

DESCRIPTION ON THE INDIVIDUAL COURSE UNITS: Sd

course unit title

Thermodynamics

course unit code

Sd

type of course unit (compulsory, optional)

Compulsory

level of course unit (e.g. first, second or third cycle)

First cycle engineering studies, Full-time

year of study

2

semester/trimester when the subject (course unit) is delivered

3, 4

number of ECTS credits allocated

5, 4

name of lecturer(s)

dr inż. Bogdan Pojawa

learning outcomes of the course unit

Acquisition of the theory of balancing energy and the determination of the different types of energy.
Explains the theoretical foundations of phenomena and processes in engines and power equipment.

mode of delivery (face-to-face, distance learning)

Face-to-Face

prerequisites and co-requisites

Basic knowledge of Mathematics and Physics

recommended optional programme components

No recommendations

course contents

LECTURE

Introduction. Temperature. Work and Heat Transfer. First Law of Thermodynamics. First Law Applied to Flow Processes. Second Law of Thermodynamics. Entropy. Available Energy. Availability and Irreversibility. Properties of Pure Substances. Properties of Gases and Gas Mixtures. Thermodynamic Relations, Equilibrium and Stability. Vapour Power Cycles. Gas Power Cycles. Refrigeration Cycles. Psychrometrics. Reactive Systems. Compressible Fluid Flow. Elements of Heat Transfer. Gas Compressors.

TUTORIALS

The aim of the tutorials is to acquire the practical skills of calculate and analyze energy transformations that occur in engines and power equipment.

recommended or required reading

Basic literature

1. Yunus A. Cengel, Michael A. Boles: "Thermodynamics" fifth edition in SI units, McGraw-Hill Higher Education, New York 2006.

Supplementary literature

1. P K Nag: „Engineering thermodynamics" third edition, Mc GrawHill Companies, New York 2005.

planned learning activities and teaching methods

Lecture	Tutorials	Laboratory	Project	Seminar	Sum
45	40	0	0	0	85

assessment methods and criteria

Course passing criteria	Passing threshold	Percentage of the final grade
Written examination	60%	60%
Accounting exercises	60%	40%

language of instruction

polish, english

work placement(s)

Not applicable