

COURSE INFORMATION					
Course Title	Code	Semester	L+P Hour	Credits	ECTS
STATISTICAL PHYSICS & THERMODYNAMICS	PHYS541	1	3 + 0+0	3	10

Prerequisites	
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Language of Instruction	English
Course Level	Postgraduate
Course Type	Compulsory
Course Coordinator	Prof. Dr. Necdet Aslan
Instructors	
Assistants	
Goals	
Content	

Learning Outcomes	Teaching Methods	Assessment Methods
1) Fundamentals of statistics	1,2	A,B,C
2) Fundamentals of thermodynamics	1,2	A,B,C
3) Quantum statistics	1,2	A,B,C
4) Kinetic theory of gases	1,2	A,B,C
5) Magnetism and properties	1,2	A,B,C
6) Thermodynamics cycles	1,2	A,B,C

Teaching Methods:	1: Lecture, 2: Question-Answer
Assessment Methods:	A: Testing, B:Course project, C: Homework

COURSE CONTENT		
Week	Topics	Study Materials
1	INTRODUCTION	
2	DISTRIBUTION FUNCTIONS	Distributions
3	INTERACTION AMONGST MACROSCOPIC SYSTEMS	Partition function
4	THERMODYNAMICS LAWS	0. law
5	APPLICATIONS OF THERMODYNAMICS	1. & 2. law
6	STATISTICAL THERMODYNAMICS	
7	APPLICATIONS OF STATISTICAL THERMODYNAMICS	
8	ADVANCED QUANTUM STATISTICS	Microscopic systems
9	ADVANCED MAGNETISM APPLICATIONS	
10	FERRO-PARA-DIA MAGNETISM DEFINITIONS	magnetism
11	ADVANCED GASES KINETIC THEORY	gases
12	FUNDAMENTALS OF PLASMA PHYSICS	plasma
13	THERMODYNAMICS CYCLES	
14	THERMODYNAMICS CYCLES APPLICATIONS AND TECHNOLOGY	

RECOMMENDED SOURCES	
Textbook	Introduction to Plasma Physics and Controlled Fusion
Additional Resources	

MATERIAL SHARING	
Documents	
Assignments	10 homeworks
Exams	1 midterm, 1 final

ASSESSMENT		
IN-TERM STUDIES	NUMBER	PERCENTAGE
Mid-term	1	30
Homework	2	20
Final	1	50
Total		100
CONTRIBUTION OF FINAL EXAMINATION TO OVERALL GRADE		50
CONTRIBUTION OF IN-TERM STUDIES TO OVERALL GRADE		50
Total		100

COURSE CATEGORY	Expertise/Field Courses
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COURSE'S CONTRIBUTION TO PROGRAM						
No	Program Learning Outcomes	Contribution				
		1	2	3	4	5
1	Gets a sound base for the main fields of physics such as Classical Mechanics, Quantum Mechanics and Electromagnetism,					X
2	Gets the ability of interpreting, analysing, forming a synthesis and relationships between the main fields of physics and/or other sciences,					X
3	Obtains the education required for the measurements in scientific and technological areas and the contribution of physics in the industrial applications and on the macroscopic scale such as the society,				X	
4	Follows the up-to-date scientific developments, makes the analysis/synthesis for the new ideas and evaluates them,				X	
5	Uses the academic sources, the computer technology and the related devices,		X			
6	Joins the working and research groups, also the scientific meetings, communicates well at the national and international level,		X			
7	Gets the ability of creative and critical thinking, problem solving, researching, producing a new and original work, improving himself/herself in his/her own fields of interest,					X
8	Gains the concepts of ethics and responsibility. Undertakes the responsibility for the solutions to the problems related with his/her field as required for having an intellectual identity.		X			

ECTS ALLOCATED BASED ON STUDENT WORKLOAD BY THE COURSE DESCRIPTION			
Activities	Quantity	Duration (Hour)	Total Workload (Hour)
Course Duration (Excluding the exam week: 14x Total course hours)	14	3	48
Hours for off-the-classroom study (Pre-study, practice)	14	12	168
Mid-terms	1	3	3
Assignment	2	12	24
Final examination	1	3	3
Total Work Load			246
Total Work Load / 25 (h)			9.84
ECTS Credit of the Course			10