

MM 487 Plasma Technology				DEPARTMENT OF MECHANICAL ENGINEERING					
Semester	Methods of Education							Credits	
	Lecture	Recit.	Lab.	Project / Field Study	Homework	Other	Total	Credit	ECTS Credit
7	42	0	12	-	14	7	75	3	3.0
Language	Turkish								
Compulsory / Elective	Elective								
Prerequisites	None								
Course Contents	Principles of plasma, properties of gases and plasma, plasma with high and low temperature. Thermodynamic properties of plasma. Plasma formation methods. Application areas of plasma, reforming fuels into plasma, plasma antennas.								
Course Objectives	To support the students feel curious about a current subject, ionization and plasma. To help them learn about plasma phase of the matter and applications of plasma.								
Learning Outcomes and Competences	They will gain knowledge about the formation of plasma and its application at various areas of industry, energy and environmental economy, its importance at space systems and capability of application.								
Textbook and / or Reference	1) Industrial Plasma Technology, Applications from Environmental to Energy Technologies. Edited by Y. Kawai, H. Ikegami, N. Sato, A. Matsuda, K. Uchino, M. Kuzuya, A. Mizuno. Wiley-VCH. 2) Advanced Plasma Technology. Ed. By R. D'Agostino, P. Favia, Y. Kawai, H. Ikegami, N. Sato, F. Arefi-Khonsari. Wiley-VCH. 3) The Physics of Plasmas. T.J. Boyd, J.J. Sanderson. 4) The Physics of Plasmas. R. Fritzpatrick.								
Assessment Criteria						If any, mark as (x)		Percentage (%)	
	Midterm Exams					X		50	
	Quizzes								
	Homeworks					X		10	
	Projects								
	Term Paper								
	Laboratory Work								
	Other								
Final Exam					X		40		
Instructors	Prof. Beycan IBRAHIMOGLU								
Week	Subject								
1	Plasma, the 4 th phase of matter, Principles of plasma								
2	Properties of gases and plasma								
3	Plasma with high and low temperatures								
4	Thermodynamic properties of plasma								
5	Plasma formation methods: electro-arc method								
6	Plasma formation methods: electrochemical method								
7	Plasma formation methods: electromagnetic method								
8	1 ST MIDTERM								
9	Application areas of plasma: cutting, welding								
10	Application areas of plasma: external and internal surface coating								
11	Reformation of fuels into plasma								
12	Plasma antennas								
13	2 ND MIDTERM								
14	Usage of plasma at space systems								