

# Teaching Notes

Management of Logistics Operations

LSLN1803



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## General information

### Modality

- Banner Code: LSLN1803

### Course competence

Develop the ability to understand, analyze, and propose innovative solutions to the challenges faced by logistics management in a globalized and constantly changing environment. This involves applying theoretical and practical knowledge related to the integration of logistics operations in Supply Chain Management, Warehouse Management Systems, and trends in new technologies such as AI, as well as international regulations like Incoterms.



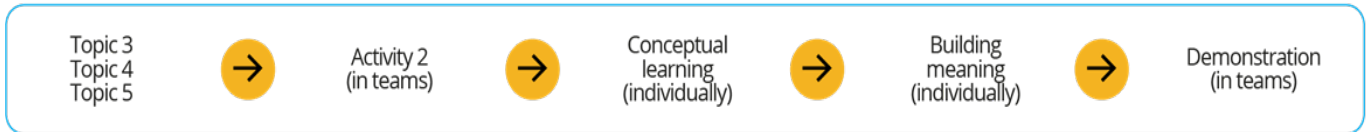
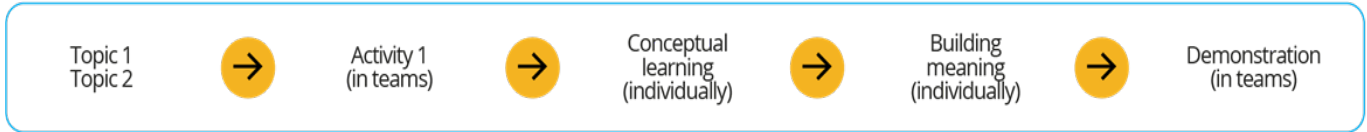
## Methodology

### 1. Course features

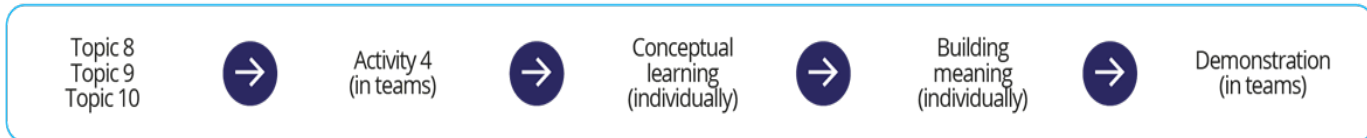
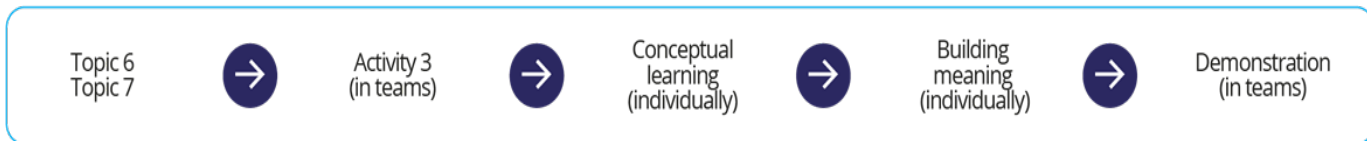
- The course is taught with the didactic technique of **Flipped Classroom**.
- The course is designed to develop a competence.
- Contents are divided into three modules.
- Each module includes five topics.
- There are three learning outcomes in the course, one per module.
- Six activities are done, two per module.
- Course evaluation is comprised by:
  - ✓ 6 activities
  - ✓ 3 learning outcomes
  - ✓ 2 partial exams or 1 midterm exam
  - ✓ 1 final evaluation

## 2. Course structure

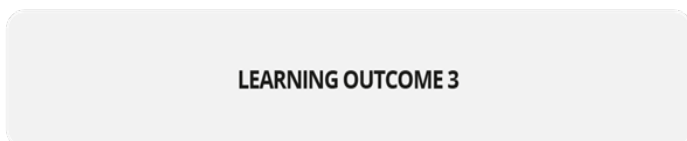
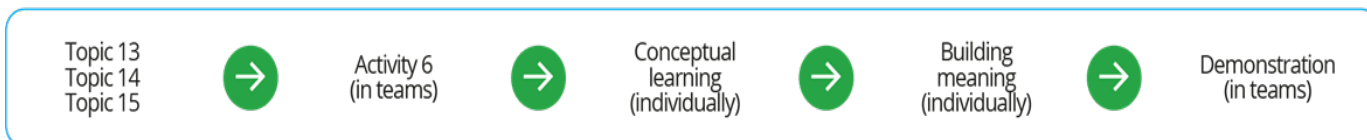
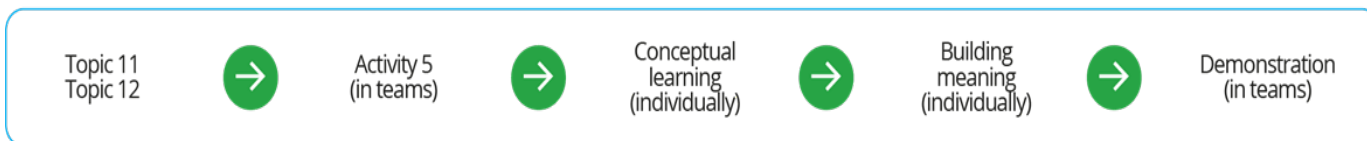
### Module 1



### Module 2



### Module 3



### 3. Didactic model

The educational model of Tecmilenio University, whose vision is 'to train people with a life purpose and the skills to achieve it', is focused on the development of unique competences that distinguish its students from the rest. These skills enable them to perform in different contexts, foreseen or unpredictable, empowering them to be self-learners and to learn. This model, vision, and competencies are designed to foster human flourishing, considering the elements of the university's wellness and happiness ecosystem.

The most important goal in the classroom is to achieve student-centered learning, which is why the model used to design and deliver the courses is also constructivist. This presents a change in roles.

