Course Syllabus
Supply Chain Management

August – December 2021

Term VII

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I. General Course Information

Subject:	Supply Chain Management		
Pre-requisite:	Operations Research I	**Code:**	01239
Precedent:	None	**Semester:**	2021-2
Credits:	3	**Term:**	VII
Weekly Hours:	4 hours	**Course type:**	Remote-synchronous
Course Type Career	**Compulsory**: Industrial and Commercial Engineering Information Technology and Systems Engineering Administration and Finance Administration and Marketing	**Course Coordinator:**	Augusto Choy: achoy@esan.edu.pe

II. Summary

This course covers theoretical and practical topics. It seeks to develop competencies in the analysis of key elements associated with the design and administration of supply chains, considering the efficient integration of suppliers, manufacturers, distributors and retail outlets.
The course focuses on the criteria and tools that students can utilize to manage costs while analyzing the relationship between supply chain and business functions. It seeks to monitor the customer management and the creation of value, the integration of order processes with inventory management, warehousing systems, outsourcing and transportation (national and global) while monitoring the supply chain's performance.

III. Course Objectives

The objective of the course is to generate models and strategies for effective integration of the supply chain network in order to improve the competitiveness of the company. Students are asked to describe and analyze various supply chain situations from a range of strategic and operational contexts and are expected to offer improvement suggestions.

IV. Learning Results

At the end of the course, the students will be able to:

- Classify the stages, drivers and roles of supply chains.
- Evaluate strategies to balance responsiveness and efficiency under different conditions of supply and demand uncertainty.
- Define and contrast the concepts of Green Supply Chain Management and its benefits for the organization and the needs of society.
- Apply and calculate different demand planning techniques, manufacturing strategies and inventory control systems in the context of the supply chain.
- Evaluate sourcing decisions in terms of the benefits and risks.
- Summarize and interpret the logistics functions to improve supply chain performance.
- Identify the need to measure and assess the performance of firms and their supply chains.

- Demonstrate a basic understanding of the application of ERP software in a range of supply chain contexts.
- Demonstrate a basic level of understanding of the SCOR model to interpret supply chain performance.
- Able to function effectively as an individual, as a member or leader of diverse teams.
- Recognize the need for lifelong learning and the ability to face it in the broader context of technological change.
- Create, select, and use modern engineering and information technology techniques, skills, resources, and tools, including prediction and modeling, with an understanding of their limitations.

V. Methodology

During the development of the course, sessions will contain student presentations and discussions in multidisciplinary teams. The topics will be about theoretical aspects learned in class, where students are encouraged to use their knowledge and creativity to answer questions and solve problems with the lecturer's guidance.

Theoretical lectures will provide students with essential background knowledge that are reinforced with visual tools (videos) about relevant topics of supply chains.

The assessment is continuous and comprises the following: Four (4) quizzes on assigned academic papers, four (4) chapter quizzes on Moodle platform and three (3) integrated cases. Additionally, there is one major project, which must be completed in teams of three to six students that relates to the analysis of real business situations and contexts.

VI. Evaluation

The evaluation system is comprehensive and continuous. It is subdivided as follows: Permanent evaluation (50%), mid-term exam (25%) and final exam (25%).

The final grade (PF) will be obtained in the following way:

PF = (0,25 x EP) + (0,50 x PEP) + (0,25 x EF)

Where:

PF = Final Grade (PF)
EP = Mid-Term Exam (EP)
PEP = Continuous Evaluation (PEP)
EF = Final Exam (EF)

The permanent evaluation results from the weighted average of the evaluations that correspond to the assessment of the student's learning process: Quizzes Presentations / Research projects / Graded Practical work and sessions focused on exercises. The average of these grades provides the corresponding grade.
The weights within the permanent evaluation are described in the following table:

AVERAGE PERMANENT EVALUATION (PEP) 50%		
Evaluation Type	**Description**	**Weight**
Moodle quizzes	4 online Moodle quizzes (5% each)	20%
Theory papers	4 quizzes on assigned academic papers (5% each)	20%
Graded practical	Two integrated analysis cases (15% each)	30%
Course Project	Project Report & Presentation	15%
Participation	Attendance and involvement in groups and class	15%

