Module title			Abbreviation
Game Lab III Systems			10-GE-GL-3-252-m01

Module coordinator	Module offered by
holder of the Chair of Computer Science IX	Institute of Computer Science

ECTS	Method of grading	Only after succ. compl. of module(s)
20	numerical grade	--

Duration	Module level	Other prerequisites
2 semester	undergraduate	--

Contents

In this course, students develop interactive, real-time capable game prototypes without using existing game engines. They use system programming languages such as C++ and basic rendering libraries like OpenGL or Vulkan to design and implement central components such as graphics systems, input processing, state management and resource management. In doing so, they apply central concepts of graphics programming, including shader programming and scene graphs. The course supports a reflective approach to architectural decisions and performance optimization and opens up the possibility of new and further developments of game engine technologies and basic concepts.

Intended learning outcomes

Students should develop a game prototype without a game engine using C++ and low-level libraries, implement complex engine components independently, apply the basics of real-time graphics programming, analyze engine-specific architectural decisions and test, reflect on and improve their solutions in a targeted manner. On the one hand, they should use the freedom for game design that independence from established engines offers them. On the other hand, they should also work creatively and effectively in a complex programming context.

Courses (type, number of weekly contact hours, language — if other than German)

R (10)
Module taught in: German or English

Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)

portfolio (approx. 500 hours)
Language of assessment: German and/or English
creditable for bonus

Allocation of places

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Additional information

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Workload

600 h

Teaching cycle

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Referred to in LPO I (examination regulations for teaching-degree programmes)

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Module appears in

Bachelor's degree (1 major) Games Engineering (2025)