SEMICONDUCTORS PHYSICS

1	Course Title:	SEMICONDUCTORS PHYSICS	
2	Course Code:	FZK4104	
3	Type of Course:	Optional	
4	Level of Course:	First Cycle	
5	Year of Study:	4	
6	Semester:	8	
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:	None	
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Prof. Dr. MUHITDIN AHMETOĞLU	
15	Course Lecturers:	Dr. Öğr. Üy. M. Cüneyt Hacıismailoğlu	
16	Contact information of the Course Coordinator:	afrailov@uludag.edu.tr, 0 224 294 16 99, UÜ Fen Edebiyat Fakültesi, Fizik Bölümü 16059 Görükle Kampüsü Bursa	
17	Website:		
18	Objective of the Course:	Today, the production of semiconductor materials, devices (diode, transistor, photodiode, light emitting diode, laser, solar battery, etc.), microelectronics and optoelectronic circuits, electronic radioelectronics, determine the advances in computer technology. The development of semiconductor physics stems from the needs in practice. Therefore, it is very important to enlighten the information about semiconductor physics to students. To teach students the fundamentals of semiconductor physics such as structural properties of semiconductors, fundamentals of energy band theory, kinetic events in semiconductors, statistics of electrons and spaces, p-n junctions; to teach the working principles of semiconductor devices used in electronic circuits, to update information by following and following the latest developments in related subjects on the internet.	
19	Contribution of the Course to Professional Development:	To be able to analyze semiconductor materials in systems by knowing their properties	
20	Learning Outcomes:		
		1	Knows the basic subjects of Solid State Physics
		2	Knows energy bands of solids
		3	Knows the distribution of charge carriers in semiconductors
		4	Knows the formation and properties of metal-semiconductor and p-n junctios
		5	Learns basic principles of semiconductor devices
		6	
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21	Course Content:		

	Course Content:	
Week	Theoretical	Practice
1	Basic subjects of Solid State Physics	
2	Wave mechanics	
3	Crystals and crystal imperfections	
4	Energy bands in solids	
5	Kinetic phenomena in semiconductors	
6	Statistics of charge carriers in semiconductors	
7	Doped conductivity in semiconductors	
8	Metal-Semiconductor joints	
9	P-n Junctions	
10	Thermoelectric effects in semiconductors	
11	Galvanomagnetic effects in semiconductors	
12	Properties of p-n junction semiconductor assemblies	
13	Optical properties of semiconductors	
14	General review	

22	Textbooks, References and/or Other Materials:	11. C. KİTTEL, Katıhal Fiziğine Giriş, 6 th edition, J.Wiley & Sons,Inc., 1986. 2. R.A. SMITH, Semiconductors, Cambridge University Yarıiletken Fiziği, Mir, Moskova,1977
23	Assessment	

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	5.00	70.00
Homeworks		14	5.00	70.00
Projects		0	0.00	0.00
Field Studies		0	0.00	0.00
Midterm exams		1	0.00	0.00
Others		0	0.00	0.00
Final Exams		1	2.00	2.00
Total Work Load				184.00
Total work load/ 30 hr				6.13
ECTS Credit of the Course				6.00

Total	100.00
Measurement and Evaluation Techniques Used in the Course	Measurement and evaluation is carried out according to the priciples of Bursa Uludag University Associate and Undergraduate Education Regulation.

24	**ECTS / WORK LOAD TABLE**

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	0	0	0	3	3	3	0	4	0	0	0	0	0	0	0	0

ÖK2	0	0	0	3	3	3	0	4	0	0	0	0	0	0	0	0
ÖK3	0	0	0	3	3	3	0	4	0	0	0	0	0	0	0	0
ÖK4	0	0	0	3	3	3	0	4	0	0	0	0	0	0	0	0
ÖK5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications

Contribution Level:	**1 very low**	**2 low**	**3 Medium**	**4 High**	**5 Very High**