TEACHING GUIDE

1. BASIC INFORMATION

Subject	**Inventory and Production Management**
Degrees	**Business Engineering (GIE)**
Faculties	**Faculty of Engineering and Business Technology**
ECTS	**6**
Character	**Mandatory**
Language	**English**
Mode	**In-person/Synchronous In-person**
Semester	**Fifth**
Subject Coordinator	**Rafael M. Carreño Morales**

2. PRESENTATION

On the one hand, this course deals with Inventory Management policies for effective management of materials in any organization, whether they are used to manufacture goods or to provide services. On the other hand, Production Management involves the integration of different activities and processes to produce goods and services in a highly competitive and turbulent global environment, characterized by unpredictability, uncertainty, and volatility. Therefore, many companies agree that effectively managing production is essential for competitive success and long-term survival. Key production performance measures to be considered include productivity, throughput, cycle time, demand forecasting, takt time, response time, among others.

3. COMPETENCIES AND LEARNING OUTCOMES

Competencies	Code	Description
Basic Competencies	**BC01**	Students will demonstrate knowledge and comprehension of a field of study that extends from a foundation in general secondary education to a level informed by advanced textbooks and incorporating insights from cutting-edge research in the discipline.
	BC02	Students will demonstrate the ability to apply their knowledge professionally in their work or future careers, exhibiting competencies commonly demonstrated through the construction and defence of arguments and effective problem-solving within the relevant field.
	BC03	Students will demonstrate the capacity to collect and interpret pertinent data (usually within their discipline) to formulate informed judgments incorporating critical reflection on relevant social, scientific, and ethical considerations.
General Competencies	**GC01**	Resolve complex and unpredictable situations systematically, creatively, and with critical judgment, making decisions with incomplete information and taking risks in the field of engineering and business.

Competencies	Code	Description
	GC02	Effectively determine the objectives, priorities, methods, and controls to perform tasks by organizing activities with the available timeframes and resources in the field of engineering and business.
	GC03	Demonstrate the ability to analyse, synthesize, and evaluate data and information in the field of engineering and business.
	GC04	Work in an international and intercultural context in the field of engineering and business.
	GC05	Utilize the potential of cutting-edge technologies to contribute to improving the competitiveness of the company or organization in the field of engineering and business.
Transversal Competencies	**TC03**	Demonstrate oral and written communication skills in a foreign language.
	TC05	Solve problems and make decisions by applying knowledge, methods, and tools in their academic and professional field.
	TC07	Demonstrate skills and attitudes for autonomous work and teamwork.
	TC08	Use knowledge, skills, abilities, and attitudes to communicate in digital environments.
Specific Competencies	**SC18**	Develop plans and projects for management in the different functional and operational areas in the business field within the framework of national and international legislation and standards of occupational and ecological safety.

Code	Description
LO01	Apply production engineering principles to evaluate and design a plant layout.
LO02	Develop production planning, scheduling, control, and execution plans.
LO03	Design and implement Material Requirements Planning (MRP) plans.
LO04	Design and implement optimized inventory control plans.
LO05	Utilize the principles and methodologies of queueing theory for the analysis of production flow.
LO06	Apply software tools relevant to the subject matter.
LO07	Undertake a final project.

4. CONTENT

Unit I Models of Inventory Management

1.1. Inventory Control.

1.2. Inventory and Demand.

1.3. Inventory Costs.

1.4. Forecasting Techniques.

1.5. Models with Independent Demand.

1.6. Material Requirements Planning (MRP).

1.7. Capacity Requirements Planning (CRP) and Distribution Requirements Planning (DRP).

1.8. ERP Systems.

Unit II Production Engineering and Management

2.1. Production Engineering. Concepts, Components, and Production Process.

2.2. Product Design and Development.

2.3. New Product Development.

2.4. Production Planning.

2.5. Scheduling and Control of Production Activities.

2.6. Production Management. Software Tools.

Unit III Facilities Planning and Production Process Design

3.1. Productivity.

3.2. Location Strategies.

3.3. Process Strategies.

3.4. Plant Layout.

3.5. Analysis of the Production Process.

3.6. Queueing Theory.

3.7. Type and Analysis of Queue Flow.

5. TEACHING AND LEARNING METHODOLOGIES

UIE develops an innovative academic model centered on the learner, combining different philosophical approaches to Teaching-Learning (T-L), a wide variety of learning activities—especially those in which students take an active role in knowledge construction—continuous guidance, and the intensive use of technology as a facilitating tool, creating a unique and innovative learning ecosystem.