VII. Programmed Content

<table>
<tr><th>WEEK</th><th>CONTENTS</th><th>ACTIVITIES / EVALUATION</th></tr>
<tr><td colspan="3">LEARNING UNIT I: INTRODUCTION TO SUPPLY CHAINS AND THEIR MANAGEMENT
LEARNING OUTCOME:
• Classify the roles and stages of supply chains and how these may improve supply chain network performance.
• Evaluate strategies to balance responsiveness and efficiency under different conditions of supply and demand uncertainty.
• Able to function effectively as an individual, as a member or leader of diverse teams.
• Recognize the need for lifelong learning and the ability to face it in the broader context of technological change.</td></tr>
<tr><td rowspan="2">1°
23rd to 28th August</td><td>SUPPLY CHAIN BASICS & UNDERSTANDING THE SUPPLY CHAIN.
1.1) What is supply chain management
1.2) Objectives of supply chain management
1.3) Supply chain stages and roles</td><td rowspan="2">Presentation: Course Methodology Guidelines:
• Review for UESAN written work presentation (APA Standards)
• Effective Presentations

Moodle Quiz N°1
Wisner et al. (2012) Principles of Supply Chain Management, Ch 1: Details on UE Virtual.</td></tr>
<tr><td>Wisner/Tan/Leong. Principles of Supply Chain Management: A Balanced Approach 3rd Ed.Ch 1 Págs. 3-28</td></tr>
<tr><td rowspan="2">2°

30th August to 4th September</td><td>1.4) Supply Chain Strategy & Performance Drivers and Metrics
1.5) Bullwhip effect Lab</td><td rowspan="2">Moodle Quiz N°2
Chopra & Meindl (2016). Performance Drivers Ch 3.
Details on UE Virtual.

Activity N° 1
The Soda/Beer game lab</td></tr>
<tr><td>Chopra, S. & Meindl, P. (2016) Supply Chain Management: Strategy, Planning and Operation. (6th Edition), Ch 2 Págs. 19-39
Chopra, S. & Meindl, P. (2016) Supply Chain Management: Strategy, Planning and Operation. (6th Edition), Ch 3 Págs. 40-68</td></tr>
<tr><td rowspan="2">3°
6th to 11 September</td><td>1.6) Coordination of the Supply Chain</td><td rowspan="2"></td></tr>
<tr><td>Chopra, S. & Meindl, P. (2016) Supply Chain Management: Strategy, Planning and Operation. (6th Edition), Ch 10 Págs. 248-267</td></tr>
<tr><td colspan="3">LEARNING UNIT II: GREEN SUPPLY CHAINS
LEARNING OUTCOME:
• Define and contrast the concepts of Green Supply Chain Management and its benefits for the organization and the needs of society.
• Apply and calculate different demand planning techniques, manufacturing strategies and inventory control systems in the context of the supply chain.</td></tr>
<tr><td rowspan="2">3°
6th to 11 September</td><td>2.1) Green Supply Chain: Basic concepts,
2.2) 3 Pillars of Sustainability</td><td rowspan="2">Graded Practical N° 1 Set</td></tr>
<tr><td>Chopra, S. & Meindl, P. (2016) Supply Chain Management: Strategy, Planning and Operation. (6th Edition), Ch 17 Págs. 492-508</td></tr>
</table>

