

SUBJECT CARD FOR RECRUITMENT 2020-2021							
GENERAL INFORMATION							
1. Name of subject	COMPUTATIONAL FLUID DYNAMICS						
2. Name of the course	Mechanic and Machine Construction						
3. Learning content group	-						
4. Type of object (mandatory, optional)	Optional						
5. Level of study	First degree studies						
6. Number of ECTS credits	1						
7. Subject level (basic, intermediate, advanced)	The basic						
8. Year, semester of study	II year, semester IV – summer						
9. Number of hours per semester	Lect.	Exerc.	Lab.	Proj.	Pbn.	Zp.	Works
	15						
10. Language:	English/Polish						
11. Lecturers(s)	Michał Biały, M.Sc. Eng., m.bialy@dydaktyka.pswbp.pl Rafał Sochaczewski, Ph.D. Eng., r.sochaczewski@dydaktyka.pswbp.pl						
DETAILS							
12. Prerequisites							
1) Course in fluid mechanics.							
13. Objectives							
C1	Familiarising students with the basics of computer fluid mechanics..						
C2	The introduction of basic knowledge on the issues of grid adaptation to the fluid mechanics problem under consideration, grid preparation and its impact on the quality of calculations.						
C3	The introduction students with the principles of conducting and developing the results of numerical calculations.						
14. Learning goals in terms of knowledge, skills and social competences							
A student who has passed the subject:						reference	

	to directional learning outcomes
KNOWLEDGE	
EU01. It has advanced knowledge in designing technological processes of machine elements using computer techniques.	K_W14
SKILLS	
EU02. Can apply thermodynamics to describe physical phenomena and mathematical modelling of heat exchange in technological processes.	K_U21
SOCIALCOMPETENCE	
EU03. Understands the need for continuous learning (e.g. second cycle studies, postgraduate studies, literature studies); can encourage and organise further training for others.	K_K01 K_K02
15. Programme of lecture	
Form of classes - lecture	
1) Introduction to CFDs. 2) Preparation of geometry for simulation. 3) Numerical Grid in CFD analyses. 4) Finite Element Method. 5) Methodology of conducting simulation - stages of analysis - analysis settings, boundary conditions, etc.. 6) Post-processing - analysis of the results obtained, critical assessment of their credibility. 7) Colloquium.	
16. Teaching tools/methods	
1. Lecture with multimedia presentations.	
2. Discussion.	
3. Consultation.	
17. Assessment methods (F – forming; P – summary)	
F1. Discussion during lectures.	
P1. Evaluation based on the colloquium.	
18. Student workload	
form of activity	average number of hours to complete activity
Contact hours with the teacher *	17
Preparation for classes and colloquium	8
TOTAL	25
SUMMARY NUMBER OF ECTS POINTS for the subject	1
19. Basic and supplementary literature	
Basic literature:	
1) Podstawy mechaniki płynów i hydrauliki / Romuald Puzyrewski, Jerzy Sawicki. Wydanie 3 poprawione - 1 dodruk. - Warszawa : Wydawnictwo Naukowe PWN, 2000	
2) Iteracyjne rozwiązywanie zadań z mechaniki płynów / Piotr Gorzelańczyk, Jan Adam Kołodziej. Piła : Państwowa Wyższa Szkoła Zawodowa im. Stanisława Staszica w Pile, 2007	
Supplementary literature:	
1) Mateusz Pawłucki, Maciej Kryś. CFD dla inżynierów. Praktyczne ćwiczenia na przykładzie systemu ANSYS Fluent. Wydawnictwo:mHelion.	
20. Forms of assessment - details	
Conditions for obtaining a pass in the lecture: the classes end with a grade. Elements of the	

semester grade: 90% are the student's knowledge and skills, 10% are social competences / student base.

A method of verifying learning effects in terms of knowledge and skills::

The pass: scores from the colloquium:

Percentage grading scale: 91% - 100% = 5,0

81% - 90% = 4,5

71% - 80% = 4,0

61% - 70% = 3,5

51% - 60% = 3,0

0% - 50% = 2,0

Absence on the colloquium is equivalent to no credit being obtained (2.0). In the case of absence or negative assessment, the student is obliged to pass the colloquium within the correctional period - set by the teacher.

A method of verifying learning outcomes of social competence:

Observation of student's engagement and work during the classes..

21. Other useful information on the subject matter

1. Direct information about the issues and programme content is provided by the tutor duringt he classes and during consultations.
2. Classes will be take place in PSW in Biała Podlaska.
3. The classes will take place according to the current timetable..
4. The consultations will take place in accordance with the timetable of the leader.

* Classes conducted with the direct participation of an academic teacher or other person conducting classes
and consultations