

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	<ul style="list-style-type: none"> 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, 6 th Ed . McGraw-Hill, 2019 Reference book: Holman J.P., Heat Transfer, 10th Ed. McGraw-Hill, 2010.																																		
Grading Scheme	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Assessments</th> <th>Assessments Task</th> <th>Week due</th> <th>Proportion of Final Mark (%)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Quizzes</td> <td>fortnightly</td> <td>10</td> </tr> <tr> <td>2</td> <td>Home-works</td> <td>fortnightly</td> <td>10</td> </tr> <tr> <td>3</td> <td>Midterm exam</td> <td>7</td> <td>20</td> </tr> <tr> <td>4</td> <td>Lab Reports</td> <td>Every week</td> <td>10</td> </tr> <tr> <td>5</td> <td>Lab Midterm</td> <td>8</td> <td>10</td> </tr> <tr> <td>6</td> <td>Lab Final</td> <td>12</td> <td>10</td> </tr> <tr> <td>7</td> <td>Final exam</td> <td>13</td> <td>30</td> </tr> </tbody> </table>			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
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<p>Course Learning Outcomes & Mapped So's</p>	<ul style="list-style-type: none"> ➤ 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) 																			
<p>Attendance</p>	<table border="1"> <thead> <tr> <th rowspan="2"></th> <th colspan="3">Number of unexcused absences</th> <th>Tot Absences (excused* + unexcused)</th> </tr> <tr> <th>Warning I</th> <th>Warning II</th> <th>DN</th> <th>DN</th> </tr> </thead> <tbody> <tr> <td>5 Hours / Week (45 Hours Total)</td> <td>4 Hours (8%)</td> <td>8 Hours (17%)</td> <td>11 Hours (25%)</td> <td>15 Hours (33%)</td> </tr> <tr> <td>Laboratory session</td> <td>NA</td> <td>NA</td> <td>NA</td> <td>NA</td> </tr> </tbody> </table>		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
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