Kingdom of Saudi Arabia
Ministry of Education
University of Hafr Al Batin

المملكة العربية السعودية
وزارة التعليم
جامعة حفر الباطن

جامعة حفر الباطن
University of Hafr Al Batin
كلية الهندسة

Department of Chemical Engineering

Course Syllabus

Course Code & Number	CHE 300
Course Title	Process Heat Transfer
Credit & Contact Hours	3 Credits; 3 Lectures, 3 Laboratories (3-3-4)
Instructor	Dr. Mohammad Anwar Parvez
Office Location	Room# 2303
Instructor's Office Phone	00966 13 720 5175
Instructor's Email	maparvez@uhb.edu.sa **Homepage link** https://www.uhb.edu.sa/Pages/MemberDetails.aspx?Param=college&Ref=29&Member=440
Prerequisites	CHE 203, CHE 204
Course Description	Modes of heat transfer. Differential equations of energy transport. Steady and transient heat conduction. Free and forced convection in laminar and turbulent flows. Momentum and heat transfer analogies. Boiling and condensation. Radiation heat transfer. Application to the design of process heat transfer equipment. Relevant experiments (Thermal Conductivity, Double Pipe Heat Exchanger, Shell & Tube Heat Exchanger, Convection and Radiation Heat Transfer)
Course Objectives	i. To introduce fundamental concepts of conduction, convection and radiation heat transfer and their applications to engineering problems. ii. To understand and analyze steady and unsteady state heat transfer iii. To understand the principles of heat exchangers design
Required Textbook	Textbook: Cengel, Y. A. Heat and Mass Transfer: A practical Approach, 6th Ed . McGraw-Hill, 2019 Reference book: Holman J.P., Heat Transfer, 10th Ed. McGraw-Hill, 2010.

Grading Scheme

Assessments	Assessments Task	Week due	Proportion of Final Mark (%)
1	Quizzes	fortnightly	10
2	Home-works	fortnightly	10
3	Midterm exam	7	20
4	Lab Reports	Every week	10
5	Lab Midterm	8	10
6	Lab Final	12	10
7	Final exam	13	30

Kingdom of Saudi Arabia
Ministry of Education
University of Hafr Al Batin

المملكة العربية السعودية
وزارة التعليم
جامعة حفر الباطن

جامعة حفر الباطن
University of Hafr Al Batin
كلية الهندسة

Course Learning Outcomes & Mapped So's	➢ Understand the three modes of heat transfer (Conduction, Convection, Radiation) (SO 1) ➢ Calculate the steady and unsteady rates of heat transfer (SO 1) ➢ Calculate the convection heat transfer coefficient for different systems including boiling and condensation (SO 1) ➢ Design different types of heat exchangers (SO 2) ➢ Conduct experiments, analyze and interpret data(SO 6)

Attendance

	Number of unexcused absences			Tot Absences (excused* + unexcused)
	Warning I	Warning II	DN	DN
5 Hours / Week (45 Hours Total)	4 Hours (8%)	8 Hours (17%)	11 Hours (25%)	15 Hours (33%)
Laboratory session	NA	NA	NA	NA

Topics

Weeks	List of Topics
1-2	Introduction
	Steady-State Conduction in One Dimension
	Steady-State Conduction in multiple Dimensions
3	Unsteady-State Conduction
	Principles of Convection
4-7	Empirical and Practical Relations for Forced-Convection Heat Transfer
	Natural Convection Systems
	Condensation and Boiling Heat Transfer
8-11	Heat Exchangers
12	Radiation Heat Transfer