16	Martin Luther King Day No Class Meeting		
	1/18	UF Career Fair No Class Meeting		
	1/20	Inventory Management: Deterministic Models EOQ Model		HW 1 Poem 1
3	1/23	Inventory Management: Deterministic Models EOQ Model Extensions I		
	1/25	Inventory Management: Deterministic Models EOQ Model Extensions II	Quiz 1	
	1/17	Inventory Management: Deterministic Models EOQ Model Extensions III		
4	1/30	Inventory Management: Stochastic Models Periodic Review: Single-period model (cost min)		
	2/1	Inventory Management: Stochastic Models Periodic Review: Single-period model (profit max)		
	2/3	Inventory Management: Stochastic Models Periodic Review: Single-period models		HW 2
5	2/6	Inventory Management: Stochastic Models Periodic Review: Multi-period models	In-Class Activity 1	
	2/8	Inventory Management: Stochastic Models Periodic Review: Multi-period models	Quiz 2	
	2/10	Inventory Management: Stochastic Models Periodic Review: Multi-period models		Poem 2
6	2/13	Inventory Management: Stochastic Models Periodic Review: Multi-period models		

	2/15	Inventory Management: Stochastic Models Periodic Review: Multi-period models	Term Exam 1: Part 1	
	2/17	Term Exam 1: Part 2 <i>In-Class</i>	Term Exam 1: Part 2	
7	2/20	Inventory Management: Stochastic Models Continuous Review: (Q,r) model		
	2/22	Inventory Management: Stochastic Models Continuous Review: (Q,r) model		
	2/24	Inventory Management: Stochastic Models Continuous Review: (Q,r) model		
8	2/27	Inventory Management: Stochastic Models Continuous Review: (Q,r) model		
	3/1	Inventory Management: Stochastic Models Continuous Review: Service Levels (Type I)		
	3/3	Inventory Management: Stochastic Models Continuous Review: Service Levels (Type II)		HW 3
9	3/6	Transportation Management Preliminaries		
	3/8	Logistics Management Preliminaries	Quiz 3	
	3/10	Logistics Management Shipment Mode Selection		
10	3/13	Spring Break No Class Meeting		
	3/15	Spring Break No Class Meeting		
	3/17	Spring Break No Class Meeting		
11	3/20	Logistics Management Shipment Size Selection		
	3/22	Logistics Management Demand Pooling		
	3/24	Logistics Management Network Design		HW 4
12	3/27	Logistics Management Consolidation	In-Class Activity 2	
	3/29	Logistics Management Consolidation	Quiz 4	
	3/31	Logistics Management International Considerations		Poem 3
13	4/3	Supply Chain Management Definition and Fundamental Issues		
	4/5	Supply Chain Management Definition and Fundamental Issues	Term Exam 2: Part 1	
	4/7	Term Exam 2: Part 2 <i>In-Class</i>	Term Exam 2: Part 2	
14	4/10	Supply Chain Management The Bullwhip Effect		
	4/12	Supply Chain Management Integration		
	4/14	Supply Chain Management Contemporary Issues		HW 5
15	4/17	Demand Forecasting Preliminaries and Forecasting Error	In-Class Activity 3	
	4/19	Demand Forecasting Methods for Stationary Series	Quiz 5	
	4/21	Demand Forecasting Methods for Linear Trend Series		Poem 4
16	4/24	Demand Forecasting Methods for Seasonal Series		
	4/26	Review		Poetry Reflection

	4/28	Reading Days <i>No Class Meeting</i>		
17	5/4	Final Exam <i>May 4, 7:30am-9:30am; CSE E121</i>	Final Exam	

Class. Students will be provided with detailed class notes. Classroom meetings will be used to (i) assess student learning; (ii) highlight distinguishing features of different decision-making tools and methodologies; (iii) work through example problems to enhance student learning; and (iv) discuss issues related to the use of the decision-making tools and methodologies for analysis in practice.

Exam Policy. To assess student learning, students will be given five Quizzes (see detailed Course Schedule), two Term Exams and a comprehensive Final Exam. Formula sheets for the second parts of term exams 1 and 2 as well as the final exam will be provided by the instructor. These formula sheets will be posted on the course web-site in advance. Prior to each exam the topics that will be covered in the exam will be provided. The exams are scheduled in advance, please plan accordingly.

