IV1200 System Modelling and Simulation 7.5 credits

Systemmodellering och simulering

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 IV1200 valid from Autumn 2010

Grading scale

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

Education cycle

First cycle

Main field of study

Information Technology,Technology

Specific prerequisites

Completed upper secondary education including documented proficiency in Swedish corresponding to Swedish B and English corresponding to English A. For students who received/will receive their final school grades after 31 December 2009, there is an additional entry requirement for mathematics as follows: documented proficiency in mathematics corresponding to Mathematics A. And the specific requirements of mathematics, physics and chemistry corresponding to Mathematics D, Physics B and Chemistry A.

- A Programming course as ID1004 Objectoriented Programming 7.5 hp or an equivalent course

- SF1901 Probability Theory and Statistics 6 hp or an equivalent course

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, Mc-Graw-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

- LAB1 - Laboratory Work, 3.0 credits, grading scale: P, F
- TEN1 - Examination, 4.5 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

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. The grade for this part is pass or fail.

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.