

# HEAT TRANSFER

1	Course Title:	HEAT TRANSFER
2	Course Code:	MAK3005
3	Type of Course:	Compulsory
4	Level of Course:	First Cycle
5	Year of Study:	3
6	Semester:	6
7	ECTS Credits Allocated:	6.00
8	Theoretical (hour/week):	4.00
9	Practice (hour/week):	0.00
10	Laboratory (hour/week):	0
11	Prerequisites:	-
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Doç. Dr. GÖKHAN SEVİLGİN
15	Course Lecturers:	Prof.Dr.Muhsin KILIÇ Prof.Dr.Akın B. ETEMOĞLU Prof.Dr.Abdulvahap YİĞİT
16	Contact information of the Course Coordinator:	e-posta: can@uludag.edu.tr telefon: 0 224 2941957 adres: UÜMMF, Makine Müh. Bölümü
17	Website:	
18	Objective of the Course:	The primary objective of this course is to give students knowledge about heat transfer operations in real-world engineering applications. 1. To train students in understanding of the basic principles of heat transfer applications. 2. To provide knowledge about economical, environmental and ethical effects of heat transfer operations
19	Contribution of the Course to Professional Development:	
20	Learning Outcomes:	
	1	To be informed of heat transfer principles, importance and the application field in engineering.
	2	Knows the heat transfer characteristics of materials and the heat transfer methods.
	3	Solves the steady state conduction heat transfer problems.
	4	Learns the analyzing procedure of heat conduction in transient conditions.
	5	Learns analyze and design techniques of heat convection and its applications.
	6	Learns the calculations and design procedure of heat exchangers.
	7	Learns the relationship between heat transfer and energy efficiency.
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21	Course Content:	

	Course Content:			
Week	Theoretical	Practice		
1	Introduction, course objectives, motivation, application areas of heat transfer			
2	Modes of heat transfer			
3	Finding out the heat conduction equations in cartesian, cylindrical and spherical coordinates, definition of boundary and initial conditions			
4	Steady-state heat conduction, composite systems, internal heat generation systems			
5	Transient heat conduction (lumped systems analysis)			
6	Transient heat conduction in large plane walls, long cylinders and spheres			
7	Heat convection: introduction, derivation of mass, momentum and energy equations. Definition of basic parameters in heat convection			
8	Heat transfer by forced convection on surfaces and its applications			
9	Course Review and Midterm exam			
10	Heat transfer by forced convection in pipes and channels and its applications			
11	Natural convection and applications			
Activites		Number	Duration (hour)	Total Work Load (hour)
Theoretical	criteria	14	3.00	42.00
14	Radiation heat transfer			
Practicals/Labs		0	0.00	0.00
Self study	Textbooks, References and/or Other	1	10.00	10.00
22	Homeworks	7	4.00	28.00
	Projects	1	15.00	15.00
Field Studies		0	0.00	0.00
Midterm exams	Assesment	1	10.00	10.00
23	Others	1	10.00	10.00
Final Exams	R	1	15.00	15.00
Total Work Load				160.00
Quiz		1	10.00	10.00
Total work load/ 30 hr				5.00
ECTS Credit of the Course				6.00
Final Exam	1	60.00		
Total	3	100.00		
Contribution of Term (Year) Learning Activities to Success Grade		40.00		
Contribution of Final Exam to Success Grade		60.00		
Total		100.00		
Measurement and Evaluation Techniques Used in the Course				
24	ECTS / WORK LOAD TABLE			

25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS															
	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ10	PQ11	PQ12	PQ13	PQ14	PQ15	PQ16
ÖK1	3	4	0	0	0	0	0	3	0	0	3	3	0	0	0	0
ÖK2	4	4	4	0	0	0	0	0	0	0	3	3	0	0	0	0
ÖK3	4	4	4	0	0	0	0	0	0	0	3	3	0	0	0	0
ÖK4	4	4	4	0	0	0	0	0	0	0	3	3	0	0	0	0
ÖK5	4	4	4	0	0	0	0	0	0	0	3	3	0	0	0	0
ÖK6	4	4	4	0	0	0	0	0	0	0	3	3	0	0	0	0
ÖK7	3	3	4	0	0	0	0	0	3	0	0	0	0	0	0	0
LO: Learning Objectives    PQ: Program Qualifications																
Contribution Level:	1 very low			2 low			3 Medium			4 High			5 Very High			