



## HÖGSKOLAN I GÄVLE

### Simulation Technique in Logistics 7.5 cr

*Simulering av logistiksystem 7,5 hp*

Set by Faculty of Engineering and Sustainable Development

**Version**

**Set at**

**Valid from**

6/2/16

**HT2016**

|                            |                                       |
|----------------------------|---------------------------------------|
| <b>Level</b>               | G1F                                   |
| <b>Education level</b>     | First cycle                           |
| <b>Course identifier</b>   | IEG306                                |
| <b>Credits</b>             | 7.5 cr                                |
| <b>Main field of study</b> | Industrial Economics                  |
| <b>Subject group</b>       | Industrial Engineering and Management |
| <b>Disciplinary domain</b> | Technology 100.0 %                    |

**Learning outcomes** After completion of the course the student shall be able to:

1. introduce basic methods for simulation of logistics systems
2. use the theory to formulate and analyze a logistics system
3. applying a relevant program to simulate and analyze a system
4. assess and evaluate the importance of simulation technology for various applications.

**Course content** Overview of simulation techniques

Random variables, simple probability, concept of probability distributions, descriptive statistics, commonly used distributions; Goodness-of-fit test, data analysis techniques

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

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

Skills in usage of relevant simulation program , Basics in relevant programming language, tutorial models in logistics and production.

**Teaching**

Lectures, labs and project work.

**Prerequisites**

Data Analysis and Statistics, Manufacturing Logistics and Distribution logistics or equivalent courses.

**Examination**

Written examination, project work and labs.

**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**

A minor part of the course content deals with sustainable development.

**Module**

|      |                     |        |           |
|------|---------------------|--------|-----------|
| 0010 | Written examination | 3 cr   | Grade: AF |
| 0020 | Laborations         | 1.5 cr | Grade: UG |
| 0030 | Project work        | 3 cr   | Grade: AF |