

MM 484 Applications of Solar Energy				DEPARTMENT OF MECHANICAL ENGINEERING					
Semester	Methods of Education							Credits	
	Lecture	Recit.	Lab.	Project / Field Study	Homework	Other	Total	Credit	ECTS Credit
8	42	0	-		23	10	75	3	3.0
Language	Turkish								
Compulsory / Elective	Elective								
Prerequisites	None								
Course Contents	Solar radiation, calculation of solar radiation on horizontal surfaces. Transmission of solar radiation through glass and plastics. Performance and theory of flat plate solar collectors. Concentration collectors. Energy storage, electric power generation using Energy, various applications of solar energy. Heat losses from solar collectors. Conversion of solar energy into electrical energy; solar cells.								
Course Objectives	To give necessary knowledge to the students on solar energy and its applications. The aim of the course is to help the development of the national industry. To help the development of the engineering skills of the students.								
Learning Outcomes and Competences	To give the related theory and practice the students. Learning the usage of the methods for research, design and development in the analysis of the energy transformation at applications of solar energy.								
Textbook and /or Reference	1. Solar Engineering of Thermal Processes, J. Duffie and W. Beckman, John Wiley & Sons, Inc., Second Edition. 2. Solar Energy Engineering, J. S. Hsieh, Prentice-Hall, Inc. 3. Application of Solar Energy, S. T. Wu, D. L. Christensen, UAH Press.								
Assessment Criteria					If any, mark as (x)			Percentage (%)	
	Midterm Exams				X			50	
	Quizzes				X			5	
	Homeworks				X			5	
	Projects								
	Term Paper								
	Laboratory Work								
	Other								
Final Exam				X			40		
Instructors	Assist.Prof. Ibrahim ATILGAN								
Week	Subject								
1	Fundamental concepts, radiation processes and properties.								
2	Solar energy, technology of solar energy and applications.								
3	Solar radiation, emissivity, absorption, reflection and trasmissivity.								
4	Calculation of solar radiation on horizontal surfaces.								
5	Transmission of solar radiation through glass and plastics.								
6	Solar geometry; angles, direct and emitted radiations.								
7	Applications, Midterm Exam 1.								
8	Performance and theory of flat solar collectors.								
9	Concentration collectors.								
10	Energy storage, electric power generation using energy.								
11	Applications of solar energy.								
12	House heating, passive and active systems.								
13	Application, Midterm Exam 2.								
14	Conversion of solar energy into electrical energy; solar cells.								