A student is permitted to make up a missed exam/quiz only if they have a conflict between an exam/quiz and a scheduled university-approved activity with appropriate documentation. Excused absences that are consistent with university policies and require appropriate documentation are listed in the undergraduate catalog at <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>. Please do not ask for a make-up exam to attend a job interview. If you missed an exam/quiz due to a health problem, the note must say that you were medically unable to take the exam. A note indicating that you were seen at the health center the day of the exam is not sufficient documentation of a medically excused absence from an exam. A student needing a make-up exam due to a schedule conflict must notify the instructor at least one week before the day the exam is scheduled for. It is the student's responsibility to make sure a make-up exam date is scheduled within a week of the original date or as soon as possible in the case of medical circumstances.

Exam Policy is non-negotiable.

Regrade Requests. Requests for regrading of exams will be considered only with a written explanation and only within a one-week period from the time graded work is returned in class. Specifically, you need to prepare a typed up or legibly written memo explaining why you believe your work needs to be regraded, attach make it the cover sheet of the exam booklet, and return it to the instructor or the TA. Grades will be posted on the course page on Canvas. Throughout the semester, you have to ensure that your grades are entered correctly. Corrections to posted grades will be considered only within a one-week period after the grades have been posted on Canvas.

Announcements and Course Materials. You are responsible for all announcements made in class as well as some additional material that might be covered. You are responsible for printing the lecture notes posted on Canvas. Paper copies of the lecture notes will not be distributed in class.

Assignments

- **Homework.** You will receive a total of five homework assignments that are collected in class at the assigned due date. Late homework assignments are accepted the following two class meetings, with a deduction of 15% and 30%, respectively, for the first class and second class meeting following the due date.
- **Creative Writing.** To invite students to use their imaginative and creative thinking skills, students will be asked to complete several creative writing assignments as well as asked to complete a number of in-class activities throughout the semester.

Professional Conduct. Students are expected to arrive to class on time and behave in a manner that is respectful to the instructor and to fellow students. Opinions held by other students should be respected in discussion, and conversations that do not contribute to the discussion should be held at minimum, if at all. Please restrict eating to outside of the classroom. The use of computers and other electronic devices in class is limited to class related

activities. Students who are being disruptive (e.g., using electronic devices when not appropriate for class activities, talking over the instructor/other students, or otherwise disrupting the learning environment for other students) will be asked to leave class. Students who are asked to leave for disruptive behavior will lose all assignment points for that day. *Persistent disruptive behavior will not be tolerated and might result in grade deductions (half a letter grade).*

Evaluation of Grades

Your final grade for the class will be calculated as shown in the table below:

Assignment	Percentage of Final Grade
Term Exam 1 (7% Part 1, 20% Part 2)	27%
Term Exam 2 (7% Part 1, 20% Part 2)	27%
Final Exam	27%
Creative Writing	9%
Quizzes (1.25% each for four out of five)	5%
Homework (1% each)	5%
Total	100%

Grading Policy

Grade	Range	Grade Points
A	93-100	4.00
A-	90-92	3.67
B+	87-89	3.33
B	83-86	3.00
B-	80-82	2.67
C+	77-79	2.33
C	73-76	2.00
C-	70-72	1.67
D+	67-69	1.33
D	63-66	1.00
D-	60-62	0.67

More information on UF grading policy may be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

Students Requiring Accommodations

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://www.dso.ufl.edu/drc>) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.ua.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.ua.ufl.edu/public-results/>.

University Honesty Policy

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Commitment to a Safe and Inclusive Learning Environment

The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Graduate Program Coordinator
- Jennifer Nappo, Director of Human Resources, 352-392-0904, jpennacc@ufl.edu
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see:

<http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html>

Campus Resources:

Health and Wellness

U Matter, We Care:

If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.

Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Discrimination, Harassment, Assault, or Violence

If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the Office of [Office of Title IX Compliance](#), located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.
<https://lss.at.ufl.edu/help.shtml>.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. <https://www.crc.ufl.edu/>.

Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.
<https://teachingcenter.ufl.edu/>.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.
<https://writing.ufl.edu/writing-studio/>.

Student Complaints Campus: https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf.

On-Line Students Complaints: <http://www.distance.ufl.edu/student-complaint-process>.