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# **Course Syllabus Supply Chain Management**

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**March - July 2024**

**Term VII**

**Rees, Gareth  
Saenz, Cesar**

## I. General Course Information

<b>Subject:</b>	Supply Chain Management		
<b>Pre-requisite:</b>	Operations Research I	<b>Code:</b>	01239
<b>Precedent:</b>	None	<b>Semester:</b>	2024-1
<b>Credits:</b>	3	<b>Term:</b>	VII
<b>Weekly Hours:</b>	4 hours	<b>Course type:</b>	Presencial
<b>Course Type Career</b>	<b>Compulsory:</b> Industrial and Commercial Engineering Information Technology and Systems Engineering Administration and Finance Administration and Marketing	<b>Course Coordinator:</b>	Gareth Rees: <a href="mailto:grees@esan.edu.pe">grees@esan.edu.pe</a>

## 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.
- Identify and describe different Supply Chain strategies to ensure optimum Supply Chain performance.
- Identify the need to measure and assess the performance of firms and their Supply Chains.
- Demonstrate a basic level of understanding of the SCOR model to interpret Supply Chain performance.
- Define and contrast the concepts of Ethical and Sustainable Supply Chains and the benefits for the organization and the needs of society of these.
- Evaluate purchasing and 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.

- Summarize and interpret the logistics functions to improve 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 two (2) practice and interpretation-based assessments. 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 supply chain 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:

$$PF = (0,25 \times EP) + (0,50 \times PEP) + (0,25 \times EF)$$

Where:

<b>PF</b>	= Final Grade	(PF)
<b>EP</b>	= Mid-Term Exam	(EP)
<b>PEP</b>	= Continuous Evaluation	(PEP)
<b>EF</b>	= 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:

<b>AVERAGE PERMANENT EVALUATION (PEP) 50%</b>		
<b>Evaluation Type</b>	<b>Description</b>	<b>Weight</b>
Moodle quizzes	4 online Moodle quizzes (5% each)	20%
Theory quizzes	4 quizzes on assigned academic papers (5% each)	20%
Graded practical	Two integrated case analysis (15% for #1, 20% for #2) undertaken in Computer Lab	35%
Course Project	Project Report & Presentation	15%
Participation	Attendance, punctuality and participation	10%

## VII. Programmed Content

<b>WEEK</b>	<b>CONTENTS</b>	<b>ACTIVITIES / EVALUATION</b>
<b>LEARNING UNIT I: INTRODUCTION TO SUPPLY CHAINS AND THEIR MANAGEMENT</b> <b>LEARNING OUTCOME:</b> <ul style="list-style-type: none"> <li>Classify the roles and stages of supply chains and how these may improve supply chain network performance.</li> <li>Identify and describe different Supply Chain strategies to ensure optimum Supply Chain performance.</li> <li>Identify the need to measure and assess the performance of firms and their supply chains.</li> <li>Demonstrate a basic understanding of SCOR model to interpret supply chain performance.</li> </ul> <b>ACROSS ALL LEARNING OUTCOMES:</b> <ul style="list-style-type: none"> <li>Able to function effectively as an individual, as a member or leader of diverse teams.</li> <li>Recognize the need for lifelong learning and the ability to face it in the broader context of technological change.</li> </ul>		
<b>1°</b> From 21 to 27 March	<b>UNDERSTANDING THE SUPPLY CHAIN AND ITS PERFORMANCE</b> 1.1) What is supply chain management 1.2) Objectives of supply chain management 1.3) Supply chain stages and roles	<b>Presentation:</b> Course Methodology and Assessment Guidelines  <b>Moodle Quiz N°1</b> Wisner et al. (2019) Ch 1. Details on UE Virtual.
	Wisner/Tan/Leong. Principles of Supply Chain Management: A Balanced Approach 5 <sup>th</sup> ed. Ch 1 Págs. 3-24	
<b>2°</b> From 01 to 07 April	1.4) Supply Chain Strategy & Performance 1.5) Supply Chain Integration 1.6) Supply Chain Integration - The Bullwhip effect	<b>Theory Quiz N°1</b> Hoole (2005) 5 ways to simplify your supply chain.pdf and Wisner Chap 13 Details on UE Virtual.  <b>Activity N° 1</b> The Soda/Beer game Lab
	Wisner/Tan/Leong. Principles of Supply Chain Management: A Balanced Approach 5 <sup>th</sup> ed. Ch 13 Págs. 501-531	
<b>3°</b> From 08 to 14 April	1.7) Understanding Supply Chain performance 1.8) Performance measures and measurement 1.9) The SCOR Model	<b>Theory Quiz #2:</b> Delipinat Kocaoglu (2014) Using SCOR model to gain competitive advantage.pdf.
	Wisner/Tan/Leong. Principles of Supply Chain Management: A Balanced Approach 5 <sup>th</sup> ed. Ch 14 Págs. 543-563	
<b>LEARNING UNIT II: FORECASTING IN THE SUPPLY CHAIN</b> <b>LEARNING OUTCOME:</b> <ul style="list-style-type: none"> <li>Apply and calculate different demand planning techniques, manufacturing strategies and inventory control systems in the context of the supply chain.</li> <li>Create, select, and use modern engineering and information technology techniques, skills, resources, and tools, including prediction and modeling, with an understanding of their limitations.</li> </ul>		
<b>4°</b> From 15 to 21 April	3.1) Demand forecasting 3.2) Types of forecasting approaches 3.3) Quantitative forecasting models	<b>Activity N° 2</b> Quantitative Forecasting Lab-Exercises  <b>Theory Quiz #3:</b> van Hoek (2001). E-supply chains – virtually non-existing.  Details on UE Virtual
	Wisner/Tan/Leong. Principles of Supply Chain Management: A Balanced Approach 5 <sup>th</sup> ed. Ch 5 Págs. 145-170	

