COURSE DESCRIPTION CARD - SYLLABUS

Course name

Problems of hydrodynamic lubrication

Course

Field of study

Design and operation of tramsport

Year/Semester

1/2

Area of study (specialization)

Combustion Engines

Profile of study

general academic

Level of study

Second-cycle studies

Course offered in

polish

Form of study

part-time

Requirements

compulsory

Number of hours

Lecture

18

Laboratory classes

0

Other (e.g. online)

0

Tutorials

9

Projects/seminars

0

Number of credit points

3

Lecturers

Responsible for the course/lecturer:

dr hab. inż. Jarosław Kałużny

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tel. 61-6652049

Wydział Inżynierii Lądowej i Transportu

ul. Piotrowo 3, 60-965 Poznań

Responsible for the course/lecturer:

Prerequisites

Knowledge: Base knowledge in design and function of combustion engines; base knowledge in mechanics of fluids

Competences: Ability to read and understand diagrams, technical scetches etc.

Social competences: Understanding of continuous personal developement; understanding of the impact of engineering products on the human environment.

Course objective

Analysis of the process of piston-cylinder friction. Hydrodynamic theory of lubrication.

Course-related learning outcomes

Knowledge

The student gains extended knowledge in thermodynamics and fluid dynamics.

Skills

The student can design and execute experiments related to the processes and phenomena occuring in machines.

Social competences

The student becomes to be happy to start his activity striving public affairs

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Discussion during the lesson

Mutual or written exam

Programme content

- Parts of the piston-cylinder group: materials, design and function

- Methods for oil film parameter calculation

- Navier-Stockes equation in the application to the cylinder liner and journal bearings

- Nanomaterials in friction and lubrication

Teaching methods

various

Bibliography

Basic

1. Iskra A., Dynamika mechanizmów tłokowych silników spalinowych. Wydawnictwo Politechniki Poznańskiej, Poznań 1995

2. Zima S., Kurbeltriebe. Vieweg GmbH. Braunschweig, Wiesbaden 1999

Additional

Köhler E., Verbrennungsmotoren ? Motormechanik, Vieweg ? ATZ-MTZ-Fachbuch, Braunschweig/Wiesbaden 2002

Breakdown of average student's workload

	Hours	ECTS
Total workload	62	3,0
Classes requiring direct contact with the teacher	27	
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests/exam, project preparation) [1]	35	

[1] delete or add other activities as appropriate