STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Computer graphics**		Code **1010325341010320116**

Field of study **Electrical Engineering**	Profile of study (general academic, practical) **(brak)**	Year /Semester **2 / 4**

Elective path/specialty **Electrical Systems in Mechatronics**	Subject offered in: **Polish**	Course (compulsory, elective) **obligatory**

Cycle of study: **Second-cycle studies**	Form of study (full-time,part-time) **part-time**

No. of hours

Lecture: **-**	Classes: **-**	Laboratory: **-**	Project/seminars: **9**	No. of credits **1**

Status of the course in the study program (Basic, major, other) **(brak)**	(university-wide, from another field) **(brak)**

Education areas and fields of science and art
 	
technical sciences
       Technical sciences
	ECTS distribution (number and %**)**
	
	1 100%
	     1 100%

Responsible for subject / lecturer:

dr inż. Wojciech Pietrowski
email: wojciech.pietrowski@put.poznan.pl
tel. 61 665 2396
Wydział Elektryczny
ul. Piotrowo 3A 60-965 Poznań

Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Basic knowledge of analytical and differential geometry, matrix calculations.
2	**Skills**	Programming in C + + or Delphi.
3	**Social competencies**	Is aware of the need to broaden their competence, willingness to work together as a team

Assumptions and objectives of the course:

Getting familiar with modern methods of creating three-dimensional computer graphics. Understanding the principles of these algorithms to create graphics.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. Develop an algorithm to create a three-dimensional computer graphics in high-level language using the OpenGL library. - [K_W07+++]

2. Describe the principle of building a scene in computer graphics. Offer a selection of basic object transformations. - [K_W01+, K_W18++]

3. Offer your choice of textures, colors and lighting appropriate to the scene. - [K_W13+]

4. Sformułować zagadnienie analizy fragmentu rzeczywistości a następnie algorytmu tworzenia sceny - [K_W01+]

Skills:

1. Creating software to create three-dimensional computer graphics. - [K_U15++, K_U16++]

2. Prepare a script computer animation. - [K_U08+]

3. Perform an analysis of a fragment of the real world in order to build their own computer graphics. - [K_U06++]

Social competencies:

1. Ability to act in an entrepreneurial manner in the area of ??mechatronics, electrical systems. - [K_K04+++]

Assessment methods of study outcomes

project:

? test and favoring knowledge necessary for the accomplishment of the problems in the area of ??laboratory tasks,

? to evaluate the classroom - rewarding gain skills they met the principles and methods

? assessment of knowledge and skills related to the implementation of the tasks your practice, the assessment report performed exercise.

Get extra points for the activity in the classroom, and in particular for:

? propose to discuss additional aspects of the subject Wych ?;

? the effectiveness of the application of the knowledge gained during solving the given problem;

? ability to work within a team practice performing the task detailed in the laboratory;

? subsequent to improve the educational process;

? developed aesthetic diligence reports and jobs - in the self-study.

Course description

Drawing objects in three dimensions. Geometric transformations, rotation, translation, scaling. Perspective projection and perpendicular. Coloring and shading. Light and shadows. Texture mapping. Mixing color and transparency. Anti-aliasing. Parametric curves and surfaces. The use of OpenGL graphics library for presentation of research results.

Basic bibliography:

1. M. Jankowski, Elementy grafiki komputerowej, WNT 2006.

2. A. Ross, M. Bousquet, 3ds max 5. Projekty i rozwiązania, Helion 2004.

3. R. S. Wright Jr., B. Lipchak, OpenGL. Księga eksperta. Wydanie III, Helion 2004

4. P. Kiciak, Podstawy modelowania krzywych i powierzchni. Zastosowania w grafice komputerowej, WNT 2005.

Additional bibliography:

1. A. Marciniak, Grafika komputerowa w języku Turbo Pascal, seria Biblioteka Użytkownika Mikrokomputerów, Wydawnictwo NAKOM, Poznań 1998.

2. F. P. Preparata, M. I. Samos, Geometria obliczeniowa, Helion 2003.

Result of average student's workload

Activity	Time (working hours)
1. Participation in project activities	15
2. Consultation on design activities	4
3. Preparation for laboratory exercises and develop reports	15

Student's workload

Source of workload	hours	ECTS
Total workload	34	1
Contact hours	19	1
Practical activities	30	1