DOCTORAL SCHOOL OF WROCŁAW UNIVERSITY OF SCIENCE AND TECHNOLOGY

SUPERVISOR/TEAM/ DECLARING/CONDUCTINGCOURSE: Prof. Antoni Mituś
DEPARTMENT: Faculty of Basic Technical Problems W11
SCIENTIFIC DISCIPLINE: Physical Sciences

COURSE CARD

Course name in Polish: Mini-kompendium klasycznej fizyki teoretycznej
Course name in English: Mini-kompendium of Classical Theoretical Physics
Course language English*
University-wide general course type*:
The course is intended for all PhD students: YES / NO
1) ~~BASIC COURSE~~
2) SPECIALIST COURSE
3) ~~SEMINAR~~
4) ~~HUMANISTIC COURSE~~
5) ~~LANGUAGE~~

Subject code: NFQ100241W
* delete as applicable

	Lecture	Foreignlanguagecourse	Seminar	Mixedforms
Number of hours of organized classes in university (ZZU)	30			
Grading	Exam	Exam	Oralpresentation	Exam, inspection, evaluation classes
Number of ECTS points	**0**			

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. Theoretical physics according to technical university study programme
2. Mathematical analysis according to technical university study programme

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COURSE OBJECTIVES
C1 Overview of methodology and basic concepts and formulas in physics based on Landau Lifshitz course of theoretical physics
C2 Solving typical problems from Landau Lisfhitz course of theoretical physics

PROGRAM CONTENTS

Form of classes – lecture (Lec)		Number of hours
Lec1	Mechanics: principle of least action, symmetries and conservation laws, Hamilton and Hamilton-Jacobi equations. Integrating equations of motion, small oscillations, dynamics of a rigid body (Euler's equations).	6

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Lec2	Electrodynamics: charge in electromagnetic field. Equations of electromagnetic field. Constant electromagnetic field. Electromagnetic waves. Electromagnetic radiation.	6
Lec3	Statistical physics: thermodynamics, Gibbs distribution, Fermi and Bose distributions. Solids. Fluctuations. Phase transitions.	6
Lect4	Theory of elasticity: elastic deformations, Hooke's law, equilibrium of isotropic bodies, elastic waves, dislocations, thermodynamics.	3
Lect5	Hydrodynamics: continuity equation, Euler's equation, Bernouli and Navier-Stokes equations, heat transport.	3
Lect6	Electrodynamics of continuous media: electrostatics of conductors and dielectrics. Constant magnetic field. Electromagnetic waves and their propagation.	6
	Total hours:	**30**

TEACHING TOOLS USED
N1. Lecture N2. Active discussion during the lecture

ACHIEVED SUBJECT LEARNING OUTCOMES		
Type of learning outcome	Code of learning outcome	Assessment of learning outcome
Knowledge Basic concepts and formulas in physics based on Landau Lifshitz course of theoretical physics	**P8S_WG**	Oral and written examination, discussion during the lecture
Knowledge Methodology of lectures of theoretical physics based on Landau Lifshitz course of theoretical physics	**P8S_WG**	Oral and written examination, discussion during the lecture
Skills Schemes of derivation of basic laws in theoretical physics	**P8S_UW**	Oral and written examination, discussion during the lecture
Skills Solving typical problems from Landau Lifshitz course of theoretical physics	**P8S_UW**	Oral and written examination, discussion during the lecture
Social competence	**P8U_K**	Discussion during the lecture

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Awareness of social role of a scientist		

PRIMARY AND SECONDARY LITERATURE
PRIMARY LITERATURE: [1]   L.D. Landau, E.M Lifszyc, Mechanika, PWN, 2014 [2]   L.D. Landau, E.M Lifszyc, Teoria pola, PWN, 2011 [3]   L.D. Landau, E.M Lifszyc, Fizyka statystyczna część 1, PWN, 2011 [4]   L.D. Landau, E.M Lifszyc, Teoria Sprężystości, PWN, 2011 [5]   L.D. Landau, E.M Lifszyc, Hydrodynamika, PWN, 2011 [6]   L.D. Landau, E.M Lifszyc, Elektrodynamika ośrodków ciągłych, PWN, 2011
SUBJECT SUPERVISOR(NAME AND SURNAME, E-MAIL ADDRESS)
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