

**AZƏRBAYCAN RESPUBLİKASI ELM VƏ TƏHSİL
NAZİRLİYİ
BAKİ DÖVLƏT UNİVERSİTETİ**

BAKALAVRİAT PİLLƏSİ ÜÇÜN

İXTİSAS- Fizika müəllimliyi

FƏNN – Yarımqeçiricilərin elektron nəzəriyyəsi

Bakı 2024

№	Mövzular	Saatlar		
		Cəmi	Müh.	Lab
		75	30	45
1	Introduction. Classification of substances by electrical conductivity. Elementary and complex semiconductors. Types of chemical bonds.		2	
2	Crystal cage.Reverse crystal cage.		2	
3	Defects in semiconductor materials.Specific defects. Pointed defects		2	
4	There are many defects. Dislocations		2	
5	Effect of dislocations on the physical properties of the crystal. Additives in elemental semiconductors.		2	
6	The Schrödinger equation for a crystal.		2	
7	Adiabatic approximation. One-electron approximation.Weakly bound electron approximation		2	
8	Effective mass and quasi-momentum of an electron in a crystal		2	
9	Differentiation of metals, semiconductors and dielectrics based on the model of zones		2	
10	Statistics of electrons and holes in equilibrium. Density of quantum states		2	
11	Fermi-Dirac distribution function.Concentration of electrons and holes.		2	
12	The equation of electrical neutrality of crystals. Temperature dependence of the Fermi level		2	
13	Scattering mechanism. Scattering from ionized dopant centers.		2	
14	Scattering from neutral additive centers.Scattering from dislocations		2	
15	Scattering from thermal oscillations (acoustic phonons) of the crystal.Scattering from optical phonons (in ionic crystals).General case.		2	
	Laboratoriya işləri			
1	Determination of the type of conductivity in a semiconductor			4
2	Study of the temperature dependence of the specific resistance of semiconductors			5
3	Determination of the concentration of charge carriers by the Hall effect method			4
4	Study of the temperature dependence of the Hall coefficient			5

5	Study of VAX of p-n junction			4
6	Study of VFX of p-n junction			5
7	Determination of absorption coefficient in a substance			4
8	Study of the spectrum of the emission coefficient in a thin film			5
9	Measurement of photocurrent to stationary mode			4
10	Study of photocurrent kinetics			5