

## Course Description Form

<b>1. Course Name:</b>					
Physical Chemistry					
<b>2. Course Code:</b>					
PHCH108					
<b>3. Semester / Year:</b>					
Second semester (spring) / 2023–2024					
<b>4. Description Preparation Date:</b>					
1/2/2024					
<b>5. Available Attendance Forms:</b>					
Presence					
<b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>					
30theoretical hours + 45 practical hours (75 hours) / 3.5 units					
<b>7. Course administrator's name (mention all, if more than one name)</b>					
Name: Ph.D. Roqaya Fouad Lafy and Msc. Abd Allah Anwar Email: <a href="mailto:roqayafouad@uomosul.edu.iq">roqayafouad@uomosul.edu.iq</a>					
<b>8. Course Objectives</b>					
<ul style="list-style-type: none"> <li>-Enable students to know the concept of physical chemistry and its relationship to food products</li> <li>-Enable students to know the effect of food components on chemical physical qualities.</li> <li>-Introduce students to some laws of physical chemistry.</li> <li>-Introducing students to the types and qualities of solutions.</li> <li>-Introducing the student to energy transformations to their various forms through the laws of thermodynamics the first and second laws and thermochemistry.</li> <li>-Distinguish between laws and units specific to each law.</li> <li>-Positive thinking and employing the knowledge received by the ability to deal with entities outside university and train.</li> </ul>					
<b>9. Teaching and Learning Strategies</b>					
Theoretical <ul style="list-style-type: none"> <li>- Interactive lecture</li> <li>- Brainstorming</li> <li>- Dialogue and discussion</li> <li>- Assigning reports</li> <li>-Conducting monthly and daily examinations</li> </ul>					
<b>10. Course Structure</b>					
<b>Week</b>	<b>Hours</b>	<b>Required Learning Outcomes</b>	<b>Unit or subject name</b>	<b>Learning method</b>	<b>Evaluation method</b>

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1	2Theoretical	<b>Theoretical</b> B1:Knowing the definition physical chemistry science and the importance chemical physics for food dairy products C1:knowing the impact of food ingredients on chemical physical qualities	<b>Theoretical</b> The importance physical chemistry food science students	<b>Theoretical</b> audio method Writing on the board Direct dialogu style	<b>Theoretical</b> Short exa assignments, discussions
	3Practical	<b>A 1: Recognizes some law of physical chemistry</b> <b>B 4: understands surf tensile action</b>	<b>surface tension</b>		
2	2Theoretical	A1:General Gas I understands Dalton Law and Avoca Number	General review of cert physical chemistry law	audio method Writing on the board Direct dialogu style	Short exa assignments, discussions
	3Practical	B3: Recognizes organized solutions and disintegration IVFs C3: Recognizes non-ideal solutions containing non-volatile solid materials and ausmosic pressure C4: Knows the most import changes that occur when dissolved balance betw unmixed solvents, dissol substance solutions saturated solution	Solids Solutions in Liqu		
3	2Theoretical 3Practical	A1: Recognizes energy in chemistry and the f thermodynamic law C2: The Second Law Thermodynamic	Thermodynamic	audio method Writing on the board Direct dialogu style	Short exa assignments, discussions
	3Practical	B3: Recognizes organized solutions and disintegration IVFs C3: Recognizes non-ideal solutions containing non-volatile solid materials and ausmosic pressure C4: Knows the most import changes that occur when dissolved balance betw unmixed solvents, dissol substance solutions saturated solution	How to measure the concentration of solutio and understand the perfect solutions And not ideal		
4	2Theoretical 3Practical	B3:Student understands liq vapor pressure	Liquid state	audio method Writing on the	Short exa assignments,

		C3: Knowledge understanding of steam pressure measurement methods and the effect of temperature on steam pressure		board Direct dialogu style	discussions
	3Practical	B3: Recognizes organized solutions and disintegration IVFs C3: Recognizes non-ideal solutions containing non-volatile solid materials and osmotic pressure C4: Knows the most important changes that occur when the dissolved balance between unmixed solvents, dissolved substance solutions and saturated solution	Recognize ways expressing the degree of concentration of solutions in liquids		
5	2Theoretical 3Practical	B3: Know and understand how to measure the concentration of solutions and understand the ideal solutions	Liquid Solutions	audio method Writing on the board Direct dialogu style	Short exam assignments, discussions
	3Practical	A1: Recognizes some laws of physical chemistry	Refraction		
6	2Theoretical 3Practical	B3: Know the perfect solution Non-ideal solutions containing non-volatile solid materials and osmotic pressure	Liquid Solutions	audio method Writing on the board Direct dialogu style	Short exam assignments, discussions
	3Practical	A1: Recognizes some laws of physical chemistry	Measures the refractive coefficient of food products using refractometer		
7	2Theoretical	C4: The student recognizes the solutions of disintegrated substances and the balance dissolved between unmixed solvents and saturated solution	Liquid Solutions	audio method Writing on the board Direct dialogu style	Short exam assignments, discussions
	3Practical	A1: Recognizes some laws of physical chemistry	Light Absorption		
8	2Theoretical	A1: The student understands the law of the act of mass Ionized balance and disintegration of weak acids	Chemical Balance	audio method Writing on the board Direct dialogu style	Short exam assignments, discussions
	3Practical	A1: Recognizes some laws of physical chemistry	Recognizes the basic laws of light absorption theory and the use of the absorption meter device		

