

Subject code	Credits
INF4025	4

Title

IPLOSTINSREALYBSINŽINERIJA

Title in English

AUGMENTED REALITY ENGINEERING

Subject goal and annotation

Course provides an advanced knowledge of interactive multimedia and its technology. Students are going to learn about the main and advanced concepts of interactive multimedia creation process, programming and hardware. The main objective of this course is to get extensive knowledge in interactive multimedia systems, like interactive systems based on the mobile devices, technology and hardware based on computer vision technologies, motion recognition, augmented reality, virtual reality technologies, virtual spaces and etc.

Prerequisites

Undergraduate courses: Programming basics, Interactive multimedia I, Multimedia systems and animation

Relationship between the learning outcomes of the Programme and learning outcomes of the subject

Learning outcomes of the Programme	Learning outcomes of the subject	Criteria for measuring the achievement of learning outcomes
6. Knowledge of Internet and multimedia products development, their commercial and social impact.	Knowledge and understanding of multimedia products development process and its other aspects, hardware and software tools.	Student demonstrates the knowledge about various interactive multimedia systems.
11. Analysis, design and development of advanced Multimedia systems.	Choose and apply effective methods and tools.	Student demonstrates skills by applying proper methods.
13. Ability to analyse the newest trends in Internet and multimedia systems (and general computer science and digital arts) and apply them in development of novel systems.	Working in team and presenting results. Analyse information and apply it to the projects to improve their applicability and universality.	Student and student groups presents their analysis to their colleagues and lecturer.
4. Knowledge of basic and advanced multimedia theories and applications, ability to apply it.	Knowledge and understanding of basic computer vision technologies and its algorithms.	Student demonstrates the ability to select effective technology and algorithms.

Subject content

	Lecture topics and contents	Hours
1.	Introduction to interactive multimedia	3
2.	Human-computer interaction	6
3.	Multi projection systems	3
4.	Augmented Reality technology	3
5.	Computer Vision technology	3
6.	Virtual Reality technology	3
7.	Computer Interactive Graphics	6
8.	Advanced multimedia projects	3
	Total	30

Practical work contents

All problems should be presented and described.

1. Analysis of the newest trends in Internet and multimedia systems.
2. Basics of programming with SDK for multi-platforms.
3. Augmented reality application.

Evaluation of study results

Final written exam (50%), mid-term written exam (25%), and assessments of laboratory (practical) work (25%).

Distribution of subject study hours

Lectures	30
Laboratory work	30
Individual studies (including studies in groups, preparation for the mid-term and final exams)	48
Total	108

Recommended literature

No	Authors of publication and title	Number of copies available		
		<i>in the Library of VMU</i>	<i>in specialized publication collections at VMU</i>	<i>in other libraries</i>
Main literature				
1.	XNA Game Studio		1	
2.	Fundamentals of Multimedia, Ze-Nian Li, Mark S.Drew, Prentice Hall		1	
3.	Beginning 3D Game Development with Unity		1	
Additional literature				
1.	Kinect SDK http://msdn.microsoft.com/en-us/library/hh855348.aspx			
2.	MS Windows Phone http://msdn.microsoft.com/library/windowsphone/develop			
3.	Unity 3D http://docs.unity3d.com/Documentation/ScriptReference/index.html			
4.	MS Windows http://msdn.microsoft.com/library/windows/hardware/			

Subject prepared and coordinated by

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