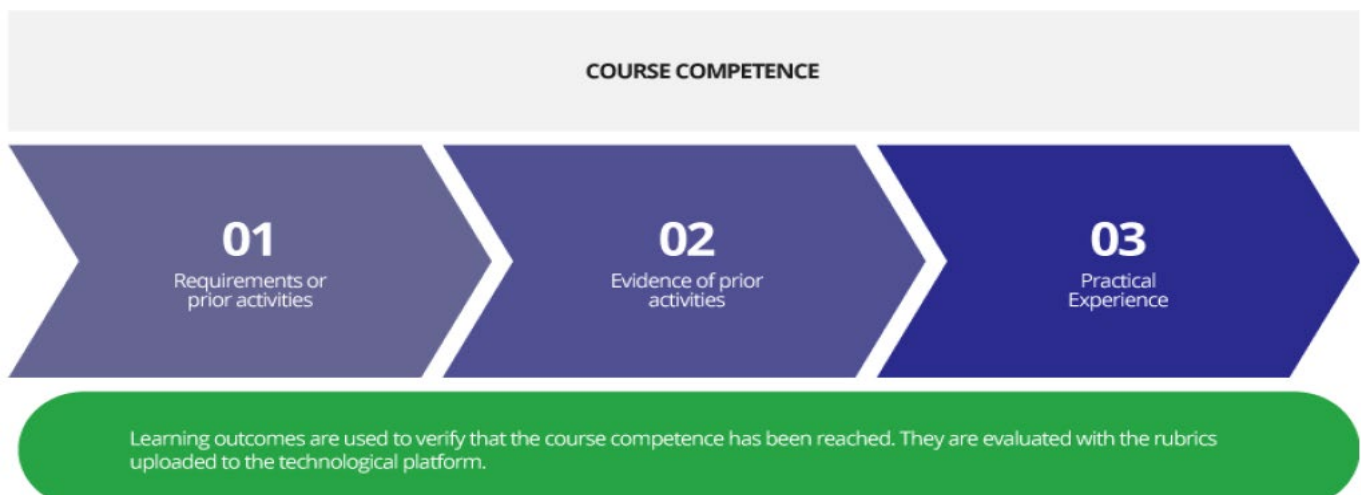
- **Students** obtain the bases to make an interpretation of reality and build their knowledge, learning by doing (not just seeing, listening, and reading).
- **Facilitators**, being experts in their discipline and working in the industry, bring their work experience to guide students and build learning environments in real contexts that motivate them to learn, thus enriching their learning experience.

With this constructivist vision, the flipped classroom teaching technique has been incorporated to foster active learning. The modality of this course is explained below.

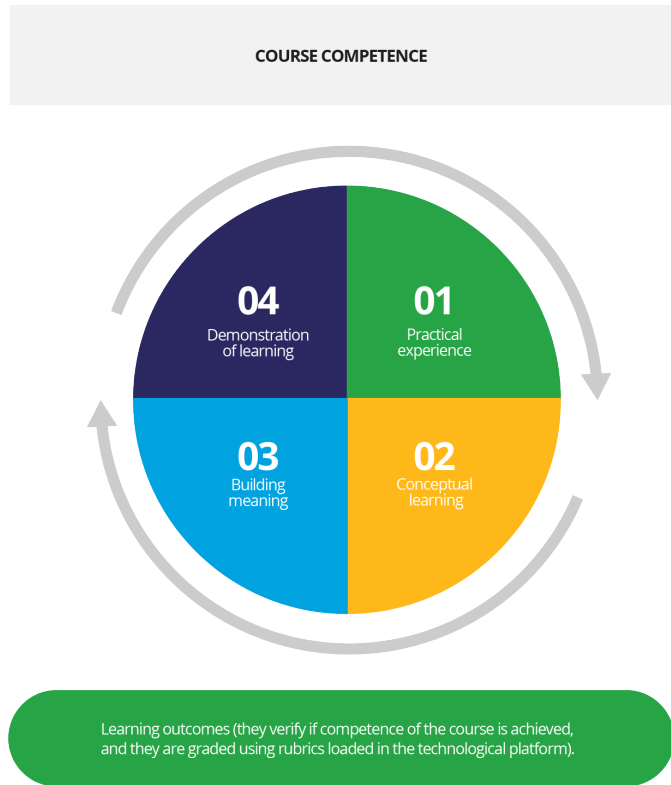
#### Modality: Flipped Classroom with a two-week academic cycle

Students, committed to their learning, perform activities or requirements before class to be introduced to the concepts that will be applied in the classroom. This way, when students come to the classroom, they will be prepared to ask questions, explore, practice, understand the experience of their teachers, and be guided by them in performing activities that attempt at creating valuable experiences and opportunities for individual learning, by getting students involved, stimulating, and challenging them to discover answers.

The phases of this modality are explained in detail next:



Considering the latter, the following phases are developed at Tecmilenio University for this modality.



## References

- Structural-learning. (2022). *Kolb's Learning Cycle*. Retrieved from <https://www.structurallearning.com/post/kolbslearning-cycle>

#### 4. How to deliver the course

The facilitator must thoroughly review the activity before the students do it and know all the theoretical aspects involved (chapters of textbooks or support and resources) to provide a timely response or help to the students within the constructivist model. In addition to the previous requirement, the facilitator must point to the students (before each part of the activity) the information they need to study and search on the internet so that they can bring it to the class sessions if required.

The facilitator must start their class with a brief explanation of the activity and an overview of the most important concepts on which the students must focus their attention. Considering this explanation, the students start their work, and the facilitator monitors their progress (not in front of the group but walking between the tables and sometimes sitting next to the students to observe their work), trying not to interrupt the learning processes, but guiding the activity so that students focus on what they are doing.

Each activity is completed in teams (parts of it can be done individually) and is designed to take approximately six hours, including the demonstration. Regardless of the number of weekly classes, the activity must be adapted by the facilitator to be carried out in two weeks, this includes the demonstration.

At the end of the class, the facilitator will remind the students that their homework is to study the concepts on which the activity they are carrying out is based. As part of the conceptual learning phase, the learners must study, review the assigned textbooks, or support chapters, and analyze the explanations and resources for each topic.

The facilitator will develop and apply quick reading checks, preferably in the middle of each activity. These quizzes are weighted in the final grade.

As previously stated, the third phase of the model is **building meaning**. This phase is extremely important because it merges the experience, concepts, and examination of what has been learned. At the end of the activity, the facilitator can organize a group discussion to reflect on what has been learned and correct, if necessary, erroneous or unfounded interpretations. The facilitator can use the points established in this phase as a reference for each activity of the course.

At the end of this course, the students must create an executive presentation of the project at a campus fair with all the course teams. The students should be encouraged to keep their presentation short and creative (approximately 10 minutes per team, however, this may vary depending on the number of teams and the time available).

In this last phase, the facilitator details how each activity will be evaluated. This evaluation involves the process (points of the evaluation criteria of the activity), the rationale or basis (points for the document on which the work is based), and the result (points for the demonstration of the activity).

The partial or mid-term exams will be conducted on an online platform, with a study plan organized in advance according to the student's availability and respecting the deadline.

## 5. Visit the virtual flipped classroom community of Tecmilenio University

Through this community, facilitators and students will be able to:

- Learn more about the flipped classroom teaching technique.
- Know the role of the facilitator.
- Know the role of the student.
- Explore resources related to the flipped classroom teaching technique to stay up to date.
- Share best practices and videos recorded by university professors to make them available through this community.
- Provide feedback on courses.
- Share testimonials.
- See frequently asked questions.