The training is conducted in an in-person modality, including synchronous virtual learning, supported by a cutting-edge virtual campus that provides flexibility and personalization within a ubiquitous learning (U-Learning) model.

Additionally, in alignment with its founding and corporate principles of social responsibility, UIE not only encourages the participation of its entire university community in volunteer and social service activities but also incorporates the Service-Learning (ApS) approach as a formal component of its teaching-learning strategies.

Code	Activity	Type	Teaching Modalities	Mode
MD01	First Contact and Motivation	**I**	Introductory	PR
MD02	Presentation, Course Plan and Commitment	**I**		
MD03	Lecture	**T**	Expository and Participatory	PR
MD04	Guest Lectures by Experts	**T**		
MD07	Activity in the Virtual Campus UIE	**T/P**	Guided / Autonomous	PR / NP
MD08	Content Study	**T**	Guided / Autonomous	NP
MD16	Use of Software Tools	**P**	Guided	PR
MD20	Tutoring	**T/P**	Personalized (Individual/Group)	PR
MD21	Learning Agreement	**I/T/P**		
MD24	Analysis and Synthesis of Documentary Material	**T**	Autonomous	NP
MD25	Monitoring and Completion	**C**	Continuous Self-Assessment	NP

I: Informative **T**: Theoretical **P**: Practical **C**: Complementary

PR: In-person **NP**: Non-in-person

6. TRAINING ACTIVITIES

The following identifies the types of educational activities that will be carried out:

Code	Name	Modality	Type of activity
AF01	Introductory	IP	Motivational/Informative
AF02	Expository and Participatory	IP	Theoretical
AF03	Guided	IP	Theoretical / Practical
AF04	Personalized (Individual / Group)	IP	Theoretical / Practical
AF05	Autonomous	NP	Theoretical / Practical
AF06	Service-Learning	IP	Service-Learning
AF07	Continuous self-assessment	NP	Quality Assessment

IP: In-person NP: Non-in-person

7. EVALUATION

The model also includes the continuous assessment process as an essential part of verifying the competencies acquired. For UIE, and in line with the proposed improvement of the teaching-learning process for the European Higher Education Area (EHEA), the assessment system, called Learning Outcomes Review (LOR), is developed as a more humanized process, distancing itself from traditional systems where students risk their fate in exams (sessions), sometimes with high and decisive percentage weights, leading to stress, frustration, and occasionally, dropout.

The UIE LOR system is continuous, shared, and progressive, allowing for the monitoring of learning throughout the entire period, making it a natural process to which students turn without negative emotions and aware of the need to understand their own progress.

Code	Evaluation Activity	Weighting %	Type	Mode
AE01	Partial Tests	45	Discrete	W
AE03	Projects	20	Discrete	W
AE05	Participation in the Virtual Campus	15	Discrete	W
AE06	Participation, Daily Activities and Volunteering	5	Discrete (Pass/ Fail)	O/W
AE08	Service-Learning			
AE09	Digital Portfolio	15	Continuos	E/DF
		100		

Mode: O: Oral W: Written O/W: Both DF: Digital Folder

8. BIBLIOGRAPHY

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9. TUTORIALS

MD20 Tutorial (2%): Students must attend at least three personalized tutorials throughout the semester. This is an all-or-nothing activity (“Pass-Fail”), meaning that all three tutorials must be completed.

10. QUALITY SURVEYS

MD25 Quality Management (2%): Students must complete four forms throughout the semester related to UIE's quality management. This is an all-or-nothing activity (“Pass-Fail”), meaning that all four forms must be completed within the deadlines specified in the course activity plan. The activity aims to timely assess the development of the teaching-learning process and the transversal competence related to critical and self-critical thinking.