Elective Course Description Winter Term 2024/2025

Title	**Optimization of Real Time Applications**					
Cluster Title PO 2014 To be filed by focus managers s.u.						
Date of first course event / first organizational meeting with students***/ Room**	FR 1.11.25		F17/105		NN	
kind of room if not indicated above	**Online**		**Seminarraum**		**Labor**	

Belegung über OBS
30.09. - 07.10.2024 14:00

Course Data	credit points						5 credit points	
	workload/semester						125-150 h	
	presence/week on average**						4 SWS	
	Group size according to cnw							
	Min. size						8 students	
	14.10.24 – 7.2.25							
					weekday of course		Friday	
	frequency of course-events		weekly		bi-weekly		blocked	
	prospective timeframe**** (Block = 90 min)		Block 1 **8:30**	x	Block 2 10:15	x	Block 3 12:00	
			Block 4 **14:15**		Block 5 16:00		Block 6 **17:45**	
	course language				English		German	
	suitable for students of course/focus				**ER**		**AG**	
					IMD		**MP**	
					SMP		**IW (BA)**	
					OJ/WJ/OK		**KMI**	
Content(s): (check one or more)	Design		Informatics / Technology		Economy / Business		Culture	
Time frame in case of blocked event								

Course Portrait								
Lecturer(s) Name(s)	**Lars Thießen**							
Lecturer(s) email	lars.thiessen1@web.de							
Contact Prof. @ fbmd	Stephan.Jacob@h-da.dex							
Teaching Method	lecture		lecture + seminar		seminar	x	project	x
Course Contents	his course focuses on enhancing the performance of real-time systems using Unreal Engine and C++. The framerate of a game is probably one of the main factors defining it's perceived production value and playability. But how can we control the final frame rate? Why does the game always stutter at this random point in level 3? This elective explores how to measure and interpret framerate, how to identify bottlenecks and how to optimise code to run within a tight timeframe. The focus is on CPU optimisation, but rendering optimisation will also have its place. **Outcome:** Students will learn techniques for optimizing CPU, GPU, and memory usage to ensure smooth and efficient application performance. While the course emphasizes Unreal Engine, the concepts taught are applicable to other environments, providing a broad understanding of optimization strategies. Through hands-on projects, students will gain practical experience in improving the efficiency and responsiveness of real-time applications.							

Type of Exam	homework		work+presentation		paper					
Milestones if known										
		Examination								
		Examination / Presentation								
End of Elective										

Suitability	beginner course intermediate course advanced course
Preconditions	Basic programming skills are required, and basic knowledge of Unreal and C++ is strongly recommended, although the basics will be covered in class as needed.
Info about lecturer (especially if guest)	Lars Thießen is an experienced game programmer at Limbic Entertainment, where he has worked on over several commercial game projects, including the popular Tropico 6. In addition to his work in the industry, Thießen has also worked as a professor, teaching game development at HMKW Cologne. He specialises in performance and optimisation and writes about these topics on his blog larstofus.com
Other information	

* According to our examination law, the course titles have to be matched to a given catalogue with common course titles. This title will appear in the Transcript of Record and the Bachelor Certificate. Field has to be filed by Focus Managers, all clusters can be found below
** The official presence-time is 3 SWS for the whole semester. As the elective period is condensed to 12 weeks instead of 16 weeks, the presence time for the electives is 4 SWS.
*** Courses and focal points: er = Expanded Realities , oj = Online Journalismus; wj = Wissenschaftsjournalismus, blank field = please insert appropriate course. *(check as many as apply)*
**** Block 1 = 8.30 - 10.00 Uhr, Block 2 = 10.15 - 11:45 Uhr, Block 3 = 12.00 - 13.30 Uhr, Block 4 = 14.15 - 15.45 Uhr, Block 5 = 16.00 - 17.30 Uhr, Block 6 = 17.45 - 19.15 Uhr
***** In case that the course does not start in the first week 15.10.2018 there has to be a first organisational meeting to finalize the application process

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Please upload in Moodle Course!