

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Fluid Mechanics		Code 1010612221010630432
Field of study Mechanika i budowa maszyn	Profile of study (general academic, practical) general academic	Year /Semester 1 / 2
Elective path/specialty Product engineering (Inżynieria produktu)	Subject offered in: English	Course (compulsory, elective) obligatory
Cycle of study: Second-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: 1 Classes: 1 Laboratory: - Project/seminars: -		No. of credits 2
Status of the course in the study program (Basic, major, other) other		(university-wide, from another field) university-wide
Education areas and fields of science and art technical sciences Technical sciences		ECTS distribution (number and %) 2 100% 2 100%
Responsible for subject / lecturer: dr hab. inż. Piotr Krzyślak, prof. nadzw PP email: piotr.krzyślak@put.poznan.pl tel. +4861 665-2209 Machines and Transport ul. Piotrowo 3, 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Knowledge of mathematics and physics from first cycle studies.
2	Skills	Student can describe the basic physical phenomena, and perform calculations associated with them.
3	Social competencies	Student is able to prioritize solving the tasks. Demonstrates self-reliance in solving problems, acquires and improves his/her knowledge and skills.
Assumptions and objectives of the course: Acquaint students with the theoretical background and applications of fluid mechanics.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. The student has a basic knowledge of technical mechanics of fluids, ie, liquids and perfect gases and fluids, viscous Newtonian and non-Newtonian liquids, theory of thermal flow machines. - [K2A_W06]		
2. The student has a basic knowledge of the methods of measurement of temperature and fluid streams. - [K2A_W13]		
Skills:		
1. Student performs elementary technical calculations in the field of fluid mechanics on min. number of similarities and the reaction of liquid on the walls of the channel (convergent and divergent), channel of axial turbomachine. - [K2A_U07]		
2. Student is able to use mathematical theories to create and analyze simple mathematical models. - [K2A_U17]		
3. Student is able to properly use the equipment for measuring the size of the main physical characteristics such as temperature and pressure. - [K2A_U19]		
Social competencies:		
1. Student is aware of their responsibility for their own work. - [K2A_K03]		
2. Student is aware of the validity of the behavior in a professional manner. - [K2A_K04]		
Assessment methods of study outcomes		

Lecture: Written exam		
Laboratory exercises: Written test		
Course description		
Subject of fluid mechanics. The numbers used to describe similarities: the geometry of the fluid flow, the heat conductivity. Mach, Strouhal, Reynolds, Froude, Euler numbers. The reaction of fluid passing through the confusor, and diffuser, palisade rectilinear profiles. Rayleigh-Stokes equation.		
Basic bibliography:		
1. Ciałkowski M., Mechanika Płynów. Skrypty Uczelniane. Wydawnictwo Politechniki Poznańskiej		
2. Ciałkowski M., Bartoszewicz J., Frąckowiak A., Grudziński M., Grzelczak M., Kołodziej J., Piątkowski R., Rybarczyk J., Wróblewska A., Mechanika płynów: zbiór zadań z rozwiązaniami, Wydawnictwo Politechniki Poznańskiej, Poznań 2008		
3. Prosnak W.J. Mechanika Płynów, t. I. PWN Warszawa 1971		
Additional bibliography:		
Result of average student's workload		
Activity	Time (working hours)	
1. Lecture participation	15	
2. Consolidation of lecture content	3	
3. Preparation for exam	15	
4. Exam participation	20	
5. Preparation for exercises	10	
6. Participation in exercises	15	
7. Consolidation of exercise content	30	
8. Test preparation	5	
9. Test participation	1	
Student's workload		
Source of workload	hours	ECTS
Total workload	70	2
Contact hours	34	1
Practical activities	0	0