4° 13th to 18th September	2.3) Reverse logistics. Chopra, S. & Meindl, P. (2016) Supply Chain Management: Strategy, Planning and Operation. (6th Edition), Ch 17 Págs. 492-508	
LEARNING UNIT III: SUPPLY CHAIN FORECASTING AND PLANNING **LEARNING OUTCOME:** • Evaluate sourcing decisions in terms of the benefits and risks. • Apply and calculate different demand planning techniques, manufacturing strategies and inventory control systems in the context of the supply chain. • Create, select, and use modern engineering and information technology techniques, skills, resources, and tools, including prediction and modeling, with an understanding of their limitations.		
4° 13th to 18th September	3.1) Sourcing decisions in the supply chain 3.2) Outsourcing Chopra, S. & Meindl, P. (2016) Supply Chain Management: Strategy, Planning and Operation. (6th Edition), Ch 15 Págs. 433-467	**Theory Quiz #1:** Hoole (2005) 5 ways to simplify your supply chain. Details on UE Virtual.
5° 20th to 25th September	3.3) Managing risk and availability 3.4) Make or Buy 3.5) Demand forecasting 3.6) Types of forecasting approaches Wisner/Tan/Leong. Principles of Supply Chain Management: A Balanced Approach 3rd Ed.Ch 2 Págs. 37-69 Wisner/Tan/Leong. Principles of Supply Chain Management: A Balanced Approach 3rd Ed.Ch 5 Págs. 133-162	**Graded Practical N° 1 Due:** Upload to UE Virtual
6° 27th September to 2nd October	3.7) Quantitative forecasting models 3.8) Assessing accuracy Wisner/Tan/Leong. Principles of Supply Chain Management: A Balanced Approach 3rd Ed.Ch 5 Págs. 133-162	**Activity N° 2** Quantitative Forecasting Lab-Exercises
7° 4th to 9th October	3.9) Aggregate planning in the supply chain 3.10) Basic Chase and Level strategies 3.11) Chase and level strategies with additional variables Wisner/Tan/Leong. Principles of Supply Chain Management: A Balanced Approach 3rd Ed.Ch 6 Págs. 165-202	
8° 11th to 16th October	**MID-TERM EXAM**	
LEARNING UNIT IV: PRODUCTION AND MATERIALS MANAGEMENT **LEARNING OUTCOME:** • Apply and calculate different demand planning techniques, manufacturing strategies and inventory control systems in the context of the supply chain. • Create, select, and use modern engineering and information technology techniques, skills, resources, and tools, including prediction and modeling, with an understanding of their limitations.		
9° 18th to 23rd October	4.1) Materials management in the supply chain 4.2) Available to Promise Wisner/Tan/Leong. Principles of Supply Chain Management: A Balanced Approach 3rd Ed.Ch 6 Págs. 165-202	**Moodle Quiz N° 3:** Wisner et al. (2012) Principles of Supply Chain Management, Ch 6. Details on UE Virtual

10° 25th to 30th October	4.3) Bill of materials 4.4) Net requirements planning Wisner/Tan/Leong. Principles of Supply Chain Management: A Balanced Approach 3rd Ed.Ch 6 Págs. 165-202	**Graded Practical N° 2 Set** **Group Project Set**
LEARNING UNIT V: LOGISTICS FUNCTION **LEARNING OUTCOME:** • Summarize and interpret the logistics functions to improve supply chain performance. • Apply and calculate different demand planning techniques, manufacturing strategies and inventory control systems in the context of the supply chain. • Demonstrate a basic level of application of the SAP ERP software in a range of supply chain contexts. • Create, select, and use modern engineering and information technology techniques, skills, resources, and tools, including prediction and modeling, with an understanding of their limitations.		
11° 1st to 6th November	**Logistics Function I: Inventory** 5.1) Managing Inventories 5.2) ABC control method 5.3) Service level and Item Fill Rates 5.4) Weighted Average Fill Rates 5.5) Cycle Inventory 5.6) Economic Order Quality Wisner/Tan/Leong. Principles of Supply Chain Management: A Balanced Approach 3rd Ed.Ch 7 Págs. 207-242	**Moodle Quiz N° 4** Wisner et al. (2012) Principles of Supply Chain Management, Ch 7. Details on UE Virtual.
12° 8th to 13th November	5.7) Safety Inventory 5.8) Statistical reorder point 5.9) Probabilistic Safety Stock **Logistics Function II: Facilities** 5.10) Warehouse / Distribution facilities 5.11) Warehouse Centralization / Square Root Rule Wisner/Tan/Leong. Principles of Supply Chain Management: A Balanced Approach 3rd Ed.Ch 9 Págs.318-325	**Theory Quiz #2:** van Hoek (2001). E-supply chains – virtually non-existing. Details on UE Virtual. **Graded Practical N° 2 Due:** Upload to UE Virtual
13° 15th to 20th November	5.12) Facility location decisions 5.13) Facility location factors 5.14) Facility location models **Logistics Function III: Transport** 5.15) Transportation in the supply chain 5.16) Transportation types and attributes Wisner/Tan/Leong. Principles of Supply Chain Management: A Balanced Approach 3rd Ed.Ch 11 Págs. 375-398 299-339	**Theory Quiz #3:** Chandrashekhar et al. (2017) Significance of SAP as ERP to achieve overall operational and manufacturing improvements.pdf. Details on UE Virtual.
LEARNING UNIT VI: SUPPLY CHAIN PERFORMANCE MEASUREMENT **LEARNING OUTCOME:** • Identify the need to measure and assess the performance of firms and their supply chains. • Describe Enterprise Resource Planning (ERP) and its contribution to supply chain performance. • Demonstrate a basic understanding of SCOR model to interpret supply chain performance. • Able to function effectively as an individual, as a member or leader of diverse teams. • Recognize the need for lifelong learning and the ability to face it in the broader context of technological change.		

