SPECIFICATION AND APPLICATIONS OF COOLING MACHINERY AND HEAD PUMPS

1	Course Title:	SPECIFICATION AND APPLICATIONS OF COOLING MACHINERY AND HEAD PUMPS
2	Course Code:	BSM6013
3	Type of Course:	Optional
4	Level of Course:	Third Cycle
5	Year of Study:	1
6	Semester:	1
7	ECTS Credits Allocated:	5.00
8	Theoretical (hour/week):	3.00
9	Practice (hour/week):	0.00
10	Laboratory (hour/week):	0
11	Prerequisites:	No prerequisites
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Prof. Dr. KAMİL ALİBAŞ
15	Course Lecturers:	Yok
16	Contact information of the Course Coordinator:	e-posta : alibas@uludag.edu.tr Telefon: 0 224 2941601 Adres: Uludağ Üniversitesi, Ziraat Fakültesi, Biyosistem Mühendisliği Bölümü, Görükle Kampüsü, 16059, Nilüfer/BURSA
17	Website:	
18	Objective of the Course:	Refrigeration machines and heat pumps to provide information about the operating principles and applications. These machines provide the ability to solve problems related to
19	Contribution of the Course to Professional Development:	
20	Learning Outcomes:	

	1	Understands the cooling event
	2	Cooling systems and heat pump knows what it is
	3	Learn the operating principles of cooling systems and head pumps
	4	Thermodynamics of refrigeration, heating and cooling coefficients learns what it means to know
	5	Learn the properties of refrigerants. They learn to make the accounts of the heat loads
	6	Learns to recognize all the parts of the detail of compression refrigeration systems
	7	Learns the techniques of cold store design
	8	Cold storage is designed with the ability to
	9	
	10	

21	Course Content:	
	Course Content:	
Week	Theoretical	Practice
1	Introduction of the course and content, history of cooling, basic concepts; Cooling systems	

2	Steam compressed mechanical cooling system; The use of pressure- enthalpy diagram (Molier diagram); Cooling conversion calculations
3	Heat pump conversion calculations; Example problems, real cooling conversion; Cooling circuit heat exchanger system.(over-heating/ over-cooling process)
4	Cooling Systems working at different temperatures with one compressor and 2 or more than 2 steamers and conversion calculations; 2 phase cooling systems and conversion calculations; Systems using two or more cooling fluid and conversion calculations
5	Compressors; Condensators; Evaporators
6	Contraction valves and supporting equipment; Cooling system with absorption; Thermodynamic analysis of cooling system with absorption
7	Thermodynamic analysis of compression refrigeration systems
8	The solution of problems related to the compression refrigeration systems
9	Uses the concept of heat pump and heat pumps in agriculture
10	Uncompressed absorption cooling systems
11	Examination of existing projects for cold
12	Cooling system failures that may occur. Ways to solve them
13	Examination of existing projects for cold
14	Cooling system failures that may occur. Ways to solve them
22	Textbooks, References and/or Other Materials:
23	Assesment

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	10	6.00	60.00
Homeworks	8	5.00	40.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	0	0.00	0.00
Others	0	0.00	0.00
Final Exams	1	40.00	40.00
Total Work Load			182.00
Total work load/ 30 hr			6.07
ECTS Credit of the Course			5.00

- Yamankaradeniz, R., Horuz, I. ve Coşkun, S., Uygulamalı Soğutma Tekniği, Uludağ Üniversitesi, Vipaş, Bursa, 2002.
5. A. K. Dağsöz (1990), Soğutma Tekniği, Isı Pompaları, Ankara.1998
- Y. Özkol (1985), Uygulamalı Soğutma Tekniği, Makine Mühendisleri Odası yayın no.115, Ankara.
Sistemlerine Giriş, Cilt 1, Uludağ Üniversitesi Basımevi.
- O. F. Genceli (2001), Soğutma Tesisatı, Makine
14. O. F. Genceli (1999), Isı Değiştiricileri, Birsen Yayınevi, İstanbul.

TERM LEARNING ACTIVITIES	NUMBER	WEIGHT
Midterm Exam	0	0.00
Quiz	0	0.00
Home work-project	0	0.00
Final Exam	1	100.00
Total	1	100.00
Contribution of Term (Year) Learning Activities to Success Grade		0.00

Contribution of Final Exam to Success Grade	100.00
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	2	2	2	4	1	1	5	2	2	2	4	0	0	0	0
ÖK2	3	2	2	2	4	1	1	5	2	2	2	4	0	0	0	0
ÖK3	3	2	2	3	4	1	1	5	2	2	2	4	0	0	0	0
ÖK4	4	2	2	2	4	1	1	5	2	2	2	4	0	0	0	0
ÖK5	4	2	2	2	4	1	1	5	2	2	2	4	0	0	0	0
ÖK6	4	4	3	3	4	1	1	5	3	3	2	4	0	0	0	0
ÖK7	4	4	3	3	4	1	1	5	3	3	2	4	0	0	0	0
ÖK8	4	3	3	3	4	1	1	5	3	3	2	4	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications

Contribution Level:	**1 very low**	**2 low**	**3 Medium**	**4 High**	**5 Very High**