

SUBJECT CARD FOR RECRUITMENT 2020-2021

GENERAL INFORMATION

1. Name of subject Computational Fluid Dynamics

2. Name of the course of study Mechanics and Mechanical Engineering

3. Level of study Part-time first degree studies

4. Number of ECTS credits 1

5. Number of hours per semester

semester	lect.	excer.	lab.	prj.	zp.	works.
V			9			

6. Language english

7. Lecturers Michał Biały, m.sc. eng.

DETAILS

8. Prerequisites

1. Course in fluid mechanics.

9. 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..

10. The introduction students with the principles of conducting and developing the results of numerical calculations.

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

SOCIAL COMPETENCE

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

11. Programme of lecture

Form of classes - lecture

Laboratorium:

- 1) Introduction to CFDs.
- 2) Numerical Grid in CFD analyses.
- 3) Methodology of conducting simulation - stages of analysis - analysis settings, boundary conditions, etc..
- 4) Post-processing - analysis of the results obtained, critical assessment of their credibility.

12. Teaching tools/methods

1. Lecture with multimedia presentations.
2. Computer workstations.
3. Consultation.

13. Assessment methods (forming; summary)

1. Discussion during lectures.
2. Final grade with based on solving the problem using CFD software.

14. Student workload

Form of activity	number of hours
1. Classes with direct participation of the teacher and consultations	11
2. Student workload	14
total	25
summary number of ECTS points	1

15. 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.

16. 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: grade from a correctly solved flow (fluid mechanics) problem using CFD software:

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 classes is equivalent to no credit being obtained (2.0). In the case of absence or negative assessment, the student is obliged to pass the classes 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..

17. Other useful information on the subject matter

1. Direct information about the issues and programme content is provided by the tutor during the classes and during consultations.
2. Classes will be take place in AB 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.

