

## Inventory and Supply Chain Systems

EIN4343 8231/2F45

**Class Periods:** MWF 8 (3:00 PM - 3:50 PM)

**Location:** LAR 330

**Academic Term:** Fall 2019

### Instructor

Dr. Elif Akcali. [akcali@ise.ufl.edu](mailto:akcali@ise.ufl.edu) 352-294-7726. Weil 450. Office Hours: TBD

### Teaching Assistant

Shannon Hickey. [shannonhickey@ufl.edu](mailto:shannonhickey@ufl.edu) Weil 202. Office Hours: TBD

### 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.

### 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)

The table below is an example. Please consult with your department's ABET coordinator when filling this out.

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	8/21	Introduction: Syllabus and Motivation	
	8/23	Inventory Management: ABC Analysis	
2	8/26	Inventory Management: Deterministic Models Economic Order Quantity (EOQ) Model	
	8/28	Inventory Management: Deterministic Models Economic Order Quantity (EOQ) Model	Poem 1
	8/30	Inventory Management: Deterministic Models EQO Extensions I	
3	9/2	Inventory Management: Deterministic Models EQO Extensions II	
	9/4	Inventory Management: Deterministic Models EQO Extensions III	Quiz 1
	9/6	Inventory Management: Deterministic Models Wagner-Whitin Model	
4	9/9	Inventory Management: Deterministic Models Heuristics	
	9/11	Inventory Management: Stochastic Models Periodic Review: Single-period model (cost minimization)	Quiz 2
	9/13	Inventory Management: Stochastic Models Periodic Review: Single-period model (profit maximization)	
5	9/16	Inventory Management: Stochastic Models Periodic Review: Multi-period with Backlogging	
	9/18	<b>In-Class Exam</b>	<b>Term Exam 1</b>
	9/20	Inventory Management: Stochastic Models Periodic Review: Multi-period with Lost Sales	
6	9/23	Inventory Management: Stochastic Models Continuous Review: Preliminaries	
	9/25	<b>CRC Showcase</b> <i>No Class</i>	
	9/27	Inventory Management: Stochastic Models Continuous Review: Multi-period with Backlogging	
7	9/30	Inventory Management: Stochastic Models Continuous Review: Multi-period with Lost Sales	
	10/2	Inventory Management: Stochastic Models Continuous Review: Service Levels	Price Comparison

	10/4	<b>UF Homecoming</b> <i>No Class Meeting</i>	
8	10/7	Logistics Management Preliminaries	
	10/9	Logistics Management Shipment Size Selection	Quiz 3
	10/11	Logistics Management Shipment Mode Selection	
9	10/14	Logistics Management Consolidation I	
	10/16	Logistics Management Consolidation II	Quiz 4
	10/18	Supply Chain Management Definition and Fundamental Issues	
10	10/21	Supply Chain Management The Bullwhip Effect	
	10/23	<b>In-Class Exam</b>	<b>Term Exam 2</b>
	10/25	Supply Chain Management Contemporary Issues I	
11	10/28	Supply Chain Management Contemporary Issues II	
	10/30	Supply Chain Management Retailer-Supplier Coordination	Quiz 5
	11/1	Supply Chain Management Contracting; Wholesale pricing	
12	11/4	Supply Chain Management Contracting: Buy-back	
	11/6	Supply Chain Management Contracting: Revenue sharing	Quiz 6
	11/8	Supply Chain Management Contracting: Options	
13	11/11	<b>Veteran's Day</b> <i>No Class Meeting</i>	
	11/13	Demand Forecasting Preliminaries	
	11/15	Demand Forecasting Forecasting Error	
14	11/18	Demand Forecasting Methods for Stationary Series	
	11/20	Demand Forecasting Methods for Linear Trend Series	Quiz 7
	11/22	Demand Forecasting Methods for Linear Trend Series	
15	11/25	Demand Forecasting Methods for Seasonal Series	
	11/27	<b>Thanksgiving Holiday</b> <i>No Class Meeting</i>	
	11/29	<b>Thanksgiving Holiday</b> <i>No Class Meeting</i>	
16	12/2	Demand Forecasting Methods for Seasonal Series	Poem 2
	12/4	Demand Forecasting Practical Considerations	Company Research
	12/6	<b>Reading Days</b> <i>No Class Meeting</i>	

	12/12	<b>Final Exam</b> 12E: 7:30 – 9:30pm	LAR 330
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### ***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 given six Quizzes (see detailed Course Schedule), two Term Exams (see detailed Course Schedule) and a comprehensive Final Exam (on December 12, 2019). 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 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 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.
- **Price Comparison.** You will be asked to choose a product and create a table that depicts the price of the product at a number of brick-and-mortar stores in Gainesville as well as .com businesses due on October 2, 2019. 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 pricing, inventory management and network design and operation practices of the company due on December 4, 2019. More information will be provided via Canvas.
- **Creative Writing Component.** To allow students to connect seemingly two disparate areas, creative writing and engineering in this semester, the students will be given a number of creative writing assignments throughout the semester.
  1. *Individual Assignment.* Write an “I am” poem about yourself due on August 28, 2019 (Week 2 of the semester).
  2. *Group Assignment.* Write an “I am” poem in groups of two on a topic related to the class due on December 2, 2019 (Week 15 of the semester). For this assignment, you may change the verbs also as you see fit.
    - 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)

- **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.

### ***Evaluation of Grades and Grading Policy***

Your final grade for the class will be calculated as follows: Quizzes 6%, Term Exam 1 28 %, Term Exam 2 28%, Final Exam 34%, Creative Writing 2% (1% Poem 1 and 1% Poem 2), Price Comparison (1%), and Company Research (1%). 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.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.bluer.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://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 or the TA in this class. *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:

- Your academic advisor or Graduate Program Coordinator

- Robin Bielling, Director of Human Resources, 352-392-0903, [rbielling@eng.ufl.edu](mailto:rbielling@eng.ufl.edu)
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, [taylor@eng.ufl.edu](mailto:taylor@eng.ufl.edu)
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, [nishida@eng.ufl.edu](mailto: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](mailto: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:** <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 Title IX Compliance](#), located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, [title-ix@ufl.edu](mailto: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](mailto: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](https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf).

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

