

## 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)

30 theoretical hours + 45 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](mailto:roqayafouad@uomosul.edu.iq)

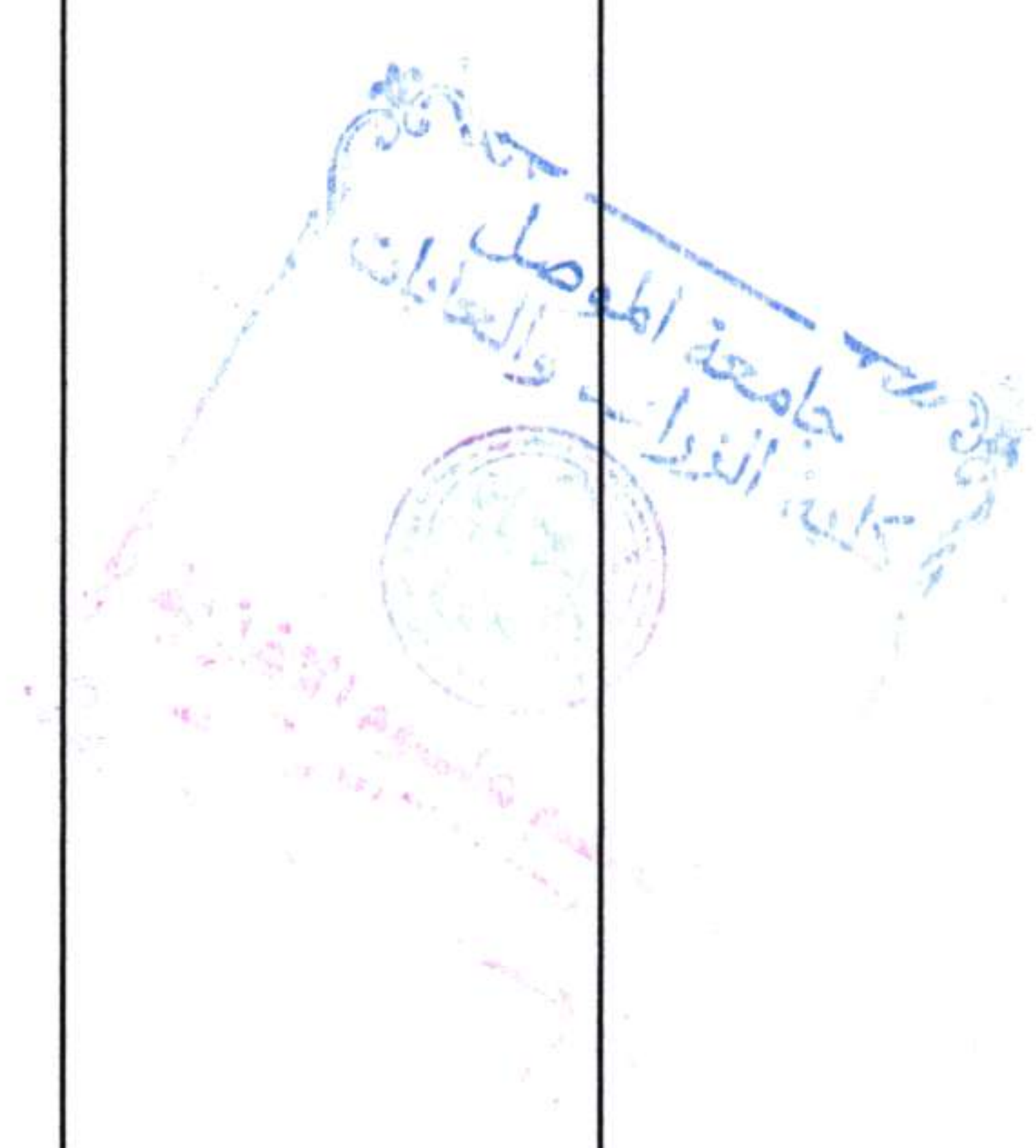
8. Course Objectives


- 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 thermodynamics 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

