

MODULE SPECIFICATION

Module code	
Module title in Polish	Engineering Thermodynamics
Module title in English	Engineering Thermodynamics
Module running from the academic year	2016/2017

A. MODULE IN THE CONTEXT OF THE PROGRAMME OF STUDY

Field of study	Civil Engineering
Level of qualification	First cycle <i>(first cycle, second cycle)</i>
Studies profile	Academic <i>(academic/practical)</i>
Mode of study	Full-time <i>(full-time / part-time)</i>
Specialism	
Organisational unit responsible for module delivery	The Department of Piped Utility Systems The Division of Heating and Ventilation
Module co-ordinator	Łukasz Orman, PhD, Eng.
Approved by	Marek Iwański, Professor

B. MODULE OVERVIEW

Module type	Core module <i>(core/programme-specific/elective HES*)</i>
Module status	Compulsory module <i>(compulsory / non-compulsory)</i>
Language of module delivery	English
Semester in the programme of study in which the module is taught	Semester 4
Semester in the academic year in which the module is taught	Summer semester <i>(winter / summer)</i>
Pre-requisites	None <i>(module code/module title, where appropriate)</i>
Examination required	No <i>(yes / no)</i>
ECTS credits	3

Mode of instruction	lectures	classes	laboratories	project	others
Total hours per semester	15				

* elective HES – elective modules in the Humanities and Economic and Social Sciences

C. LEARNING OUTCOMES AND ASSESSMENT METHODS

Module aims	The aim of the module is to familiarise students with English technical vocabulary concerning thermodynamics as well as basic laws of thermodynamics as regards utilising them to solve simple engineering problems.
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Module outcome code	Module learning outcomes	Mode of instruction (l/c/lab/p/ others)	Corresponding programme outcome code	Corresponding discipline-specific outcome code
W_01	A student knows basic notions as regards thermodynamics, energy forms, and the differences between open and closed system.	l	B_W01	T1A_W01 T1A_W02
W_02	A student knows zeroth principle of thermodynamics, the properties of simple substances and the equations of gas equation of state.	l	B_W01	T1A_W01 T1A_W02
W_03	A student knows the principles of determining energy balance and the operation heat engines.	l	B_W01	T1A_W01 T1A_W02
U_01	A student can obtain information (in English) on thermodynamics from the literature on the subject and other sources.	l	B_U28	T1A_U01 T1A_U03 T1A_U04 T1A_U05 T1A_U06
K_01	A student can formulate conclusions and describe the results of the obtained work.	l	B_K04	T1A_K01 T1A_K07

Module content:

1. Topics to be covered in the lectures

No.	Topics	Module outcome code
1.	Introductory issues. Basic notions: thermodynamics in relations to energy, closed and open system, energy forms, temperature.	W_01 U_01
2.	The zeroth law of thermodynamics.	W_02 U_01
3.	The properties of simple substances: transitions with phase change, thermodynamic tables, and the gas equation of state.	W_02 U_01
4.	Energy balance for the systems of controllable mass and volume.	W_03 U_01 K_01
5.	Heat engines.	W_03 U_01

2. Topics to be covered in the classes
3. Topics to be covered in the laboratories
4. Topics to be covered in the projects

Assessment methods

Module outcome code	Assessment methods <i>(Method of assessment; for module skills – reference to specific project, laboratory and similar tasks)</i>
W_01	A test
W_02	A test
W_03	A test
U_01	A test

C. STUDENT LEARNING ACTIVITIES

ECTS summary		
	Type of learning activity	Study time/ credits
1	Contact hours: participation in lectures	15
2	Contact hours: participation in classes	
3	Contact hours: participation in laboratories	
4	Contact hours: attendance at office hours (2-3 appointments per semester)	5
5	Contact hours: participation in project-based classes	
6	Contact hours: meetings with a project module leader	
7	Contact hours: attendance at an examination	1
8		
9	Number of contact hours	20 <i>(total)</i>
10	Number of ECTS credits for contact hours <i>(1 ECTS credit =25-30 hours of study time)</i>	0.8
11	Private study hours: background reading for lectures	20
12	Private study hours: preparation for classes	
13	Private study hours: preparation for tests	
14	Private study hours: preparation for laboratories	
15	Private study hours: writing reports	
16	Private study hours: preparation for a final test in laboratories	
17	Private study hours: preparation of a project/a design specification	
18	Private study hours: preparation for an examination	35
19		
20	Number of private study hours	55 <i>(total)</i>
21	Number of ECTS credits for private study hours <i>(1 ECTS credit =25-30 hours of study time)</i>	2.2
22	Total study time	75
23	Total ECTS credits for the module <i>(1 ECTS credit =25-30 hours of study time)</i>	3
24	Number of practice-based hours <i>Total practice-based hours</i>	5
25	Number of ECTS credits for practice-based hours <i>(1 ECTS credit =25-30 hours of study time)</i>	0.2