MATERIAL PHYSICS

1	Course Title:	MATERIAL PHYSICS	
2	Course Code:	FZK4211	
3	Type of Course:	Optional	
4	Level of Course:	First Cycle	
5	Year of Study:	4	
6	Semester:	7	
7	ECTS Credits Allocated:	6.00	
8	Theoretical (hour/week):	3.00	
9	Practice (hour/week):	0.00	
10	Laboratory (hour/week):	0	
11	Prerequisites:	Fundamental Physics, Chemistry, Electricity and Magnetism, Quantum Mechanics	
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Prof. Dr. Mürsel Alper	
15	Course Lecturers:	Yrd. Doç. Dr. Mürşide ŞAFAK HACİİSMAİLOĞLU	
16	Contact information of the Course Coordinator:	Prof. Dr. Mürsel ALPER malper@uludag.edu.tr, (0224) 29 41 697, UÜ Fen Edebiyat Fakültesi, Fizik Bölümü 16059 Görükle Kampüsü Bursa	
17	Website:		
18	Objective of the Course:	To study the structure and properties of materials, to learn the relationship between their structure and properties, the production, synthesise, characterisations of the materials used in technology and nanotechnology	
19	Contribution of the Course to Professional Development:		
20	Learning Outcomes:		
		1	Classification and structure of Materials, crystal and amorphous material
		2	Solid Solitons, Diffusion, Formation and transformations of Phase, Phase Diagrams
		3	The properties (thermal, electrical, magnetic, optical) of materials
		4	Mechanical properties, Industrial materials, Nanotechnological materials and their production, properties and application areas.
		5	the production, synthesise, characterisations of the materials used in technology and nanotechnology
		6	
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		10	
21	Course Content:		

Course Content:

Week	Theoretical	Practice
1	Introduction to Material Physics,	

2	Crystal and Amorf Materials	
3	Material Defects and its Effects on Material Properties.	
4	Diffraction Techniques and Materials	
5	Solid Solitons, Atomic Diffusion	
6	Phases and Phase Formations	
7	Phase Transformations and Thermal Diagrams	
8	Phase Diagrams	
9	Plot of Phase Diagrams Midterm Exam	
10	Phase Diagrams of Solid Solitons	
11	Phase Diagrams of Alloys	
12	Mechanical Properties of Materials	
13	Electrical, Magnetic and Thermal Properties of Materials	
14	Industrial and Advanced Materials, Developments in Material Physics.	

22	Textbooks, References and/or Other Materials:	1. ALPER, Malzeme Fiziği Ders Notları 2. Kaşif ONARAN, Malzeme Bilimi Bilim Teknik Yayınevi 2000, İstanbul 3. Braithwaite and, G. Weave, Electronical

24. ECTS / WORK LOAD TABLE

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	3.00	42.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	14	6.00	84.00
Homeworks	2	3.00	6.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	1.50	1.50
Others	14	3.00	42.00
Final Exams	1	2.00	2.00
Total Work Load			177.50
Total work load/ 30 hr			5.92
ECTS Credit of the Course			6.00

Midterm Exam	1	40.00
Total	2	100.00

Contribution of Final Exam to Success Grade	60.00
Total	100.00

25	**CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS**															
	PQ1	**PQ2**	**PQ3**	**PQ4**	**PQ5**	**PQ6**	**PQ7**	**PQ8**	**PQ9**	**PQ10**	**PQ11**	**PQ12**	**PQ13**	**PQ14**	**PQ15**	**PQ16**
ÖK1	4	4	0	4	0	4	0	4	0	0	4	4	0	0	0	0
ÖK2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK3	5	5	4	5	4	4	4	0	4	4	4	4	0	0	0	0
ÖK4	4	4	4	5	5	5	0	0	5	0	0	0	0	0	0	0

ÖK5	0	5	0	5	4	4	4	4	5	4	4	4	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications					
Contribution Level:	**1 very low**	**2 low**	**3 Medium**	**4 High**	**5 Very High**