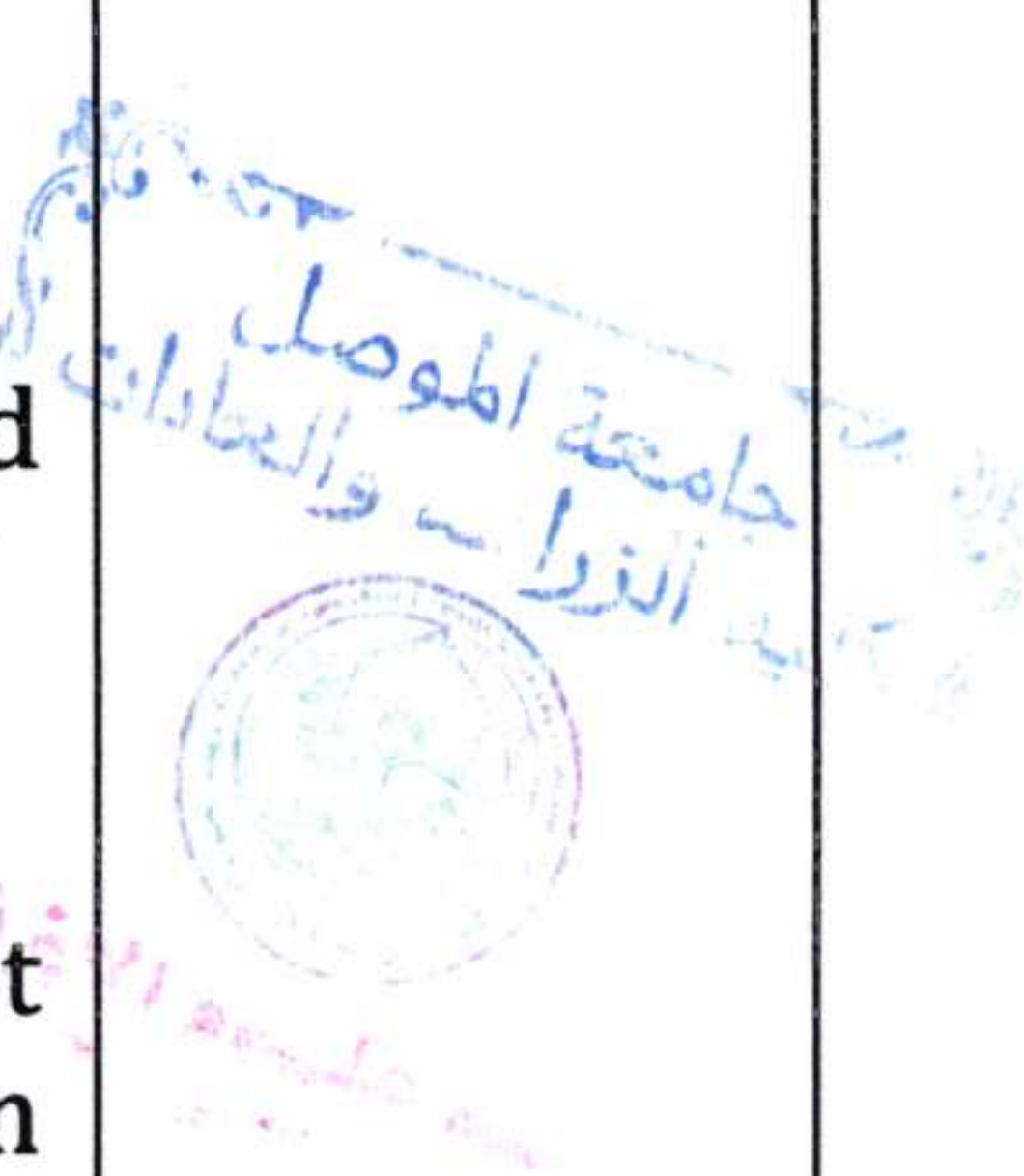
## 10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2Theoretical	<b>Theoretical</b> B1:Knowing the definition of physical chemistry science and the importance of chemical physics for food and dairy products and C1:knowing the impact of food ingredients on chemical and physical qualities	<b>Theoretical</b> The importance physical chemistry food science students	<b>Theoretical</b> audio methods, Writing on the board Direct dialogu style	<b>Theoretical</b> Short exams, assignments, discussions
	3Practical	A 1: Recognizes some laws of physical chemistry B 4: understands surface tensile action	surface tension		
2	2Theoretical	A1:General Gas Law understands Dalton Law and Avocado Number	General review of Certain physical chemistry laws	audio method Writing on the board Direct dialogue style	Short exa assignments, discussions
	3Practical	B3: Recognizes organized solutions 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 and saturated solution	Solids Solutions in Liquid		
3	2Theoretical	A1: Recognizes energy in chemistry and the first thermodynamic law C2: The Second Law Thermodynamic	Thermodynamic	Audio methods, Writing on the board Direct dialogu style	Short exams, assignments, discussions
	3Practical	B3: Recognizes organized solutions and disintegration of IVFs C3: Recognizes non-ideal solutions containing non-volatile solid materials and ausmosic pressure C4: Knows the most important changes that	How to measure the concentration of solutio and understand the perfect solutions And not ideal		

