SYLLABUS OF A MODULE

Polish name of a module	**Inżynieria odwrotna**
English name of a module	**Reverse engineering**
ISCED classification - Code	0715
ISCED classification - Field of study	*Mechanics and metal trades*
Languages of instruction	*English*
Level of qualification: *1 – BSc (EQF 6)* *2 – MSc (EQF 7)* *3 – PhD (EQF 8)*	*1 – BSc (EQF 6)*
Number of ECTS credit points	*5*
Examination: *EO – exam oral* *EW – exam written* *A - assignment*	*A - assignment*

Number of hours per semester:

Lecture	Tutorials	Laboratory	Seminar	E-learning	Project
		30			30

MODULE DESCRIPTION

MODULE OBJECTIVES

O1. Acquiring basic practical skills in 3D scanning, geometry recreation, surface modeling.

O2. Acquiring practical skills in Polyworks, Solidworks, Geomagic Design X software.

PRELIMINARY REQUIREMENTS FOR KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. Knowledge in mathematics and basic CAD modeling.
2. Individual and group work skills.
3. Skills of correct interpretation and presentation of own activities.

LEARNING OUTCOMES

LO1. Has knowledge of scanning, geometry recreation, surface modeling

LO2. Can develop CAD models of points clouds and wire geometry

LO3. Can compare recreated data with the points clouds

MODULE CONTENT

Type of classes – laboratory	Number of hours

L 1 – 3 - Introduction to surface modeling in SolidWorks	**3**
L 4 – 5 - Basic surface modeling techniques	**2**
L 6 – 15 - Advanced surface and hybrid modeling	**10**
L 15-18 - 3D scanning with use of Polyworks	**3**
L 19 – 20 - Introduction to Geomagic Design X	**2**
L 21 – 30 - Recreation of CAD models on the basis of point clouds	**10**
Sum	**30**

Type of classes– project	**Number of hours**
P 1 – 15 - Creation of final products with the use of surface modeling techniques	**15**
P 16 – 30 - Recreation of models (final products with the use of surface modeling techniques) with the use of reverse engineering	**15**
Sum	**30**

TEACHING TOOLS

1. - Laboratory tutorials.
2. - Computer workstations equipped with the Polyworks, Solidworks, Geomagic Design X softwares educational license.
3. - 3D scanners.

WAYS OF ASSESSMENT (F – FORMATIVE, S – SUMMATIVE)

F1. - assessment of preparation for laboratory exercises
F2. - assessment of the ability to apply the acquired knowledge while doing the exercises
F3. - evaluation of reports on the implementation of exercises covered by the curriculum
F4. - assessment of activity during classes
S1. - assessment of the ability to solve the problems posed and the manner of presentation obtained results - pass mark *

*) in order to receive a credit for the module, the student is obliged to attain a passing grade in all laboratory classes as well as in achievement tests.

STUDENT'S WORKLOAD

No.	Forms of activity	Average number of hours required for realization of activity
1.	**Contact hours with teacher**	
1.1	Lectures	0
1.2	Tutorials	0
1.3	Laboratory	30
1.4	Seminar	0
1.5	Project	30
1.6	Consulting teacher during their duty hours	5
1.7	Examination	0

1.6	Examination	0
	Total number of contact hours with teacher:	65

2. Student's individual work		
2.1	Preparation for tutorials and tests	0
2.2	Preparation for laboratory exercises, writing reports on laboratories	25
2.3	Preparation of project	25
2.4	Preparation for final lecture assessment	0
2.5	Preparation for examination	0
2.6	Individual study of literature	10
	Total number of hours of student's individual work:	60
	Overall student's workload:	125
Overall number of ECTS credits for the module		5 ECTS
Number of ECTS points that student receives in classes requiring teacher's supervision:		2.4 ECTS
Number of **ECTS** credits acquired during practical classes including laboratory exercises and projects:		4.8 ECTS

BASIC AND SUPPLEMENTARY RESOURCE MATERIALS

1.	Dassault Systems SolidWorks Corporation: SOLIDWORKS Advanced Part Modelling, USA, 2015.
2.	Dassault Systems SolidWorks Corporation: SOLIDWORKS Surface Modeling, USA, 2017.
3.	Dassault Systems SolidWorks Corporation: SOLIDWORKS Web Help 2020.
4.	Geomagic Design X Technical Documentation
5.	Polyworks Technical Documentation

MODULE COORDINATOR (NAME, SURNAME,   E-MAIL ADDRESS)

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