Politechnika Świętokrzyska
WYDZIAŁ ELEKTROTECHNIKI, AUTOMATYKI I INFORMATYKI

COURSE DESCRIPTION

Course code	full-time studies	
	part-time-studies	
Course name	**Podstawy grafiki komputerowej 1**	
Course name in English	**Basics of the computer graphics 1**	
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	**All specializations**
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		**Introductory course**
Course status		**Mandatory**
Language		**English**
Semester	full-time studies	**3rd**
	part-time-studies	**4th**
Requirements		**Fundamentals of programming 1 & 2, Object-oriented programming 1, Algorithms and data structures**
Exam (YES/NO)		**YES**
ECTS		**5**

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

LEARNING RESULTS

Category	Result Symbol	Learning Results	References to the field of study results
Knowledge	W01	A student knows and understands basic algorithms used in 2D and 3D computer graphics.	INF_W13
	W02	A student knows and understands main problems concerning 2D and 3D computer graphics, knows classic solutions to these problems and contemporary trends.	INF_W13
Skills	U01	A student is able to select a proper visualisation method, depending on the capabilities of the graphics hardware.	INF_U13
	U02	A student is able to propose a proper visualisation method with 2D/3D graphics to a given problem.	INF_U13
	U03	A student is able to design and implement an application for visualisation of a given problem, using a chosen library supporting rendering of the 3D graphics.	INF_U13

COURSE CONTENT

Course Form	Content
lecture	1. Fundamentals of 2D graphics, basic 2D algorithms, colour models, geometric transformations.
	2. Processing raster images.
	3. Fundamentals of 3D graphics, models of visualisation, 3D graphics algorithms. Programming with the help of a chosen library supporting rendering of the 3D graphics.
laboratory	1. Basics of 2D graphics programming.
	2. Basics of 3D graphics programming, using a chosen library supporting rendering of the 3D graphics.

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
U03			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.

STUDENT'S VOLUME OF WORK

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			18		18			h
2.	Other (consultations, exams)	4		2			4		2			h
3.	**Total with the direct assist of an academic teacher**	**66**					**42**					h
4.	**Number of ECTS, that students obtains with the direct assist of an academic teacher**	**2,64**					**1,68**					ECTS
5.	**Hours of unassisted student work**	**59**					**83**					h
6.	**Number of ECTS that student obtains working unassisted**	**2,36**					**3,32**					ECTS
7.	**Practical classes volume of work**	**30**					**18**					h
8.	**Number of ECTS obtained by student at practical classes**	**1,2**					**0,72**					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. John Kessenich, Graham Sellers, Dave Shreiner: "OpenGL Programming Guide: The Official Guide to Learning OpenGL, 9th Edition", 2016.