Course Description Form

1. Course Name:
Physical Chemistry
2. Course Code:
PHCH108
3. Semester / Year:
Second semester (spring) / 2023-2024
4. Description Preparation Date:
1/2/2024
5. Available Attendance Forms:
Presence
6. Number of Credit Hours (Total) / Number of Units (Total)
2theoretical hours + 3 practical hours (75 hours) / 3.5 units
7. Course administrator's name (mention all, if more than one name)
Name: Ph.D. Roqaya Fouad Lafy and MSc. Abd Allah Anwar Email:roqayafouad@uomosul.edu.iq
8. Course Objectives
-Enable students to know the concept of physical chemistry and its relationship to food products -Enable students to know the effect of food components on chemical physical qualities. -Introduce students to some laws of physical chemistry. -Introducing students to the types and qualities of solutions. -Introducing the student to energy transformations to their various forms through the laws of thermodynam the first and second laws and thermochemistry. -Distinguish between laws and units specific to each law. -Positive thinking and employing the knowledge received by the ability to deal with entities outside university and train.
9. Teaching and Learning Strategies
Theoretical - Interactive lecture - Brainstorming - Dialogue and discussion - Assigning reports -Conducting monthly and daily examinations

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10. Course Structure

Wee	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

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1	2Theoretical	**Theoretical** b1:Knowing the definition Of physical chemistry science and the importance of chemical physics for food and dairy products c1:knowing the impact of food ingredients on chemical and physical qualities	**Theoretical** The importance physical chemistry food science students	**Theoretical** audio methods, Writing on the board Direct dialogue style	**Theoretical** Short exams, assignments, discussions
	3Practical	a 1: Classifies some laws of physical chemistry b 4: understands surface tensile action	surface tension		
2	2Theoretical	b 1 : Understands General Gas Law b1:understands Dalton Law and Avocadro Number	General review certain physical chemistry laws	audio methods, Writing on the board Direct dialogue style	Short exams, assignments, discussions
	3Practical	d 2:Applies organized solution and disintegration of IVFs c3: Recognizes non-ideal solutions containing non-volatile solid materials and ausmosic pressure c4: Knows the most important changes that occur when the dissolved balance between unmixed solvents, dissolved substance solutions saturated solution	Solids Solutions Liquid		
3	2Theoretical 3Practical	a1: Understands energy in life chemistry and tl first thermodynamic law c2: The Second Law Thermodynamic	Thermodynamic	audio methods, Writing on the board Direct dialogue style	Short exams, assignments, discussions
	3Practical	b3: Explaining the buffer solutions that break down amphoteric compounds c3: Recognizes non-ideal solutions containing non-volatile solid materials and ausmosic pressure c4: Knows the most	How to measure the concentration of solutions and understand the perfect solutions And not ideal		

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كلية الزراعة والغابات
قسم
المكائن والالات الزراعية

		important changes that occur when the dissolved balance between unmixed solvents, dissolved substance solutions and saturated solution			
4	2Theoretical 3Practical	b3:Student understands liquid vapor pressure c3: Knowledge understanding of steam pressure measurement methods and effect of temperature on steam pressure	Liquid state	audio methods, Writing on the board Direct dialogue style	Short exams, assignments, discussions
	3Practical	b3: Explaining the buffer solutions that break down amphoteric compounds c3: Recognizes non-ideal solutions containing non-volat solid materials and ausmosic pressure c4: Knows the most important changes that occur when the dissolved balance between unmixed solvents, dissolved substance solutions and saturated solution	Recognize ways of expressing the degree concentration of solids solutions liquids		
5	2Theoretical 3Practical	b3:Know and understand how to measure concentration of solutions and understand ideal solutions	Liquid Solutions	audio methods, Writing on the board Direct dialogue style	Short exams, assignments, discussions
	3Practical	a1: Classifies some laws physical chemistry	Refraction		
6	2Theoretical 3Practical	a3:Student distinguishes the perfect solutions a3: Differention between Non-ideal solutions containing non-volatile solid materials and osmosic pressure	Liquid Solutions	Audio methods, Writing on the board Direct dialogue style	Short exams, assignments, discussions
	3Practical	a1: Classifies some laws of physical chemistry	Measures the Refractive coefficient of food products using refractometer		
7	2Theoretical	c4: The student recognizes the solutions of	Liquid Solutions	audio methods,	Short exams,