### Evaluation

| Units | Assessment Tools    | Score      |
|-------|---------------------|------------|
| 6     | Activities          | 33         |
| 3     | Learning Outcomes   | 27         |
| 1     | First partial exam  | 10         |
| 1     | Second partial exam | 10         |
| 1     | Final evaluation    | 20         |
|       | <b>Total</b>        | <b>100</b> |

| Assessment Tools    | Score |
|---------------------|-------|
| Activity 1          | 6     |
| Activity 2          | 6     |
| First partial exam  | 10    |
| Learning Outcome 1  | 9     |
| Activity 3          | 6     |
| Activity 4          | 5     |
| Second partial exam | 10    |
| Learning Outcome 2  | 9     |
| Activity 5          | 5     |



|                    |            |
|--------------------|------------|
| Activity 6         | 5          |
| Learning Outcome 3 | 9          |
| Final evaluation   | 20         |
| <b>Total</b>       | <b>100</b> |



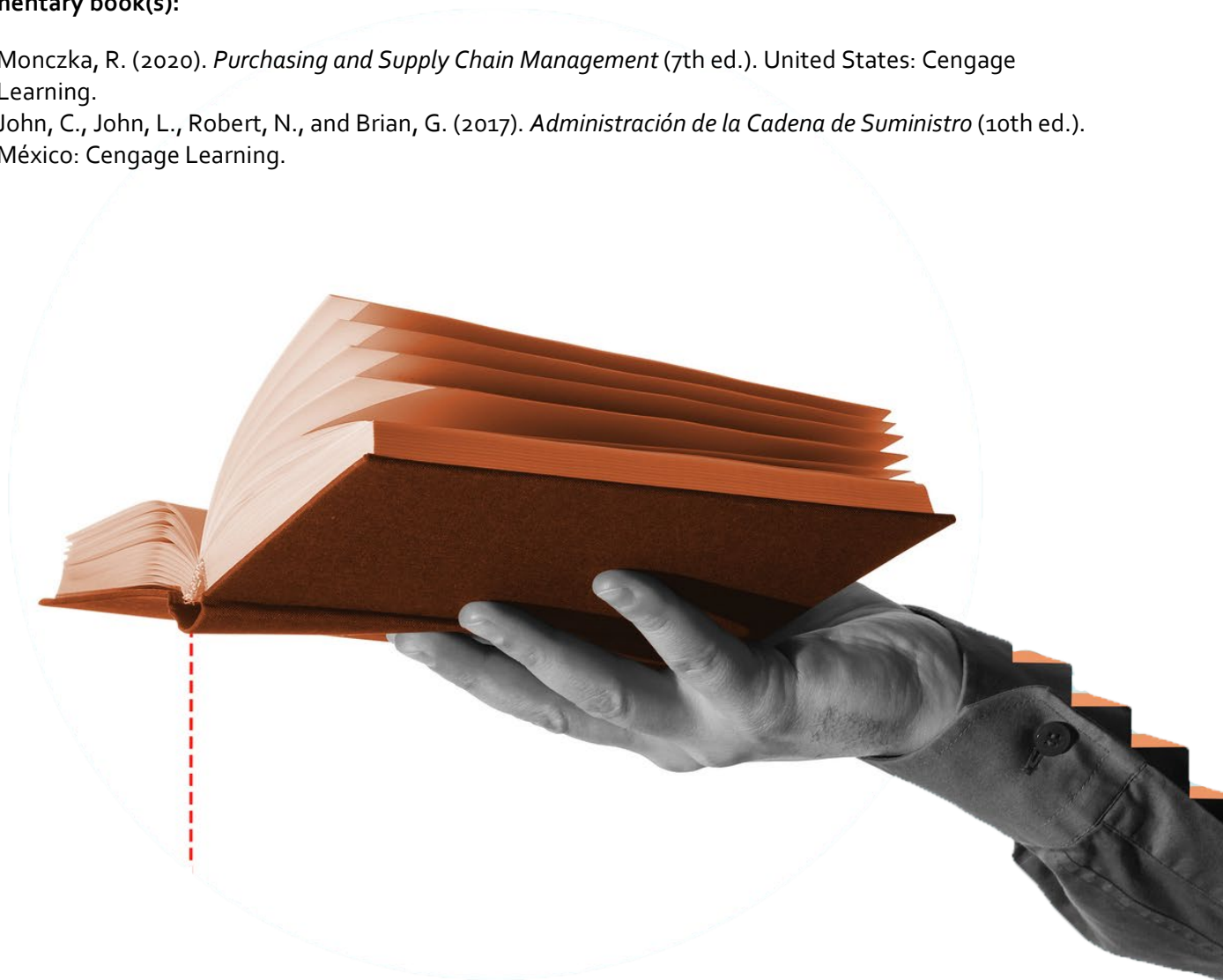
## Bibliography

### Textbook(s):

- Closs, D. (2023). *Supply Chain Logistics Management* (6th ed.). United States: McGraw-Hill Education.
- Langley, C. (2020). *Supply Chain Management: A Logistics Perspective* (11th ed.). United States: Cengage Learning.

### Supplementary book(s):

- Monczka, R. (2020). *Purchasing and Supply Chain Management* (7th ed.). United States: Cengage Learning.
- John, C., John, L., Robert, N., and Brian, G. (2017). *Administración de la Cadena de Suministro* (10th ed.). México: Cengage Learning.





## Recommendations

- **Training material on the Canvas technology platform**
  - Digital tutorial for teachers: <https://bit.ly/2SbMaNK>
  - Digital tutorial for students: <https://bit.ly/35lBnP6>
- **Where or to whom do I report a detected error in the course content?**

You can report it to the account [atencioncursos@servicios.tecmilenio.mx](mailto:atencioncursos@servicios.tecmilenio.mx), but we ask that you also report suggestions for the content and activities of the course.

- **Who tells me the number of sessions and time of each session in the weeks?**

The teaching coordinator must provide you with this information.

- **In which weeks are the partial exams and the final exam given?**

Consult with your teaching coordinator the calendars according to the modality.

- **Do I have to register the grades on banner and on the educational platform?**

Yes, it is important that you register grades on the platform so that students are informed of their progress and receive feedback from you on everything they do in the course. Banner is the official record of the student's progress.

The graded activities within each topic and calendar, as well as the course's final presentation, include a rubric that must be used to grade the student's work. This is especially important for our competency model since it is how we measure the development of skills in our students. Each rubric is located in the assignments section, specifically with the name of the week in which it needs to be evaluated.

It is necessary to use the rubric in the final evidence section to grade the final rubric, since the use of the rubric for grading will be constantly audited.

Video available for grading with rubrics.

