MG2030 Production Engineering - Simulation of Factory, Flow and Processes 6.0 credits

Industriell produktion - simulering av fabriker, flöden och processer

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

Course syllabus for MG2030 valid from Autumn 2007

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Specific prerequisites

MG1003/MG1004 Product Realization 1 and 2, orMF1012/MF1013/MF1014 Design and Product Realization A, B and C

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

Upon completion of the course requirements, each student should be able to:

- use simulation programs for:
- layout design of factories, production lines, and manufacturing and assembly cells
- simulation of manufacturing in individual machines
- coordination and balancing within and between machining cells
- event-driven simulation to develop a proper foundation for deciding buffer and batch sizes for a desired production capacity
- simulate the effects of different process parameter values in a given manufacturing process
- explain the principles of exchanging product and production data between simulation programs and other IT tools
- explore the functionality and user interface of different simulation programs and evaluate their usability in a given production case

Course contents

- Digital visualization and simulation of machining cells, layouts, material flow, and factories.
- Factory layouts.
- Event-driven simulation of product throughput to evaluate production capacity, lead times, bottlenecks, buffer locations and sizes, etc.
- Simulation of manufacturing processes.

Disposition

The course is divided into 3-4 tasks, each of which deals with a certain family of simulation programs. The majority of the work is practical and the bulk part of the classes is spent in our computer lab. During much of the course you will work on a project where you and your fellow students will use a simulation program to explore a given production case and evaluate its functionality and usability.

Course literature

Course binder, which will be filled with lecture notes, articles, exercises etc., throughout the course.

Examination

- INL1 - Assignment, 3.0 credits, grading scale: P, F
- TEN1 - Examination, 3.0 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

Other requirements for final grade

Completed projects and laboratory assignments

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.