

Manufacturing Planning and Lean Management

Code: MK3GYLMJ04JJ20-EN

ECTS Credit Points: 4

Evaluation: mid-semester grade

Semester: 6th semester

Its prerequisite(s): Vehicle Manufacturing and Repair

Further courses are built on it: Yes/No

Number of teaching hours/week (lecture + practice): 2+2

Topics:

The goal and the task of the course is to introduce students to the value-added and non-value-added activities of either manufacturing or service providing companies. The course material introduces the planning phase of the companies' strategies from the production management's point of view. Both theoretical and practical courses - complemented with real life problems - help the students understand the following fields of study: Modelling of operations management, Production planning based on the available capacities, Organization as a system, Types and comparison of production systems, Future planning – forecasting models as a support of decision making, Inventory management and the application of practical models, ABC analysis, Material Requirement Planning (MRP), Process management, Production philosophies: Lean and its methods: waste hunting, value streams, process mapping, Jidoka tools, Heijunka, 5S, 5W, JIT.

Literature:

Compulsory:

William J. Stevenson: Operations management, 13th ed. McGraw-Hill Education - New York, 2018, ISBN 978-125-9921-81-0

Stephen N. Chapman, J. R. Tony Arnold, Ann K. Gatewood, Lloyd M. Clive: Introduction to Materials Management, 8th. global ed., Pearson New - Jersey, 2016, ISBN: 978-1-292-16235-5

Recommended:

Steven Nahmias, Tava Lennon Olsen: Production and Operations Analysis, 7th ed. Waveland press, Inc. - Long Grove Illinois, 2015, ISBN 978-1-4786-2306-9

Schedule

1st week Registration week

2nd week:

Lecture: Introduction to production and service operations. Competitiveness, productivity, model of manufacturing systems

3rd week:

Lecture: Introduction to Forecasting. Elements, steps in the forecasting process. Qualitative Forecasts. Components of demand.

Practice: Forecast based on time series data.

Practice: Determination of manufacturing system's components. Productivity – problem solving.

4th week:

Lecture: Monitoring forecast error. Choosing a forecasting technique, using forecast information.

Practice: Associative forecasting technique.

6th week:

Lecture: Service level improving. Capacity planning for services.

Practice: Developing capacity strategies for services.

8th week: 1st drawing week

9th week:

Lecture: MRP - Inputs of MRP, steps of MRP Basic Economic Order Quantity. MRP I-II, ERP.

Practice: MRP processing, Deterministic Inventory Models.

11th week:

Lecture: JIT comparison of push and pull systems, MTO-MTS dilemma.

Practice: Examples, case studies JIT comparison of push and pull systems.

13th week:

Lecture: Jidoka Problem Solving and material flow scheduling.

Practice: Jidoka tools - case studies.

15th week: 2nd drawing week

5th week:

Lecture: Capacity planning for products, waste in the manufacturing.

Practice: Determination of real and theoretical capacity. Bottleneck in process – developing capacity strategies.

7th week:

Lecture: Define the term of Inventory, functions of inventories.

Practice: Inventory (stock) control.

10th week:

Lecture: Introduction to Aggregate planning.

Practice: Techniques for Aggregate planning. Technics of optimizing the number of workers.

12th week:

Lecture: Waiting Lines Management – Implications, goals characteristics.

Practice: Service pool line model, Queuing models.

14th week:

Lecture: Service and production development by Six Sigma method.

Practice: Application of Six Sigma method for process quality control.

Requirements

A, for a signature:

Participation at practice is compulsory. Students must attend lectures and may not miss more than three of them during the semester. In case a student does so, the subject will not be signed and the student must repeat the course. Attendance at lectures will be recorded by the lecturer. Being late is equivalent with an

absence. In case of further absences, a medical certification needs to be presented. Missed lectures must be made up for at a later date, being discussed with the tutor.

During the semester there are two tests: the mid-term test is on the 8th week and the end-term test is on the 14th week. Students must sit for the tests. The minimum requirement of the mid-term and the end-term test is 60% separately. If the score of any test is below 60%, the students once can take a retake test of the whole semester material. If somebody fails, then he/she has to write both tests in the 1st week of the exam period again. If the result is 60 % or better the retake test is success.

B, for grade:

The grade is given according to the following (score/grade): 0-59 % = fail (1); 60-69 % = pass (2); 70-79 % = satisfactory (3); 80-89 % = good (4); 90-100 % = excellent (5).