Title	Photogrammetry
Cluster Title PO 07 To be filed by focus managers s.u.	
Cluster Title PO 2012 To be filed by focus managers s.u.	
Cluster Title PO 2014 To be filed by focus managers s.u.	Technical Art for Animations and Games

Date of first course event / first organizational meeting with students***/ Room**	F17/103 8.11.19 10:oo NN	NN	NN
kind of room if not indicated above	**Hörsaal**	**Seminarraum**	**Labor**

Belegung über OBS WED 30.09.2019 bis 08.10.2019 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
	15.10.18 – 18.01.19			

		weekday of course		block	
	frequency of course-events	weekly	bi-weekly	blocked	
	prospective timeframe**** (Block = 90 min)	Block 1 **8:30**	Block 2 10:15	x	Block 3 12:00	x
		Block 4 **14:15**	x	Block 5 16:00	x	Block 6 **17:45**
	course language		English	x	German
	suitable for students of course/focus		**DM**		**AG**	X
			IMD	x	**MP**	X
			SMP		**IW (BA)**	
			OJ/WJ/OK		**KMI**	X
Content(s): (check one or more)	Design	x	Informatics / Technology	x	Economy / Business		Culture	
Time frame in case of blocked event	8.-1o.11. + 22.-23.11.19 10:00 – 17:30			

Course Portrait	
Lecturer(s) Name(s)	Ramon Schauer
Lecturer(s) email	rschauer3d@gmail.com
Contact Prof. @ fbmd	Tilmann.kohlhaase@h-da.de
Teaching Method	lecture lecture + seminar seminar X project X

Course Contents	**Elective Description:**
	Photogrammetry describes a technique which reconstructs 3D models and textures from a series of images. Nowadays it is used in nearly every VFX production and in recent years has also been adopted by game studios as it provides a quick and cost efficient way to generate photorealistic 3D models. Having basic knowledge of the process as well as an understanding of the workflows used to process and work with this data is beneficial for almost everyone - examples would be modeling/texture artists who work with scanned data, level designers and lighting artists as well as animators or riggers who have to handle scanned blendshapes. The goal of this elective is to give an overview on how photogrammetry works and which equipment and what knowledge is necessary to make your first steps in it. Afterwards we dive into the various ways this data can be processed, cleaned up and used. **Rough outline:** 08.11.2019: • Introduction to photogrammetry (Hardware, camera settings, planning/breaking down the scenes, capturing of images, common problems and limitations • Processing of captured data and creation of 3D models and textures in Agisoft Photoscan/RealityCapture/Alice Vision Meshroom • Scan cleanup in Zbrush, methods for quick low-poly generation, projection of textures to a final UV layout • Texture baking, delighting of textures, creation of additional textures (e.g. roughness, metalness etc.) 09.11.2019: • Creation of tileable textures using photogrammetry • Combination of multiple scans/incomplete scans into new assets • Creation of Zbrush alphas and brushes from scan data • Using scan data with procedural tools like Substance Designer, Houdini or Speedtree 10.11.2019: • Introduction to photometric stereo capture (an alternative technique which works very well for materials or foliage) • Creating tileable materials with photometric stereo capture and Substance Designer • Scanning foliage using Photometric Stereo Capture • Creation of game-ready vegetation from previously generated scans 23.11.2019: • Photogrammetry for character art (common problems and solutions, how to work with scans) • Introduction to WrapX for quickly retopologizing scanned faces • Workflows for working with scanned blendshapes 24.11.2019: • Scene setup in Unreal Engine 4 using scans • Tips and tricks on how to work with scanned assets • Shader setup & lighting • Everything else that might come up during the workshop

Type of Exam	homework		work+presentation		paper			
Milestones if known								

		Examination
		Examination / Presentation
End of Elective		
Suitability	beginner course intermediate course advanced course	
Preconditions		
Info about lecturer (especially if guest)	Ramon Schauer is a freelance artist focusing on the creation of 3D art for both film and games. He graduated from his studies in Animation and Game at Darmstadt University of Applied Sciences in early 2018. In addition to the experiences made during various student projects and game jam, he worked as a 3D environment artist on Deck13 Interactive's "The Surge" as well as a freelancer on projects for clients like Lufthansa. Currently he is attending the postgraduate course "Technical Directing" at the Animationinstitute of the Filmakademie Baden-Württemberg in Ludwigsburg. A selection of his work can be found at: https://www.artstation.com/shyralon	
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: dm = Digital Media , 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

Elective Start: 21.10.19
Christmas Holiday 21. Dez. 2019 bis 12. Jan. 2020 (There might be Electives during 8.1. until 12.1.19)
Electives End 25.1.20