



Module name: Management engineering

Academic year: 2013/2014 Code: RMS-1-708-s ECTS credits: 1

Faculty of: Mechanical Engineering and Robotics

Field of study: Mechatronics with English as instruction language Specialty: —

Study level: First-cycle studies Form and type of study: Full-time studies

Lecture language: English Profile of education: Academic (A) Semester: 7

Course homepage: —

Responsible teacher: dr hab. inż. Kaczmarczyk Waldemar (wkaczmar@zarz.agh.edu.pl)

Academic teachers: dr hab. inż. Kaczmarczyk Waldemar (wkaczmar@zarz.agh.edu.pl)

Description of learning outcomes for module

MLO code	Student after module completion has the knowledge/ knows how to/is able to	Connections with FLO	Method of learning outcomes verification (form of completion)
Skills			
M_U002	Ability to solve chosen PEM with help of simple algorithms		Test, Project, Scientific paper
M_U003	Ability to build simulation and/or mathematical model of PEM		Test, Project, Scientific paper
Knowledge			
M_W001	Knowledge of basic Problems of Engineering Management (PEM)		Test, Project, Scientific paper
M_W005	Knowledge of methods applied to solve PEM		Test, Project, Scientific paper
M_W007	Understanding of basic processes in manufacturing and logistic systems		Test, Project, Scientific paper
M_W008	Knowledge of basic methods of control applied in manufacturing and logistic systems		Test, Project, Scientific paper

FLO matrix in relation to forms of classes

MLO code	Student after module completion has the knowledge/ knows how to/is able to	Form of classes										
		Lectures	Auditorium classes	Laboratory classes	Project classes	Conversation seminar	Seminar classes	Practical classes	Others	Fieldwork classes	Workshops	E-learning
Skills												
M_U002	Ability to solve chosen PEM with help of simple algorithms	+	-	-	-	-	+	-	-	-	-	-
M_U003	Ability to build simulation and/or mathematical model of PEM	+	-	-	-	-	+	-	-	-	-	-
Knowledge												
M_W001	Knowledge of basic Problems of Engineering Management (PEM)	+	-	-	-	-	+	-	-	-	-	-
M_W005	Knowledge of methods applied to solve PEM	+	-	-	-	-	+	-	-	-	-	-
M_W007	Understanding of basic processes in manufacturing and logistic systems	+	-	-	-	-	+	-	-	-	-	-
M_W008	Knowledge of basic methods of control applied in manufacturing and logistic systems	+	-	-	-	-	+	-	-	-	-	-

Module content

Lectures

1. Inventory control:
 - a) Economical Order Quantity,
 - b) variable demand,
 - c) stock replenishment policies,
 - d) joint replenishment planning,
 - e) multilevel lot-sizing,
2. Materials Requirements Planning (MRP)
3. Manufacturing Resource Planning (MRP II)
4. Lot-sizing and scheduling
5. Manufacturing scheduling
6. Resource constrained project scheduling
7. Transport and distribution planning
8. Quality control
9. Stochastic processes and queues theory
10. Discrete event simulation applied in operations management
11. Variability and stochastic processes manufacturing and logistic systems
12. Push and pull systems: comparison of MRP, just-in-time and conWIP

13. Production control oriented on bottlenecks – TOC / OPT®

Seminar classes

1. Inventory control:
 - a) Economical Order Quantity,
 - b) variable demand,
 - c) stock replenishment policies,
 - d) joint replenishment planning,
 - e) multilevel lot-sizing,
2. Materials Requirements Planning (MRP)
3. Manufacturing Resource Planning (MRP II)
4. Lot-sizing and scheduling
5. Manufacturing scheduling
6. Resource constrained project scheduling
7. Transport and distribution planning
8. Quality control
9. Stochastic processes and queues theory
10. Discrete event simulation applied in operations management
11. Variability and stochastic processes manufacturing and logistic systems
12. Push and pull systems: comparison of MRP, just-in-time and conWIP
13. Production control oriented on bottlenecks – TOC / OPT®

Method of calculating the final grade

Weighted average of grades:

Weight	Grade
40%	Test
30%	Project
30%	Report

Prerequisites and additional requirements

Basic course in mathematics

Recommended literature and teaching resources

1. Wallace J. Hopp, Mark L. Spearman, 2008, *Factory Physics*, McGraw-Hill.
2. James Ignizio, 2009, *Optimizing Factory Performance*, McGraw-Hill.
3. Edward A. Silver, David F. Pyke, Rein Peterson, *Inventory management and production planning and scheduling*, John Wiley & Sons, New York, 1998.

Scientific publications of module course instructors related to the topic of the module

Additional scientific publications not specified

Additional information

None

Student workload (ECTS credits balance)

Student activity form	Student workload
Participation in lectures	15 h
Participation in seminar classes	15 h
Summary student workload	30 h
Module ECTS credits	1 ECTS