GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Fundamentals of fluid mechanics, PG_00039952		
Field of study	Management and Production Engineering, Management and Production Engineering		
Date of commencement of studies	October 2020	Academic year of realisation of subject	2021/2022
Education level	first-cycle studies	Subject group	Obligatory subject group in the field of study Subject group related to scientific research in the field of study
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish -
Semester of study	4	ECTS credits	3.0
Learning profile	general academic profile	Assessment form	assessment
Conducting unit	Department of Energy and Industrial Apparatus -> Faculty of Mechanical Engineering and Ship Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Krzysztof Tesch	
	Teachers	dr inż. Marzena Banaszek dr inż. Wojciech Włodarski prof. dr hab. inż. Krzysztof Kosowski	

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	0.0	0.0	30
	E-learning hours included: 0.0						
	Adresy na platformie eNauczanie:						

Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
	Number of study hours	30	5.0	40.0	75

Subject objectives	The objective of the course is to provide basic information about fluid mechanics, which will be useful in the work of an engineer.

Learning outcomes

Course outcome	Subject outcome	Method of verification
K6_U02	The student has the ability to self-educate and expand his specialization knowledge in the field of production engineering	[SU3] Assessment of ability to use knowledge gained from the subject
K6_W04	The student has basic knowledge in the field of automation, robotics and control of production processes, and has elementary knowledge of electrical and electronic applications in the production system, has basic knowledge of thermodynamics and fluid mechanics as well as the selection and design of hydraulic and pneumatic systems	[SW1] Assessment of factual knowledge

<table>
<tr><td>Subject contents</td><td>Lecture:

1. Differential operators
2. Strem lines, trajectories, acceleration
3. Deformation of the fluid element
4. conservation equations
5. Constitutive equations for Newtonian and Newtonian fluids including blood.
6. Governing equations describing fluid motion.
7. Introduction to turbulence modelling

LABORATORY: Flow visualization. Outflow from holes. Measurement of flow rates in open channels and in pipelines. Study of the flow in the aerodynamic tunnel. Modelling of gas flows by hydrodynamic analogy.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td>Mathematics</td></tr>
<tr><td>Assessment methods and criteria</td><td><table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>Exam</td><td>50.0%</td><td>50.0%</td></tr>
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</table></td></tr>
<tr><td>Recommended reading</td><td><table>
<tr><td>Basic literature</td><td>Tesch K., "Mechanika Płynów", Wyd. PG, 2008, 2013</td></tr>
<tr><td>Supplementary literature</td><td>Puzyrewski R., Sawicki J., "Podstawy Mechaniki Płynów i Hydrauliki", PWN, 1998</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
</table></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td>-</td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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