Submodule BIN-200-01 Computer Graphics 1

Subheading	(BIN-CG1)
Person in Charge	Sprengel, Frauke, Prof. Dr.
Language of Instruction	German
Curriculum Allocation	BIN
Course Type, Contact Hours per Week	Lecture with exercise, 4 SWS
ECTS Credits	6
Contact Hours / Independent Study Hours	68 h / 112 h
Semester	4
Suggestions for Independent Study	see literature
Recommended Prerequisites	BIN-100 Mathematical foundations of computer science (BIN-MAT1) BIN-105 Linear Algebra and Analytic Geometry (BIN-MAT2) BIN-111 Calculus (BIN-MAT3) BIN-102 Programming I (BIN-PR1), BIN-108 Programming II (BIN-PR2) BIN-110 Programming III (BIN-PR3)
Examination	Examination (written or oral examination) and experimental work

Learning Outcomes

Mathematical, algorithmic, interdisciplinary skills: Knowledge of the basic mathematical-geometrical and physical principles of rendering and lighting objects in space and the practical application of this knowledge. Analysis, design and realization skills: Application of the skills acquired in smaller projects using a graphics library

Content

Basic principles, affine transformations and perspective projection in descriptive geometry, curves and areas, visibility, transparency, lighting models, introduction to a standard 3D library, programming examples

Requirements for Contact Hours

Active participation, individual task-solving in small groups, discussion

Requirements for Independent Study Hours

Preparation and postprocessing of the lectures, reading literature, individual or group task-solving, individual discussion

Bibliography

Lecture notes
Alan Watt: 3D-Computergraphik, Pearson Studium
Foley, van Dam, Feiner, Hughes: Computer Graphics: Principles and Practice, Addison Wesley
Alfred Nischwitz, Peter Haberäcker: Computergraphik und Bildverarbeitung, Vieweg