Module card

I. GENERAL INFORMATION								
WITELON COLLEGIUM STATE UNIVERSITY **DEPARTMENT Faculty of Technical and Economic Sciences**								
Field of study:		Production management and engineering						
Form of study:		Erasmus						
Module title:		**MP2 Production and service management**						
Module type:		compulsory field of study						
Language of lecture:		English						
Year of study:	2	**Forms of teaching including number of teaching hours:**						
Semester (winter/summer):	winter	Lectures	Classes	Laboratory	Project	Workshop	Seminar	Other
Total number of ECTS credits:	5	15	15					
Form of completion:								
Prerequisites:		-						

II. LEARNING OBJECTIVES
Learning objectives:
Objective 1: Understanding the nature, objectives, and principles of production and service management concepts and methods. Acquiring the ability to calculate productivity, break-even points, and operating profit. Understanding the production system in terms of product, process, production capacity, structure, and layout. **Objective 2:** Acquiring skills in production planning, material requirements and detailed scheduling. **Objective 3:** Learning and understanding inventory management systems and acquiring the skills to apply them properly.

IV. PROGRAMME CONTENT		
Content of the programme (topics of classes, presented with a breakdown into individual forms of classes with the indication of the number of hours needed for their realization)		
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Code	Course topics in theory	Number of hours
Lec1	The essence, objectives, and scope of production and service management. The concept of production, production system, and production management. The structure and infrastructure of a production system. Comparison of production and service activities. Production resources: labor, material, capital, information, and knowledge. Functions of production management. Strategic and operational decisions in production management. Objectives of production management. Principles of logistic production management. Production process parameters: batch, lead time, and inventory. Capital turnover cycle. Production efficiency measures: productivity, operating profit, break-even point, cash flow, and their calculation.	3
Lec2	Strategic production management decisions - production system design. Product and process selection. Process types: continuous (stream), discontinuous (workshop), project-based, and their fixed and variable costs. Matching process and product characteristics. Production types. Economies of scale and scope. Types of process structures and production systems. Process efficiency indicator.	3
Lec3	Hierarchy of production management levels. Aggregate production planning (APP). APP objectives. APP strategies: constant production, production in line with demand.	2
Lec4	Enterprise inventory management. Types of inventory: purchased inventory, work-in-process inventory, and commercial inventory. Inventory functions. Inventory costs: carrying costs, ordering costs, shortage costs, and surplus costs. The economic order quantity (EOQ) model. Inventory management models. The economic production quantity model. The shortage model. The quantity discount model. Classic inventory management systems: fixed quantity, fixed ordering period.	3
Lec5	Master Production Planning (MPS): objectives, essence, input Data. Material Requirements Planning (MRP). MRP Logic: calculating gross requirements, calculating net requirements, determining order quantity (batching), determining order deadlines (termination).	2
Lec6	Production control. Detailed production scheduling. Forward and backward scheduling. Capacity management with finite and unlimited capacity. JIT production strategy.	2
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Code	Course topics in practice	Number of hours
C1	Selection of a production program and process using the break-even method.	3
C2	Capacity planning. Production cycle. Part flow patterns in the production process: serial flow, parallel flow. Using a Gantt chart to determine the production cycle.	3
C3	Aggregate production planning. Development of production plans using informal methods and the	3

	transport matrix method.	
C4	Material requirements planning. Determining the product structure (BOM). Calculating material requirements according to MRP logic.	3
C5	Determining the economic order quantity (EOQ). Calculating inventory holding costs and ordering costs. Determining the reorder point.	3

VIII. RECOMMENDED LITERATURE

Basic sources:

1. Chary, S. N. Production and operations management. McGraw Hill Education, 2017.
2. Khanna, R. B. Production and operations management. PHI Learning Pvt. Ltd., 2015.

Additional sources:

1. Avlonitis G.J., Papastahopoulou P. Production and service management. SAGE publication, London 2014.
2. Stark R., Seliger G., Bonvoisin J. Sustainable Manufacturing: Challenges, Solutions and Implementation Perspectives. Springer International Publishing, 2017.