



**DEPARTMENT OF MECHANICAL AND INDUSTRIAL ENGINEERING
MECHANICAL ENGINEERING PROGRAM, BSC.**

Course Syllabus

1. Course number and name

IE 570 Supply chain management

2. Credits and contact hours

(3+0) 3 credit hours, 3 contact hours

3. Course type

Face to face Learning Course (3+0)

4. Instructor's or course coordinator's name

Dr. Hanan Saleet

5. Textbook information

Supply chain management: strategy, planning and operations, by Sunil Chopra and Peter Meindl, Printice hall, 5th edition 2016. ISBN-10: 1292093560, ISBN-13: 978-1292093567

a. Other supplemental materials

-Operations Management: Processes and Supply Chains (11th Edition) 11th Edition, by Lee J. Krajewski, Manoj K. Malhotra, Larry P. Ritzman, 2016.
- Instructor's Notes

6. Specific course information

a. Catalog description

Supply chain drivers and metrics, distribution networks, uncertainty in a supply chain, transportation, sourcing decisions, information technology, green supply chain.

b. Prerequisites or co-requisites

co-requisites: IE 471 Production Planning and Control

c. The course is:

Required in Industrial Engineering program.

7. Specific goals for the course

a. Course outcomes:

After completion of the course, students are expected to be able to:

1. Illustrate how a company can utilize its supply chain to achieve strategic fit
2. Identify the six supply chain drivers and their metrics
3. Design transportation and distribution networks.



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4. Value green supply chain and how to achieve sustainability

b. The following student outcomes are addressed by the course:

SO-(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.

SO-(g) an ability to communicate effectively

SO-(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context

SO-(pc-3) ability to design, develop, implement, and improve integrated systems that include people, materials, information, equipment and energy using appropriate analytical, computational, and experimental practices

8. Learning Outcomes and their Alignment with Program Educational Objective (PEO's), Methods of Delivery, and Assessment Methods:

Learning Outcomes	Program PEOs	Method of Delivery	Assessment Method
Course Outcomes			
CO-(1): Illustrate how a company can utilize its supply chain to achieve strategic fit	-	Lectures (Example and Problems)	Exams
CO-(2): Identify the six supply chain drivers and their metrics	-	Lectures (Example and Problems)	Assignment
CO-(3): Design transportation and distribution networks	-	Lectures (Example and Problems)	Project
CO-(1): Value green supply chain and how to achieve sustainability	-	Lectures (Example and Problems)	Project
Student Outcomes			
SO-(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.	2	Lectures (Example and Problems)	Midterm Exam



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SO-(g) an ability to communicate effectively		Term Project	Term Project- Part 1
SO-(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context		Lectures (Example and Problems)	Midterm Exam
SO-(pc-3) ability to design, develop, implement, and improve integrated systems that include people, materials, information, equipment and energy using appropriate analytical, computational, and experimental practices	1	Term Project	Term Project- Part 1

9. Weekly Teaching Plan

Week	Lecture	Topic	Method of Delivery
1	Lec_1	1.1 Discuss the <u>goal</u> of a supply chain and explain the impact of supply chain decisions on the <u>success of a firm</u> .	Lecture
	Lec_2	1.2 Define the three key supply chain <u>decision phases</u> and explain the significance of each one.	Lecture
	Lec_3	1.3 Describe the cycle and <u>push/pull views</u> along with the macro processes of a supply chain.	Lecture
2	Lec_4	1.4 Identify important issues and <u>decisions</u> to be addressed in a supply chain.	Lecture
	Lec_5	Explain why achieving strategic fit is critical to a company's overall success.	Lecture
	Lec_6	Describe how a company achieves strategic fit between its	Lecture
3	Lec_7	supply chain strategy and its competitive strategy.	Lecture



