SH2400 Physics Simulation II 7.5 credits

Simulering av fysikaliska system II

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 SH2400 valid from Autumn 2007

Grading scale

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

Education cycle

Second cycle

Main field of study

Specific prerequisites

Recommended prerequisites: Previous knowledge corresponding to 5A1247/SH1009 Modern Physics.

Language of instruction

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

Intended learning outcomes

After successfully passing the course, the student should be able to write simple programs in Java for simulation and controlling experiments in physics. The student should be able to well use the inherent features of Java with respect to safety, security, networking and graphics.

Course contents

The concepts of object oriented programming (OOP) will be introduced using physical system simulations as examples, e.g. interacting particles where each particle is an object and thread. We will discuss the advantages and disadvantages of Java compared to other OOP languages.

Java basics, i.e. syntax, will be developed over several lectures.

Using physics simulations demonstrations, we will develop more advanced Java techniques in graphics and multi-threading.

Finally, network programming with Java will be introduced and basic client and server routines developed to simulate the control and monitoring of an online experiment.

Course literature

E. Boeker and R. Van Grondelle, Environmental Physics, John Wiley & Sons, New York 1995.

Lecture notes

Examination

- INL1 - Assignments, 6.0 credits, grading scale: A, B, C, D, E, FX, F
- TEN1 - Examination, 1.5 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

One written exam (TENA; 1,5 university credits) Project work (PROA; 6 university credits) to be presented orally and as a written report

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.