



T.C. ESKİŞEHİR OSMANGAZI UNIVERSITY
ARCHITECTURE AND ENGINEERING FACULTY
MECHANICAL ENGINEERING DEPARTMENT

COURSE INFORMATION FORM

SEMESTER	Spring
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COURSE CODE	151818425/151838425	COURSE NAME	Solar Energy
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SEMESTER	WEEKLY COURSE PERIOD			COURSE OF			
	Theory	Practice	Laboratory	Credit	ECTS	TYPE	LANGUAG E
8	3	0	0	3	5	COMPULSORY () ELECTIVE (X)	Turkish
COURSE CATAGORY							
Basic Science	Basic Engineering	Mechanical Engineering Subjects [if it contains considerable design, mark with (√)]				Social Science	
		()					
ASSESSMENT CRITERIA							
MID-TERM		Evaluation Type		Quantity		%	
		Mid-Term		1		40	
		Quiz					
		Homework					
		Project					
		Report					
		Others (.....)					
FINAL EXAM				1		60	
PREREQUIEITE(S)							
COURSE DESCRIPTION		Solar Energy and Formation, Solar Radiation Calculation Methods, Use Technologies of Solar Energy, Solar Energy Uses Area					
COURSE OBJECTIVES		Understanding Solar Energy in Renewable Energy Sources, Ability to Solar Radiation Calculate Modeling, Have knowledge Areas of Solar Energy and Related that Solution Methods					
ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION		Students have knowledge awareness about renewable energy sources and Solar Energy Heat and Power Applications					
COURSE OUTCOMES		Make basic calculations related to solar energy and solar radiation, have knowledge about thermal and electrical applications in Solar Energy Applications and having knowledge of select system					
TEXTBOOK		Duffie J.A., Beckman, W.A., Solar Engineering of Thermal Proses, John Wiley & Sons,					
OTHER REFERENCES		Güneş Enerjisi, A. Kılıç ve A. Öztürk, Kipaş Dağıtımçılık, 1983, İstanbul. 1991 Güneş Enerjili Su Isıtma Sistemleri, M. Tırıs, Ç. Tırıs, TUBİTAK Marmara Araştırma Merkezi, 1997.					
TOOLS AND EQUIPMENTS REQUIRED							

COURSE SYLLABUS

WEEK	TOPICS
1	Introduction and Classification of Solar Energy
2	Basic Solar Angles
3	Extraterrestrial Solar Radiation Accounts
4	Instant Solar Radiation On Earth
5	The Average Daily Solar Radiation On Earth
6	Plane Solar Collectors
7	Concentrated and Vacuum Tube Solar Collectors
8	Mid-Term Examination
9	Mid-Term Examination
10	Energy Storage
11	Solar Energy Power Generation
12	Solar Energy Power Generation
13	Solar Cells
14	Other applications of solar energy
15,16	Final Exam

NO	PROGRAM OUTCOMES	3	2	1
1	Sufficient knowledge of engineering subjects related with mathematics, science and Mechanical engineering; an ability to apply theoretical and practical knowledge on solving and modeling of Mechanical engineering problems.		X	
2	Ability to determine, define, formulate and solve complex Mechanical engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods.	X		
3	Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for that purpose an ability to apply modern design methods.	X		
4	Ability to develop, select and use modern methods and tools required for Mechanical engineering applications; ability to effective use of information technologies.	X		
5	In order to investigate Mechanical engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results.	X		
6	Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence.	X		
7	Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language.	X		
8	Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement.		X	
9	Understanding of professional and ethical issues and taking responsibility		X	
10	Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development.			X
11	Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering solutions.			X

1:None. 2:Partially contribution. 3: Completely contribution.

Prepared by: Prof. Dr. Haydar ARAS

Date: 13/11/2017

Signature(s):