

MODULE DESCRIPTION

Module code	Z-ZIP2-596z
Module name	Wizualizacja komputerowa w projektowaniu inżynierskim
Module name in English	Computer Visualization in Engineering Design
Valid from academic year	2016/2017

A. MODULE PLACEMENT IN THE SYLLABUS

Field of study	Management and Production Engineering
Level of education	2nd degree <i>(1st degree / 2nd degree)</i>
Studies profile	General <i>(general / practical)</i>
Form and method of conducting classes	Full-time <i>(full-time / part-time)</i>
Specialisation	Management Engineering
Unit conducting the module	The Department of Machine Design
Module co-ordinator	Zbigniew Lis, PhD
Approved by:	

B. MODULE OVERVIEW

Type of subject/group of subjects	Specialist subject <i>(basic / major / specialist subject / conjoint / other HES)</i>
Module status	Compulsory <i>(compulsory / non-compulsory)</i>
Language of conducting classes	English
Module placement in the syllabus - semester	2nd semester
Subject realisation in the academic year	Winter semester <i>(winter / summer)</i>
Initial requirements	No requirements <i>(module codes / module names)</i>
Examination	No <i>(yes / no)</i>
Number of ECTS credit points	3

Method of conducting classes	Lecture	Classes	Laboratory	Project	Other
Per semester	10		20		

C. TEACHING RESULTS AND THE METHODS OF ASSESSING TEACHING RESULTS

Module target	The acquisition of knowledge concerning the design capabilities of modern engineering design applications, the role it plays especially 3D visualization and the ability to conduct analysis and simulation (MES) of the proposed subject. Presentation techniques of CAD / CAE with a focus on systemic issues in the design, optimization methods and product innovation.
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Effect symbol	Teaching results	Teaching methods (l/c/lab/p/other)	Reference to subject effects	Reference to effects of a field of study
W_01	He has in-depth knowledge of physics, applied mathematics, including optimization problems, as applied to engineering problems, issues from the area of economics and management including processes of mathematical modeling.	l	K_W01	T2A_W01 T2A_W02
W_02	He has extensive knowledge in the field of simulation and forecasting including decision support methodologies as applied to engineering problems, issues from the area of economics and management.	l	K_W02	T2A_W01 T2A_W02
W_03	He knows the techniques, methods and tools used in the process of solving engineering problems including issues of quality assurance	lab	K_W05	T2A_W07 T2A_W09 S2A_W06
U_01	He can use mathematical knowledge and knowledge related to management and manufacturing engineering to the analysis, design, production processes and systems	lab	K_U03	T2A_U08 T2A_U15 T2A_U17
U_02	He can prepare documentation or report on the results of the tasks of the project or research that follows the work of theoretical and analytical or experimental.	lab	K_U04	T2A_U03 T2A_U08
U_03	It is capable of learning process, in order to solve and new tasks with the use of experimental methods and research	l	K_U07	T2A_U05 T2A_U09
K_01	Appreciates the importance of a continuous process of learning and acquiring specialized knowledge and skills as the basis for creative and entrepreneurial thinking.	l	K_K01	T2A_K01 T2A_K06
K_02	He is aware of the importance and understand the relationships between the activities of engineering and business including the development of the region and understands the related responsibility for decisions.	l	K_K02	T2A_K02 T2A_K04

Teaching contents:

1. Teaching contents as regards lectures

Lecture number	Teaching contents	Reference to teaching results for a module
1	Modern environmental engineering design - conditioning system, new design technologies.	K_01 K_02
2	Technologies CAD - system overview.	W_01
3	Opportunities for simulation of a numerical design process - technologies CAE-FEA essence of 3D computer visualization in the design process.	W_01 W_02 U_01

4	Changing the paradigm of engineering design to modern CAD / CAE-MES, visualization of CAD / CAE-FEA design process - case study.	W_02 U_03
5	Lecture - test Passing.	

