



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

COURSE INFORMATION FORM

SEMESTER Spring

COURSE CODE 151818413E/151838413E COURSE NAME Machine Laboratory II

SEMESTER	WEEKLY COURSE PERIOD			COURSE OF			
	Theory	Practice	Laboratory	Credit	ECTS	TYPE	LANGUAGE
8	0	4		2		COMPULSORY (X) ELECTIVE ()	Turkish
COURSE CATAGORY							
Basic Science	Basic Engineering	Mechanical Engineering [if it contains considerable design, mark with (√)]				Socials cience	
x()							
ASSESSMENT CRITERIA							
MID-TERM	Evaluation Type		Quantity		%		
	Mid-Term		1		40		
	Quiz						
	Homework						
	Project						
	Report		2		20		
Others (.....)							
FINAL EXAM				1		40	
PREREQUIEITE(S)							
COURSE DESCRIPTION							
Cross-flow heat exchangers, refrigeration, refrigerate cycle, p-h diagram							
COURSE OBJECTIVES							
Students acquire theoretical knowledge about the types of thermodynamics and heat transfer, in order to verify experimental skills improve information using existing experimental setups.							
ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION							
Consolidation of theoretical knowledge about the experimental heat exchangers and refrigeration							
COURSE OUTCOMES							
1. Design and conduct experiments, analyse and interpret the data to achieve the desired results gained. 2. Individual and team work skills gave the executive.							
TEXTBOOK							
Machine tools laboratory lecture notes and experimental Sheet							
OTHER REFERENCES							
Yunus Ali Çengel ve Michael A. Boles, Çeviri Editörü: Ali PINARBAŞI, "TERMODİNAMİK, Mühendislik Yaklaşımıyla", 5. Baskı, İzmir Güven Kitabevi, 2008. F. P. Incropera ve D. P. Dewitt, "Isı ve Kütle Geçişinin Temelleri," Türkçe Çevirisi, Literatür Yayıncılık.							
TOOLS AND EQUIPMENTS REQUIRED							
Experimental Sheet							

COURSE SYLLABUS	
WEEK	TOPICS
1	Parallel-flow heat exchangers
2	Counter-flow heat exchangers
3	Cross-flow heat exchangers
4	Calculation of heat transfer coefficient for single tube heater
5	Calculation of heat transfer coefficient for in-line heaters
6	Refrigeration cycle components
7	Energy balance for refrigeration cycle
8	Mid-Term Examination 2
9	Mid-Term Examination 2
10	Calculation of temperatures and pressures in the cycle
11	Calculation of loss, inlet-outlet power and friction in the cycle
12	P-h diagram
13	Draw p-h diagram for different temperatures and flow rate
14	Draw p-h diagram for different temperatures and flow rate
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:Completelycontribution.				

Prepared by: Prof. Dr. Haydar ARAS

Date: 13/11/2017

Signature(s):