



# IV1200 System Modelling and Simulation 7.5 credits

Systemmodellering och simulering

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

## Establishment

Course syllabus for IV1200 valid from Autumn 2008

## Grading scale

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

## Education cycle

First cycle

## Main field of study

Information Technology, Technology

## Specific prerequisites

## Language of instruction

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

## Intended learning outcomes

This understanding means that after the course you should be able to

- 1.- Define basic concepts in modeling and simulation (M&S)
2. Classify various simulation models and give practical examples for each category
3. Construct a model for a given set of data and motivate its validity
4. Generate and test random number variates and apply them to develop simulation models
5. Analyze output data produced by a model and test validity of the model
6. Explain parallel and distributed simulation methods

## Course contents

- basic concepts in discrete event simulation (DES)
- classification of simulation models
- design of discrete-Event Simulation (DES)
- random number generation
- Input data modeling
- verification and validation of simulation models
- output data analysis
- introduction to parallel and distributed simulation
- introduction to high level architecture (HLA)

## Course literature

Discrete-Event System Simulation , Jerry Banks, John S. Carson II, Barry L. Nelson and David M. Nicol

Upplaga: 4th Edition Förlag: Pearson Education, Inc År: 2005

ISBN: 0-13-129342-7

Övrig litteratur

- Simulation Modeling and Analysis (3rd Edition). Averill M. Law, W. David Kelton, McGraw-Hill 2000

- Discrete-Event Simulation, A First Course. Larry H Leemis, Stephen K. Park, published by Prentice Hall 2006

- Simulation With Arena, (4th Edition). David Kelton, Randall P. Sadowski, and David T. Sturrock , McGraw-Hill 2007

## Examination

- TEN1 - Examination, 4.5 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Laboratory Work, 3.0 credits, grading scale: P, 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

The course consists of a theoretical and a practical part.

The theoretical part gives 4.5 credits and is assessed by a written exam, with grades A-F. You must fulfill objectives 1 -4 above to get a pass grade. In addition, for higher grades you must fulfill objectives 5 and 6.

The practical part gives 3 credits. This part consists of two project assignments and must be done before 31 December 2007. The grade for this part is pass or fail.

A student who does not complete both assignments before end of December 2007 must redo both projects, possibly with different content, next year.

Students who complete the projects before the given deadline will receive some bonus points that can improve the grade of the written exam. These bonus points are valid only in the first exam given in October 2007.

## 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.