5° From 22 to 28 April	3.4) Forecast accuracy	<b>Activity N° 2</b> Quantitative Forecasting Lab-Exercises
	Wisner/Tan/Leong. Principles of Supply Chain Management: A Balanced Approach 5 <sup>th</sup> ed. Ch 5 Págs. 145-170	
<b>LEARNING UNIT II: SOURCING AND PURCHASING</b> <b>LEARNING OUTCOME:</b> <ul style="list-style-type: none"> <li>Evaluate purchasing and sourcing decisions in terms of the benefits and risks.</li> </ul>		
5° From 22 to 28 April	2.1) Sourcing decisions in the supply chain 2.2) Purchasing 2.3) Outsourcing 2.4) Make or Buy decisions	.
	Wisner/Tan/Leong. Principles of Supply Chain Management: A Balanced Approach 5 <sup>th</sup> ed.Ch 2 Págs. 37-71	
6° From 29 April to 05 May	2.1) Supplier relationships 2.2) Managing risk and availability 2.3) Supplier selection	<b>Graded Practical N° 1</b> Excel-based Integrated Calculation and Interpretation assessment conducted in Lab
	Graded Practical in 1 <sup>st</sup> session of Week 6 Wisner/Tan/Leong. Principles of Supply Chain Management: A Balanced Approach 5 <sup>th</sup> ed.Ch 3 Págs. 81-101	
<b>LEARNING UNIT IV: ETHICAL AND SUSTAINABLE SUPPLY CHAINS</b> <b>LEARNING OUTCOME:</b> <ul style="list-style-type: none"> <li>Evaluate sourcing decisions in terms of the benefits and risks.</li> <li>Define and contrast the concepts of Ethical and Sustainable Supply Chains and the benefits for the organization and the needs of society.</li> </ul>		
7° From 06 to 12 May	4.1) Ethical sourcing 4.2) Sustainable sourcing 4.3) Supplier certifications 4.4) Supplier alliances 4.5) Benchmarking and capabilities	<b>Theory Quiz #4:</b> Paul, I.D., Bholeb, G.P., & Chaudharic, J.R. A review on Green Manufacturing.pdf and Wisner Chap 4  Details on UE Virtual
	Wisner/Tan/Leong. Principles of Supply Chain Management: A Balanced Approach 5 <sup>th</sup> ed. Ch 4 Págs.111-135	
8° From 13 to 19 May	<b>MID-TERM EXAM</b>	
<b>LEARNING UNIT V: RESOURCE PLANNING</b> <b>LEARNING OUTCOME:</b> <ul style="list-style-type: none"> <li>Apply and calculate different demand planning techniques, manufacturing strategies and inventory control systems in the context of the supply chain.</li> <li>Create, select, and use modern engineering and information technology techniques, skills, resources, and tools, including prediction and modeling, with an understanding of their limitations.</li> </ul>		
9° From 20 to 26 May	4.1) Resource planning in the Supply Chain 4.2) Aggregate planning in the supply chain 4.3) Basic Chase and Level strategies 4.4) Chase and level strategies with additional variables	
	Wisner/Tan/Leong. Principles of Supply Chain Management: A Balanced Approach 5 <sup>th</sup> ed. Ch 6 Págs. 183-191	