		disintegrated substances and the balance of dissolved between unmixed solvents and saturated solution		Writing on the board Direct dialogue style	assignments, discussions
	3Practical	a1: Classifies some laws of physical chemistry	Light Absorption		
8	2Theoretical	a1: The student understands tl law of the act of mass Ionized balance disintegration of weak acids	Chemical Balance	audio method Writing on the board Direct dialogue style	Short exams, assignments, discussions
	3Practical	a1: Classifies 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, b2: The student understands disintegration of IVFs and disintegration of weak acids	Chemical Balance	audio methods, Writing on the board Direct dialogue style	Short exams, assignments, discussions
	3Practical	a1: Classifies some laws physical chemistry	Viscosity		
10	2Theoretical	a3:Student distinguishes oxidation reductivity interactions	Oxidation reduction	audio methods, Writing on the board Direct dialogue style	Short exams, assignments, discussions
	3Practical	a1: Classifies some laws physical chemistry	Recognize the laws relative viscosity the factors affect them		
11	2Theoretical	a1:Student recognizes surface tension	Surface chemistry	Audio methods, Writing on the board Direct dialogue style	Short exams, assignments, discussions
	3Practical	a1: Classifies some laws physical chemistry	Viscosity measurement using viscometer		

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المكائن والالات الزراعية

12	2Theoretical	e4: The student recognizes that surfaces as catalysts increase the speed of chemical reactions	Surface chemistry	audio methods, Writing on the board Direct dialogue style	Short exams, assignments, discussions
	3Practical	b3: Explaining the buffer solutions that break down amphoteric compounds c3: Recognizes non-ideal solutions containing non-volatile solid materials and ausmosic pressure c4: Knows the most important changes that occur when the 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 methods, Writing on the board Direct dialogue style	Short exams, assignments, discussions
	3Practical	b3 Explaining the buffer soluti that break down amphoteric compounds c3: Recognizes non-ideal solutions containing non-volatile solid materials and ausmosic pressure c4: Knows the most important changes that occur when the dissolved balance between unmixed solvents, dissolved substance solutions saturated solution	Temperature effect soluble fluid		
14	2Theoretical	b5: Students learn about types of electrical connection of solutions	Electrical connectivity solutions	audio methods, Writing on the board Direct dialogue style	Short exams, assignments, discussions

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قسم
المكائن والآلات الزراعية

	3Practical	b3: Explaining the buffer solutions that break down amphoteric compounds c3: Recognizes non-ideal solutions containing non-volatile solid materials and ausmosic pressure c4: Knows the most important changes that occur when the dissolved balance between unmixed solvents, dissolved substance solutions saturated solution	Measurement melting degree using boiling tube		
15	2Theoretical 3Practical	Problem solve Practical How to mix fluids and wha t their products and conditions are	Scientific visit b3 Explaining the buffer solutions tha break down amphoteric compounds c3: Recognizes non-ideal solution containing non-volatile solid materials and ausmosic pressure C4: Knows the most important changes that occur when dissolved balance between unmixed solvents, dissolved substance solutions saturated solution	Conducting scientific visit to one of laboratories research centers physical chemistry familiarize student with most important laboratory devices working methods, especially those available in department	Submission of a report of student's views at said visit

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11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as

t	Evaluation methods	Evaluation date (one week)	Grade	Relative weight %
1	Final theoretical report +theoretical practical reports	Theoretical15weeks Practical1-15 weeks	7theoretical + 6 practical	13%
2	Short test 1 Quiz	3 weeks	4theoretical + 2practical	6%

daily preparation, dailyoral, monthly, or written exams, reports ....etc

3	Midterm exam (theoretical and practical)	9 weeks	10theoretical + 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, if any)	Physical chemistry of food products a. " Dr. Abd Ali Mahdi Hassan, 1987 Ministry of Higher Education and Scientific Research/Iraq
Main references (sources)	-Fundamentals of physical chemistry a. " d. Abdulalim Suleiman Abu Al-Majd and d. Fatima Haf 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 of University Writers/Arab Nile Publishing and Distribution Authority
Electronic References, Websites	https://t.me/agricultural_eng

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Practical Subject Teacher
Msc. Abd Allah Anwar

Chairman of the Scientific Committee
Prof. Dr. Arkan Muhammed Emin

Head of Department
Asiss. Prof. Nofal Issa Muhaimed

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