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	Lec_8	Identify the main levers to deal with uncertainty in a supply chain.	Lecture
	Lec_9	3.2 Identify the major drivers of supply chain performance.	Lecture
4	Lec_10	3.3 Define the key performance metrics for facilities and discuss their role in creating strategic fit between the supply chain strategy and the competitive strategy.	Lecture
	Lec_11	3.4 Define the key performance metrics for inventory and discuss its role in creating strategic fit between the supply chain strategy and the competitive strategy.	Lecture
	Lec_12	3.5 Define the key performance metrics for transportation and discuss its role in creating strategic fit between the supply chain strategy and the competitive strategy.	Lecture
5	Lec_13	3.6 Define the key performance metrics for information and discuss its role in creating strategic fit between the supply chain strategy and the competitive strategy.	Lecture
	Lec_14	3.7 Define the key performance metrics for sourcing and discuss its role in creating strategic fit between the supply chain strategy and the competitive strategy.	Lecture
	Lec_15	3.8 Define the key performance metrics for pricing and discuss its role in creating strategic fit between the supply chain strategy and the competitive strategy.	Lecture
6	Lec_16	4.1 Identify the key factors to be considered when designing a distribution network.	Lecture
	Lec_17	4.2 Discuss the strengths and weaknesses of various distribution options.	Lecture
	Lec_18	4.3 Describe how omni-channel retail may be structured to be both cost effective and responsive to customer needs	Lecture
7	Lec_19	14.1 Understand the role of different transportation modes in a supply chain.	Lecture
	Lec_20	14.2 Discuss the role of infrastructure and policies in transportation.	Lecture



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	Lec_21	14.3 Identify the relative strengths and weaknesses of various transportation network design options.	Lecture
8	Lec_22	14.4 Understand some success factors in a responsive network for same day delivery.	Lecture
	Lec_23	14.5 Evaluate trade-offs that shippers need to consider when designing a transportation network.	Lecture
	Lec_24	14.6 Design tailored transportation networks in a supply chain.	Lecture
	Lec_25	15.1 Understand factors that affect the decision to outsource a supply chain function.	Lecture
9	Lec_26	15.2 Identify dimensions of supplier performance that affect total cost.	Lecture
	Lec_27	15.3 Design a tailored supplier portfolio.	Lecture
	Lec_28	15.4 Describe the impact of incentives on the behavior of third-parties in a supply chain.	Lecture
10	Lec_29	15.5 Discuss the benefits of sharing risk and reward in a supply chain	Lecture
	Lec_30	17.1 Understand the importance of sustainability in a supply chain.	Lecture
	Lec_31	17.2 Discuss the challenge to sustainability posed by the tragedy of the commons.	Lecture
11	Lec_32	17.3 Describe key pillars of corporate social responsibility (CSR).	Lecture
	Lec_33	17.4 Identify opportunities for improved sustainability along various supply chain drivers.	Lecture
	Lec_34	17.5 Understand the role of incentives and regulation for improved sustainability.	Lecture
12	Lec_35	16.1 Understand the role of revenue management in a supply chain.	Lecture
	Lec_36	16.2 Identify how differential pricing can help increase profits when serving multiple customer segments.	Lecture
	Lec_37	16.3 Describe how dynamic pricing and overbooking can help increase profits from perishable assets	Lecture



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	Lec_38	16.4 Discuss how peak pricing and off-peak discounts can help increase profits when demand is seasonal.	Lecture
	Lec_39	16.5 Describe how both buyers and sellers can combine long-term contracts and spot purchases to increase profits when demand is uncertain.	Lecture
	Lec_40	16.6 Understand the potential negative consequences of revenue management in practice	Lecture
14	Lec_41	Information technology in a supply chain	Lecture
	Lec_42	Information technology in a supply chain	Lecture
	Lec_43	Information technology in a supply chain	Lecture
15	Lec_44	Global Network design in the supply chain	Lecture
	Lec_45	Global Network design in the supply chain	Lecture

10. Grade Distribution:

Assessment	Grade	Week No.
- First Exam	20%	
-Second Exam	15%	
-Assignments (Reports /Quizzes/ Seminar / Tutorials/ Home works)	15%	1-16 th Week
- Final Examination	50%	16 th Week

Note: Make-up exams will be offered for valid reasons. It may be different from regular exams in content and format.