GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Fluid Mechanics, PG_00064124
Field of study	Mechanical and Medical Engineering

Date of commencement of studies	October 2024	Academic year of realisation of subject	2025/2026
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	3	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment

Conducting unit	Zakład Maszyn Przepływowych -> Institute of Energy -> Faculty of Mechanical Engineering and Ship Technology

Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Krzysztof Tesch
	Teachers	

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						

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	2.0	18.0	50

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

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_U04] is able to utilize empirical, analytical, simulation, and computer-based methods to formulate and solve engineering tasks in the field of medical and mechanical engineering	The student is able to use empirical or analytical or simulation or computer methods to formulate and solve engineering tasks in the field of mechanical-medical engineering	[SU3] Assessment of ability to use knowledge gained from the subject
	[K6_U01] is able to acquire knowledge and self-studying, he/she is able to find needed information in specialist books, databases and other sources, he/she is able to integrate information and draw conclusions, he/she is able to communicate by using different technics in work and outside	The student has the ability to self-educate, is able to find the necessary information in the professional literature, databases and other sources, is able to integrate information and formulate conclusions and communicate using various techniques in a professional environment and outside of it	[SU3] Assessment of ability to use knowledge gained from the subject
	[K6_W04] has knowledge in automation and robotics of mechanical systems or electrical and electronic engineering or thermodynamics and fluid mechanics including bioreology	The student has knowledge in automation and robotics of mechanical systems or electrical and electronic engineering or thermodynamics and fluid mechanics including bioreology	[SW1] Assessment of factual knowledge

Subject contents	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 including this blood
	LABORATORY: Flow visualization. Outflow from holes. Measurement of flow rates in open channels and in pipelines. Study of the flow in the aerodynamic tunnel. Modeling of gas flows by hydrodynamic analogy.

Prerequisites and co-requisites	Mathematics

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Exam	50.0%	50.0%
	Exam	50.0%	50.0%

Recommended reading	Basic literature	Tesch K., "Mechanika Płynów", Wyd. PG, 2008, 2013
		Tesch K., "Wybrane Zagadnienia Modelowania Przepływów Krwi...", Wyd. PG, 2012
	Supplementary literature	Bębenek B., "Przepływy w układzie krwionośnym" Wyd. PK, 1999
		Cieślicki K., "Hydrodynamiczne uwarunkowania krążenia mózgowego", Wyd. EXIT, 2001
		Puzyrewski R., Sawicki J., "Podstawy Mechaniki Płynów i Hydrauliki", PWN, 1998
	eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	-

Work placement	Not applicable

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