1.3. Module/ course form

To be completed by Course Team							
	Module name : **Computer Graphics and Multimedia**					Module code:	
	Course name: **Rapid Prototyping Laboratory**					Course code:	
	Faculty: **The Institute of Applied Informatics**						
	Field of study: **Informatics**						
	Mode of study : **Full-time**		Learning profile: **PRACTICAL**			Speciality:	
	Year/ semester:		Module/ course status: **mandatory**			Module/ course language: **polish/english**	
	Type of classes	lecture	lessons	lab	project	tutorial	other (please specify)
	Course load			**30**			

Module/ course coordinator	PhD Henryk Olszewski
Lecturer	PhD Henryk Olszewski
Module/ course objectives	The purpose of the lab is to provide the basic knowledge of rapid prototyping technology: 3D scanning, 3D printing, stereolithography, photogrammetric methods.
Entry requirements	CAD/CAM systems, introduction to artificial intelligence, signal processing systems.

LEARNING OUTCOME		
Nr	LEARNING OUTCOME DESCRIPTION	Learning outcome reference
1	Student has a general knowledge of 3D scanners.	K_W05, K_W06, K_W15
2	Student has a general knowledge of the stereolithography and 3D printing.	K_W05, K_W06, K_W15
3	Student has a general knowledge of 3D objects modeling.	K_W05, K_W06, K_W15
4	Student can scan 3D objects using laser scanners and structured light scanners.	K_U06, K_U23
5	Student is able to generate clouds of points for 3D objects using photogrammetric methods.	K_U20, K_U23
6	Student analyzes the accuracy of received models of 3D objects using CAD/CAM software.	K_U20, K_U17

7	Student understands the need and knows the possibility of continuous learning.	K_K01
8	Student is responsible for his own work and the work of the team.	K_K04
9	Student is aware of the social role of a technical college graduate.	K_K06, K_K03

CURRICULUM CONTENTS
Lecture
Lab
• The rapid production of prototypes, • Fast production tools. • Physical modeling to assess the utility functions and marketing features of real objects, • 3D measurements of real objects - 3D scanning systems, • The quality control of products, • Photorealistic visualization, • Digital archiving.

Basic literature	1. Olszewski H.: Laboratorium szybkiego pro typowania. Inżynieria odwrotna. Wydawnictwo PWSZ, Elbląg 2012. 2. Wełyczko A.: CATIA V5. Sztuka modelowania powierzchniowego. Wydawnictwo Helion, Gliwice 2009. 3. Wełyczko A.: CATIA V5. Przykłady efektywnego zastosowania systemu w projektowaniu mechanicznym. Wydawnictwo Helion, Gliwice 2005. 4. Przybylski W., Deja M.: Komputerowo wspomagane wytwarzania maszyn. Podstawy i zastosowanie. Wydawnictwa Naukowo-Techniczne WNT, Warszawa 2007.
Additional literature	

Teaching methods	Lecture and multimedia presentation, laboratory exercises, discussion, problem solving, teamwork and individual work in the computer laboratory.	
Assessment method		Learning outcome number
Implementation of tasks related to point cloud obtaining by 3D scanning or using photogrammetric methods.		04, 05, 07, 08, 09
Implementation of tasks of accuracy analyzing of received models of 3D objects.		06
The tests consist of two parts: practical and theoretical.		01, 02, 03
Form and terms of an exam	Laboratory assessment: pass all laboratory classes included in the program, pass of the project realized during laboratory exercises.	

STUDENT WORKLOAD	
	Number of hours
Participation in lectures	
Independent study of lecture topics	
Participation in tutorials, labs, projects and seminars	30
Independent preparation for tutorials*	15
Preparation of projects/essays/etc. *	
Preparation/ independent study for exams	
Participation during consultation hours	5
Other	
TOTAL student workload in hours	50
Number of ECTS credit per course unit	**2 ECTS**
Number of ECTS credit associated with practical classes	50 **2,0 ECTS**
Number of ECTS for classes that require direct participation of professors	35 **1,4 ECTS**