SYLLABUS

Computer Game Systems 15 credits S0012E

Datorspel i ett systemperspektiv

Course syllabus admitted: Autumn 2023 Sp 1 - Present

DECISION DATE
2022-02-14

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Computer Game Systems 15 credits S0012E

Datorspel i ett systemperspektiv

First cycle, S0012E

Education level	Grade scale	Subject	Subject group (SCB)
First cycle	U G#	Medieteknik	Computer Technology

Entry requirements

In order to meet the general entry requirements for first cycle studies you must have successfully completed upper secondary education and documented skills in English language and of which the following requirements need to be met for course entry:

15 hp Mathematics, ex. (or equivalent to):
M0038M Mathematics I - Calculus
M0043M Mathematics II - Calculus and linear algebra
M0052M Mathematics III - Dfferentia equations and transforms

At least 30 hp in programming, with experience in programming for games, ex.:
D0037D Object oriented programming
D0041D Data structures and algorithms
S0009E Computer graphics programming
S0011E Game Engine Architecture

Selection

The selection is based on 1-165 credits.

Course Aim

The course aims to provide the skills necessary to understand game programming at a system level, and to understand and utilize the computer hardware to improve application performance.

The student should be able to:

- With knowledge in the eld of computer game development at the system level, understand and apply knowledge of mathematics and science for speci c topics in game systems.
- Understand and apply knowledge of computer hardware to improve performance of games and applications.
- Identify the need for further knowledge and to continuously upgrade their skills by identifying performance problems and optimising code at a system level.
- Demonstrate an understanding of parallelism and concurrency.
- Demonstrate knowledge of network programming to utilize parallelism and concurrency between multiple computers.

Contents

The course covers computer game systems, computer hardware, systems architecture, operating systems, virtual memory, virtual machines, threading, massively parallel systems. The course
also covers why and how to apply data oriented design to improve performance, based on modern hardware, together with the ability to more easily parallelize different parts of games.

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Realization

Each course occasion´s language and form is stated and appear on the course page on Luleå University of Technology's website.
This course includes lectures and seminars and learning activities such as discussions, seminars and programming exercises where the student will be able to practice thinking in terms of hardware-centric programming and data oriented approaches.

Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided.
The intended learning outcomes are assessed through compulsory participation in laboratory work and assignments and through oral presentations and written essays.

Unauthorized aids during exams and assessments

If a student, by using unauthorized aids, tries to mislead during an exam or when a study performance is to be assessed, disciplinary measures may be taken. The term "unauthorized aids" refers to aids that the teacher has not previously specified as permissible aids and that may assist in solving the examination task. This means that all aids not specified as permissible are prohibited. The Swedish version has interpretative precedence in the event of a conflict.

Course offered by

Department of Computer Science, Electrical and Space Engineering

Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0001	Laboratory work	U G#	2	Mandatory	A22	
0002	Laboratory work	U G#	3	Mandatory	A22	
0003	Laboratory work	U G#	3	Mandatory	A22	
0004	Laboratory work	U G#	5	Mandatory	A22	
0005	Report	U G#	2	Mandatory	A22	

Study guidance

Study guidance for the course is to be found in our learning platform Canvas before the course starts. Students applying for single subject courses get more information in the Welcome letter. You will find the learning platform via My LTU.

Syllabus established

by Jonny Johansson, HUL SRT 2022-02-14

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