IE 659-101: Supply Chain Engineering

Art Ismail Yagci

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SYLLABUS FOR 19 F - IE 659101-Supply Chain Engineering
Instructor: Art (Ismail) Yagci, PhD
Class Room: Guttenberg Info Tech Center 2305 | Office hours: Thursday’s (30 minutes before/after class time)
Email: iay2@njit.edu

COURSE DESCRIPTION

Supply Chain Management focuses on managing material and information flows across the product delivery enterprise. This course focuses on the key operational capabilities that a supply chain system must develop to support the business strategy of a firm, and the relationship between the desired capabilities and the structure of a supply chain. This course explores the key issues associated with the design and management of industrial Supply Chains (SC). A SC is concerned with the efficient integration of suppliers, factories, warehouses and stores so that products are distributed to customers in the right quantity and at the right time. One of the primary objectives of SC management is to minimize the total supply chain cost subject to various service requirements. Students will be able to describe and explain fundamentals of SC and to derive and compute optimal policies/variables, performance measures such as costs/profits, and be aware of SC practices. Students will gain exposure to quantitative methodologies and analysis that support operations and supply chain strategy and planning decisions, using case studies and development of analytical spreadsheet models.

MOODLE

The course will make extensive use of the Moodle system to optimize student-instructor communication. All course materials including lecture slides and homework etc. will be distributed through Moodle. All submission of homework and other assignments will also be through Moodle. To access the system please got to http://moodle.njit.edu, you will need a valid UCID to login.

GRADING

Based in individual and team performance as follows: 17% Homework #1 25% Midterm Exam 16% Case Study Project 17% Homework #2 25% Final Exam

LECTURE SLIDES AND SUGGESTED READINGS

IE 659 Supply Chain Engineering lectures slides by Prof. Ismail Art Yagci will be distributed electronically through Moodle


Course Readings – Several papers/reports (R1 to R9) have been selected to complement the weekly topics. These are listed below, please complete each reading prior to the start of the topic.
CASE STUDY TEAM PROJECT:

Your team (4 members) has been asked to review and discuss the assigned case study and create a 14-18 slide powerpoint report. Teams will be assigned projects during one of the class lectures. All case studies are taken from the course textbook and are listed below, the specific page numbers are also given. Your powerpoint report should be organized into the following general sections: (i) problem overview and case back ground (ii) available and market data or trends that you think are relevant to the case study and (iii) your proposal to management for answering the questions. The last slide must explicitly list your recommendations to management. The questions associated with each case study are listed at the end of the case study. You must attempt to address all the questions, but may opt to concentrate on some questions relative to others. To distribute the case study presentations there will be 2 presentation dates listed in the course outline. I will arbitrarily assign dates to each team. You must upload your final presentation report on Moodle by 11/4/2019. Each team will deliver their analysis and discuss their project with the class through a powerpoint presentation (15 minutes). Your team grade will be based on (i) the presentations and the final PowerPoint report – 80% and (ii) the Q&A role as the executive team – 20%.

Tips for creating a good case study presentation report. 1. Investigate and Analyze the Company’s Background. 2. Identify Strengths and Weaknesses Within the Company 3. Gather Information on the External Environment 4. Analyze Your Findings 5. Identify Financial Level Strategy. 6. Identify Operational Level Strategy. 7. Analyze Possible Solutions and their Implementations 8. Make Recommendations. The final part of your case study analysis should include your answers and recommendations. Every recommendation you make should be based on and supported by the context of your case study analysis.

COURSE OUTLINE

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<tr>
<th>#</th>
<th>CHAPTER</th>
<th>Date</th>
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<tbody>
<tr>
<td>1</td>
<td>1,2,3</td>
<td>Sep 5, 2019</td>
<td>Introduction to Supply Chain Management</td>
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<tr>
<td></td>
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<td>- Supply Chain Strategic Goals</td>
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<td>- Supply Chain Performance Metrics and Strategic Objectives</td>
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<td>Lecture #</td>
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HW# 1 Assigned on 9/26/2019 - Submit on 10/10/2019
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<th>Week</th>
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<th>Topic</th>
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| 5    | Oct 3, 2019 | Lecture #4A: Inventory Control in Supply Chains  
Lecture #4B: Uncertainty & Risk in Inventory  
Video: V7. SAP at Salvatore Ferragamo  
Video: V8. Vera Bradley Operations  
Reading: R4. Fresh Express: Six Day Perishable Supply Chain  
Reading: R5. Rapid Fire Fulfillment at Zara |
| 6    | Oct 10, 2019 | MIDTERM EXAM |
| 7    | Oct 17, 2019 | SECTION-2: Enterprise Perspective  
Materials Requirements Planning (MRP)  
- Bill of Materials & Process Plan  
- MRP Scheduling Algorithm  
- Advanced Lot Sizing Methods  
Lecture #5: Materials Requirements Planning  
Video: V10. Logistics for an Omni-Channel World  
Video: V11. Lennox International - Supply Chain Integration  
Reading: R6. Supply Chain Game Changers |
| 8    | Oct 24, 2019 | Sourcing Decisions & Supplier Contracts  
- Supply Contracts & Sourcing Flexibility  
- Revenue Sharing Models  
Lecture #6: Supplier Selection & Supply Contracts  
Video: V12. SAP Business One Demo - Inventory  
Reading: R7. Driving Supply Chain Excellence |
|      |           | Supply Pricing & Revenue Management  
- Pricing to Multiple Segments - Perishable Assets Dynamic Pricing  
- Supply Chain Analytics  
- Gartner Top 25: Metrics and Findings  
Lecture #7: Supply Pricing & Revenue Management |
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|   |   | Video: V13. Lifetime Brands Makes Home Products Better with SAP  
Video: V14. Future Supply Chain 2016 – Cap Gemini  
Reading: R8. Gartner Supply Chain Top 25 – LlamaSoft Analysis  
HW# 2 Assigned on 11/7/2018 - Submit on 11/14/2018 |
|---|---|---|
|   | Oct 31, 2019 | Fast Fulfillment & Online Retail Supply Chains  
- The Amazon Fulfillment Warehouse  
- Online Fulfillment Key Differentiators  
- Analytics driven decision models  
Lecture #8: Fast Fulfillment – The Machine that Changed Retailing  
Reading: R9. Product Flows & Models in Internet Fulfillment Warehouses |
| 9 |   |   |
| 10 | 17 | Nov 7, 2019  
Information Technology & ERP in Supply Chains  
- Introduction to ERP Systems and their Modules  
- Introduction to SAP Modules  
- SAP Supply Chain Management  
Lecture #9: Enterprise Resource Planning Systems  
Lecture #10: Introduction to SAP  
Video: V15. SAP Business One  
Video: V16. SAP Strategic MRP Monitor  
SAP Learning Resources  
2. SAP-SCM Overview Slides  
3. SAP Material Management (MM) Training Video https://www.youtube.com/watch?v=X8Q6Jj-MuY |
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| 11 | Nov 14, 2019 | 4. SAP-MM Certification  
|   |   | [https://sap-certification.info/mm/](https://sap-certification.info/mm/) |
| 12 | Nov 21, 2019 | Team Project Presentations |
| 13 | TBD: between Dec 1, 2019 and Dec 20, 2019 | Team Project Presentations |
|   |   | FINAL EXAM (Check NJIT Final exam schedule) |