

## SYLLABUS OF A MODULE

Polish name of a module	<b>Inżynieria odwrotna</b>
English name of a module	<b>Reverse engineering</b>
ISCED classification - Code	0715
ISCED classification - Field of study	<i>Mechanics and metal trades</i>
Languages of instruction	<i>English</i>
Level of qualification:	1 – BSc (EQF 6)
Number of ECTS credit points	5
Examination:	<i>A - assignment</i>
Available in semester:	S

### 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
<b>1. Contact hours with teacher</b>		
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
<b>2. Student's individual work</b>		
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
<b>Overall number of ECTS credits for the module</b>		<b>5 ECTS</b>

Number of ECTS points that student receives in classes requiring teacher's supervision:	2.4 ECTS
Number of <b>ECTS</b> 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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