



COURSE DESCRIPTION

Course code	full-time studies	
	part-time-studies	
Course name	Programowanie grafiki komputerowej	
Course name in English	Computer graphics programming	
Valid from academic year	2022/23	

PLACEMENT IN THE TEACHING PROGRAM

Field of study	Computer Science
Level of education	1st degree
Studies profile	General
Form and method of teaching classes	Full-time and part-time studies
Specialization	Computer graphics
Organizational unit responsible for the course	Department of Computer Systems
Course coordinator	Grzegorz Łukawski
Approved by	Dean of the Faculty of Electrical Engineering, Automatic Control and Computer Science Roman Deniziak, KUT prof., DSc, PhD

GENERAL CHARACTERISTIC OF THE COURSE

Course affiliation	Speciality course	
Course status	Mandatory	
Language	English	
Semester	full-time studies	6th
	part-time-studies	6th
Requirements	Basics of the computer graphics 1 & 2	
Exam (YES/NO)	YES	
ECTS	5	

Course form		lecture	classes	laboratory	project	other
Hours per semester	full-time studies	30	-	30	15	-
	part-time-studies	18	-	18	9	-

LEARNING RESULTS

Category	Result Symbol	Learning Results	References to the field of study results
Knowledge	W01	Student knows and understands the basics of 3D graphics programming using proper interfaces.	INF_W29
	W02	Student knows and understands advantages of direct programming of the graphics processor. Knows and understands basics of a shader language.	INF_W29
Skills	U01	Student is able to program realistic 3D graphics with the help of a selected 3D interface.	INF_U29
	U02	Student is able to program a graphics processor with the help of the a shader language.	INF_U29
Social competence	K01	Student is ready to analyse a programming problem, divide it into elements and cooperate in a team during its implementation.	INF_K1 INF_K2

COURSE CONTENT

Course Form	Content
lecture	1. Basics of 3D graphics programming using a proper interface.
	2. Basics of graphics processor programming with a shader language.
	3. Implementation of special effects in 3D graphics.
laboratory	1. Basics of 3D graphics programming using a chosen interface.
	2. Basics of graphics processor programming with a shader language.
	3. Programming of 3D computer graphics at the advanced level, implementation of special effects.
project	Preparation of an application that realizes 3D graphics rendering with the help of specific tools, libraries and interfaces.

LEARNING RESULTS VERIFICATION METHODS

Result Symbol	Learning results verification methods					
	Oral Exam	Written Exam	Midterm	Project	Report	Other
W01		X				
W02		X				
U01			X			X
U02			X			X
K01				X	X	

ASSESSMENT FORMS AND CRITERIA

Course Form	Assessment Form	Assessment Criteria
lecture	Exam	The student should obtain at least 50% of points at the written exam.
laboratory	Passing grade	The student should obtain at least 50% of points from laboratory classes and the final test, midterms or the final test and midterms.
project	Passing grade	The student should obtain at least 50% of points for the project task and report.

STUDENT'S VOLUME OF WORK

ECTS Balance												
No.	Activity Type	Student Involvement										Unit
		full-time studies					part-time-studies					
		Lec	C	Lab	P	S	Lec	C	Lab	P	S	
1.	Participation in classes according to the schedule	30		30	15		18		18	9		h
2.	Other (consultations, exams)	4		2	2		4		2	2		h
3.	Total with the direct assist of an academic teacher	83					53					h
4.	Number of ECTS, that students obtains with the direct assist of an academic teacher	3,32					2,12					ECTS
5.	Hours of unassisted student work	42					72					h
6.	Number of ECTS that student obtains working unassisted	1,68					2,88					ECTS
7.	Practical classes volume of work	45					27					h
8.	Number of ECTS obtained by student at practical classes	1,8					1,08					ECTS
9.	Total student's volume of work expressed in hours	125					125					h
10.	ECTS	5										ECTS

BIBLIOGRAPHY

1. Foley, James D.; van Dam, Andries; Feiner, Steven K.; Hughes, John: "Computer Graphics: Principles and Practice in C (2nd ed.)". Addison-Wesley 1995
2. Pavlidis, Theo: "Algorithms for Graphics and Image Processing", Berlin-Heidelberg-New York, Springer-Verlag 1982.
3. Randi J. Rost: "OpenGL Shading Language (3rd Edition)", Addison-Wesley Professional, 2009.
4. John Kessenich, Graham Sellers, Dave Shreiner: "OpenGL Programming Guide: The Official Guide to Learning OpenGL, 9th Edition", 2016.