Course description

Course code	Course	INŻYNIERIA SYSTEMU
MB/O/I/ST/C1B.2		**SYSTEM ENGINEERING**

Language of instruction	English
Academic year	2023/2024

field of study:	Mechanical Engineering
field of specialisation:	CAE
Educational level	first-cycle studies
Education profile	General academic
Mode of study	full-time studies
Semester(s)	6

Affiliation with a group of classes	Specialization module
Course status	eligible

Types of classes, instruction hours, ECTS credits	Types of classes	Number of instruction hours	Number of ECTS credits
	Lecture	15 [h]	2 ECTS
	Classes	-- [h]	
	Project	15 [h]	

Linkage of the course	with the education profile	related to the conducted scientific activity in the discipline to which the field of study is assigned (general academic profile)	2 ECTS
	with qualifications	serves the student to acquire engineering competences	2 ECTS
	with science discipline	Mechanical Engineering	2 ECTS

Form of teaching	Traditional – classes organized at the University /classes conducted using online learning methods and techniques
Prerequisites	knowledge in mathematics, mechanics, strength of materials, FEM

Department	Faculty of Mechanical Engineering
Coordinator	PhD Marcin Wikło
The website of the basic organizational unit	www.wm.uniwersytetradom.pl
E-mail address, phone number of the coordinator	m.wiklo@uthrad.pl, phone 361- 71-16

LEARNING OUTCOMES, CURRICULUM CONTENT, TEACHING CLASSES, VERIFICATION OF LEARNING OUTCOMES

Learning Objective:	C1 - acquisition of knowledge in the field of System engineering. C2 - presentation of ideas, methods and tools allowing for the development of the Model Based System Engineering methodology during the engineer's work
Curriculum Content:	**Lecture content**: General presentation of the components of the Systems Thinking approach: Systems Thinking, Process Models: Systems Engineering and Others, Systems Design **Content of laboratory exercises** Based on the product given as an example, students will pursue the idea of systems modeling. The next steps/stages presented in the lecture will be taken into account.
Didactic (educational) methods:	Lectures Project exercises
Course assessment type, the criteria for assessing the achieved learning outcomes, and the method of calculating the final grade:	Laboratory exercises - Average obtained by the student from grades for: completed tasks 70%, evaluation of work in classes 30% Lecture – Average obtained by the student from grades for completing tasks

Learning outcomes for the course in relation to the field of study learning outcomes and the type of classes				Methods of verifying learning outcomes	
Learning outcome number	Description of the learning outcomes for the course (PEU) A student who has passed the course (**W**) knows and understands / (**U**) can / (**K**) is ready to:	Field of study learning outcome (KEU)	Types of classes	Form of verification (credits)	Methods of testing and assessment
W1	Klasyfikuje poprawnie kroki metody modelowania systemów. Zna możliwości oprogramowanie oraz w podstawowym zakresie potrafi go wykorzystać.	K_WG01, K_WG02, K_WG05, K_WG17	Lecture	Execution of tasks	Evaluation of the correctness of task execution
U1	Potrafi zidentyfikować i dobrać etapy idei inżynierii systemu. Potrafi wykorzystać w podstawowym zakresie oprogramowanie do modelowania systemów mechanicznych.	K_UW08, K_UK16, K_UO19 K_UU21	Laboratory	Passing	Evaluation of the correctness of task execution
K1	Potrafi współpracować i działać w grupie oraz rozumie pozatechniczne aspekty działalności inżyniera-mechanika, w tym wpływ na środowisko. Wykazuje kreatywność w procesie obliczeń. Wykazuje odpowiedzialność związaną z wykonywanymi obliczeniami oraz etyką przedstawiania wyników.	K_KK01, K_KO02, K_KO04, K_KR07	Lecture/Laboratory	Verbal assessment	Verbal assessment

Literature and teaching aids
1.   Systems engineering fundamentals, supplementary text prepared by the defense acquisition university press fort Belvoir, Virginia 22060-5565, 2001
2.   NCOSE - International Council on Systems Engineering, https://www.incose.org/about-systems-engineering
3.   Systems Engineering Handbook, National Aeronautics and Space Administration Page Last Updated: Dec. 17, 2019, https://www.nasa.gov/seh/1-introduction
4.   Haberfellner, R., de Weck, O., Fricke, E., Vössner, S , Systems Engineering: Fundamentals and Applications, Springer 2019

Student workload required to achieve the assumed learning outcomes – the balance of ECTS credits			
	Student workload [h].		
Attendance, participation	Other contact hours (IGK)	Student's self-study hours Classes without a teacher (ZBN)	Classes
Participation in projects	X	X	30[h]
Meeting with teachers during their duty hours	2 [h]	X	X
Preparation for lectures/classes/.... , Preparation for ... credit / exam	X	18[h]	X
Total student workload	2 [h]/ 0.1 ECTS	18 [h]/0.7 ECTS	30[h]/ 1.2 ECTS
ECTS credits for the course	50 [h]/ 2 ECTS		

Additional information, comments
In the case of students with special needs, including disabilities, and chronic illnesses, the methods and forms of verification of learning outcomes specified above (in the syllabus) are adapted to the individual needs of these students, as appropriate.
Detailed rules and forms of support for students with special needs, including those with disabilities and chronically ill, during classes, credits, and exams are specified in: University Regulations (Regulamin Studiów Uniwersytetu Technologiczno-Humanistycznego w Radomiu), Study Regulations (Zasady Studiowania), and Procedure for Ensuring Accessibility of the Educational Process to Students with Special Needs, Including Those with Disabilities and Chronically ill (Procedura dotycząca zapewnienia dostępności procesu kształcenia studentom ze szczególnymi potrzebami, w tym: z niepełnosprawnością, przewlekle chorych).