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 2025	Academic year of realisation of subject	2026/2027
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	Division Of Fluid-Flow Machinery -> Institute Of Energy -> Faculty Of Mechanical Engineering And Ship Technology -> Wydziały Politechniki Gdańskiej		
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_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
[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_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

<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 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.</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>
<tr><td>Exam</td><td>50.0%</td><td>50.0%</td></tr>
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<tr><td>Recommended reading</td><td>
<table>
<tr><td>Basic literature</td><td>Tesch K., "Mechanika Płynów", Wyd. PG, 2008, 2013

Tesch K., "Wybrane Zagadnienia Modelowania Przepływów Krwi...", Wyd. PG, 2012</td></tr>
<tr><td>Supplementary literature</td><td>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</td></tr>
<tr><td>eResources addresses</td><td>Adresy na platformie eNauczanie:</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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