

Production management

1. Course number and name: 020GEPCS4 Production management

2. Credits and contact hours: 2 credits, 1x1:15 contact hours

3. Names of instructors: Rayan Hijazi

4. Instructional materials:

- References:
 - Nahmias, S. (2015). Production and operations analysis (7th ed.). McGraw-Hill Education.
 - Vollmann, T. E., Berry, W. L., Whybark, D. C., & Jacobs, F. R. (2017). Manufacturing planning and control for supply chain management (6th ed.). McGraw-Hill Education.
 - Krajewski, L. J., Ritzman, L. P., & Malhotra, M. K. (2018). Operations management: Processes and supply chains (12th ed.). Pearson.

5. Specific course information

a. Catalog description:

Introduction to the main methods of production systems control, Design system (design office, methods, industrialization) and management system, Push/pull systems, business process (workflow) and functions related to the production, project/ production differences, technical data (nomenclature, operating range, load point, deadlines) and production data, production forecasting management (MRP, load/capacity adaptation, inventory management), operational production management (scheduling, purchasing), Production management (control/command, monitoring, launching, monitoring), Software solutions for production (APS, ERP, MES, Supervisor, PLC).

b. Prerequisites: None

c. Required/Selected Elective/Open Elective: Required

6. Specific goals for the course

a. Specific outcomes of instruction:

Upon completion of this course, students will be able to:

- Understand the different production processes and how to improve them to increase the efficiency of the entire system.
- Plan and manage production to maximize efficiency and minimize costs.
- Use the Visio tool to design process flow diagrams, flow drawings and factory layouts. These tools will improve production management by optimizing physical flows, the arrangement of machines and personnel.
- Explore the concepts of preventive maintenance and maintenance management to minimize production downtime and maximize equipment life.

- Measure the efficiency of the entire production system and use indicators to monitor performance.
- Examine the concepts of Just-in-Time, 5S, TPM, and Lean Manufacturing to improve quality, reduce changeover times, and maximize the efficiency of the entire system.
- Analyze and solve common problems in the industry, such as production stoppages, work in progress, employee and machine layout, maintenance efficiency, labor efficiency of work, the number of employees per machine, the availability of the maintenance team, etc...and propose effective solutions to improve production management and increase the efficiency of the entire system.

b. PIs addressed by the course:

PI	1.1	1 .3	2.1	2.2	2.3	3.1	3.2	4.2	5.1	5.2	7.1	7.2
Covered	x	x	x	x	x			x			x	x
Assessed	x	x	x	x	x	x	x	x	x	x	x	x

7. Brief list of topics to be covered

- Classification of production means
- The different production organizations
- Design of a modern production unit
- Analysis methods and balancing of a Production line
 - The necessary elements to group
 - The graphic representation of an assembly (Circulation graph: Spaghetti diagram, Operational diagram)
 - Learning and use of the “Microsoft - VISIO” software for the diagramming of an installation as well as the physical production flows.
- The Performance Audit of an industrial machine
- Performance indicators
- Cause and effect diagrams
- Just-in-time system
- The 5 “S”
- Lean Manufacturing
- Traditional inventory management (part 1)
- Traditional inventory management (part 2)