- How to find a rubric: <https://youtu.be/QgDKeZvgtAl>
- How to grade assignments using rubrics: <https://youtu.be/mAbIsLAglp4>

 Syllabus

### Module 1. Transportation and Distribution

|   |   |
|---|---|
| <b>Topic 1</b>                              | Modes of transportation   |
| 1.1   | Modes of transportation: characteristics, advantages, and disadvantages |
| 1.2   | Transportation planning and strategy                                    |
| 1.3   | Transportation performance and control                                  |
| <b>Topic 2</b>                              | Cargo and packaging   |
| 2.1   | Merchandise packing and packaging                                       |
| 2.2   | Types of containers   |
| <b>Topic 3</b>                              | Infrastructure for logistics operations                                 |
| 3.1   | Transportation process and intermodal service                           |
| 3.2   | Global intermediaries   |
| <b>Topic 4</b>                              | Laws, standards, and regulations  |
| 4.1   | Foreign trade laws and treaties   |
| 4.2   | Regulations in the logistics industry                                   |
| <b>Topic 5</b>                              | Technology and safety in transportation                                 |
| 5.1   | Technological tools in support of transportation                        |
| 5.2   | Safety measures in transportation                                       |
| <b>Module 2. Inventories and Warehouses</b> |   |
| <b>Topic 6</b>                              | Inventories   |
| 6.1   | Justification of inventories and types of inventories                   |
| 6.2   | Inventory costs   |
| <b>Topic 7</b>                              | Requisition planning  |
| 7.1   | Inventory requisition planning  |

|  |  |
|--|--|
| 7.2  | Purchase administration                                |
| <b>Topic 8</b>   | Warehouses and distribution centers                    |
| 8.1  | Principles of storage                                  |
| 8.2  | Methods for inventory management                       |
| <b>Topic 9</b>   | Warehouse management                                   |
| 9.1  | Warehouse activities                                   |
| 9.2  | Handling of materials                                  |
| <b>Topic 10</b>  | Storage technology and safety                          |
| 10.1   | Technological tools in support of inventory management |
| 10.2   | Safety measures in warehouses                          |
| <b>Module 3. Customer Service and Performance Evaluation</b> |  |
| <b>Topic 11</b>  | Customer service                                       |
| 11.1   | Customer service components                            |
| 11.2   | Balancing customer service level                       |
| <b>Topic 12</b>  | Logistics indicators                                   |
| 12.1   | Logistics strategy planning                            |
| 12.2   | Logistics models                                       |
| <b>Topic 13</b>  | The company's logistics operations                     |
| 13.1   | Service outsourcing                                    |
| 13.2   | Production of commodities and services                 |
| <b>Topic 14</b>  | Supply chain sustainability                            |
| 14.1   | Logistics and environment                              |
| 14.2   | Reverse logistics                                      |
| <b>Topic 15</b>  | Innovation in logistics operations                     |
| 15.1   | Supply chain principles and approaches                 |
| 15.2   | Supply chain strategies                                |



## Teaching notes per topic

Before delivering the course, please review the data and concepts provided in general, in order to detect and, if necessary, update and/or enrich the specific information while the course is being delivered.

An important aspect in the development of the topics is the facilitator's involvement in ensuring that the course objectives are met, but also in preparing the participants to develop innovative solutions to current problems.

The teaching notes shown here are a reference for both the in-person and online versions. You can review them below.

### General information

It is important to mention to the student that, in addition to the content of each topic to complete their knowledge, they should review the section on topics to explore in depth, as in some cases it contains the foundations for the development of activities and the project.

For the delivery of this course, it is suggested to:

1. Review the list of deliverables and the agenda in Online Services in advance to know which topics and weeks activities should be carried out.
2. Share with the student the tutorials for using Canvas:

<https://www.youtube.com/playlist?list=PLxtBF8TpS7EPE5pQHHV-8iAgyDNnqZSNo>

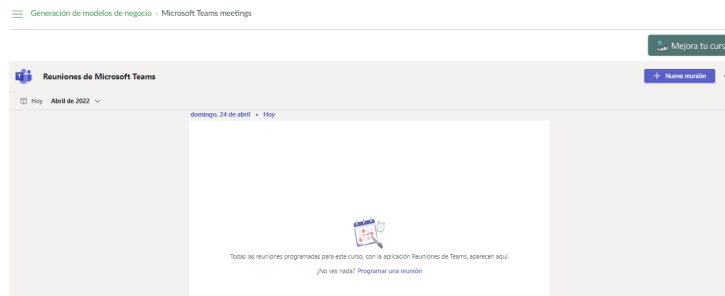
They can also consult it directly in My Course:

1. Periodically review the "Forum of Questions" in Canvas to resolve students' questions and concerns about the activities and evidence.
2. Encourage students to participate and submit their deliverables on time during the sessions.
3. Provide constant feedback on the activities carried out by the participants.
4. Upload the course calendar at the beginning, so participants can schematically view the topics and activities they need to review each week.

5. Remind participants that it is extremely important to save both the activities and the course evidence in their personal files, as they will need these documents to develop their integrative project.
6. Enrich the course with additional videos or readings if needed.

**If you are delivering the course online, it is also recommended to:**

1. In case of any issues with the student, refer the issue to IT support:
2. Carry out the course start activities indicated by the coordinator and/or leader (course start flyers, summary with updated Tecmilenio logo, calendar with privacy statement, scheduling activities in the Calendar section and Session Zero, with stream link in the virtual session schedule).
3. Schedule the asynchronous sessions indicated in the course with the participants to review the covered topics and resolve any questions that may arise; this can be done through the Canva platform in the Microsoft Teams section:



4. Remind participants about their activity submissions through announcements in the Inbox section.

## Topic 1: Modes of transportation

Before delving into the topic, it is necessary to review some basic concepts that will help the student understand transportation management in an organizational context. It is also important to review some background and principles. As an introduction to the topic, you can start by conducting a small debate presenting a fictional scenario where a company needs to select the mode of transportation for different types of goods. In this activity, details about the nature of the cargo, destinations, required times, and available budget should be provided.

At the end of the allocated time for the activity, summarize the key points of each presentation, highlight the best practices observed, and provide additional suggestions.

**Notes for the session activity:** It is recommended that the activity should not last more than 10 minutes; it should be agile and effective.

## Topic 2. Cargo and packaging

Ensure that students understand:

- The importance of packaging and its role in the protection and handling of goods.
- Identifying the different types of packaging and containers used in logistics.
- Analyzing the criteria for selecting appropriate packaging and the most efficient types of containers based on the characteristics of the goods.

As an introduction to the topic, you can start by explaining the importance of proper packaging and the correct selection of containers. Provide real-life examples where inadequate packaging has caused logistical problems.

At the end, ask one or two students for their viewpoints and provide feedback highlighting key aspects of management in an organizational context.

**Notes for the session activity:** It is recommended to encourage consulting all materials and researching the topic in depth.

### Recommendations for developing Activity 1. Transportation as a link in the supply chain

These recommendations will help students approach the activity in a structured and effective way, ensuring a comprehensive and well-founded focus:

- Encourage students to conduct thorough research on transportation modes, logistical routes, and specific packaging methods for the home appliance industry. Consulting reliable sources, such as academic articles, case studies, and industry documents, provides significant support for the deliverable.
- Suggest using technological tools like Transportation Management Systems (TMS), logistics simulation software, and tracking and tracing applications. These tools can help plan routes, optimize delivery times, and manage inventories more efficiently.
- Emphasize to students the consideration of sustainable and efficient logistics practices in their plan. This includes using recyclable packaging, optimizing routes to reduce fuel consumption, and implementing green technologies.

