Course Name/Kode: **PHASE TRANSITIONS ILT 523**					ADVANCED TECHNOLOGIES				
Semester	Teaching and Learning Methods							Credit	
	Theory	App.	Lab.	Project	Homework	Other	Total	Credit	ECTS Credit
1-2	42				30	76	188	**3**	**7.5**
Language	Turkish								
Compulsory/ Elective	Elective								
Prerequisites	None								
Course Content	The fundamental concept of thermodynamic in the phase transitions. Critical exponents and relations. Inequalities. Classification of phase transitions. Van der Waals theory in liquid-gas transitions. Phases and growth of phases, nucleation. Phase transitions in quantum systems. Magnetic phase transitions. Phase transitions in alloys. Phase trasnitions in liquid-Helium.								
Course Objectives	To learn the basic phenomena of phase transitions and related theoretical concepts, illustrate the various systems for common in nature and a remarkable phase structures and phase transitions.								
Learning outcomes and competences	To distinguish quickly the correct and necessary information, do interdisciplinary work, gain knowledge about current issues and gain the ability to provide oral and written exercises.								
Textbook and /or References	1. H. E. Stanley, "Introduction to Phase Transition and Critical Phenomena", Oxford University Press (1971) 2. A. Laviz and G. M. Bell "Statistical Mechanics of Lattice Systems", Vol:I-II, D., Springer-Verlag (1999) 3. L. H. Van Vlack , "Elements of Materials Science and Engineering", Addison-Wesley Publishing Company, Sixth Edition (1994) 4. B. Linder, "Thermodynamics and introductory statistical mechanics", Wiley-Interscience (2004)								

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

Prepared by	Assist. Prof. Nurgül SEFEROĞLU
Week	**Subject**
1	Thermodynamic and basic concepts
2	Phase transitions
3	Critical exponents and relations
4	Inequalities
5	Classification of phase transitions
6	Second order phase transitions
7	First order phase transitions
8	Phases and growth of phases
9	Nucleation
10	Van der Waals theory in liquid-gas transitions
11	Magnetic phase transitions
12	Phase transitions in quantum systems
13	Phase transitions in alloys
14	Phase trasnitions in liquid-Helium