<b>10°</b> From May 27 to 02 June	4.5) Materials management in the supply chain 4.6) Available to Promise 4.7) Bill of materials 4.8) Net requirements planning	<b>Moodle Quiz N° 2:</b> Wisner et al. (2019), Ch 6. Details on UE Virtual  <b>Group Project Set</b>
	Wisner/Tan/Leong. Principles of Supply Chain Management: A Balanced Approach 5 <sup>th</sup> ed. Ch 6 Págs. 183-220	
<b>LEARNING UNIT VI: LOGISTICS</b> <b>LEARNING OUTCOME:</b> <ul style="list-style-type: none"> <li>Summarize and interpret the logistics functions to improve supply chain performance.</li> <li>Apply and calculate different demand planning techniques, manufacturing strategies and inventory control systems in the context of the supply chain.</li> <li>Create, select, and use modern engineering and information technology techniques, skills, resources, and tools, including prediction and modeling, with an understanding of their limitations.</li> </ul>		
<b>11°</b> From 03 to 09 June <i>[06 June Engineers Day]</i>	<b>Logistics Function I: Inventory</b> 5.1) Managing Inventories 5.2) ABC control method 5.3) Inventory Fill Rates	<b>Moodle Quiz N° 3</b> Wisner et al. (2019), Ch 7. Details on UE Virtual.
	Wisner/Tan/Leong. Principles of Supply Chain Management: A Balanced Approach 5 <sup>th</sup> ed. Ch 7 Págs. 231-264	
<b>12°</b> From 10 to 16 June	5.4) Cycle Inventory 5.5) Economic Order Quantity Safety Inventory 5.6) Statistical reorder point 5.7) Probabilistic Safety Stock	
	Wisner/Tan/Leong. Principles of Supply Chain Management: A Balanced Approach 5 <sup>th</sup> ed. Ch 7 Págs. 231-264	
<b>13°</b> From 17 to 23 June	<b>Logistics Function II: Facilities</b> 5.8) Warehouse / Distribution facilities 5.9) Warehouse Centralization / Square Root Rule 5.10) Facility location 5.11) Location factor 5.12) Location decisions	<b>Moodle Quiz N° 4</b> Wisner et al. (2019), Ch 9. Details on UE Virtual.
	Wisner/Tan/Leong. Principles of Supply Chain Management: A Balanced Approach 5 <sup>th</sup> ed. Ch 11 Págs. 413-437	
<b>14°</b> From 24 to 30 June	<b>Logistics Function III: Transportation</b> 5.13) Transportation in the supply chain 5.14) Transportation types and attributes  Graded Practical in <b>2<sup>nd</sup> session</b> of Week 14	<b>Graded Practical N° 2</b> Excel-based Integrated Calculation and Interpretation assessment conducted in Lab
	Wisner/Tan/Leong. Principles of Supply Chain Management: A Balanced Approach 5 <sup>th</sup> ed. Ch 9 Págs. 331-372	
<b>15°</b> From 01 to 07 July	<b>Peruvian Supply Chain Group Project Presentations</b>  Course review	<b>Group Project Due:</b> Upload presentation and report to UE Virtual on day of presentation
<b>16°</b> From 08 to 14 July	<b>FINAL EXAM</b>	

## VIII. Bibliography

### Base Reading:

- Wisner, J.D., Tan, K-C., & Leong, G.K. (2019) **Principles of Supply Chain Management**, (5<sup>th</sup> Edition), Mason, OH: South-Western - Cengage Learning. Selected Chapters

### Complimentary Readings for Theory Quizzes:

- Paul, I.D., Bholeb, G.P., & Chaudharic, J.R. A review on Green Manufacturing: It's important, methodology and its application. *Procedia Materials Science* 6, 1644 – 1649. <https://doi.org/10.1016/j.mspro.2014.07.149>
- 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/>
- Hoole, R. (2005). Five ways to simplify your supply chain. *Supply Chain Management: An International Journal* (10)1, 3-6, <https://doi.org/10.1108/135985405110578306>
- Van Hoek, R. (2001). E-supply chains – virtually non-existing, *Supply Chain Management: An International Journal* (6)1, 21-28, <https://doi.org/10.1108/135985401110694653>

### Research Ethics:

#### PLEASE NOTE:

While you may use and cite non-academic resources such as Wikipedia when working on assignments, you should not rely on them exclusively. Most of your theory-based 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 information you find from non-academic sources through further verification.

## IX. Lab Support

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

- A Bullwhip simulation by cloud conducted in a computer lab,
- Quantitative forecasting models and Forecasting accuracy and bias, both using MSExcel conducted in a computer lab.
- There are 2 Graded Practical Assessments scheduled to be taken in a computer lab in Week 6 and Week 14.

## X. Lecturers

Rees, Gareth  
Saenz, Cesar

[grees@esan.edu.pe](mailto:grees@esan.edu.pe)  
[csaenz@esan.edu.pe](mailto:csaenz@esan.edu.pe)