Advanced Game Programming

Programme course

6 credits

Teknik för avancerade datorspel

TSBK03

Valid from: 2017 Spring semester

Determined by
Board of Studies for Computer Science
and Media Technology

Date determined
2017-01-25

Main field of study

Information Technology, Computer Science and Engineering, Computer Science, Media Technology and Engineering

Course level

Second cycle

Advancement level

A1X

Course offered for

- Computer Science and Engineering, M Sc in Engineering
- Media Technology and Engineering, M Sc in Engineering
- Applied Physics and Electrical Engineering, M Sc in Engineering
- Information Technology, M Sc in Engineering
- Applied Physics and Electrical Engineering - International, M Sc in Engineering
- Computer Science and Software Engineering, M Sc in Engineering

Entry requirements

Note: Admission requirements for non-programme students usually also include admission requirements for the programme and threshold requirements for progression within the programme, or corresponding.

Prerequisites

Programming Skills. Computer graphics. Linear Algebra. Fundamental physics.

Intended learning outcomes

The course aims to provide knowledge of the technology required for to make technologically advanced computer games, interactive training systems and simulators. Students learn the key algorithms, and study a chosen subject deeper in a project.

Course content
Computer Graphics: Stencil buffer. Shadows. HDR. Bump mapping. Stereoscopic display.
Physics: Kinetics and kinematics. Rigid bodies. Deformable bodies. Animation. Skinning.
AI: Search, behavior, state machines.
Networks: Principles for network games. Netlag.
Other: Quaternions for rotation. GPU computing.

Teaching and working methods
The course lasts over the whole semester in two periods, the first of which is devoted to lectures and laboratory work, and the other to the project.

Examination

PRA1	Project	3 credits	U, 3, 4, 5
LAB1	Laboratory work with tests	3 credits	U, G

Theory from the lectures will be examined with small exams at the start of each laboration.

Grades
Four-grade scale, LiU, U, 3, 4, 5

Department
Institutionen för systemteknik

Director of Studies or equivalent
Klas Nordberg

Examiner
Ingemar Ragnemalm

Course website and other links
http://www.computer-graphics.se/TSBK03.html

Education components
Preliminary scheduled hours: 48 h
Recommended self-study hours: 112 h

Course literature

Additional literature

Books

I. Ragnemalm, *So how can we make them scream?*

Common rules

Regulations (apply to LiU in its entirety)

The university is a government agency whose operations are regulated by legislation and ordinances, which include the Higher Education Act and the Higher Education Ordinance. In addition to legislation and ordinances, operations are subject to several policy documents. The Linköping University rule book collects currently valid decisions of a regulatory nature taken by the university board, the vice-chancellor and faculty/department boards.

LiU's rule book for education at first-cycle and second-cycle levels is available at http://styrdokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.