

Inventory and Supply Chain Systems

EIN4343 8052

Fall 2021

MWF Period 7 (1:55 PM - 2:45 PM) Anderson Hall 0034 (permanent Zoom link on Canvas)

Instructor

Dr. Elif Akçalı. akcali@ise.ufl.edu 352-294-7726. Weil 450A. Online Office Hours: MW 3:15-4:15 PM (permanent Zoom link on Canvas)

Teaching Assistant

N/A

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) with a minimum grade 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.

Materials and Supply Fees

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.

Required Textbooks and Software

- Lecture Notes
 - Title: EIN4343 Lecture Notes
 - Author: Elif Akcali
 - 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

Course Schedule

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

Week	Date	Topic	Activity
1	8/23	Introduction: Syllabus and Motivation	
	8/25	Inventory Management: ABC Analysis	
	8/27	Inventory Management: Deterministic Models Economic Order Quantity (EOQ)	
2	8/30	Inventory Management: Deterministic Models EOQ Model	
	9/1	Inventory Management: Deterministic Models EOQ Model Extensions I	I am Poem 1
	9/3	Inventory Management: Deterministic Models EOQ Model Extensions II	
3	9/6	Inventory Management: Deterministic Models Wagner-Whitin Model	
	9/8	Inventory Management: Deterministic Models Wagner-Whitin Model	
	9/10	Inventory Management: Deterministic Models Wagner-Whitin Model Extensions	
4	9/13	Inventory Management: Deterministic Models Heuristics	
	9/15	Inventory Management: Deterministic Models Heuristics	
	9/17	Inventory Management: Stochastic Models Periodic Review: Single-period model (cost min)	
5	9/20	Inventory Management: Stochastic Models Periodic Review: Single-period model (profit max)	
	9/22	Inventory Management: Stochastic Models Periodic Review: Multi-period models	I am Poem 2
	9/24	Inventory Management: Stochastic Models Periodic Review: Multi-period models	
6	9/27	Inventory Management: Stochastic Models Periodic Review: Multi-period models	Price Research
	9/29	Inventory Management: Stochastic Models Continuous Review: (Q,r) model	
	10/1	Inventory Management: Stochastic Models Continuous Review: (Q,r) model	
7	10/4	Term Exam I <i>Time and Mode TBD</i>	Term Exam I
	10/6	Inventory Management: Stochastic Models Continuous Review: (Q,r) model	

	10/8	Homecoming <i>No Class Meeting</i>	
8	10/11	Inventory Management: Stochastic Models Continuous Review: (Q,r) model	
	10/13	Inventory Management: Stochastic Models Continuous Review: Service Levels (Type I)	
	10/15	Inventory Management: Stochastic Models Continuous Review: Service Levels (Type II)	
9	10/18	Transportation Management Preliminaries	
	10/20	Logistics Management Preliminaries	
	10/22	Logistics Management Shipment Mode Selection	
10	10/25	Logistics Management Shipment Size Selection	
	10/27	Logistics Management Demand Pooling	
	10/29	Logistics Management Network Design	
11	11/1	Logistics Management Consolidation	
	11/3	Logistics Management Consolidation	I am Poem 3
	11/5	Logistics Management International Considerations	
12	11/8	Term Exam II <i>Time and Mode TBD</i>	Term Exam II
	11/10	Supply Chain Management Definition and Fundamental Issues	
	11/12	Supply Chain Management The Bullwhip Effect	
13	11/15	Supply Chain Management Integration	I am Reflection
	11/17	Supply Chain Management Contemporary Issues	
	11/19	Demand Forecasting Preliminaries and Forecasting Error	
14	11/22	Demand Forecasting Methods for Stationary Series	Company Research
	11/24	Thanksgiving Holiday <i>No Class Meeting</i>	
	11/26	Thanksgiving Holiday <i>No Class Meeting</i>	
15	11/29	Demand Forecasting Methods for Linear Trend Series	
	12/1	Demand Forecasting Methods for Seasonal Series	
	12/3	Demand Forecasting Methods for Seasonal Series	
16	12/6	Student's Choice <i>What do you want to learn about?</i>	Mind Map
	12/8	Student's Choice <i>What do you want to learn about?</i>	
	12/10	Reading Days <i>No Class Meeting</i>	
17	12/15	Final Exam <i>December 15, 10:00am-12:00pm; Mode TBD</i>	

COVID19

- You are expected to wear approved face coverings at all times during class and within buildings even if you are vaccinated.
- If you are sick, stay home and self-quarantine. Please visit the UF Health Screen, Test & Protect website about next steps, retake the questionnaire and schedule your test for no sooner than 24 hours after your symptoms began. Please call your primary care provider if you are ill and need immediate care or the UF Student Health Care Center at 352-392-1161 (or email covid@shcc.ufl.edu) to be evaluated for testing and to receive further instructions about returning to campus.
- If you are withheld from campus by the Department of Health through Screen, Test & Protect, you are not permitted to use any on campus facilities. Students attempting to attend campus activities when withheld from campus will be referred to the Dean of Students Office for Conduct Violation.
- UF Health Screen, Test & Protect offers guidance when you are sick, have been exposed to someone who has tested positive or have tested positive yourself. Visit the [UF Health Screen, Test & Protect website](#) for more information.
- Please continue to follow healthy habits, including best practices like frequent hand washing. Following these practices is our responsibility as Gators.

