INSTITUTO POLITÉCNICO DE BRAGANÇA

Course Unit	Production Management I			Field of study	Manangement		
Bachelor in	Industrial Management and Engineering			School	School of Technology and Management		
Academic Year	2023/2024	Year of study	2	Level	1-2	ECTS credits	6.0
Type	Semestral	Semester	1	Code	9104-754-2102-00-23		

Workload (hours)	162	Contact hours	T -	TP 60	PL -	TC -	S -	E -	OT -	O -

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s): José Mário Escudeiro de Aguiar

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:
1. Understand and manipulate the most common methods for forecasting demand.
2. Characterize and parametrize models of inventory management, deterministic and stochastic, to manage product inventory with independent demand.
3. Know the planning processes for different types of production systems and associated layouts.
4. Characterize and manipulate the most common techniques used for planning and control production systems associated with the paradigms Pull and Push.
5. Understand and manipulate the main tools Lean and Kaizen to reduce waste in production systems.

Prerequisites

Before the course unit the learner is expected to be able to:
Know basic Statistics competences.

Course contents

Forecasting methods. Management of stocks. Production planning. Planning and control of production systems associated with the Pull and Push paradigms. Principles of elimination/reduction waste and Kaizen and Lean tools.

Course contents (extended version)

1. Forecasting methods
   - Classification of the forecasting methods;
   - Forecasting tools for chronological series;
   - Basic tools for exploring data;
   - Times series decomposition methods and calculation of moving averages;
   - Exponential smoothing. Holt and Holt-Winters methods.
2. Management of stocks
   - Stock costs and economic quantity;
   - Continuous review and periodic review methods;
   - Quantity discounts;
   - Stochastics and deterministics models;
   - Models with constraints regarding capital, storage space and number of orders;
   - Aggregated management of orders;
   - ABC Analysis.
3. Production Planning;
   - Planning function;
   - Production structures;
   - Production per project;
   - Production to order;
   - Production batch;
   - Continuous production.
4. Systems of planning and control of production associated with the paradigms Pull and Push
   - Method MRP (Material Requirements Planning);
   - Just in time system;
   - Types of kanban;
   - Hybrid systems.
5. Principles of elimination/reduction waste and Kaizen and Lean tools.

Recommended reading

1. Jacobs, F. , & Chase, R. (2018). Operations and Supply Chain Management (15th edition). New York: McGraw-Hill Education.
2. Pinto, J. P. (2014). Pensamento Lean - A filosofia das organizações vencedoras. Lisboa: Lidel Edições Técnicas Lda.
3. Heizer, J. , Render, B. & Munson, C. (2017). Operations Management: Sustainability and Supply Chain Management (12th edition). London: Pearson Education Limited.
4. Ballou, R. (2003). Business Logistics/Supply Chain Management (5th Edition). Prentice-Hall International, Inc.
5. Courtois, A. , Pillet, M. , & Martin-Bonnefous, C. (2007). Gestão da Produção (5ª edição). Paris: Lidel.

Teaching and learning methods

The lectures are devoted to present the theorical concepts and analysis of small examples. Practical classes are devoted to solve the exercises under supervision. Non-presential hours are devoted to study real problems where the studied models can be applied taking into account the specificities and interests of students.

Assessment methods

1. Alternative 1 - (Regular, Student Worker) (Final, Supplementary, Special)
   - Final Written Exam - 100%
2. Alternative 2 - (Regular, Student Worker) (Final, Supplementary)
   - Intermediate Written Test - 40%
   - Final Written Exam - 40%
   - Practical Work - 20% (It includes consulting and discussion technical articles on topics to consolidate knowledge.)

Language of instruction

Portuguese, with additional English support for foreign students.

Electronic validation

José Mário Escudeiro de Aguiar	Carla Alexandra Soares Geraldes	António Jorge da Silva Trindade Duarte	José Carlos Rufino Amaro
13-10-2023	13-10-2023	15-10-2023	31-10-2023