



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Fluid mechanics [S1Lot1-SLiPL>MP]

Course

Field of study

Aviation

Year/Semester

2/4

Area of study (specialization)

Aircraft Engines and Airframes

Profile of study

general academic

Level of study

first-cycle

Course offered in

Polish

Form of study

full-time

Requirements

compulsory

Number of hours

Lecture

15

Laboratory classes

0

Other (e.g. online)

0

Tutorials

15

Projects/seminars

0

Number of credit points

3,00

Coordinators

dr inż. Bartosz Ziegler

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Lecturers

Prerequisites

none

Course objective

none

Course-related learning outcomes

none

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

none

Programme content

none

Course topics

1. Continuous medium model.
2. Forces acting on the fluid.
3. Fluid statics.
 - a. Euler's fluid equilibrium equation.
 - b. Pressure of fluid on the walls of solid bodies.
 - c. Pascal's law.
 - d. Archimedes' law.
 - e. Manometric formula.
4. Fluid kinematics.
 - a. Basic theorems of fluid kinematics
 - b. Streamlines. Stream surface. The path of the fluid element.
 - c. Acceleration of the fluid element. Substantial, convective and local derivative.
5. Dynamics of an ideal fluid.
 - a. Bernoulli's equation and its applications.
 - b. Instruments for measuring the mass flow of flowing fluid: Pitot tube, Prandtl probe, Ventouri tube.
 - c. The reaction exerted by the fluid on the canal walls. Angular momentum. Water turbines.
 - d. Fluid flow with losses. Classification of flow losses. Bernouli equation with losses. Hydraulic radius.

Teaching methods

none

Bibliography

none

Breakdown of average student's workload

| | Hours | ECTS |
|---|-------|------|
| Total workload | 0 | 0,00 |
| Classes requiring direct contact with the teacher | 0 | 0,00 |
| Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation) | 0 | 0,00 |