## Topic 3. Infrastructure for logistics operations

Ensure that students understand the transportation process and the importance of intermodal service in logistics, highlighting the role and function of global intermediaries in the supply chain and evaluating how infrastructure and intermediaries impact logistical efficiency. As an introduction to the topic, before the class,

prepare physical or electronic cards with definitions and examples related to intermodal transportation and global intermediaries.

Start the session by providing practical cases of companies that use intermodal transportation and global intermediaries for understanding. Then, divide the students into small groups and distribute a set of physical or electronic cards to each group, giving them two minutes to read the cards and discuss among themselves.

**Notes for the activity:** Conclude the activity by summarizing the key concepts discussed and highlighting practical applications in logistics.

#### Topic 4. Laws, standards, and regulations

Ensure that students understand the importance of laws, standards, and regulations in business practices within logistics effectively. As an introduction to the topic, you can start by providing a list of quick questions related to laws, international trade treaties, and logistical regulations. Some examples could be:

- What is NAFTA/USMCA and what is its main purpose?
- Mention two important regulations of the IMO.
- What is the impact of rules of origin on international trade? What does IATA stand for and what does it regulate?

**Notes for the activity:** After finishing the forum, provide feedback on the answers by concluding with examples or professional experiences.

#### Topic 5. Technology and safety in transportation

Ensure that students understand:

- The role of technological tools in optimizing transportation.
- Critical safety measures in the transportation of goods.
- How technology and safety measures integrate to improve efficiency and safety in logistics. At the end of the session, to reinforce the topic, you can encourage the understanding and recognition of technological tools and safety measures in transportation by generating a brainstorming session on the topic.

**Notes for the activity:** It is recommended to conduct the activity within a maximum of 10 minutes.

#### Recommendations for developing Activity 2. Elements in support of the transportation process

These recommendations will help students approach the activity in a structured and effective way, ensuring a comprehensive and well-founded focus:



- Encourage the student to make their plan scalable and adaptable to changes in demand or market conditions. Consider the possibility of real-time adjustments and how their plan can adapt to unforeseen situations.
- Make the student aware of the possible risks and challenges associated with each aspect of their plan, from intermodal coordination to regulatory compliance and technology implementation. Developing mitigation strategies to address these risks can be helpful.

## Topic 6. Inventories

Ensure that students understand:

- The importance of maintaining inventories and the different types of inventories used in logistics.
- The evaluation of the various costs associated with inventories.
- Efficient inventory management can improve the supply chain.

To support the topic, before concluding, you can conduct an interactive forum using platforms like Mentimeter, Padlet, or Miro. Some suggested aspects you can use in this activity are:

- What is a safety stock?
- Define holding cost.
- Mention one benefit of maintaining inventories of finished products.

### Notes for the activity:

- Ensure that all students participate in the activity, encouraging collaboration and the exchange of ideas.
- Conduct a brief assessment at the end of the class to measure the understanding of the topic and the effectiveness of the activity.

## Topic 7. Requisition planning

Ensure that students understand the concepts of requisition planning, which involve a priority process in organizational decision-making. As an introduction to the topic, you can prepare a series of brief scenarios related to requisition planning and purchase management.

Some examples you can consider are:

- "The demand for a product has unexpectedly increased, and the current inventory is insufficient."
- "A key supplier has notified a delay in the delivery of critical materials."

**Notes for the activity:** • Ensure that the activity does not take more than 10 minutes. • Conduct a brief assessment at the end of the class to measure the understanding of the topic and the effectiveness of the activity.

### Recommendations for developing Activity 3.

What are inventories for companies?

These recommendations will help students approach the activity in a structured and effective way, ensuring a comprehensive and well-founded focus:

- Suggest that students start by classifying inventories based on their impact on costs and volume, and analyzing the costs associated with each type of inventory: holding cost, order cost, and opportunity cost.
- Encourage students to use software tools for data analysis, forecasting, and inventory management, such as Excel, ERP, and specialized software to improve the accuracy of their management analysis.
- Advise students to ensure that their inventory management plan is aligned with production, purchasing, and sales operations.

## Topic 8. Warehouses and distribution centers

Ensure that students understand the fundamental principles of storage in warehouses and distribution centers, detailing the different methods for inventory management and how applying these principles and methods helps improve operational efficiency and customer satisfaction. As an introduction to the topic, you can prepare a matrix with four quadrants labeled "Space Optimization," "Accessibility and Organization," "Inventory Management Methods," and "Storage Technology."

Generate a debate of no more than 5 minutes to discuss each quadrant, providing brief corrections or expansions after each participation.

**Notes for the activity:** Conduct a brief assessment at the end of the class to measure the understanding of the topic and the effectiveness of the activity.

## Topic 9. Warehouse management

Ensure that students understand:

- The essential activities in warehouse management.
- The best practices for material handling in a warehouse environment.
- How efficient warehouse management can improve productivity and reduce costs. As the final part of the topic, you can prepare a blank template with a basic warehouse layout (receiving, storage, picking, shipping), either physically or virtually.

Then divide the students into small groups and give them two minutes to place the cards in the correct location on the warehouse layout. You can provide brief corrections or expansions after each participation to ensure correct understanding of the processes and equipment.

**Notes for the activity:**

- It is recommended that the activity should not take more than 10 minutes.
- Conduct a brief reflection and final comments.

## Topic 10. Storage technology and safety

Ensure that students understand the technological tools that support inventory management and the necessary safety measures in warehouses.

To support the topic, before concluding, you can conduct an interactive forum using platforms like Mentimeter, Padlet, or Miro. Some suggested aspects you can use in this activity are: •

- What is a WMS and what are its main benefits?
- How is RFID technology used in inventory management?
- Mention an essential occupational safety measure in warehouses.
- What fire prevention systems are common in warehouses?
- What are drones used for in inventory management?

**Notes for the activity:** It is recommended that the activity should not take more than 10 minutes. Conduct a brief reflection and final comments.

### Recommendations for developing Activity 4. Constructing a distribution chain?

These recommendations will help students approach the activity in a structured and effective way, ensuring a comprehensive and well-founded focus:

- Encourage students to ensure that the technologies and methods they propose comply with safety and sustainability regulations.
- Advise students to make sure their proposals are feasible from an operational perspective and consider the personnel involved in the process.
- Suggest the use of simulations and data analysis; this will help them make more informed decisions and optimize their strategies in justifying each response.

## Topic 11. Customer service

Ensure that students understand the key components of customer service in logistics and learn how to balance service levels with operational costs. At the beginning, as a starting point, you can prepare brief descriptions of

customer service scenarios that include common problems and customer expectations and generate a brainstorming session to reflect and provide feedback with the concepts of the topic and professional experiences.

**Notes for the activity:**

- It is recommended that the activity should not take more than 10 minutes.
- Ensure that all students participate in the activity, promoting collaboration and the exchange of ideas.