2. Teaching contents as regards classes

Class number	Teaching contents	Reference to teaching results for a module

3. Teaching contents as regards laboratory classes

Laboratory class number	Teaching contents	Reference to teaching results for a module
1	The basic procedure for process engineering mechanical design.	W_01
2	Introduction to environmental design, visualization and simulation - SolidWorks part 1.	W_02
3	Introduction to environmental design, visualization and simulation - SolidWorks part 2.	W_02
4	Introduction to environmental design, visualization and simulation - SolidWorks part 3.	W_02
5	Presentation of the complete design process on the selected example of the technologies of CAD / CAE-FEA - process visualization, simulations possible - project 1.	W_02
6	The role of the current visualization and simulation design techniques in the decision-making process regarding the selection of material, geometry and functionality of the product - project 2.	W_02
7	Impact of the new design takes into account the technology of CAD / CAE-MES functionality of the product, its quality and efficiency of efficiency of energy- project 3.	W_03
8	Opportunities for innovative design using CAD / CAE-FEA - creating space solutions and research opportunities for the numerical assessment solutions.	U_02 U_03
9	Presentation of student projects CAD / CAE-FEM.	U_03 K_01
10	Pass laboratories.	

4. The characteristics of project assignments

The methods of assessing teaching results

Effect symbol	Methods of assessing teaching results <i>(assessment method, including skills – reference to a particular project, laboratory assignments, etc.)</i>
W_01	Test in the form of a test carried out at the end of the lecture.
W_02	Test in the form of a test carried out at the end of the lecture.
W_03	Test in the form of a test carried out at the end of the lecture.
U_01	Validation of the design and visualization of a given project made in computer technology CAD / CAE - 1 own project created within the laboratories.
U_02	Validation of the design and visualization of a given project made in computer technology CAD / CAE - 2 own project created within the laboratories.
U_03	Validation of the design and visualization of a given project made in computer technology CAD / CAE - 3 own project created within the laboratories.

K_01	Comments on lectures and a panel discussion during lectures.
K_02	Comments on lectures and a panel discussion during lectures.

D. STUDENT'S INPUT

ECTS credit points		
	Type of student's activity	Student's workload
1	Participation in lectures	10
2	Participation in classes	
3	Participation in laboratories	20
4	Participation in tutorials (2-3 times per semester)	5
5	Participation in project classes	
6	Project tutorials	5
7	Participation in an examination	2
8		
9	Number of hours requiring a lecturer's assistance	42 <i>(sum)</i>
10	Number of ECTS credit points which are allocated for assisted work <i>(1 ECTS point=25-30 hours)</i>	1.5
11	Unassisted study of lecture subjects	10
12	Unassisted preparation for classes	
13	Unassisted preparation for tests	
14	Unassisted preparation for laboratories	
15	Preparing reports	
15	Preparing for a final laboratory test	
17	Preparing a project or documentation	30
18	Preparing for an examination	
19		
20	Number of hours of a student's unassisted work	40 <i>(sum)</i>
21	Number of ECTS credit points which a student receives for unassisted work <i>(1 ECTS point=25-30 hours)</i>	1.5
22	Total number of hours of a student's work	82
23	ECTS points per module <i>1 ECTS point=25-30 hours</i>	3
24	Work input connected with practical classes <i>Total number of hours connected with practical classes</i>	50
25	Number of ECTS credit points which a student receives for practical classes <i>(1 ECTS point=25-30 hours)</i>	1.7

E. LITERATURE

Literature list	<ol style="list-style-type: none"> 1. Castro-Cedeño M.H., <i>Introduction to SolidWorks second edition, Certified SolidWorks Associate</i>, ver. Pdf. https://forum.solidworks.com/thread/73660. 2. Tran P., <i>Solidworks 2015 Part I Basic Tools</i>, Dec 12, 2014. 3. Tran P., <i>Solidworks 2015 Part II - Advanced Techniques</i>, Dec 12, 2014. 4. Reyes A., <i>Beginner's Guide to SOLIDWORKS 2016 - Level I</i>, Dec 30, 2015. 5. Kurowski P., <i>Engineering Analysis with SOLIDWORKS Simulation 2015</i>, Feb 20, 2015. 6. Planchard D., <i>SOLIDWORKS 2016 Reference Guide</i>, Dec 16, 2015. 7. www.solidexpert.com 8. www.solidworks.com 9. www.grabcad.com
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Module website	
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