



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Science of mechanics

Course

Field of study

Aviation

Area of study (specialization)

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

1/2

Profile of study

general academic

Course offered in

polish

Requirements

compulsory

Number of hours

Lecture

15

Laboratory classes

0

Other (e.g. online)

0

Tutorials

0

Projects/seminars

0

Number of credit points

1

Lecturers

Responsible for the course/lecturer:

dr inż. Robert Kłosowiak

Responsible for the course/lecturer:

email: robert.klosowiak@put.poznan.pl

tel. 61 665 23 31

Maszyn Roboczych i Transportu

ul. Piotrowo 3; 60-965 Poznań

Prerequisites

basic knowledge of general mechanics, physics, technical drawing. Logical and creative thinking, Internet use and library resources. Understands the need for continuous learning and acquiring new knowledge. Has general knowledge about the construction of machines, in particular energy machines.

Course objective

The role of machines in energy conversion. Machine classification. Characteristic parameters of the machines. Mastering technical vocabulary, understanding the principles of operation of machines and devices.

Course-related learning outcomes

Knowledge



1. has extended and in-depth knowledge of mathematics including algebra, analysis, theory of differential equations, probability, analytical geometry as well as physics covering the basics of classical mechanics, optics, electricity and magnetism, solid state physics, thermodynamics, useful for formulating and solving complex technical tasks related to engineering aeronautical and modeling
2. has detailed knowledge related to selected issues in the field of construction of aircraft propulsion systems and the design of their components as well as their life cycles and principles of technical description
3. has a basic knowledge of the mechanisms and laws governing human behavior and psyche

Skills

1. can solve tasks using basic knowledge of aerodynamics, flight mechanics and flow around a body
2. can analyze objects and technical solutions, can search in catalogs and on manufacturers' websites, ready components of machines and devices, including means and devices, assess their suitability for use in their own technical and organizational projects

Social competences

1. understands that in technology, knowledge and skills very quickly become obsolete

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

written final test

Programme content

Simplified machine design records. Hulls and bearing structures. Propulsion systems. Machine working bodies. Jet, turbine and rocket engines. Turbines, types, the essence of action. Pumps, division, construction, principle of operation. Gyms - division, function of elements. Unconventional energy machines. Heat pumps - operating principle, application.

PART - 66 (THEORY - 11.25 hours)

MODULE 3. BASIC INFORMATION ON ELECTRICITY

3.18 AC motor

Construction, principles of operation and properties of AC synchronous and induction motors, single and polyphase;

Methods of controlling the speed and direction of rotation;

Manufacturing methods of a rotating field capacitor, inductor, shaded and split pole [2]

Teaching methods



lecture

Bibliography

Basic

Gnutek, Z., and W. Kordylewski. "Maszynoznawstwo energetyczne." Oficyna Wyd. PWr, Wrocław (2003).

Jan Kijewski, Andrzej Miller -Maszynoznawstwo

J. Gronowicz - Maszynoznawstwo ogólne

J. Łęgiewicz - Poznaj samochód

Additional

Z. Tomaszewski - Wprowadzenie do techniki

Breakdown of average student's workload

	Hours	ECTS
Total workload	25	1,0
Classes requiring direct contact with the teacher	15	0,5
Student's own work (literature studies, preparation for tests) ¹	20	0,5

¹ delete or add other activities as appropriate