

Course Syllabus

1	Course title	Food Chemistry
2	Course number	603321
3	Credit hours (theory, practical)	3theory
	Contact hours (theory, practical)	3 theory
4	Prerequisites/corequisites	Organic chemistry (303102)
5	Program title	Food Science and Technology
6	Program code	042
7	Awarding institution	The University of Jordan
8	School	Agriculture
9	Department	Nutrition and Food Technology
10	Level of course	Second year
11	Year of study and semester (s)	2019/2020, first semester
12	Final Qualification	Bachelor
13	Other department (s) involved in teaching the course	-
14	Language of Instruction	English
15	Date of production/revision	1/9/2019

16. Course Coordinator:

Office numbers, office hours, phone numbers, and email addresses should be listed.

22411, 12-1 Sunday, Tuesday, 065355000-22411, kh.ismail@ju.edu.jo

17. Other instructors:

Office numbers, office hours, phone numbers, and email addresses should be listed.

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18. Course Description:

As stated in the approved study plan.

This course covers the major and many of the minor food components with respect to their chemical classification, structure, occurrence, properties and functions. Chemical Changes due to handling, storage, preservation and processing are also emphasized. Colloids and their importance in foods are also covered.

19. Course aims and outcomes:

<p>A- Aims:</p> <ol style="list-style-type: none"> 1- To identify the chemical structure of food components including fats, proteins, carbohydrates and enzymes. 2. To understand the chemical changes that take place with food components during processing and storage such lipid oxidation 3. Recognize reactions and mechanisms important in food chemistry such as fat hydrogenation and caramelization of sugars <p>Successful completion of the course should lead to the following outcomes:</p> <p>A. Knowledge and Understanding: Student is expected to</p> <p>A1- understand the chemical structure and properties of water, colloids, proteins, carbohydrates, lipids, enzymes and natural pigments.</p> <p>A2- understand the chemical reactions of the major food components during processing and storage.</p> <p>A3- Compare the similarities and differences in the structures of the natural pigments: anthocyanins, carotenoids, chlorophyll and heme.</p> <p>B. Intellectual Analytical and Cognitive Skills: Student is expected to</p> <p>B1- explain the important chemical and physical interactions between food constituents that affect quality and nutritive value.</p> <p>B2- Distinguish between monounsaturated and polyunsaturated fatty acids</p> <p>B3- Distinguish between monosaccharides, oligosaccharides and polysaccharides</p> <p>B4- sketch the basic structure formula of fatty acids, proteins, triglycerides</p> <p>C. Subject- Specific Skills: Students is expected to</p> <p>C1- Gain the basic principles to avoid lipid deterioration in foods</p> <p>C2- Applicable for solve the problems that affect the quality of foods during processing and storage</p> <p>D. Transferable Key Skills: Students is expected to</p> <p>D1- Gain the basic knowledge to be applied in production of food products</p> <p>D2- Suggest which specific analytical methods that are relevant for describing chemical changes of food quality</p>

20. Topic Outline and Schedule:

Topic	Week	Instructor	Achieved ILOs	Evaluation Methods	Reference
<p>Water and Colloids</p> <ul style="list-style-type: none"> -D-definition -Comparison between true, colloids and suspensions -Classification of colloids -Preparation of colloids -Stability of colloids -Emulsions -Foams -Gels 	((1 st & 2 nd wk)	Prof , Khalid al-Ismail	A1, A2, C1		1
<p>Proteins:</p>	9	Prof , Khalid al-Ismail	A1, A2, B4, C2, D1, D2		1&2

<ul style="list-style-type: none"> -Definition -Structure and classification of amino acids -Some physical and chemical properties of amino acids -Protein structures (primary, secondary, tertiary and quaternary) -Protein denaturation -Milk proteins -Egg proteins -Wheat proteins -Soybean proteins 	(3 rd , 4 th & 5 th wk)				
<p>Carbohydrates:</p> <ul style="list-style-type: none"> -Structure -Classification of carbohydrates -Reactions of carbohydrates (carmalization, formation of furfural derivatives) -Structure, Occurance, properties of some mono, oligo and poly-saccharides -Sweetness of carbohydrates -Modified starch -Corn and fructose syrups, 	9 (6 th ,7 th & 8 th wk)		A1, A2, B3, B4, C2, D1, D2		1
<p>Lipids</p> <ul style="list-style-type: none"> -Definition -Classification of lipids -Structure and classification of fatty acids -Structure and properties of lipid components (phospholipids, sterols..etc) -Classification of fat according to their source and their characteristics -Fat deterioration (Lipolysis, auto-oxidation) -Fat refining processing of crude oils -Fat linteresterification -Fat Hydrogenation 	(9 th ,10 th & 11 th wk)	Prof , Khalid al-Ismail	A1, A2, B2, B4, C1, C2, D1, D2		1&2
<p>Enzymes</p> <ul style="list-style-type: none"> -Definition -Enzymes cofactors -Enzymes nomenclature -Enzymes specificity -Factors affect enzymes activity -Enzymes immobilization -Some food modification enzymes 	((12 th ,13 th & 14 th wk)	Prof , Khalid al-Ismail	A1, A2, C2, D1		1
<p>Natural pigments:</p> <ul style="list-style-type: none"> -Classification: -Carotenoids -Hemes 	(15 th & 16 th wk)	Prof , Khalid al-Ismail	A1, A2, A3, D1, D2		1&2

-Chlorophylls -Anthocyanins -Some food colors					
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21. Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:

- Power point
- Homework
- Oral question

22. Evaluation Methods and Course Requirements:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

Activity	Mark
1-Mid term exam	30
2- Exam	15
3-Assinments	5
6-Final exam	50

23. Course Policies:

Students and instructors each have an important role in maintaining a classroom environment optimal for learning, and are expected to treat each other with respect during class, using thoughtful dialogue, and keeping disruptive behaviors to a minimum. Class discussions are interactive and diverse opinions will be shared; please be thoughtful in sharing your perspectives and responses with one another. Other behaviors that can be disruptive are chatting and whispering during class, the use of electronic equipment, preparing to leave before class is over, and consistently arriving late to class. Please keep these disruptions to a minimum. Inappropriate behavior in the classroom may result in a request to leave the class and/or subject to penalty.

24. Required equipment: (Facilities, Tools, Labs, Training...)

- Classroom facilities

25. References:

Required book (s), assigned reading and audio-visuals:

1 Text book:

1- Deman, J.M., 1999. Principle of Food Chemistry, 3rd edition, Aspen Publication Inc, Gaithersburg, Maryland, USA.

Recommended reference:

1-Fenema, O. (editor) 1996. Food Chemistry 3rd ed. Marcel Dekker, New York, USA

1- Food Analysis: Theory and Practice. Pomeranz and Meloan, 3rd. ed., 1994.

2- Official methods of analysis- AOAC (15th ed)

26. Additional information:

Name of Course Coordinator: Prof. Khalid Al-Ismail Signature: ----- Date: -----

Head of curriculum committee/Department: ----- Signature: -----

Head of Department: ----- Signature: -----

Head of curriculum committee/Faculty: ----- Signature: -----

Dean: ----- -Signature: -----