MG2130 Modelling and Simulation of Industrial Processes 9.0 credits

Modellering och simulering av industriella processer

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

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

Establishment

Course syllabus for MG2130 valid from Autumn 2014

Grading scale

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

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Specific prerequisites

MG1006 Design and Product Realization - Manufacturing

MG1026 Manufacturing Technology

or the corresponding

Language of instruction

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

Intended learning outcomes

After passing the course, you will be able to:

- explain the fundamentals of “digital factories” and “digital manufacturing”
- explain factory planning, process planning and flow planning, and relationships between these three domains
- explain basic activity steps within these three domains
- use specific software:

  - to develop factory layouts with buildings, manufacturing/assembly systems and factory assets
  - for CAM – Computer Aided Manufacturing to develop and simulate manufacturing processes/operations
  - for event-driven flow simulation to develop a balanced manufacturing flow within a factory

- apply the knowledge described above for a given product, in order to develop a model which can be used in realization of a factory

Course contents

- Basic factory planning, basic production flow planning, basic process planning and relations between these.
- Digital visualization of cells, layouts and factories.
- Event-driven simulation of flows, for the assessment of production capacity, lead times, bottlenecks, buffers, inventory controls etc.
- Simulation of manufacturing processes and machine tools.

Disposition

The course contains three different themes/subjects that each represents a domain within production and factory development. In each domain basics of the theories and modeling/simulation programs will be dealt with.

50% of the course is the project assignment, where smaller groups of students have the task to solve a given production case.

Course literature

Provided as pdf documents that can be downloaded from Bilda by registered students

Examination

- LABB - Laboratory Exercises, 1.0 credits, grading scale: P, F
- LITT - Log Book Writing, 0.5 credits, grading scale: P, F
- PROJ - Project Assignment, 4.5 credits, grading scale: P, F
- TENA - Written 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.

Other requirements for final grade

Approved laboratory exercises (LABB; 1 cr)

Approved loog book writing (LITT; 0.5 cr)

Passed written examination (TENA; 3 cr)

Approved project assignment (PROJ; 4.5 cr)

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.