

SYLLABUS

Code/Name	MCE 310.2 / Refrigeration
Type	Technical Elective
Credit/ECTS	3/5
Hour per Week	3 (3+0+0)
Level/Year	Undergraduate/3
Semester	Spring
Classroom	D204
Content	Vapor compression refrigeration cycle. Compressors, evaporators, condensers, and expansion devices. Refrigerants. Cooling load calculations. Refrigeration and freezing of foods. Gas refrigeration and absorption refrigeration systems. Alternative refrigeration systems. Refrigeration applications and cryogenics.
Prerequisites	NA
Textbooks	Primary I Dinçer, M Kanoğlu, <i>Refrigeration Systems and Applications</i> , 2 nd ed. Wiley, 2010. Supplementary R J Dossat, T J Horan, <i>Principles of Refrigeration</i> , 5th ed. Prentice Hall, 2002.
Objectives	<ul style="list-style-type: none">• To provide an overview of refrigeration systems• To analyze various refrigeration processes• To analyze refrigeration and freezing of foods
Course Outcomes	In this course you will be able to: C01 Illustrate main characteristics of refrigeration equipment C02 Describe principles of refrigeration systems and refrigerants C03 Apply mass and energy balances to various refrigeration processes C04 Assess the parameters of food cooling and freezing C05 Calculate refrigeration loads C06 Calculate energy consumption for refrigeration

Weekly Schedule of Topics

W	Topic
1	Introduction
2	Refrigerants
3	Refrigerants
4	Refrigeration system components
5	Refrigeration system components
6	Vapor-compression refrigeration cycle
7	Vapor-compression refrigeration cycle
8	Gas refrigeration cycle
9	Advanced refrigeration cycles
10	Gas liquefaction and cryogenics
11	Alternative refrigeration systems
12	Refrigeration and freezing of foods
13	Refrigeration and freezing of foods
14	Refrigeration load calculations

Professional ContributionAbility to understand, select, analyze, and improve refrigeration systems

Contribution to Program Outcomes*

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	0	0	0	0	0	0	3	1	0	0	0
CO2	0	0	0	0	0	0	3	1	0	0	0
CO3	5	0	0	0	0	0	0	0	0	4	0
CO4	2	4	0	2	0	0	5	0	0	3	0
CO5	5	2	0	5	5	0	3	3	5	4	3
CO6	5	2	0	5	5	0	3	3	5	4	3

* Contribution Level | 0: None | 1: Very Low | 2: Low | 3: Medium | 4: High | 5: Very High

Special Conditions • Students work in groups for project and presentations.**Requirements** NA

Evaluation	Midterm Exam	40%
	Quizzes	15%
	<u>Final Exam</u>	<u>45%</u>
	Total	100%

Rubric**Course Policy**

1. Students are required to attend at least 70% of the theoretical courses and 80% of the courses with lab/application sessions including add-drop period. Otherwise, you will receive a grade of DZ. Health reports, and other official or nonofficial excuses are not accepted.
2. Be in the class on time. Late attendance may result in grade deductions.
3. English should always be used to communicate in the class.
4. Mobile phones should be switched off and put away during the class.
5. Illegal copies of the textbooks and other illegal course materials cannot be used for the classwork and exams.
6. Exam papers can only be checked within one week of grade announcement.

Cheating & Plagiarism

- Copying or letting someone copy your work on exams, assignments, or reports is cheating.
 - Cutting and pasting text, figures and tables from web sources or any other electronic source is plagiarism.
 - A consequence of academic dishonesty is to receive a grade of FF for the course.
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Instructor

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Prepared by Mehmet Kanoglu