



## Course Specifications

<b>Course Title:</b>	Colloids Chemistry and Phase Rule
<b>Course Code:</b>	4022146-1
<b>Program:</b>	Chemistry-Industrial chemistry
<b>Department:</b>	Chemistry
<b>College:</b>	Applied Science
<b>Institution:</b>	Umm Al-qura University

## Table of Contents

<b>A. Course Identification</b> .....	<b>3</b>
6. Mode of Instruction (mark all that apply) .....	3
<b>B. Course Objectives and Learning Outcomes</b> .....	<b>3</b>
1. Course Description .....	3
2. Course Main Objective.....	3
3. Course Learning Outcomes .....	3
<b>C. Course Content</b> .....	<b>4</b>
<b>D. Teaching and Assessment</b> .....	<b>4</b>
1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods .....	4
2. Assessment Tasks for Students .....	5
<b>E. Student Academic Counseling and Support</b> .....	<b>5</b>
<b>F. Learning Resources and Facilities</b> .....	<b>5</b>
1. Learning Resources .....	5
2. Facilities Required.....	6
<b>G. Course Quality Evaluation</b> .....	<b>6</b>
<b>H. Specification Approval Data</b> .....	<b>7</b>

## A. Course Identification

<b>1. Credit hours:</b> 1
<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> 5th level/third Year
<b>4. Pre-requisites for this course (if any):</b> General Chemistry (2)
<b>5. Co-requisites for this course (if any):</b> None

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

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	√	78%
2	Blended		
3	E-learning	√	21%
4	Distance learning		
5	Other		

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

No	Activity	Contact Hours
1	Lecture	11
2	Laboratory/Studio	-
3	Tutorial	-
4	Others (E-learning + Exams + office hours)	6
	<b>Total</b>	<b>17</b>

## B. Course Objectives and Learning Outcomes

### 1. Course Description

The course deals with the basic principles of colloid solutions and their properties, types of colloids and their methods of preparation as well as phase rule and different examples.

### 2. Course Main Objective

By the end of the study of this course have students familiar with

- the basic concepts of colloid chemistry
- types of colloids and their preparation methods
- properties of colloids and their applications
- basics of phase rule and its important
- examples of phase rule to mono, di and tri component systems

### 3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	Knowledge and understanding	

CLOs		Aligned PLOs
1.1	Demonstrate broad knowledge of theories and concepts in colloidal chemistry.	K1
1.2	Identify terminology and substance properties related to colloidal chemistry and phase rule	K2
1.3	Mention the most important developments and applications of colloidal solutions.	K3
2	<b>Skills :</b>	
2.1	Compare between colloids and suspension and true solution.	S1
2.2	Give concise about the characteristics of colloidal solutions.	S2
2.3	Recognize of the characteristics of colloidal solutions.	S2
2.4	Apply the equilibrium curves for different systems.	S1
3	<b>Values:</b>	
3.1	Write and present a chemical report related to Colloids and phase rule	V2

### C. Course Content

No	List of Topics	Contact Hours
.1	Definition of colloids with examples.	1
.2	Classification of colloids.	1E
.3	Theory of colloid stabilization.	1
.4	Methods of colloids preparations.	1
.5	Colloid technology.	1
.6	Colloid properties.	1
.7	Importance of colloids and its importance.	1E
.8	Definition of phase rule.	1
.9	Physical changes dynamics.	1
.10	Cielus Calpyron Equation.	1
.11	Studying phase rule low.	1
.12	Phase rule of one component system.	1
.13	Phase rule of two component system.	1
.14	Phase rule of three component system.	1E
Total		14

### 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	Demonstrate broad knowledge of theories and concepts in colloidal chemistry.	Lecture E-Learning	Assignments and activities
1.2	Identify terminology and substance properties related to colloidal chemistry and phase rule	Lecture	Mid-term and final Exams

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.3	Mention the most important developments and applications of colloidal solutions.	Self-Directed private Study	Assignments
2.0			
2.1	Compare between colloids and suspension and true solution.	Self-Directed private Study	Activities, Mid-term and final Exams
2.2	Give concise about the characteristics of colloidal solutions.	Lecture	Mid-term and final Exams
2.3	Recognize of some of preparation methods of colloidal solutions.	Lecture	Mid-term and final Exams
2.4	Apply the equilibrium curves for different systems.	Lecture E-learning	Mid-term and final Exams Active participation of students within their group on blackboard
3.0	<b>Values</b>		
3.1	Write and present the important applications of Colloids and phase rule in everyday life.	Library visits	Assignments

## 2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Assignments and activities	All weeks	10%
2	E-learning	All weeks	10%
3	Mid-term Exam	6	30%
4	Final Exam. (2 hours exam)	12	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 :

- A faculty member was assigned to provide counseling and advice (about 20-25 student/ one faculty member).
- Office hours of the instructor: during the working hours weekly.

## F. Learning Resources and Facilities

### 1. Learning Resources

Required Textbooks	<ul style="list-style-type: none"> <li>• Handbook of Applied Surface and Colloid Chemistry, Vol. 1-2, Holmberg, Krister, John Wiley &amp; Sons, New York, 2002.</li> <li>• PHYSICAL CHEMISTRY IN BRIEF, Josef P. Novak, Stanislav Labík, Ivona Malijejska, Institute of Chemical Technology, Prague, 2005.</li> </ul>
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<b>Essential References Materials</b>	Electronic lecture handouts are available for the students either on blackboard or via their e-mail
<b>Electronic Materials</b>	<ul style="list-style-type: none"> <li>• <a href="http://www.chemweb.com">http://www.chemweb.com</a></li> <li>• <a href="http://www.sciencedirect.com">http://www.sciencedirect.com</a></li> <li>• <a href="http://www.rsc.org">http://www.rsc.org</a></li> </ul> Websites on the internet relevant to the topics of the course
<b>Other Learning Materials</b>	None

## 2. Facilities Required

Item	Resources
<b>Accommodation</b> (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classroom with capacity of (30) students.
<b>Technology Resources</b> (AV, data show, Smart Board, software, etc.)	Teaching halls are equipped with data show projector and electronic board screen.
<b>Other Resources</b> (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Some Specialized software's for chemistry e.g. Institutional License for Chem Office , ACD labs, etc.

## G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching	Students	<u>Indirect</u> (Online survey at the end of the semester (Program survey, Experience survey & course evaluation) and graduates survey).
Effectiveness of teaching	Faculty members	<u>Direct</u> (classroom observation using the Teaching Observation Concepts and Teaching Observation Proforma)
Achievement of course learning outcomes.	Faculty members	<u>Direct</u> (60% of the students achieved $\geq 70\%$ of the degree assigned to the course learning outcome).
Assessment of faculty members	Department head	<u>Direct</u> (Performance Assessment of faculty) <u>Indirect</u> (feedback from faculty and students).
Quality of learning resources	Students	<u>Direct</u> (feedback from faculty). <u>Indirect</u> (online survey at the end of the semester (Program survey, Experience survey & course evaluation) and graduates survey).
Effectiveness of teaching Strategies for Learning Outcomes.	Faculty members	<u>Direct</u> (Comments of course instructors regarding evaluation of teaching strategies for learning outcomes mentioned in course report).

**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

Council / Committee	Quality committee and department Council
Reference No.	1 <sup>st</sup> meeting
Date	2202

Head of Chemistry Department



Dr Moataz Morad