			(spectrometer)		
9	2Theoretical	A2:The student recognizes organized solutions, disintegration of IVFs and disintegration of weak acids	Chemical Balance	audio method Writing on the board Direct dialogue style	Short exams assignments, discussions
	3Practical	A1: Recognizes some laws physical chemistry	Viscosity		
10	2Theoretical	A3:Student distinguishes oxidation and reduction interactions	Oxidation and reduction	audio method Writing on the board Direct dialogue style	Short exams assignments, discussions
	3Practical	A1: Recognizes some laws physical chemistry	Recognize the laws relative viscosity and factors affecting them		
11	2Theoretical	A1:Student recognizes surface tension	Surface chemistry	audio method Writing on the board Direct dialogue style	Short exams assignments, discussions
	3Practical	A1: Recognizes some laws physical chemistry	Viscosity measurement using viscometer		
12	2Theoretical	E4: The student recognizes that surfaces as catalysts increase the speed of chemical reactions	Surface chemistry	audio method Writing on the board Direct dialogue style	Short exams assignments, discussions
	3Practical	B3: Recognizes organized solutions and disintegration IVFs C3: Recognizes non-ideal solutions containing non-volatile solid materials and osmotic pressure C4: Knows the most important changes that occur when dissolved balance between unmixed solvents, dissolved substance solutions and saturated solution	Miscible of liquids		
13	2Theoretical	A4: The student recognizes types of reaction and factors that influence the occurrence of chemical reactions	Speed of chemical reaction	audio method Writing on the board Direct dialogue style	Short exams assignments, discussions
	3Practical	B3: Recognizes organized solutions and disintegration IVFs C3: Recognizes non-ideal	Temperature effect on soluble fluid		

		solutions containing non-volatile solid materials and osmotic pressure C4: Knows the most important changes that occur when dissolved balance between unmixed solvents, dissolved substance solutions and saturated solution			
14	2Theoretical	B5: Students learn about types of electrical conductivity of solutions	Electrical conductivity solutions	audio method Writing on the board Direct dialogue style	Short exams, assignments, discussions
	3Practical	B3: Recognizes organized solutions and disintegration IVFs C3: Recognizes non-ideal solutions containing non-volatile solid materials and osmotic pressure C4: Knows the most important changes that occur when dissolved balance between unmixed solvents, dissolved substance solutions and saturated solution	Measurement of melting degree using boiling tube		
15	2Theoretical 3Practical	Problem solve  Practical How to mix fluids and what their products and conditions are	Scientific visit  B3: Recognizes organized solutions and disintegration of IVFs C3: Recognizes non-ideal solutions containing non-volatile solid materials and osmotic pressure C4: Knows the most important changes that occur when the dissolved balance between unmixed solvents, dissolved substance solutions and saturated solution	Conducting scientific visit one of laboratories research center for physics chemistry familiarize student with most important laboratory devices and working methods, especially those not available in the department	Submission of report of student's visit at the said visit

## 11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

t	Evaluation methods	Evaluation date (one week)	Grade	Relative weight %
1	Final theoretical report + theoretical practical reports	Theoretical 15 weeks Practical 1-15 weeks	7 theoretical + 6 practical	13%
2	Short test 1 Quiz	3 weeks	4 theoretical + 2 practical	6%
3	Midterm exam (theoretical and practical)	9 weeks	10 theoretical + 5 practical	15%
4	Short test 2 Quiz	12 weeks	4 theoretical + 2 practical	6%
5	Final practical test	practical exams week	20	20%
6	Final theoretical exam	Theoretical exams week	40	40%
			100	100

## 12. Learning and Teaching Resources

Required textbooks (curricular books any)	Physical chemistry of food products a. " Dr. Abd Ali Mahdi Hassan, 1987 Ministry of Higher Education and Scientific Research/In
Main references (sources)	-Fundamentals of physical chemistry a. " d. Abdulalim Suleiman Abu Al-Majd and d. Fatima F Kamal Mohammed Publishing House for Universities/Egypt, 2005 - Fundamentals of Physical Chemistry, 1429 AH/General Institution for Technical and Vocational Training/Saudi Arabia
Recommended books and references (scientific journals, reports...)	Fundamentals surface chemistry dr. Mohammed Majdi Wasel, 2007. Modern Academy University Writers/Arab Nile Publishing and Distribution Authority
Electronic References, Websites	<a href="https://t.me/agricultural_eng">https://t.me/agricultural_eng</a>

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