



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

COURSE INFORMATION FORM

SEMESTER	Spring
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COURSE CODE	151818629 151838629	COURSE NAME	Computer Aided Thermal System Design II
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SEMESTER	WEEKLY COURSE PERIOD			COURSE OF			
	Theory	Practice	Laboratory	Credit	ECTS	TYPE	LANGUAGE
8	3	0	0	3	5	COMPULSORY () ELECTIVE (X)	Turkish

COURSE CATAGORY

Basic Science	Basic Engineering	Engineering Subjects [if it contains considerable design, mark with (√)]	Social Science
		 (X)	

ASSESSMENT CRITERIA

	Evaluation Type	Quantity	%
MID-TERM	Mid-Term		
	Quiz		
	Homework	3	%25 (%5+%10+%10)
	Project	2	%40 (%20+%20)
	Report		
	Others (.....)		
FINAL EXAM	Project	1	35

PREREQUIEITE(S)	Fluid Mechanics, Heat Transfer, Thermodynamics I and II
COURSE DESCRIPTION	Using numerical modeling of commercial software FLUENT and GAMBIT and execution of design projects using this software, engineering, economics, or various elements of the design of thermal equipment.
COURSE OBJECTIVES	FLUENT software for thermal systems encountered in industrial and process modeling, simulation and optimization of the ability to develop competence, economic parameters and indicators make the investment feasibility study.
ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION	With the help of computer support required by the system and / or thermal equipment design knowledge and skills to perform.
COURSE OUTCOMES	1- Thermal system design planning, formulation and organization, 2-To question, to optimize the existing systems and to simulate, develop and re-design, 3-Design, interpret, and present the designsand to report in writing
TEXTBOOK	Bilgisayar Destekli Isıl Sistemler Tasarımı, Ders Notları, Prof. Dr. Zekeriya ALTAÇ (2003). Örneklerle ANSYS MODELLEME, Ders Notları, Prof. Dr. Zekeriya ALTAÇ (2004).
OTHER REFERENCES	Various Heat Transfer, Thermodynamics, Fluid Mechanics and Thermal Design textbooks
TOOLS AND EQUIPMENTS REQUIRED	Computer lab and datashow

COURSE SYLLABUS

WEEK	TOPICS
1	Fundamentals of Thermal Equipment (boilers, heat exchangers, cooling towers, etc.)
2	Engineering Economics (present value, future value, interest rates, inflation and installation methods)
3	Engineering economy (investment costs, operating costs, feasibility study)
4	Introduction to GAMBIT
5	Introduction to FLUENT
6	Two-dimensional modeling of conduction and convection problems with FLUENT
7	FLUENT software, laminar and turbulent flow modeling
8	Mid-Term Examination
9	Mid-Term Examination
10	Thermal design problems (insulation, convection, heat exchanger, condenser design, etc.)
11	Modeling of 3-D convection problems using the software FLUENT
12	Numerical modeling of thermal equipment design
13	FLUENT software for 3-D transmission systems design
14	FLUENT software for 3-dimensional design of transport systems
15,16	Final Exam

NO	PROGRAM OUTCOMES	3	2	1
1	Sufficient knowledge of engineering subjects related with mathematics, science and own branch; an ability to apply theoretical and practical knowledge on solving and modeling of engineering problems.	[X]	[]	[]
2	Ability to determine, define, formulate and solve complex 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 engineering applications; ability to effective use of information technologies.	[X]	[]	[]
5	In order to investigate 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: Yrd. Doç. Dr. Zerrin SERT

Date: 13.11.2017

Yrd. Doç. Dr. Çisil TİMURALP

Signature(s):