Course Name/Kode: **ILT 507 ELECTRICAL AND MAGNETIC PROPERTIES OF MATERIALS**	ADVANCED TECHNOLOGIES

Semester	Teaching and Learning Methods							Credit	
	Theory	App.	Lab.	Project	Homework	Other	Total	Credit	ECTS Credit
1-2	42				100	46	188	**3**	**7.5**

Language	Turkish
Compulsory/ Elective	Elective
Prerequisites	None
Course Content	Structure of Matter; Atomic Structure, Interatomic Bonds and Crystal Structures. Electrical Conductivity. Energy Bands; Kronnig-Penney Model. Properties of Semiconductor. Ferromagnetism and Diamagnetism. Magnetic Domains, Magnetization Prosess and Hysteresis. Soft/Hard Magnetic Materials. Dielectric Properties; Ferroelectricity, Spontenous Polarization, Type of Polarization, Piezoelectricity. Pyroelectricity.
Course Objectives	The objectives of course shall be to enable students to: • to understand electrıcal and magnetic properties of materials, • to understand fundamental mechanisms which can ocur as electric and magnetic fields are applied to materials.
Learning outcomes and competences	• Ability to use technical /modern materials to be required in her/his Works, • Ability to present oral and written forms in her/his field, • Ability to work on interdisiplinary studies, • Ability to rapidly distinguish the true an required knowledge, • Ability to do analyze of results.
Textbook and /or References	• William D. Callister, Jr. Materials Science and Enginnering An Introduction. John Wiley&Sons, Inc; ISBN-13:978-0-471-73696-7; 7 th edition. • Kaşif Onaran, Malzeme Bilimi, Bilim Teknik Yayınevi 10. Baskı.

Assessment Criteria		**If any, mark as (X)**	**Percentage (%)**
	Midterm Exams	X	30
	Quizzes		
	Homeworks	X	
	Projects		
	Term paper	X	20
	Laboratory Work		
	Other		10
	Final Exam	X	40

Prepared by	Doç. Dr. Elif ORHAN
Week	**Subject**
1	Atomic Structure, Interatomic Bonds
2	Crystal Structures
3	Electrical Conductivity
4	Energy Bands; Kronnig-Penney Model.
5	Properties of semiconductors
6	Properties of semiconductors
7	Midterm Exam
8	Ferromagnetism
9	Diamagnetism
10	Magnetic Domains, Magnetization Process and Hysteresis
11	Soft/Hard Magnetic Materials
12	Dielectric Properties; Ferroelectricity
13	Spontenous Polarization, Type of Polarization

14	Piezoelectricity, Pyroelectricity