		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 the effect of temperature steam pressure	Liquid state	audio method Writing on the board Direct dialogue style	Short exams, assignments, discussions
	3Practical	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	Recognize ways expressing the degree of concentration of solutions in liquids		
5	2Theoretical 3Practical	B3: Know and understand how to measure concentration of solutions; understand the ideal solution	Liquid Solutions	audio methods, Writing on the board Direct dialogue style	Short exams, assignments, discussions
	3Practical	A1: Recognizes some laws of physical chemistry	Refraction		
6	2Theoretical 3Practical	B3: Know the perfect solutions Non-ideal solutions containing non-volatile solid materials and osmotic pressure	Liquid Solutions	audio method Writing on the board Direct dialogue style	Short exams, 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 of dissolved between unmixed solvents and saturated solution	Liquid Solutions	Audio methods, Writing on the board Direct dialogue style	Short exams, 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 methods, Writing on the board Direct dialogue style	Short exams, 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 methods, 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 reductive interactions	Oxidation and reduction	audio method Writing the board Direct dialogue style	Short exams assignments, discussions
	3Practical	A1: Recognizes some laws of 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 catalysts to 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 of IVFs C3: Recognizes non-ideal solutions containing non-volatile solid materials and osmotic pressure	Miscible of liquids		

		C4: Knows the most important changes that occur when the dissolved balance between unmixed solvents, dissolved substance solutions and saturated solution			
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 dialog 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	Temperature effect on soluble fluid		
14	2Theoretical	B5: Students learn about types of electrical conductivity of solutions	Electrical conductivity of solutions	audio method Writing on the board Direct dialog 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	Conducting a scientific visit to one of the laboratories or research centers for physical chemistry to familiarize	Submission of a report of the student's views at the said visit

			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	the student with the most important laboratory devices and working methods, especially those not available in the department	
--	--	--	---	--	---

## 11. Course Evaluation

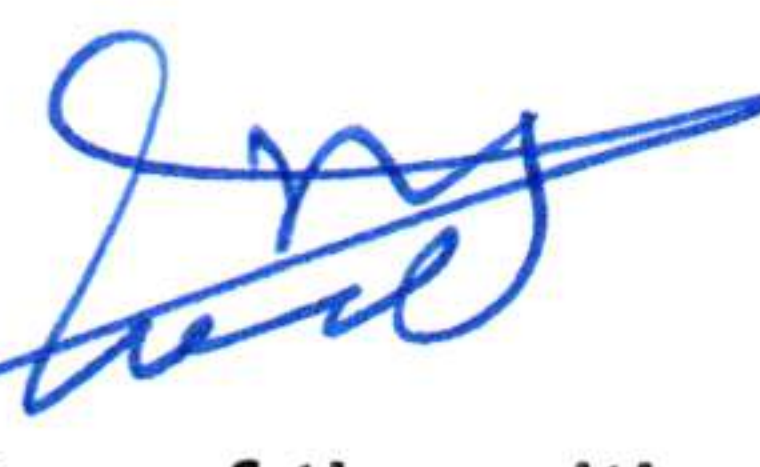
Distributing the score out of 100 according to the tasks assigned to the student such as

t	Evaluation methods	Evaluation date (one week)	Grade	Relative weight %
1	Final theoretical report +theoretical practical reports	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

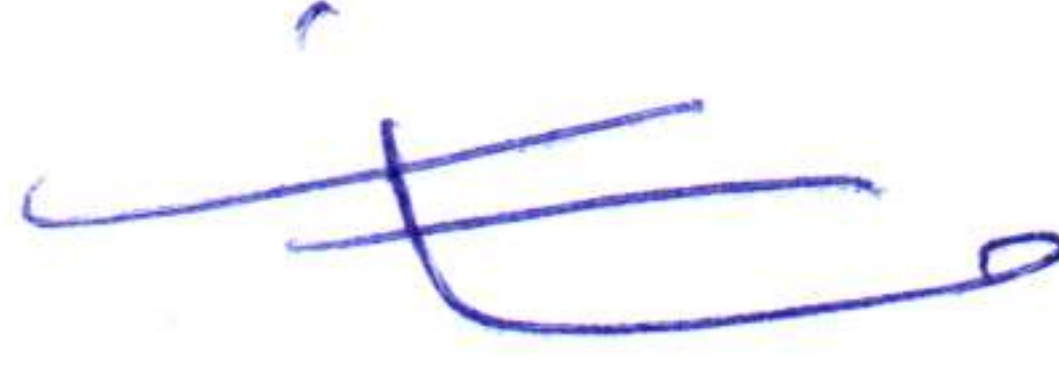
daily preparation, daily oral, monthly, or written exams, reports .... etc

## 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/Ir
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	<a href="https://t.me/agricultural_eng">https://t.me/agricultural_eng</a>


  
Instructor of theoretical part

Dr. Roqaya Fouad Lafy



Chairman of the scientific committee

Prof. Dr. Moafak mahmood ahmed

  
Instructor of practical part

Abd Allah Anwar

  
رئيس قسم العلوم الاغذية  
مستشار الدكتور

Head of the department of Food science

Prof. Dr. Sumiya kalaf badawi

