

The University of Jordan
School of Engineering
Chemical Engineering Department
1st Semester – A.Y. 2018/2019

Course: Process Heat Transfer – ChE0905343 (3 Cr. – Required Course)
Instructor: Prof. Y. Khraisha
Office: ChE000, Telephone: 06/5355000 ext 22881, Email: khraisha@ju.edu.jo
Office Hours: Sun Tue Thu 10:00-11:00, Wed 12-13:00
Course website: <http://elearning.ju.edu.jo>
Catalog description: The course is intended to cover the modes of heat transfer, steady-state heat conduction, unsteady-state heat conduction, principles of convection, natural and forced convection, radiation heat transfer, boiling and condensation and design of heat exchangers and heat transfer equipments.
Prerequisites ChE 09052 Fluid Mechanics (pre- or co-requisite)
0935441

Textbook: Incropera F., DeWitt D. , Bergman, Lavine, Fundamentals of Heat and Mass Transfer, 7th edition, John Wiley Son, New York, 2011

References:

1. Heat and Mass Transfer –Fundamentals and applications, 5th ed., Çengel, Y.A. and Afshin J. GhajarMcGraw –Hill, New York, 2014.
2. Holman J P (2008), Heat Transfer, 9th edition, McGraw-Hill, 2008
3. Course Slides.

Schedule: 48 lectures (45 minuets)

Course goals:

1. An ability to understand mechanisms of heat transfer.
2. An ability to derive the heat balance equation in three-dimensional systems.
3. An ability to understand the steady and un-steady state conduction heat transfer.
4. An ability to understand the external and internal heat convections over different geometries.
5. An ability to understand the principles of heat exchange equipments.
6. An ability to understand the principles of boiling and condensation processes.
7. An ability to design unit operations involving heat exchange processes.

Course learning outcomes (CLO) and relation to ABET student outcomes (SO):

Upon successful completion of this course, a student should:

1.	An ability to understand mechanisms of heat transfer	[SO] [1]
2.	An ability to derive the heat balance equation in 3-dimensional systems	[1]
3.	An ability to understand the steady and un-steady state conduction heat transfer	[1]
4.	An ability to understand the external and internal heat convections over different geometries	[1]
5.	An ability to understand the principles of boiling and condensation processes	[1]
6.	An ability to understand the principles of heat exchange equipments	[1]
7.	An ability to design unit operations involving heat exchange processes	[1,2]

Course topics:

1.	Formulate, simplify, and solve heat balance equations in rectangular, cylindrical, and spherical coordinates	Hrs 9
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2.	Solve problems involving steady heat conduction	6
3.	Introduction to un-steady heat conduction	3
4.	Solve problems involving un-steady heat conduction	3
5.	Understanding convective and radiation heat transfer	6
6.	Analyze convective heat transfer for internal and external flows	9
7.	Boiling and condensation	3
8.	Heat transfer in common configurations with applications	3
9.	Design of heat exchange equipment encountered in the chemical process industries	6
10.	Total	48

Ground rules: Attendance is required and strictly enforced. To that end, attendance will be taken every lecture; Absence of more than 5 hours will result in the expulsion of the student from the course.

Assessment &				1
	Assignments	0%	Quizzes	0%
				0
grading policy:	First Exam	25%	Projects	0%
			Lab	0
	Midterm	25%	Work	0%
			Presentation	0
	Final Exam	40%		0%
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Last Revised: October 20, 2018