Attendance Policy, Class Expectations, and Make-Up Policy

Throughout the semester, following policies will be followed:

- **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 two Term Exams (on October 4, 2021 [Week 7] and November 8, 2021 [Week 12]) and a comprehensive Final Exam (on December 15, 2021 [Week 17]). Formula sheets that can be used during the exams will be provided by the instructor. These formula sheets will be posted on the course web-site in advance. Prior to each exam a study guide will also be provided by the instructor that lists the topics that will be covered in the exam. The exams are scheduled in advance, please plan accordingly. Make-up tests will be given for unanticipated absences ONLY (e.g., illness/death in family with appropriate documentation, but NOT for job interviews). 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. 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, if you wish. Paper copies of the lecture notes will not be distributed in class.
- **Professional Conduct.** Please remember to turn off cellular telephones before you come to class. You will not be allowed to check e-mail, send text messages, and/or play games. Please come to class in time. Late arrivals as well as walking out and in during the lectures disrupt the flow of the class. *Persistent disruptive behavior will not be tolerated and might result in grade deductions (half a letter grade).*
- **Absences.** Excused absences must be consistent with university policies in the undergraduate catalog (<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>) and require appropriate documentation.

Assignments

- **Creative Writing.** To allow students to connect seemingly two disparate areas, creative writing and engineering in this semester, the students will be given four creative writing assignments throughout the semester.
 1. *Poem 1.* Write an "I am" poem about yourself due on September 1, 2021 (Week 2).
I am (two special characteristics)

I wonder (something you are actually curious about)
 I hear (an imaginary sound)
 I see (an imaginary sight)
 I want (an actual desire)
 I am (the first line of the poem restated)
 I pretend (something you pretend to do)
 I feel (a feeling about something imaginary)
 I touch (an imaginary touch)
 I worry (something that really bothers you)
 I cry (something that makes you very sad)
 I am (the first line of the poem repeated)
 I understand (something you know is true)
 I say (something you believe in)
 I dream (something you actually dream about)
 I try (something you make an effort to do)
 I hope (something you actually hope for)
 I am (the first line of the poem repeated)

2. *Poem 2.* Write an “I am” poem on a topic, concept, model, issue, etc. related to course content due September 22, 2021 (Week 5). More information will be provided via Canvas.
 3. *Poem 3.* Write an “I am” poem on a topic, concept, model, issue, etc. related to course content due on November 3, 2021 (Week 11). More information will be provided via Canvas.
 4. *Creative Writing Reflection.* You will be asked to respond to a number of questions focusing on your experience with the creative writing assignments due on November 15, 2021 (Week 13). More information will be provided via Canvas.
- **Price Research.** You will be asked to choose a product and create a table that depicts the price of the product for at least five different brick-and-mortar in Gainesville and at least three on-line (minimum required Amazon.com, Walmart.com, Target.com) businesses due on October 4, 2021 (Week 7). More information will be provided via Canvas.
 - **Company Research.** You will be assigned a company and will be asked to conduct a company research about the supply chain practices as they pertain to pricing, inventory management and network design and operation practices of the company due on November 22, 2021 (Week 14). More information about the submission guidelines will be provided via Canvas.
 - **Mind Map.** You will be asked to create a Mind Map of the overall course material due on December 6, 2021 (week 16). More information about the submission guidelines will be provided via Canvas.

Evaluation of Grades

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

Term Exam 1	28%
Term Exam 2	28%
Final Exam	33%
Creative Writing (1% Poem 1, 2% each Poems 2 & 3, 1% Reflection)	6%
Price Research	2%
Company Research	2%
Mind Map	1%
Total	100%

Grading Policy

Final grade averages will be rounded off to the nearest integer, and assigned on the standard scale as follows:

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E
100-93	92-90	89-87	86-83	82-80	79-77	76-73	72-70	69-67	66-63	62-60	59-0

More information on UF grading policy may be found at:

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

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.a.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.a.ufl.edu/public-results/>.

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.

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 completing this assignment.” The Honor Code (<https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-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. All cases will be handed over to the Dean of Students.

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:

- Meredith Hartig, Undergraduate Advisor, UF ISE, 352-294-0451, mhartig@ise.ufl.edu

- 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: <https://registrar.ufl.edu/ferpa.html>

Campus Resources

Health and Wellness

U Matter, We Care: Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: <https://counseling.ufl.edu>, 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 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: 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

Academic Resources

E-learning Technical Support: 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://career.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://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>;<https://care.dso.ufl.edu>.

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