Course Code	Course Name	Semester	Theory	Practice	Lab	Credit	ECTS
IND435	Introduction To Logistics Engineering	7	3	0	0	3	4

Prerequisites	
Admission Requirements	
Language of Instruction	English
Course Type	Elective
Course Level	Bachelor Degree
Objective	Logistics deals with the materials and information flow and their storage in an efficient way. Logistics engineering can be defined as the management of logistics activities using quantitative techniques. Performing logistics activities successfully results in cost savings, and improved customer service level. This elective course focuses mainly on the following logistics areas: forecasting logistics requirements, design of logistics systems, inventory management, transportation planning. The course objectives are the following: 1.Make the students be aware of the benefits of performing logistics activities in an efficient way, 2.Introduce the students the decision problems encountered when designing, planning and controlling the logistics systems, 3.Inform the students about the various quantitative methods used for solving logistics problems.
Content	Week 1.Introducing Logistics Systems: Definitions and Concepts.(Ghiani, Laporte & Musmanno, Chapter 1) Week 2. Introducing Logistics Systems (Cont.): How Logistics Systems Work?, Types of Logistics Decisions (Ghiani, Laporte & Musmanno, Chapter 1) Week 3. Introducing Demand Forecasting: Why Forecasting Is Required?, Classification of Forecasting Methods (Ghiani, Laporte & Musmanno, Chapter 2) Week 4. Time Series Forecasting Methods: Static and Adaptive Methods (Chopra&Meindl, Chapter 7) Week 5. Aggregate Planning Problem: Linear Programming Modeling and Solving Using What's Best. (Chopra&Meindl, Chapter 8) Week 6. Logistics Network Design: Network Design Decisions, Facility Location, Capacity Allocation, and Demand/Supply Allocation Models (Chopra&Meindl, Chapter 5) Week 7. Logistics Network Design (Cont.): Solving Network Design Models Using GAMS Modeling Language Week 8. Introduction to Inventory Management: Reasons for Holding Inventory, Costs Associated with Holding Inventory, Classification of Inventory Models (Chopra&Meindl, Chapter 10) Week 9. Midterm Exam Week 10. Deterministic Inventory Models: Cycle Inventory, Single Product Inventory Models Under Constant Demand, EOQ and EPQ models (Chopra&Meindl, Chapter 10) Week 11. Deterministic Inventory Models (cont.): Evaluating Ordering Strategies for Multiple Products Case (Chopra&Meindl, Chapter 10) Week 12. Stochastic Inventory Models : Safety Inventory, Product Availability Measures, Replenishment Policies: Basestock Policy, Reorder Point Policy, Evaluating Safety Inventory and Product Availability Given a Replenishment Policy, Evaluating Safety Inventory Given Desired Level of Product Availability (Chopra&Meindl, Chapter 11) Week 13. Stochastic Inventory Models (Cont.): Evaluating Effects of Supplier Lead Time Uncertainty and Product Aggregation on Safety Inventory (Chopra&Meindl, Chapter 11) Week 14. Introducing Transportation Management : Classification of Transportation Problems, Vehicle Allocation Problems, Vehicle Routing Problems, The Traveling Salesman Problem

References	Chopra, S., Meindl, P., “Supply Chain Management: Strategy, Planning, and Operation”, 4th Edition, Prentice Hall, 2010. Ghiani,G., Laporte,G., Musmanno,R., “Introduction to Logistics Systems Planning and Control”, John Wiley & Sons, 2004.

Theory Topics

Week	Weekly Contents
1	Introducing Logistics Systems: Definitions and Concepts.(Ghiani, Laporte & Musmanno, Chapter 1)
2	Introducing Logistics Systems (Cont.): How Logistics Systems Work?, Types of Logistics Decisions (Ghiani, Laporte & Musmanno, Chapter 1)
3	Introducing Demand Forecasting: Why Forecasting Is Required?, Classification of Forecasting Methods (Ghiani, Laporte & Musmanno, Chapter 2)
4	Time Series Forecasting Methods: Static and Adaptive Methods (Chopra&Meindl, Chapter 7)
5	Aggregate Planning Problem: Linear Programming Modeling and Solving Using What’s Best.(Chopra&Meindl, Chapter 8)
6	Logistics Network Design: Network Design Decisions, Facility Location, Capacity Allocation, and Demand/Supply Allocation Models (Chopra&Meindl, Chapter 5)
7	Logistics Network Design (Cont.): Solving Network Design Models Using GAMS Modeling Language
8	Introduction to Inventory Management: Reasons for Holding Inventory, Costs Associated with Holding Inventory, Classification of Inventory Models (Chopra&Meindl, Chapter 10)
9	Midterm Exam
10	Deterministic Inventory Models: Cycle Inventory, Single Product Inventory Models Under Constant Demand, EOQ and EPQ models (Chopra&Meindl, Chapter 10)
11	Deterministic Inventory Models (cont.): Evaluating Ordering Strategies for Multiple Products Case (Chopra&Meindl, Chapter 10)
12	Stochastic Inventory Models : Safety Inventory, Product Availability Measures, Replenishment Policies: Basestock Policy, Reorder Point Policy, Evaluating Safety Inventory and Product Availability Given a Replenishment Policy, Evaluating Safety Inventory Given Desired Level of Product Availability (Chopra&Meindl, Chapter 11)
13	Stochastic Inventory Models (Cont.): Evaluating Effects of Supplier Lead Time Uncertainty and Product Aggregation on Safety Inventory (Chopra&Meindl, Chapter 11)
14	Introducing Transportation Management : Classification of Transportation Problems, Vehicle Allocation Problems, Vehicle Routing Problems, The Traveling Salesman Problem