AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Computer Aided Analysis of Thermal Systems								
Course Code	MME510		Couse Level	Second Cycle (Master's Degree)					
ECTS Credit	8	Workload	202 *(Hours)*	Theory	3	Practice	0	Laboratory	0
Objectives of the Course	The course offers the modelling of various types of heat transfer problems, and the solution of these models by employing software packages and programming languages.								
Course Content	Ansys will be learnt and heat systems will be solved by ANSYS								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Discussion, Case Study, Project Based Study, Individual Study, Problem Solving								
Name of Lecturer(s)	Prof. Yunus ÇERÇİ								

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Midterm Examination	1	15
Final Examination	1	60
Quiz	4	15
Assignment	5	5
Term Assignment	1	5

Recommended or Required Reading	
1	Myers, G.E., Analytical Methods in Conduction Heat Transfer, Amcht Publications, 2nd edition, 1998.
2	Moaveni, S., Finite Element Analysis Theory and Application with ANSYS, Prentice Hall, 3rd edition, 2007.
3	Lewis, R. W. Fundamentals of the Finite Element Method for Heat and Fluid Flow, 1st edition, Wiley, 2004.

Week	Weekly Detailed Course Contents	
1	Theoretical	Introduction to heat transfer
2	Theoretical	Finite difference equations in cartesian coordinates
3	Theoretical	Finite difference equations in cartesian coordinates
4	Theoretical	Finite difference equations in cartesian coordinates
5	Theoretical	Computer aided solution of steady heat transfer problems
6	Theoretical	Computer aided solution of steady heat transfer problems
7	Theoretical	Computer aided solution of unsteady heat transfer problems
8	Intermediate Exam	Midterm Exam
9	Theoretical	Computer aided solution of unsteady heat transfer problems
10	Theoretical	Introduction to finite elements in heat transfer problems
11	Theoretical	Solution of one-dimensional steady heat transfer problems
12	Theoretical	Computer aided solution of one-dimensional steady heat transfer problems
13	Theoretical	Solution of two-dimensional steady heat transfer problems
14	Theoretical	Solution of unsteady heat transfer problems
15	Theoretical	Solution of unsteady heat transfer problems
16	Final Exam	Final Exam

Workload Calculation				
Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	4	3	98
Assignment	5	0	4	20
Term Project	1	15	10	25
Quiz	4	4	1	20
Midterm Examination	1	15	2	17

Final Examination	1	20	2	22
			Total Workload (Hours)	202
			[Total Workload (Hours) / 25*] = **ECTS**	8
**25 hour workload is accepted as 1 ECTS*				

Learning Outcomes	
1	Ability to use Ansys for heat systems
2	Ability to design heat transfer systems by using Ansys
3	Ability to do heat transfer analysis with ANSYS
4	Ability to model heat transfer problems
5	Ability to solve heat transfer problems

Programme Outcomes *(Mechanical Engineering Master's Without Thesis)*	
1	To be able to access wide and deep information with scientific researches in the field of Engineering, evaluate, interpret and implement the knowledge gained in his/her field of study
2	To be able to complete and implement “limited or incomplete data” by using the scientific methods
3	To be able to consolidate engineering problems, develop proper method(s) to solve and apply the innovative solutions to them
4	To be able to develop new and original ideas and method(s), to develop new innovative solutions at design of system, component or process
5	To be able to gain comprehensive information on modern techniques, methods and their borders which are being applied to engineering
6	To be able to design and apply analytical, modeling and experimental based research, analyze and interpret the faced complex issues during the design and apply process
7	To be able to gain high level ability to define the required information and data
8	To be able to work in multi-disciplinary teams and to take responsibility to define approaches for complex situations
9	To be able to transfer of the process and results of studies at national and international environments systematic and clear verbal or written
10	To be able to become aware of social, scientific and ethical values guarding adequacy at all professional activities and at the stage of data collection, interpretation, and announcement
11	To be able to become aware of new and developing application of profession and ability to analyze and study on those applications
12	To be able to gain ability to interpret engineering application’s social and environmental dimensions and it’s compliance with the social environment

Contribution of Learning Outcomes to Programme Outcomes *1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High*

	L1	L2	L3	L4	L5
P1	3	3	5	5	4
P2	3	4	4	4	5
P3	4	4	5	5	4
P4	3	3	4	4	3
P5	3	3	3	3	4
P6	4	4	5	3	5
P7	4	4	4	3	4
P8	5	3	3	4	3
P9	4	5	5	5	5
P10	4	5	4	5	4
P11	5	5	5	4	3
P12	3	3	5	5	5