



COURSE SYLLABUS

Basic Production Flow Simulation, 3.5 credits

Grundläggande simulering av produktionsflöden, 3,5 högskolepoäng

Course Code: TGS13	Education Cycle: First-cycle level
Confirmed by: Dean Jun 1, 2022	Disciplinary domain: Technology
Valid From: Jan 1, 2023	Subject group: MT1
Version: 1	Specialised in: G1N

Intended Learning Outcomes (ILO)

After a successful course, the student shall

Knowledge and understanding

- demonstrate comprehension of methods and tools for production system modelling, design and analysis
- demonstrate comprehension of how conceptual production systems can be realized and deployed using simulation

Skills and abilities

- demonstrate skills of applying discrete-event simulation for the design and improvement of production systems
- demonstrate skills of applying basic multi-objective optimization for production system development
- demonstrate the ability to analyze production and maintenance data

Contents

The course deals with production systems design and modelling production flows using discrete-event simulation, and to some extent with the help of multi-objective optimization to identify best trade-off solutions for a specific design. Basics concepts are provided so that the student will be able to identify production- and maintenance data valid to input into models, as well as basic concepts for building conceptual models. The course provides basic skills in applying simulation to evaluate production system performance such as throughput, Leadtime, work-in-progress, backlog and more. The course is designed especially for working professionals who want to start exploring the power of simulation and multi-objective optimization to embark an Industry 4.0 journey applying these skills. The course is suitable for roles such as technicians, engineers, first-line managers, production staff who might enter new roles to increase performance, production planners, and many other roles.

The course includes the following elements:

- Evaluation of production performance
- Analysis and implementation of production strategies

- Design of production systems, which can include sustainability and maintenance, production philosophies, layout and organizational solutions
- The connection between maintenance operations and production operations

Type of instruction

Video lectures and exercises.

The teaching is conducted in English.

Prerequisites

General entry requirements and at least 2 years of work experience (or the equivalent). Applicants with an academic degree of at least 180 credits within the technical/scientific field are exempt from the work experience requirement.

Examination and grades

The course is graded Fail (U) or Pass (G).

The final grade will only be issued after satisfactory completion of all assessments.

Registration of examination:

Name of the Test	Value	Grading
Assingments	3.5 credits	U/G

Course literature

The literature list for the course will be provided 8 weeks before the course starts.

Course material will be provided during the course.

Reference literature

Title: Simulation: The Practice of Model Development and Use

Author: Stewart Robinson

Publisher: Bloomsbury Publishing

ISBN: 9781137328038