

POLITEHNICA University of Bucharest (**UPB**)
 Faculty of Industrial Engineering and Robotics (**IIR**)
 Study Programme: Industrial Engineering (**IE**)
 Form of study: Licence (Bachelor)

COURSE SPECIFICATION

Course title:	Production and Operations Management (POM)	Semester:	5
Course code:	UPB.06.S.06.O.001	Credits (ECTS):	5

Course structure	Lecture	Seminar	Laboratory	Project	Total hours
<i>Number of hours per week</i>	2	-	2	2	6
<i>Number of hours per semester</i>	28	-	28	28	84

Lecturer	Lecture / Laboratory / Project	Laboratory
<i>Name, academic degree</i>	CatanăMădălin, Lecturer	Tarbă Cristian, Assist. Prof.
<i>Contact (email, location)</i>	mg_catana@yahoo.com , CE103	ticris@gmail.com , CO02

Course description:
<p>Course lectures will use presentations and case studies to familiarize students with POM tasks and decision making procedures for the case of manufacturing companies mainly. Main topics for the course lectures are: scope and structure of POM tasks; master production scheduling of end-products under different production strategies and capacity constraints; material requirements planning for end-products' components under different production strategies and capacity constraints; setting the type of production for a manufacturing process to mass, batch or individual production; deriving detailed POM parameters for cyclic, mass or batch, production processes concerning production capacity requirements, manufacturing flow strategy (flow by production batch, by transfer batch, or by piece), and production cyclicity regulation; planning operations management parameters and daily production schedules for mass production in flow-shops; planning the sizes of production and transfer batches, batch production cycle time, and production batch releases, as well as batch production schedules in job-shops; planning the size of purchase order, the reorder period and purchasing schedule for the procurement of raw materials required for production at fixed or discounted unit price; scheduling of batch production operations in job-shops by using networkbased models with generalized precedence relationships and serial or parallel scheduling schemes applied in forward or backward time direction.</p>
Laboratory & Project description:

Laboratory works will be performed by students with pencil and paper and with computer software in order to solve the following POM tasks: planning master production schedule for an assembled product; planning material requirements for an assembled product and setting type of production for its manufactured component parts; operations management for mass production in flow-shop; operations management for batch production in job-shop; operations management for purchasing raw materials for cyclic production of parts; scheduling batch production operations in job-shop with Primavera Project Planner software (during 7 weeks).

Project work will be performed by students with pencil and paper in order to solve individual POM tasks concerning batch production of two different component parts of an assembled product, which can be manufactured alternatively in a high-capacity job-shop or in a low-capacity job-shop. The best production alternative is to be selected in terms of production flow time, machine utilization ratio, and total production cost criteria.

Intended learning outcomes:

At the end of this course, students will be able to:

- recognize the scope, initial data, performance criteria, and decision making procedures for master production scheduling, material requirements planning, operations management for mass or batch type of production, operations management for purchasing raw materials at fixed or discounted unit price, scheduling of batch production operations in job-shop;
- select, implement, and compare the solutions of decision making procedures available for master production scheduling, material requirements planning, operations management for mass or batch type of production, operations management for purchasing raw materials at fixed or discounted unit price, scheduling of batch production operations in job-shop.

<i>Assessment method:</i>	% of the final grade	Minimal requirements for award of credits
Written final exam	40	<ul style="list-style-type: none"> - Laboratory and project tasks completion and presentation of results; - Obtaining at least 50% of laboratory grade points; - Obtaining at least 50% of project grade points; - Obtaining at least 50% of total grade points available for all evaluated activities.
Written midterm exam	18	
Project	21	
Homework	0	
Laboratory	14	
Class attendance	7	

References:

1. Anil Kumar S., Suresh N., Operations Management, New Age International Publishers, New Delhi, 2009
2. Klein R., Scheduling of Resource-Constrained Projects, Springer Science+Business Media, New York, 2000
3. Neagu C., Nițu E., Melnic L., Catană M., Ingineria și managementul producției: Bazele teoretice, Ed. Didactică și Pedagogică, București, 2006
4. Pinedo M., Scheduling: Theory, Algorithms, and Systems, 3rd Edition, Springer Science+Business Media, New York, 2008
5. Sipper D., Bulfin R., Production: Planning, Control, and Integration, McGraw-Hill, Singapore, 1998

<i>Prerequisites:</i>	<i>Co-requisites</i> <i>(courses to be taken in parallel as a condition for enrolment):</i>
Mathematics, Economics, Manufacturing Processes, System and Project Management	

<i>Additional relevant information:</i>

07.07.2016

Lecturer Dr. Eng. Catană Mădălin