POZNAN UNIVERSITY OF TECHNOLOGY

EUROPEAN CREDIT TRANSFER AND ACCUMULATION SYSTEM (ECTS)

COURSE DESCRIPTION CARD - SYLLABUS

Course name
Advanced programming in multimedia [S2EiT2E-TIT>ZPwM]

Course

Field of study	Year/Semester
Electronics and Telecommunications	2/3
Area of study (specialization)	Profile of study
Information and Communication Technologies	general academic
Level of study	Course offered in
second-cycle	English
Form of study	Requirements
full-time	elective

Number of hours

Lecture	Laboratory classes	Other
30	30	0
Tutorials	Projects/seminars	
0	0	

Number of credit points

5,00

Coordinators	Lecturers
dr inż. Sławomir Maćkowiak slawomir.mackowiak@put.poznan.pl	

Prerequisites

Has a systematic knowledge of mathematical analysis, algebra and theory of probability. Has a systematic knowledge of operating systems and data bases. Has the knowledge of computer resource management and protection technologies. Is able to extract information from Polish or English language literature, databases and other sources. Is able to synthesize gathered information, draw conclusions, and justify opinions. Is able to communicate in English or in Polish in the professional environment and other environments. Is capable of studying autonomously. Has knowledge of programming in C / C + +. Has basic knowledge in the field of image processing. Is able to look for information required during educational process and take educational courses, if needed, especially through Internet and distance education. Capable of self-learning (books, computer programs). He acts actively in class, asks questions, knowingly uses the contact with the teacher (eg. consultation).

Course objective

The aim of the course is to acquire knowledge in the field of programming applications for multimedia applications, in particular embedded operating systems of multimedia terminals and most of the major application programming interfaces. Skills in selecting and programming DirectX, OpenGL technologies in audio, video and interactive applications.

Course-related learning outcomes

Knowledge:
Knowing the rules of construction of computer programs. Knowing the syntax and programming practices of DirectX, OpenGL environments.

Skills:
Can implement in software basic multimedia applications using C, C++ with DirectX, OpenGL libraries.

Social competences:
Knows the limits of own knowledge and skills, understands the need for ongoing education

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:
Knowledge acquired as part of the lecture is verified during the exam. The exam takes the form of a written and / or oral exam. The exam is a collection of several open questions with different levels of difficulty with the assigned number of points. The exam is passed when the number of points scored exceeds 50%.
Completion of the laboratory is based on the current assessment of student progress during the implementation of tasks defined as a result of laboratory instructions and / or the results of assumptions from the discussion at the beginning of the class.
Rating scale: <= 50% 2.0; 51% -60% 3.0; 61% -70% 3.5; 71% -80% 4.0; 81% -90% 4.5; 91% -100% 5.0

Programme content

In this course, students acquire knowledge in the field of programming applications for multimedia applications, in particular embedded operating systems of multimedia terminals and most important application programming interfaces. In particular, the emphasis is on the use of the latest technologies in audio, video and interactive applications. Programming in the Visual Studio 2017 environment. Debugging the code. Creating applications and games for the Windows and Linux platform. Creating games and applications using OpenGl. Advanced parallelization techniques. Audio recording, playback and processing in applications. Operating and recording camera image in own applications. Application development step by step, each line of code is explained.

Course topics

Teaching methods

Traditional lecture
Laboratory - in the early phase of the discussion, then individual / or group work method implementation of the project.

Bibliography

Basic
1. OpenGL : księga eksperta / Richard S. Wright jr., Nicholas Haemel, Graham Sellers, Benjamin Lipchak ; tłumacz Łukasz Piwko z wykorzystaniem fragmentów książki "OpenGL : księga eksperta" Wydanie III w tłumaczeniu Wojciecha Mocha, Marka Pętlickiego oraz Rafała Jońcy. Grupa Wydawnicza Helion. Wydawca, Helion, 2011
2. Programowanie Windows, Petzold Charles, Wydawnictwo RM
2. Programowanie aplikacji dla Microsoft Windows, Jeffrey Richter, Wydawnictwo RM
3. Debuger - usuwanie błędów z programów, John Robbins, Wydawnictwo RM
Additional

Breakdown of average student's workload

	Hours	ECTS
Total workload	125	5,00
Classes requiring direct contact with the teacher	70	3,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	55	2,00