14° 22nd to 27th November	6.1) Understand the use and implementation of Enterprise Resource Planning (ERP) programs 6.2) Understanding Supply Chain performance 6.3) Performance measures and measurement 6.4) The SCOR Model Wisner/Tan/Leong. Principles of Supply Chain Management: A Balanced Approach 3rd Ed.Ch 14 Págs. 375-398 299-339	**Theory Quiz #4:** Delipinat Kocaoglu (2014) Using SCOR model to gain competitive advantage.pdf. Details on UE Virtual.
15° 29th November to 4th December	**Peruvian Supply Chain Group Project Presentations** Course review	**Group Project Due:** Upload presentation and report to UE Virtual on day of presentation
16° 6th to 11th December	**FINAL EXAM**	

VIII. Bibliography

Base Reading:

- Chopra, S. & Meindl, P. (2016) **Supply Chain Management: Strategy, Planning and Operation**. (6th Edition) New Jersey, Pearson Prentice-Hall, Inc. [HF5415.13 C533i 2010] Selected Chapters

- Wisner,JD., Tan, K-C., & Leong, GK. (2012) **Principles of Supply Chain Management**, (3rd Edition), Mason, OH: South-Western - Cengage Learning. Selected Chapters

Complimentary Readings for Theory Quizzes:

- Hoole, R. (2005). Five ways to simplify your supply chain. *Supply Chain Management: An International Journal (10)*1, 3-6, https://doi.org/10.1108/13598540510578306

- Van Hoek, R. (2001). E-supply chains – virtually non-existing, *Supply Chain Management: An International Journal (6)*1, 21-28, https://doi.org/10.1108/13598540110694653

- Chandrashekhar et al. (2017). Significance of SAP as ERP to achieve the overall operational and manufacturing improvements (A case study of auto component manufacturing industry in P/ Aurangabad area). *International Journal on Emerging Technologies 8*(1), 11-19.

- Delipinar, G. E., & Kocaoglu, B. (2016). Using SCOR model to gain competitive advantage: A literature review. *Procedia-Social and Behavioral Sciences 229*, 398-406. http://creativecommons.org/licenses/by-nc-nd/4.0/

Research Ethics:

PLEASE NOTE: Internet searches will often take you to non-academic information resources. You may supplement your research with these sources, but keep in mind that the information you find there may not be accurate, since it does not come under a formal oversight or peer-review process.

While you may use and cite non-academic resources such as Wikipedia when working on assignments, you may not rely on them exclusively. The majority of your sources should be peer-reviewed academic journals. Further, remember that you are responsible for the accuracy of any facts you present in your assignments and therefore should confirm the veracity of information you find on non-academic sources through further research.

IX. Lab Support

There are a number of Laboratory-Practical type sessions for the course:

- A Bullwhip simulation by cloud,
- A session using quantitative forecasting models using excel

X. Lecturers

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Jorge, Edgardo	ejorge@esan.edu.pe
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