## Topic 12. Logistics indicators

Ensure that students understand the management of strategic planning and logistic models to measure and improve the performance of operations in distribution centers (DCs).

At the end of the session, as a conclusion, you can encourage a debate on different logistic models, discussing their scope, advantages, and disadvantages. Among the most significant models, you can consider: Just-In-Time, Cross-Docking, and Optimal Routes.

**Notes for the activity:** It is recommended that the activity should not take more than 10 minutes. You can include case studies of companies that have successfully implemented logistic models and planning strategies to illustrate the concepts.

### Recommendations for developing Activity 5. Supply chain performance

These recommendations will help students approach the activity in a structured and effective way, ensuring a comprehensive and well-founded focus:

- Suggest to the students that when analyzing how to balance customer service levels with operational costs, they use charts and hypothetical data to illustrate the impacts of different service levels. Support this with an evaluation of the advantages and disadvantages of each level, and how these affect both costs and customer satisfaction.
- Advise the students to include clear objectives and a detailed analysis of LogiTrans' current logistics capabilities in their plan. In this regard, provide specific strategies to improve customer service, considering aspects such as process optimization, technology investment, and staff training.

## Topic 13. The company's logistics operations

Ensure that students understand:

- The concept and importance of outsourcing logistic services in optimizing business operations.
- How the production of goods and services impacts logistics management and the supply chain.
- How decisions about outsourcing and production affect efficiency, costs, and logistic flexibility. At the beginning of the session, you can prepare brief descriptions of business situations involving outsourcing and production decisions. An example of the context could be: "A food company wants to outsource

the packaging of its products and adjust its production line to improve efficiency. How would you handle these decisions to effectively integrate logistics?”.

**Notes for the activity:** Ensure that all students participate in the activity, promoting collaboration and the exchange of ideas.

## Topic 14. Supply chain sustainability

Ensure that students understand:

- The relationship between logistics and the environment, and how logistics practices can impact and improve sustainability.
- The concept of reverse logistics and its importance in waste management and recycling within the supply chain.
- Strategies and practices to improve sustainability in logistics operations, integrating environmental and economic aspects.

At the beginning of the session, you can prepare scenarios or problems related to sustainability in logistics and reverse logistics to motivate a debate. Encourage students to discuss and propose a solution or strategy to address the presented problem. Provide brief and constructive feedback on the solutions presented, highlighting key points and suggesting improvements.

**Notes for the activity:**

- Ensure that all students participate in the activity, promoting collaboration and the exchange of ideas.
- Conduct a brief assessment at the end.

## Topic 15. Innovation in logistics operations

Ensure that students understand:

- The key principles and approaches of the supply chain that drive innovation in logistics operations.
- Innovative supply chain strategies that can improve efficiency, reduce costs, and increase competitiveness.

At the beginning of the session, generate a brainstorming session with different scenarios related to challenges and opportunities for innovation in the supply chain. Encourage the group to discuss and develop an innovative solution for the presented case. An example for this context could be: "A company is considering integrating emerging technologies into its supply chain. What technologies would you suggest and how could they impact efficiency and competitiveness?".

Provide brief and constructive feedback on the solutions presented, highlighting key points and suggesting improvements.

**Notes for the activity:**

- Ensure that all students participate in the activity, promoting collaboration and the exchange of ideas.
- Conduct a brief assessment at the end and provide conclusions on the topic.

**Recommendations for developing Activity 5. Supply chain performance**

These recommendations will help students approach the activity in a structured and effective way, ensuring a comprehensive focus and presentation at the campus fair:

- Suggest that students, when proposing a solution, consider the competitive advantages their proposal will offer. Encourage them to research competitors, brands, substitutes, and relevant technologies to ensure their solution is innovative and has significant added value.
- Remind students that interacting with potential customers and presenting them with the problem or need, along with gathering feedback, helps collect the necessary adjustments to improve the proposed solution.
- Guide students to design a presentation stand that is visually appealing and professional. Suggest using posters, videos, and live demonstrations to capture their audience's attention and effectively communicate their proposal.



## Activities

The student must complete six activities, through which they will demonstrate mastery of the course competency, as an essential element for passing the course. In other words, what is reflected in each activity is what we aim for the students to be able to do well. The instructions for completing the deliverables are as follows:

### Activity 1.

Activity 1. Transportation as a link in the supply chain

#### Description

Students will identify the different modes of transportation, planning and strategy, as well as the packaging of goods, to optimize the logistics process of a fictitious company.

#### Objective

To identify the types of mode of transportation in companies' logistics operations.

#### Requirements for the activity

Read diverse sources such as textbooks, specialized journals, or reliable webpages about the different modes of transportation, aspects such as transportation routes, shipping frequency, distribution points, and coordination with suppliers and customers. Identify the types of containers that exist for different modes of transportation and the characteristics and functions of product packing and packaging.

#### Instructions

Imagine you work as a logistics consultant for a home appliances company called Electro Mundo. This company manufactures and distributes a variety of home appliances nationally and internationally.

1. Analyze and select at least three modes of transportation that could be used by Electro Mundo to ship its products nationally and internationally. Justify your choice based on the products to be transported, distances, and required delivery times.
2. Include in your plan aspects such as transportation routes, shipping frequency, distribution points, coordination with suppliers and customers, among other relevant elements to ensure efficient logistics.
3. Analyze the different types of products handled by Electro Mundo and suggest suitable packaging methods for each, considering their fragility, size, weight, and handling requirements.

**Note:** Consider your activity must be documented (process) and supported.

#### Evaluation criteria

| Criteria | Score |
|----------|-------|
|----------|-------|

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|----|--|----|
| 1. | For each mode of transportation, describe its advantages and disadvantages, costs, delivery time, cargo capacity, and security.  | 30 |
| 2. | In the logistics plan, consider the modes of transportation, describing transportation routes, shipping frequency, distribution points, and coordination with suppliers and customers to ensure efficient logistics. | 40 |
| 3. | Analyze different types of products and suggest suitable packaging methods for each, considering their fragility, size, weight, and handling requirements.   | 30 |

### Deliverable

Comprehensive report in free format, to be submitted via the platform.

### Activity 2

Activity 2. Elements in support of the transportation process

#### Description

Students will identify an efficient infrastructure for logistics operations, considering national and international laws and regulations, as well as current trends in technology and safety.

#### Objective

To identify the elements comprising the complete transportation process regarding safety, regulations, technology, and intermediaries.

#### Requirements for the activity

Research the most current national or international legal framework to ensure the proposal is up to date.

#### Instructions

Suppose that you are the logistics manager at Amazon and are facing a significant challenge in managing the company's global supply chain. Your task is to address this challenge using your knowledge of infrastructure, laws and regulations, technology, and transportation safety.

The assignment is to develop a strategic plan to tackle the aforementioned challenges and ensure effective logistics management in Latin America.

