

# CONDENSERS AND EVAPORATORS

1	Course Title:	CONDENSERS AND EVAPORATORS
2	Course Code:	MAK5236
3	Type of Course:	Optional
4	Level of Course:	Second Cycle
5	Year of Study:	1
6	Semester:	2
7	ECTS Credits Allocated:	6.00
8	Theoretical (hour/week):	3.00
9	Practice (hour/week):	0.00
10	Laboratory (hour/week):	0
11	Prerequisites:	None
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Prof. Dr. Abdulvahap Yiğit
15	Course Lecturers:	
16	Contact information of the Course Coordinator:	avahap@uludag.edu.tr / 2242941971 / U.Ü. Müh. Mim. Fak. Mak. Müh. Bölümü BURSA
17	Website:	
18	Objective of the Course:	Learn the design of condensers and evaporators
19	Contribution of the Course to Professional Development:	Contribution to academic development
20	Learning Outcomes:	
	1	To learn calculation of Heat Exchanger
	2	Be equipped with calculation of pressure drop and mean convection coefficient
	3	Be equipped with overall heat transfer coefficient
	4	Have the basic knowledge of two-phase flow and condensation
	5	Be equipped with condensers design
	6	Have the basic knowledge boiling and evaporation
	7	Be equipped with evaporators design
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21	Course Content:	
	<b>Course Content:</b>	
Week	Theoretical	Practice
1	Heat Exchangers	
2	Methods of heat exchanger design calculation	
3	Overall heat transfer coefficient	
4	Heat exchanger pressure drop, Forced convection correlations for single-phase flow	

5	Film condensation, Film condensation on the vertical plate	
6	Condensation on a single tube, condensation in tube bundles	
7	Condensation in a vertical tubes	
8	Condensation in horizontal tubes	
9	Repeating courses and midterm exam	
10	Steam power plant condensers, process condensers	
11	Refrigeration and air-conditioning condensers	
12	Boiling and evaporation, pool boiling, forced convection boiling	
13	Evaporator heat exchanger analysis, air side heat transfer	
14	Wet-coil heat transfer, frosted coil heat transfer, Types of evaporators.	
22	Textbooks, References and/or Other Materials:	1. Kakaç, S., Boilers, Evaporators&Condensers, Wiley-Interscience,U.S.A., 1991. 2. Özişik, M.N., Heat Transfer-A Basic Approach,McGraw-Hill, Singapore, 1985. 3. Incropera, F. P. and DeWitt, D. P., Fundamentals of Heat and Mass Transfer, Third ed., Singapore: John Wiley&Sons,1990.
23	Assesment	
<b>TERM LEARNING ACTIVITIES</b>		<b>NUMBE R</b>
Midterm Exam		1
Quiz		0
Home work-project		3
Final Exam		1
Total		5
Contribution of Term (Year) Learning Activities to Success Grade		50.00
Contribution of Final Exam to Success Grade		50.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course		Measurement and evaluation are performed according to the Rules & Regulations of Bursa Uludağ University on Undergraduate Education.
24	<b>ECTS / WORK LOAD TABLE</b>	

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	3.00	42.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	12	6.00	72.00
Homeworks	8	8.00	64.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	1.00	1.00
Others	0	0.00	0.00
Final Exams	1	1.00	1.00
Total Work Load			180.00
Total work load/ 30 hr			6.00
ECTS Credit of the Course			6.00

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	4	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
ÖK2	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK3	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK4	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK5	0	0	4	0	0	0	3	0	0	0	0	0	0	3	0	0
ÖK6	0	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK7	0	0	4	0	0	0	3	0	0	0	0	0	0	3	0	0
LO: Learning Objectives    PQ: Program Qualifications																
Contribution Level:	1 very low		2 low		3 Medium		4 High		5 Very High							