



HÖGSKOLAN I GÄVLE

Simulation Techniques for Logistic Systems 6 cr

Simuleringsteknik för logistiksystem 6 hp

Set by Faculty of Engineering and Sustainable Development

Version

Set at

Valid from

10/8/14

HT2015

Level	A1N
Education level	Second cycle
Course identifier	IEA013
Credits	6 cr
Main field of study	Industrial Economics
Subject group	Industrial Engineering and Management
Disciplinary domain	Technology 100.0 %

Learning outcomes The objectives of the course are to provide participants advanced knowledge on simulation technique for logistics systems. After completion of the course the student shall be able to

Knowledge and understanding

1. apply theory for formulating and analyzing a logistics system

Competence and skills

2. use a simulation software package/language to simulate and analyze a system

3. present the results of a simulation and provide the solution to a defined problem

Judgment and approach

4. verify and validate the simulation models and solutions for the defined problem

5. critically assess the implications of using simulation techniques.

Course content

Introduction

Overview of simulation techniques

Statistics in simulation techniques

Random variables, simple probability, concept of probability distributions, descriptive

statistics, commonly used distributions in simulation, presentation of results, Goodness-of-fit test, advanced data analysis techniques

Queue theory

Stochastic process, Markovian property, Poisson process, queue systems, theory on waiting time, utilization, length of queue, etc

Simulation techniques

Nature of simulation, simulation process, benefits and limitation of simulation, classification of simulation, application of systems simulation, output analysis and experimentation for systems simulation, building systems simulation models

Techniques for verification and validation

Software/Language

Skills in usage of simulation program Flexsim, basics in programming language Flexscript, tutorial models in logistics and production

Teaching

Teaching is given in the form of:

Lectures, Labs on software/language for building simulation models and Group project on case study and simulation modeling

Prerequisites

English language proficiency equivalent to (the Swedish upper secondary school) English course 6/B.

Bachelor Degree within the area of Industrial Management or equivalent

Examination

Assignment, written examination and project work

Grade

A, B, C, D, E, Fx, F

Other regulations

Criteria for final grade will be handed out at the beginning of the course.

Sustainable environment

The majority of the course content deals with sustainable development..

Module

0010	Assignment	0.5 cr	Grade: AF
0020	Written examination	2.5 cr	Grade: AF
0030	Project work	3 cr	Grade: AF