STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Mechanics of Gas and Fluid Flows**		Code **1010631361010632993**
Field of study **Transport**	Profile of study (general academic, practical) **(brak)**	Year /Semester **3 / 6**
Elective path/specialty **Engineering of Pipeline Transport**	Subject offered in: **Polish**	Course (compulsory, elective) **obligatory**
Cycle of study: **First-cycle studies**	Form of study (full-time, part-time) **full-time**	

No. of hours	No. of credits **1**
Lecture: **1** Classes: **1** Laboratory: **-** Project/seminars: **-**	

Status of the course in the study program (Basic, major, other) **(brak)**	(university-wide, from another field) **(brak)**
Education areas and fields of science and art	ECTS distribution (number and %**)**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Students have an understanding of the basics of thermodynamics and fluid mechanics
2	**Skills**	Strict use of terminology concepts of mechanics, thermodynamics.
3	**Social competencies**	Working in an interdisciplinary team. Ability to lead a team and knowledge team.

Assumptions and objectives of the course:

Learning: phenomena in the flow of real fluids incompressible and compressible through various channels geometrically and applied to different tasks in engineering, physical and mathematical description as the basis for calculations

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. Has a structured, theoretically founded knowledge of the mechanics of solids and liquids in classic expression - axioms, statics - flat and spatial arrangement, friction, kinematics of point and rigid body, flat, rotating and spherical motion of a body, dynamics of a point and a rigid body, Newton's equations, conservation laws - [K1A_W04]

Skills:

1. Is able to obtain information from the literature, internet, databases and other sources in Polish and English. Can integrate the information to interpret and learn from them, create and justify opinions. - [K1A_U01]

2. Has the ability to self-educate using modern teaching tools such as remote lectures, webpages and databases, educational software, electronic editions. - [K1A_U06]

Social competencies:

1. Understands the need and knows the possibilities of lifelong learning, knows the need for acquiring new knowledge for professional development. - [K1A_K01]

2. Is aware of and understands the importance and impact of non-technical aspects of mechanical engineering activities and its impact on the environment and responsibility for own decisions in short and long-term aspect. - [K1A_K02]

3. Is able to identify and resolve the dilemmas associated with the profession, among others. problems at the technology/environment level. - [K1A_K06]

Assessment methods of study outcomes

Exam, final test

Course description
The description in the flow of fluids. Similarity number of flows. The equations describing the flow in different channels. The equations of continuity. Energy balance equation. Total pressure losses. Flow through the nozzles under and supersonic. Factors and indicators of the efficiency of movement. Factors and indicators describing the differences in the flow of a perfect fluid and viscous fluid real. Methods and algorithms for computational flows. The similarity of flows? number of similarities flows. Improving the flow in the channels. Ability to solve problems in the flow channels. Algorithms for the calculation.

Basic bibliography:

Additional bibliography:

Result of average student's workload

Activity	Time (working hours)
1. Participation in the lecture	30
2. Consultation	3
3. Preparing to pass	12
4. Exam	3
5. Participation in exercises	15
6. Consolidation of the exercises content	14
7. Consultations	3
8. Preparing to pass	6
9. Final test	3

Student's workload

Source of workload	hours	ECTS
Total workload	89	1
Contact hours	89	1
Practical activities	0	0