COURSE OFFERED

Name of the	Polish	Fizyka statystyczna					
course	English	Statistical Physcs					

1. LOCATION OF THE COURSE OF STUDY WITHIN THE EDUCATION SYSTEM

1.1. Section ¹	Section of Exact and Natural Sciences
1.2. Discipline ²	Physical Sciences
1.3. Type of education	Stationary
1.4. Level of education	PhD School/ 3 year
1.5. Person preparing the course	Francesco Giacosa
description	
1.6. Contact	fgiacosa@ujk.edu.pl

2. GENERAL CHARACTERISTICS OF THE COURSE OF STUDY

2.1. Type of course ³	specialized subjects in the discipline
2.2. Language of the course	English

3. DETAILED CHARACTERISTICS OF THE COURSE OF STUDY

3.1. Type of classes ⁴		Lecture				
3.2. The numbe	r of hours ⁵	15				
3.3. Location of	classes	UJK, WNSiP				
3.4. Type of ass	essment	pass with grade				
3.5. Didactic me	ethods	Oral lectures, problem solving				
3.6. Literature	basic	K. Huang, statistical mechanics.				
	supplementary	E. Fermi, Thermodynamics				

4. OBJECTIVES, SYLLABUS CONTENT AND INTENDEND LEARNING OUTCOMES

4.1. Course objectives (including the form of classes)

Description of the basic features and formalism of classical and quantum gases.

Understanding the tools related to statistical physics.

Developing skills to solve exercises

Syllabus content

- 1. Recall of thermodynamics of a classical gas from a statistical point of view: binomial distribution, entropy, velocity distribution.
- 2. Ensembles. Microcanonical, Canonical, grand canonical.
- 3. Time arrow. What does Entropy tells us?
- 4. Indistinguishable particles: gas of bosons.
- 5. Condensation of a Bose gas at low temperature.

¹ Section of Humanities:, Social Sciences, Section of Exact and Natural Sciences, Section of Medical and Health Sciences, Section of Arts.

² History, Linguistics, Literary Studies, Medical Sciences, Health Sciences, Political and Administrative Sciences, Legal Sciences, Security Sciences, Pedagogy, Communication and Media Studies, Management and Quality Studies, Biological Sciences, Chemical Sciences, Physical Sciences, Earth and related Environmental Sciences, Visual Arts and Artwork Conservation, Musical Arts.

³ General courses, domain specific subjects in the section, disciplinary subjects in the sections, specialized subjects in the discipline.

⁴ Classes, lecture, seminar.

⁵ Consistent with the education program at the Doctoral School Jan Kochanowski University in Kielce.

- 6. Indistinguishable particles: gas of fermions.
- 7. Neutron stars as an example of a Fermi gas.

5. SUBJECT LEARNING OUTCOMES

Learning outcomes	A doctoral student who has passed the subject:	Reference to the learning outcomes of Doctoral School (according to the training program at the Doctoral School)								
in the area of KNOWLEDGE:										
W01	The doctoral student has advanced knowledge of development trends in disciplines related to the research theme being pursued									
	in the area of SKILLS:									
U01	The doctoral student is capable of utilizing knowledge from various disciplines to identify, formulate, and creatively solve complex problems or undertake research tasks.	SD_U03								
	in the area of SOCIAL COMPETENCE:									
K01	The doctoral student can independently conduct scientific research activities, adhering to the principles of public ownership of research results outcomes and ensuring intellectual property protection.	SD_K04								

6. METHODS OF ASSESSMENT OF THE INTENDED LEARNING OUTCOMES

							M	ETH	OD	OF A	ASSE	SSN	/IEN	T (+	/-)						
SUBJECT	Oral/writte n exam		•	Test			Project		activity in class		Own work		Group work		Others						
LEARNING OUTCOMES		e ty of lasse	-	The type of classes		The type of classes		The type of classes		The type of classes		The type of classes		The type of classes							
	L	Ε	S	L	Ε	S	L	Ε	S	L	Ε	S	L	Ε	S	L	Ε	S	L	Ε	S
W01				Х																	
U01				Х																	
K01				X																	

7. CRITERIA OF ASSESSMENT OF THE INTENDED LEARNING OUTCOMES

Form of classes	Grade	Criterion of assessment
9	3,0	51-60% correct exercises with test
(L)	3,5	61-70% correct exercises with test
re	4,0	71-80% correct exercises with test
Lecture	4,5	81-90% correct exercises with test
Ľ	5,0	91-100% correct exercises with test

Accepted for execution		

⁶ Niepotrzebne usunąć.