



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

COURSE INFORMATION FORM

SEMESTER	Fall
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COURSE CODE	151817451/151837451	COURSE NAME	Thermal Systems Design
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SEMESTER	WEEKLY COURSE PERIOD			COURSE OF			
	Theory	Practice	Laboratory	Credit	ECTS	TYPE	LANGUAGE
7	3	-	-	3	5	COMPULSORY () ELECTIVE (X)	Turkish
COURSE CATAGORY							
Basic Science		Basic Engineering		Mekhanical Engineering [if it contains considerable design, mark with (√)]			Social Science
				(X)			
ASSESSMENT CRITERIA							
MID-TERM				Evaluation Type		Quantity	%
				1 st Mid-Term			
				Quiz			
				Homework			
				Project		2	20+20
				Report			
				Others (.....)			
FINAL EXAM						1	60
PREREQUIEITE(S)							
COURSE DESCRIPTION				System design concept, reliability in design, environmental effects in design, mass transfer, thermal analysis and design for condenser and heat exchanger, thermal analysis for air conditioning systems, cost analysis and optimization in design.			
COURSE OBJECTIVES				The students is to apply knowledge learned in heat transfer, thermodynamics and fluid mechanics courses to thermal system design problems.			
ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION				Providing the ability to solve heat flow and flow problems			
COURSE OUTCOMES				1- Model development for complex thermal designs 2- Calculation of design and performance parameters for condensers, 3- Design and calculation of performance parameters for heat exchangers 4- Calculation of design parameters for air conditioning systems 5- Awareness of design credibility and environmental impact			
TEXTBOOK				Yogesh Jaluria, “Design and Optimization of Thermal Systems”			
OTHER REFERENCES				Incropera and Dewitt, “Isı ve Kütle Geçişinin Temelleri” Yunus Çengel, “Mühendislik yaklaşımıyla Termodinamik” Bird, Stewart and Lightfoot, “ Transport Phenomena”			
TOOLS AND EQUIPMENTS REQUIRED				Computer and other laboratory facilities			

COURSE SYLLABUS	
WEEK	TOPICS
1	Introduction to thermal system design, Engineering design, Analysis in design, Basic issues in design.
2	Formulation of design problems, modeling of thermal systems, reliability, environmental effects in design,
3	Mass transfer
4	Mass transfer
5	Heat Exchanger Design
6	Heat Exchanger Design
7	Heat Exchanger Design
8	Mid-Term Examination 1
9	
10	Condenser Design
11	Condenser Design
12	Air conditioning systems
13	Optimization, Cost analysis
14	Optimization, Cost analysis
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 constraints 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: Ass. Prof. Özge Altun

Date: 13.11.2017

Signature(s):