1. Describe how you would use an intermodal approach to organize the transportation of products, considering various modes of transportation such as trucks, trains, planes, and ships.
2. Explain how you would ensure the company complies with customs and foreign trade regulations in preparing shipping documentation, customs declarations, Incoterms, and specific requirements.
3. Imagine that the freight transport company needs to enhance its vehicle tracking and monitoring system to ensure the safety of the cargo and personnel. Describe how you would implement



operational efficiency and cargo protection, as well as the potential challenges and considerations when implementing security technologies in transportation, such as AI.

**Note:** Consider the activity must be documented (process) and supported.

### Evaluation criteria

|    | Criteria  | Score |
|----|---|-------|
| 1. | Describe the coordination and supervision of cargo throughout the supply chain to ensure it reaches its final destination efficiently and safely, mentioning the challenges and benefits.       | 30    |
| 2. | Support the main foreign trade laws and treaties and explain how they apply to activities such as preparing shipping documentation, customs declarations, Incoterms, and specific requirements. | 40    |
| 3. | Define how to implement technological tools in the vehicle fleet and how they would integrate with other logistics management systems.  | 30    |

### Deliverable

Comprehensive report in free format, to be submitted via the platform.

## Activity 3

### Activity 3. What are inventories for companies?

#### Description

The student will apply theoretical knowledge and practical skills in a collaborative and dynamic environment, fostering critical thinking in strategic decision-making and actions in inventory management.

#### Objective

To apply knowledge on types of inventories, costs, request planning, management methodologies, and the S&OP process.

#### Requirements for the activity

Research various resources on S&OP, inventory management, and methodologies that aid in the development of the activity.

#### Instructions

Part 1:

The company "XYZ" is dedicated to the distribution of electronic products in Latin America. Recently, they have experienced significant inventory management issues, leading to high storage costs, stock outs, and overstock

situations. Management has decided to implement an improvement project to optimize inventory management

|   |  |
|---|--|
| <p><b>Sales history</b><br/>(in units per month for the last 12 months)</p> <ul style="list-style-type: none"> <li>• <b>Product A:</b> [1200, 1350, 1400, 1500, 1600, 1550, 1700, 1650, 1800, 1750, 1900, 2000]</li> <li>• <b>Product B:</b> [800, 850, 900, 950, 1000, 980, 1100, 1050, 1200, 1150, 1300, 1400]</li> <li>• <b>Product C:</b> [500, 550, 600, 650, 700, 680, 750, 700, 800, 750, 850, 900]</li> </ul> | <p><b>Demand forecasts</b> (in units per month for the next 6 months)</p> <ul style="list-style-type: none"> <li>• <b>Product A:</b> [1900, 1950, 2000, 2100, 2200, 2300]</li> <li>• <b>Product B:</b> [1300, 1350, 1400, 1450, 1500, 1550]</li> <li>• <b>Product C:</b> [900, 950, 1000, 1050, 1100, 1150]</li> </ul> |
| <p><b>Current inventories</b><br/>(in units)</p> <ul style="list-style-type: none"> <li>• <b>Product A:</b> 500 units</li> <li>• <b>Product B:</b> 300 units</li> <li>• <b>Product C:</b> 200 units</li> </ul>  | <p><b>Inventory costs:</b><br/>maintenance/unit (monthly)</p> <ul style="list-style-type: none"> <li>• <b>Product A:</b> \$2</li> <li>• <b>Product B:</b> \$1.5</li> <li>• <b>Product C:</b> \$1</li> </ul>  |
| <p><b>Order cost per unit</b></p> <ul style="list-style-type: none"> <li>• <b>Product A:</b> \$50</li> <li>• <b>Product B:</b> \$30</li> <li>• <b>Product C:</b> \$20</li> </ul>  | <p><b>Supplier lead time</b></p> <p><b>Product A:</b> 2 months<br/><b>Product B:</b> 1.5 months<br/><b>Product C:</b> 1 month</p>  |
| <p><b>Production capacity</b> (in units per month)</p> <ul style="list-style-type: none"> <li>• <b>Product A:</b> 1800 units</li> <li>• <b>Product B:</b> 1200 units</li> <li>• <b>Product C:</b> 800 units</li> </ul>  | <p><b>Storage capacity</b></p> <p><b>Maximum storage capacity:</b> 5000 units</p>  |

**Part 2:**

Based on the previous context, develop the following:

1. Classify the types of inventories and the associated costs of each, and define: What would be the best methodology to manage inventories: Push, Pull, Demand, or Kanban? Justify your answer.
2. Prioritize the products by groups according to their level of impact on cost, volume, and time. Define the two main products of the inventory justifying their value in the supply chain.
3. Develop a demand forecast based on historical data and market trends and plan the inventory request.
4. Propose a schedule for managing S&OP meetings (include phases of data review, demand forecasting, supply review, reconciliation, and executive meetings).

**Note:** Consider your activity must be documented (process) and supported.

**Evaluation criteria**

| Criteria |  | Score |
|----------|--|-------|
| 1.       | Classify the types, costs of inventories, and adequately justify the management methodology to be applied. | 30    |
| 2.       | Analyze the products according to their value, indicating those with the greatest impact on the company.   | 30    |
| 3.       | Generate the forecast and inventory request planning objectively.  | 30    |

|    |   |    |
|----|---|----|
| 4. | Define the schedule of S&OP meetings, describing all phases of the process. | 10 |
|----|---|----|

**Deliverable**

Define the schedule of S&OP meetings, describing all phases of the process.

**Activity 4**

Activity 4. Constructing a distribution chain

**Description**

The student will identify in practice the strategies performed to establish distribution centers and the basic concepts on warehouse administration as part of companies' logistics operations.

**Objective**

To identify distribution and storage centers concepts and strategies as part of companies' logistics operations.

**Requirements for the activity**

- Map of Mexico with political division, a map of the United States with political division, and a world map.
- Search information on the most common methods for stock and materials management in warehouses.
- Search information on the systems to support organizations in warehouse management tasks.

**Instructions**

Part 1:

Analyze the following case.

A food company specializing in the production and distribution of frozen products, including fish, seafood, and vegetable products, faces challenges in managing its central warehouse due to the rapid growth in demand and the need to maintain product quality.

The main identified problems are the following:

- Difficulties in maintaining the proper cold chain during storage and transportation.
- Inefficiencies in inventory management, with occasional losses due to accidental thawing.
- High operational costs due to intensive manual handling of frozen products.
- Need to improve picking accuracy and dispatch speed to meet urgent orders.

Part 2:

Based on the previous context, develop the following:

1. Use a map of the United States and Mexico to determine the optimal locations for distribution centers, and justify each location based on criteria such as access to major markets, logistical infrastructure, operating costs, and transportation efficiency.
2. Generate a strategic plan to supply the distribution centers. Consider cross-border transportation, inventory management between countries, customs policies, product reception, storage, handling, and shipping packaging.
3. Describe a method to optimize the stock of finished products and raw materials, considering demand and market seasonal cycles. Additionally, you can reference equipment such as refrigerated conveyors, automated picking systems, and ergonomic handling tools.
4. Describe a technology that helps improve traceability and cold chain management, justifying the impact and scope.
5. Develop a plan for the safe handling of refrigeration equipment and frozen product handling.

