

MODULE DESCRIPTION

Module code	Z-0099z
Module name	Fizyka I
Module name in English	Physics I
Valid from academic year	2016/2017

A. MODULE PLACEMENT IN THE SYLLABUS

Field of study	Management and Production Engineering
Level of education	1st degree <i>(1st degree / 2nd degree)</i>
Studies profile	General <i>(general / practical)</i>
Form and method of conducting classes	Full-time <i>(full-time / part-time)</i>
Specialisation	All
Unit conducting the module	The Department of Mathematics and Physics
Module co-ordinator	Prof. Andrzej Okniński, PhD hab.
Approved by:	

B. MODULE OVERVIEW

Type of subject/group of subjects	Basic <i>(basic / major / specialist subject / conjoint / other HES)</i>
Module status	Compulsory <i>(compulsory / non-compulsory)</i>
Language of conducting classes	English
Module placement in the syllabus - semester	1st semester
Subject realisation in the academic year	Winter semester <i>(winter semester/ summer)</i>
Initial requirements	No requirements <i>(module codes / module names)</i>
Examination	No <i>(yes / no)</i>
Number of ECTS credit points	3

Method of conducting classes	Lecture	Classes	Laboratory	Project	Other
Per semester	15	15			

C. TEACHING RESULTS AND THE METHODS OF ASSESSING TEACHING RESULTS

Module target	The aim of the module is to acquaint students with electric charges and currents and their properties as well as with electric and magnetic fields. Another aim is to provide and explain, within vector formalism, the fundamental laws governing the behaviour of electromagnetic fields.
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Effect symbol	Teaching results	Teaching methods (l/c/lab/p/other)	Reference to subject effects	Reference to effects of a field of study
W_01	A student has knowledge of electric charge, charge conservation principle, Coulomb law, electric and magnetic fields as well as knowledge about necessary mathematical methods such as calculus and differential equations.	l/c	K_W02	T1A_W01 T1A_W02 T1A_W07
W_02	A student has knowledge of electric circuits and Ohm law, magnetic properties of metals and understands meaning of their universality.	l/c	K_W02	T1A_W01 T1A_W02 T1A_W07
U_01	A student is able to analyse and describe basic physical phenomena.	c	K_U17	TA1_U09
U_02	A student is able to model basic physical phenomena.	c	K_U17	TA1_U09
U_03	A student is able to compute and compare values of physical quantities of macroworld and microworld.	c	K_U19	TA1_U15
K_01	A student understands the need of permanent follow-up of her/his knowledge of foundations of physics.	l/c	K_K01	TA1_K01

Teaching contents:

1. Teaching contents as regards lectures

Lecture number	Teaching contents	Reference to teaching results for a module
1	Electric charge. Charge conservation principle. Coulomb law.	W_01 K_01
2	Electric field. Electric field strength. Lines of force. The force acting on a point charge in an electric field.	W_01 K_01
3	Electric field. Capacitor. Electric current. Strength of electric current. Conductors and isolators. Resistance. Ohm law.	W_02 K_01
4	Magnetic field and generation of magnetic field. The force acting on a charge moving in magnetic field. Action of a magnetic field on a current carrying conductor. Units of magnetic field. The Biot-Savart law.	W_01 W_02 K_01
5	Magnetic properties of materials. Electromagnetic field.	W_02 K_01
6	Wave motion. Sinusoidal waves. Electromagnetic waves.	W_02 K_01
7	Lght as electromagnetic field. Basic properties of the light.	W_02 K_01
8	Final test.	

2. Teaching contents as regards classes

Class number	Teaching contents	Reference to teaching results for a module
1	Coulomb law.	W_01 U_01 U_02 U_03 K_01
2	Electric field.	W_01 U_01 U_02 U_03 K_01
3	Test #1. Electric current.	W_01 U_01 U_02 U_03 K_01
4	Conductors and isolators. Ohm law.	W_01 U_01 U_02 U_03 K_01
5	Test #2. The Biot-Savart law.	W_01 U_01 U_02 U_03 K_01
6	Electromagnetic field.	W_01 U_01 U_02 U_03 K_01
7	Wave motion and electromagnetic field.	W_01 U_01 U_02 U_03 K_01
8	Test #3.	

3. Teaching contents as regards laboratory classes

Laboratory class number	Teaching contents	Reference to teaching results for a module

4. The characteristics of project assignments

The methods of assessing teaching results

Assessment of classes on the basis of two tests.

Assessment of lectures on the basis of final test.

Effect symbol	Methods of assessing teaching results <i>(assessment method, including skills – reference to a particular project, laboratory assignments, etc.)</i>
W_01	Test during lectures, test during classes.
W_02	Test during lectures, test during classes.
W_03	Test during lectures, test during classes.
U_01	Test and assessment of student's activity during classes.
U_02	Test and assessment of student's activity during classes.
U_03	Test and assessment of student's activity during classes.
U_04	Test and assessment of student's activity during classes.
K_01	Test during lecture, tests during classes, observation of student's activity at lectures and classes.

D. STUDENT'S INPUT

ECTS credit points		
	Type of student's activity	Student's workload
1	Participation in lectures	15
2	Participation in classes	15
3	Participation in laboratories	
4	Participation in tutorials (2-3 times per semester)	$3l+3c=6$
5	Participation in project classes	
6	Project tutorials	
7	Participation in an examination	
8		
9	Number of hours requiring a lecturer's assistance	36 <i>(sum)</i>
10	Number of ECTS credit points which are allocated for assisted work <i>(1 ECTS point=25-30 hours)</i>	1.4
11	Unassisted study of lecture subjects	10
12	Unassisted preparation for classes	15
13	Unassisted preparation for tests	10
14	Unassisted preparation for laboratories	
15	Preparing reports	
15	Preparing for a final laboratory test	
17	Preparing a project or documentation	
18	Preparing for an examination	
19	Preparing for a test at a lecture	10
20	Number of hours of a student's unassisted work	45 <i>(sum)</i>
21	Number of ECTS credit points which a student receives for unassisted work <i>(1 ECTS point=25-30 hours)</i>	1.6
22	Total number of hours of a student's work	81
23	ECTS points per module <i>1 ECTS point=25-30 hours</i>	3
24	Work input connected with practical classes <i>Total number of hours connected with practical classes</i>	43
25	Number of ECTS credit points which a student receives for practical classes <i>(1 ECTS point=25-30 hours)</i>	1.5

E. LITERATURE

Literature list	1. Resnick R., Halliday D., Walker J, Fundamentals of Physics Extended, 10th edition, John Wiley and Sons, Inc., 2011.
Module website	