MODULE DESCRIPTION

Module code	full-time studies:	**Z-ZIP1-E-622**
	part-time studies:	**Z-ZIPN1-E-622**
Module name	**Computer-Aided Engineering Work**	
Module name in Polish	**Komputerowe wspomaganie prac inżynierskich**	
Valid from academic year	**2019/2020**	

MODULE PLACEMENT IN THE SYLLABUS

Field of study	**MANAGEMENT AND PRODUCTION ENGINEERING**
Level of education	**1st degree**
Studies profile	**General**
Form and method of conducting classes	**Full-time and Part-time**
Specialisation	**Computer Science for Management and Modelling**
Unit conducting the module	**Department of Computer Science Technologies**
Module co-ordinator	**Paweł Stąpór, PhD**
Approved by:	**Dariusz Bojczuk, PhD, DSc**

MODULE OVERVIEW

Type of subject / group of subjects	**Specialist subject**
Module status	**Non-compulsory**
Language of conducting classes	**English**
Module placement in the syllabus - semester	**Semester VI**
Initial requirements	**No requirements**
Examination (YES/NO)	**NO**
Number of ECTS credit points	**1**

Method of conducting classes		**Lecture**	**Classes**	**Laboratory**	**Project**	**Other**
Per semester	full-time studies:	**15**				
	part-time studies:	**9**				

TEACHING RESULTS AND THE METHODS OF ASSESSING TEACHING RESULTS

Category	Symbol	Learning outcomes	Assignations to the directional learning outcomes
Knowledge	W01	A student knows the role of computer simulations in engineering analysis and design.	ZIP1_W01
	W02	A student knows the fundamental rules of modelling engineering problems using finite element programs.	ZIP1_W01
Social competences	K01	A student is ready to improve their knowledge and skills in computer simulations.	ZIP1_K01

TEACHING CONTENTS

Method of conducting classes	Teaching contents
Lecture	Basic concepts of the design process. The role of numerical experiments, review of computer methods and commercial software used in the engineering simulations. Physical and mathematical interpretations of Finite Element Method (FEM). FEM in analysis and design, basic FEM terminology, general FEM modeling rules. FEM modelling software. The benefits of Finite Element Analysis (FEA). Getting started with ABAQUS interactive edition: using continuum elements, example of the static stress analysis, modelling steady state heat transfer. From physical model to virtual experiment. 2D and 3D dynamic analysis in ABAQUS/CAE.

METODS OF ASSESSING TEACHING RESULTS

Symbol	Methods of checking the learning outcomes *(select X)*					
	Oral exam	Written exam	Test	Project	Statement	Other
W01					X	
W02					X	
K01						X

FORM AND CONDITIONS OF PASSING

Form of classes	Form of credit	Passing conditions
Lecture	Credit with grade	Obtain a positive assessment of a report on a specific topic.

STUDENT WORKLOAD

<table>
<tr><th colspan="13">Balance of ECTS points</th></tr>
<tr><td rowspan="3">No.</td><td rowspan="3">Type of student's activity</td><td colspan="10">Student's workload</td><td rowspan="3">Unit</td></tr>
<tr><td colspan="5">full-time</td><td colspan="5">part-time</td></tr>
<tr><td>Lc</td><td>C</td><td>Lb</td><td>P</td><td>O</td><td>Lc</td><td>C</td><td>Lb</td><td>P</td><td>O</td></tr>
<tr><td>1.</td><td>Participation in the activities</td><td>15</td><td></td><td></td><td></td><td></td><td>9</td><td></td><td></td><td></td><td></td><td>h</td></tr>
<tr><td>2.</td><td>Other (consultation, exam)</td><td>2</td><td></td><td></td><td></td><td></td><td>2</td><td></td><td></td><td></td><td></td><td>h</td></tr>
<tr><td>3.</td><td>Number of hours of a student's assisted work</td><td colspan="5">17</td><td colspan="5">11</td><td>h</td></tr>
<tr><td>4.</td><td>Number of ECTS credit points which are allocated for assisted work</td><td colspan="5">0,7</td><td colspan="5">0,4</td><td>ECTS</td></tr>
<tr><td>5.</td><td>Number of hours of a student's unassisted work</td><td colspan="5">8</td><td colspan="5">14</td><td>h</td></tr>
<tr><td>6.</td><td>Number of ECTS credit points which a student receives for unassisted work</td><td colspan="5">0,3</td><td colspan="5">0,6</td><td>ECTS</td></tr>
<tr><td>7.</td><td>Work input connected with practical classes</td><td colspan="5">0</td><td colspan="5">0</td><td>h</td></tr>
<tr><td>8.</td><td>Number of ECTS credit points which a student receives for practical classes</td><td colspan="5">0,0</td><td colspan="5">0,0</td><td>ECTS</td></tr>
<tr><td>9.</td><td>Total number of hours of a student's work</td><td colspan="5">25</td><td colspan="5">25</td><td>h</td></tr>
<tr><td>10.</td><td>Punkty ECTS za moduł
1 ECTS=25 hours</td><td colspan="10">1</td><td>ECTS</td></tr>
</table>

LITERATURE

1. *Dassault Systemes Simulia Inc., Abaqus Analysis User's Guide, USA,* 2022.
2. Lee R. (2019), *ABAQUS for Engineers: A Practical Tutorial Book*, Independently published.
3. Reddy J. N. (2019), *An Introduction To The Finite Element Meth*od, 4th Edition, McGraw Hill – International edition.
4. Akai T.J. (1994), *Applied numerical methods for engineers* , John Wiley & Sons, cop., New York.
5. Tizzard A. (1994), *An Introduction to Computer-aided Engineering*, McGraw-Hill.