**Note:** Consider your activity must be documented (process) and supported.

**Evaluation criteria**

| Criteria |   | Score |
|----------|---|-------|
| 1.       | Analyze the location of the new distribution centers, justifying each one in detail.                              | 20    |
| 2.       | Generate a strategic plan to supply the distribution centers, considering the indicated elements.                 | 30    |
| 3.       | Define a method to optimize the stock of finished products and raw materials, considering the indicated elements. | 30    |
| 4.       | Describe a technology that helps improve traceability and the management of the distribution centers.             | 10    |
| 5.       | Develop a detailed plan for the safe handling of equipment.   | 10    |

**Deliverable**

Document developed as a team integrating the maps with the proposals for distribution strategies, answers to the questions, summaries, and conclusions requested.

**Activity 5**

Activity 5. Supply chain performance

**Description**

The student will define the customer service activities that companies perform in their operation and the impact of these practices in the market. He/she will also identify the processes to establish performance measurement indicators, what they are useful for, and the elements they need to consider.

**Objective**

To define the topics of customer service activities and performance measurement indicators used by companies’ logistics operations.

**Requirements for the activity**

Search information on the customer service components and logistics performance indicators.

**Instructions**

*Part 1:*

1. Analyze the following case:

LogiTrans is a logistics company operating at an international level, offering transportation, storage, and distribution services. The company faces the challenge of balancing a high level of customer service with the need to control operating costs. Below is key information about LogiTrans and the specific issues it must address.

| General information about LogiTrans  | Issues and challenges  |
|--|--|
| <ul style="list-style-type: none"> <li>• <b>Sector:</b> logistics and transportation.</li> <li>• <b>Services:</b> land, air, and sea transportation; storage and distribution; inventory management.</li> <li>• <b>Target market:</b> manufacturing companies, retailers, and individual clients on an international level.</li> <li>• <b>Vision:</b> to be the leading company in innovative logistics solutions, providing exceptional customer service.</li> <li>• <b>Mission:</b> to offer efficient and reliable logistics solutions that exceed our customers expectations through the use of advanced technology and continuous improvement.</li> </ul> | <ul style="list-style-type: none"> <li>• <b>Delivery time:</b> customers expect fast and accurate deliveries, but maintaining a short delivery time implies higher operational costs.</li> <li>• <b>Order accuracy:</b> LogiTrans must ensure that orders are accurate and complete. Errors in orders can generate additional costs and affect customer satisfaction.</li> <li>• <b>Customer service:</b> providing high-quality customer service is crucial, but it requires investment in personnel and technology.</li> <li>• <b>Post-Delivery follow-up:</b> the ability to follow up on orders after delivery is vital to resolve issues and maintain customer satisfaction.</li> <li>• <b>Product availability:</b> maintaining sufficient inventory to ensure product availability without overstocking, which can increase costs.</li> </ul> |

**Part 2:**

1. Investigate and list the key components of customer service in a logistics company. Identify at least five essential components (such as delivery time, order accuracy, customer support, post-sale tracking, and product availability).
2. Based on the LogiTrans case, analyze how to balance the level of customer service with operational costs. Evaluate the advantages and disadvantages of different service levels, using hypothetical charts and data to illustrate the impacts on costs and customer satisfaction.
3. Develop a strategic logistics plan for LogiTrans. The plan should include clear objectives, an analysis of current logistical capabilities, and strategies to improve customer service.

4. Create a set of key performance indicators (KPIs) to measure the effectiveness of LogiTrans's logistics strategy. Identify at least five indicators (such as average delivery time, inventory levels, order accuracy, transportation costs, and customer satisfaction).
5. Simulate the operation of the model over a specified period (e.g., one month) and evaluate its impact on the logistics indicators.

**Note:** Consider your activity must be documented (process) and supported.

### Evaluation criteria

| Criteria |  | Score |
|----------|--|-------|
| 1.       | Identification of customer service components.     | 20    |
| 2.       | Analysis of the balance in customer service level. | 20    |
| 3.       | Planning the logistics strategy.                   | 20    |
| 4.       | Development of logistics indicators.               | 20    |
| 5.       | Implementation of a logistics model.               | 20    |

### Deliverable

Comprehensive report in free format to be submitted via the platform.

## Activity 6

Activity 6. Challenges of supply chain innovation

### Description

The student will define the topics of supply chain innovation in companies, in activities such as outsourcing of logistics services, optimization of output capacity, supply chain sustainability, and reverse logistics.

### Objective

To define the topics relative to supply chain innovation used by companies' logistics operations.

### Requirements for the activity

- For this activity, it is important to consider the type of study modality, so the professor will define whether the development is in teams or individual.
- The final development is oriented to be presented at a university campus fair.

**Instructions**

*Part 1:*

1. Identify an opportunity or existing needs in the logistics market from the following topics.
  - a. Supply chain innovation in companies.
  - b. Activities such as logistics services outsourcing.
  - c. Optimization of production capacity.
  - d. Supply chain sustainability.
  - e. Reverse logistics.
2. Propose a hypothetical solution to the problem and define the competitive advantages of your solution. It is recommended to research competitors, brands, substitutes, technologies, among others.
3. Summarize your solution and develop a prototype based on the results of your research. This stage involves time and effort, so it is recommended to have a work plan.

*Part 2:*

4. Validate the hypothetical solution to the identified need. For this, you must conduct research to support the justification of your solution, considering the following:
  - a. Contacting your potential customers and presenting the problem or need.
  - b. Proposing the solution or prototype to your potential customers to generate feedback and identify areas of opportunity.
  - c. Validating if the potential customer would be willing to pay for the proposed solution and how much they would be willing to pay.
5. Based on the validation and feedback from your potential customers, make the necessary adjustments and present the proposal again to your customers.

*Part 3:*

7. Evaluate the impact of the developed solution in terms of efficiency, sustainability, customer satisfaction, and feasibility.
8. Compare the obtained results with the initial objectives and highlight the competitive advantages.
9. Design a presentation stand that includes an executive summary of your proposal and prototype. You can use posters, models, live demonstrations, videos, or simulations.
10. Present the project on time and according to the professor's instructions.

**Note:** The specifications for the presentation at the university campus fair must be indicated by the professor.

**Evaluation criteria**

| Criteria |  | Score |
|----------|--|-------|
| 1.       | Identification of a significant opportunity in the current logistics market. | 30    |
| 2.       | Validation and justification of the logistics market opportunity.            | 35    |

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| 3. | Evaluation and presentation of the impact of the logistics proposal. | 35 |
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**Deliverable**

Executive presentation and prototype of the project at a university campus fair.