



## Course Specifications

Course Title:	Introduction to Chemical Engineering
Course Code:	111CHET
Program:	Chemical Engineering Technology
Department:	Chemical Engineering Technology
College:	College of Applied Industrial Technology
Institution:	Jazan University

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## A. Course Identification

<b>1. Credit hours:</b>
<b>2. Course type</b>
a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
<b>3. Level/year at which this course is offered:</b> third level/2 <sup>nd</sup> year
<b>4. Prerequisites for this course (if any):</b>
<b>5. Co-requisites for this course (if any):</b> --

### 6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	30	100
2	Blended		
3	E-learning		
4	Distance learning		
5	Other		

### 7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	45
3	Tutorial	
4	Others (specify)	
	<b>Total</b>	<b>75</b>

## B. Course Objectives and Learning Outcomes

### 1. Course Description

This course is an introductory course dealing with the fundamental calculations and processing technology employed in the chemical process industry. The calculations cover basic physical and chemical concepts, stoichiometry of chemical reactions, mixtures of fluids and combustion of fuels, in addition to simple material and energy balance concepts applied to process units. Typical chemical processing industries are also dealt with. Laboratory sessions are mainly devoted to formal calculations consolidating the principles and concepts outlined with some experimental exercises where appropriate.

## 2. Course Main Objective

The objectives of this course are: (1) Providing students with an opportunity to identify different types of chemical engineering instruments in their respective laboratories. (2) Provide principles and operating conditions of the Chemical Instruments among others, introduce students to the practical use of Chemical Instruments for chemical technology.

## 3. Course Learning Outcomes

K <sub>1</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>		V <sub>1</sub>	V <sub>2</sub>	
P	P	P		P		I	P	
2	2	2	NA	2		1	2	

CLOs		Aligned PLOs
1	<b>Knowledge and Understanding</b>	
1.1	Identify chemical engineering knowledge requirements, industry standards, and best practice in chemical work settings;	K <sub>1.3</sub>
1.2		
1.3		
1...		
2	<b>Skills :</b>	
2.1	Utilize modern chemical engineering instruments in a chemical process;	S <sub>1.2</sub>
2.2	Calculate parameters in material balances and chemical processes around simple systems;	S <sub>2.1</sub>
2.3	Identify the strategies needed to solve chemical engineering stoichiometry problems;	S <sub>4.3</sub>
2...		
3	<b>Values:</b>	
3.1	Function effectively in the classroom;	V <sub>1.1</sub>
3.2	Integrate safety and competent in a work laboratory setting.	V <sub>2.1</sub>
3.3		
3...		

## C. Course Content

No	List of Topics	Contact Hours
1	Introduction to basic of chemical engineering, terminologies, units, notations, instruments, and uses. Illustrate the objectives of the course for the students.	4
2	calculations cover basic physical and chemical concepts	3
3	<b>Chemical conversions and Factors</b>	3
4	stoichiometry of chemical reactions	4
5	mixtures of fluids and combustion of fuels	6
6	simple material and energy balance concepts applied to process units	6
7	<b>Practice</b>	2
8	Revision	2
<b>Total</b>		<b>30</b>

## D. Teaching and Assessment

### 1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	<b>Knowledge and Understanding</b>		
1.1	Identify chemical engineering knowledge requirements, industry standards, and best practice in chemical work settings;	Lecture, tutorial, active learning	Quizzes, Assignments, exams
1.2			
...			
2.0	<b>Skills</b>		
2.1	Utilize modern chemical engineering instruments in a chemical process;	Lecture, tutorial, active learning	Quizzes, Assignments, exams
2.2	Calculate parameters in material balances and chemical processes around simple systems;		
...	Identify the strategies needed to solve chemical engineering stoichiometry problems;		
3.0	<b>Values</b>		
3.1	Function effectively in the classroom;	Assignments	Marks are given according to participating in classroom
3.2	Integrate safety and competent in a work laboratory setting.		
...			

### 2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Class Activities and Quizzes	Week 2 till Week 12	20%
2	Laboratory	All weeks	10%
3	Midterm	Week 7	20%
4			
5			
6			
7			
8			
9	Final Term Exam	As scheduled	50%

\*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

## E. Student Academic Counseling and Support

**Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:** Office hours are specified and instructors can be reached through emails or WhatsApp.

## F. Learning Resources and Facilities

### 1. Learning Resources

<b>Required Textbooks</b>	<ul style="list-style-type: none"><li>• Classroom policy</li></ul> Lecture notes and hardcopies of some sections from “ <i>Textbooks</i> S. Pushpavanam, <i>Introduction to Chemical Engineering</i> , 2 <sup>nd</sup> edition, Wiley 2012”.
<b>Essential References Materials</b>	<ul style="list-style-type: none"><li>• NA</li></ul>
<b>Electronic Materials</b>	<ul style="list-style-type: none"><li>• Not utilized</li></ul>
<b>Other Learning Materials</b>	<ul style="list-style-type: none"><li>• Not utilized</li></ul>

### 2. Facilities Required

Item	Resources
<b>Accommodation</b> (Classrooms, laboratories, demonstration rooms/labs, etc.)	<ul style="list-style-type: none"><li>• BB</li></ul>
<b>Technology Resources</b> (AV, data show, Smart Board, software, etc.)	<ul style="list-style-type: none"><li>• Computer</li></ul>
<b>Other Resources</b> (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	<ul style="list-style-type: none"><li>• Not utilized</li></ul>

## G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Confidential student Course Evaluation Survey	Institution	Online Direct Survey
End of semester CLO	Course Coordinator	Direct Survey

**Evaluation areas** (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

**Evaluators** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

**Assessment Methods** (Direct, Indirect)

## H. Specification Approval Data

<b>Council / Committee</b>	Chemical Engineering Technology
<b>Reference No.</b>	CAITCHET210704
<b>Date</b>	21/09/2021

