Syllabus*: Food Chemistry and Analysis (1905021336)
Second Semester 2023 /2024

COURSE INFORMATION	
Course Name: Food Chemistry and Analysis **Semester:** Second semester **Department:** Department of Clinical Nutrition and Dietetics **Faculty:** Applied Health Sciences	**Course Code:** 1905021336 **Section:** 7 **Core Curriculum:**
Day(s) and Time(s): Sunday: 14:00-15:15 Tuesday: 14:00-15:15 **Classroom:** AMS-107 AMS-311	**Credit Hours:** 2 **Prerequisites** 110103236 +140502220

COURSE DESCRIPTION

This course covers the major and many of the minor food components concerning 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.

DELIVERY METHODS

The course will be delivered through a combination of active learning strategies. These will include:

- PowerPoint lectures and active classroom based discussion
- Oral questions during the lectures.

Home works.

FACULTY INFORMATION

Name	**Dalia Alomari**
Academic Title:	**Dr.**
Office Location:	
Telephone Number:	

Email Address:		
Office Hours:	**Sunday**	9.30-10.30, 13:30- 14:30
	Tuesday	9.30-10.30, 13:30- 14:30

REFERENCES AND LEARNING RESOURCES

Required Textbook: Deman, J.M., et al 2018. Principle of Food Chemistry, 4rd edition, Springer Publication.

Suggested Additional Resources: Fenema, O. (editor) 1996. Food Chemistry 3rd ed. Marcel Dekker, New York, USA
Food Analysis: Theory and Practice. Pomeranz and Meloan, 3rd. ed., 1994.
2- Official methods of analysis- AOAC (15th ed)

Useful Web Resources:
http://www.cdc.gov
http://www.fda.gov

ACADEMIC SUPPORT

It is The Hashemite University policy to provide educational opportunities that ensure fair, appropriate and reasonable accommodation to students who have disabilities that may affect their ability to participate in course activities or meet course requirements. Students with disabilities are encouraged to contact their Instructor to ensure that their individual needs are met. The University through its Special Need section will exert all efforts to accommodate for individual's needs.

Special Needs Section:
Tel:
Location:
Email:

STUDENT LEARNING OUTCOMES MATRIX*

Core Curriculum Learning Outcomes	Program Learning Outcomes	Course Objectives	Course Student Learning Outcomes	Assessment Method
To provide students with the optimum educational standard in the field of clinical nutrition and general knowledge in food technology	**KP1:** Demonstrate a depth understanding of the basis of nutritional science and the nutrient composition of food and discover the links between diet and disease and health	To identify the chemical structure of food components including fats, proteins, carbohydrates and enzymes.	CLO1: Understand the chemical structure and properties of water, colloids, proteins, carbohydrates, lipids, enzymes, natural pigments, food additives and vitamins and minerals.	Report
To provide optimal educational and training opportunities for students during their professional preparation for careers in nutrition.	**KP2:** demonstrate an understanding of food chemistry, technology, preparation, safety and correlates nutrition with food technology and future challenges**.**	To understand the chemical changes that take place with food components during processing and storage such lipid oxidation	CLO2: Understand the chemical reactions of the major food components during processing and storage.	Homework
To participate in community services for health promotion and disease prevention programs	**KP3:** Explain the principles of cellular metabolic processes, the structure and function of the various physiological systems, and the principles of biochemistry	Recognize reactions and mechanisms important in food chemistry such as fat hydrogenation and carmalization of sugars	CLO3: Compare the similarities and differences in the structure of the natural pigments: chlorophyll, anthocyanin, carotenoids and heme.	Quiz
To encourage creativity and innovation in solving problems of emerging cases in the field of clinical nutrition	**KP4:** Providing students with high levels of educational quality based on training on specific pathological conditions in therapeutic nutrition.		CLO4: Explain the important chemical and physical interactions between food constituents that affect quality and nutritive value.	Report
	SP1: Evaluate critically scientific research from a variety of sources in relation to nutrition and health through working with others, communication, self-management, and problem-solving and reflect on the various components		CLO5: Distinguish between monounsaturated and polyunsaturated fatty acids.	Homework
To sustain the concept of collaboration to promote an appropriate diet solution in cases of health and disease	**SP2:** Communicate effectively with groups and individuals to promote the benefits of a balanced diet throughout the lifespan and demonstrate the ability to use scientific laboratory skills.		CLO6: Distinguish between monosaccharides, oligoscaccharides and polysaccharides.	Quiz
	SP3: Assess diet, food and nutrient intake, and the consumption of food constituents in individuals and groups		CLO7: Sketch the basic structure formula of fatty acids, proteins, triglycerides.	Report

	CP1: Demonstrate consistent professional behavior in accordance with the legal and ethical boundaries of the dietetic profession		CLO8: Gain the basic principles to avoid lipid deterioration in foods	Homework
	CP2: Critically apply knowledge of diet and health to evaluate and communicate and comment on dietary or health information both from scientific sources.		CLO9:Applicable for solve the problems that affect the quality of foods during processing and storage	Quiz
	CP3: Utilize the methods of data analysis using computer software and apply these methods to analyze data obtained from a wide variety of sources and situations, and apply critical thinking, testing hypotheses, formulating suggestions in diet and health			

Participation

Class participation and attendance are important elements of every student's learning experience at The Hashemite University, and the student is expected to attend all classes. A student should not miss more than 15% of the classes during a semester. *Those exceeding this limit of 15% will receive a failing grade regardless of their performance*. It is a student's responsibility to monitor the frequency of their own absences. **Attendance record begins on the first day of class irrespective of the period allotted to drop/add and late registration. It is a student's responsibility to sign-in; failure to do so will result in a non-attendance being recorded.**

In exceptional cases, the student, with the instructor's prior permission, could be exempted from attending a class provided that the number of such occasions does not exceed the limit allowed by the University. The instructor will determine the acceptability of an absence for being absent. A student who misses more than 25% of classes and has a valid excuse for being absent will be allowed to withdraw from the course.

Plagiarism

Plagiarism is considered a serious academic offence and can result in your work losing marks or being failed. HU expects its students to adopt and abide by the highest standards of conduct in their interaction with their professors, peers, and the wider University community. As such, a student is expected not to engage in behaviours that compromise his/her own integrity as well as that of the Hashemite University.

Plagiarism includes the following examples and it applies to all student assignments or submitted work:

- **Use of the work, ideas, images or words of someone else without his/her permission or reference to them.**
- **Use of someone else's wording, name, phrase, sentence, paragraph or essay without using quotation marks.**
- **Misrepresentation of the sources that were used.**

The instructor has the right to fail the coursework or deduct marks where plagiarism is detected

Late or Missed Assignments

In all cases of assessment, students who fails to attend an exam, class project or deliver a presentation on the scheduled date without prior permission, and/or are unable to provide a medical note, will automatically receive a fail grade for this part of the assessment.

- Submitting a term paper on time is a key part of the assessment process. Students who fail to submit their work by the deadline specified will automatically receive a 10% penalty. Assignments handed in more than 24 hours late will receive a further 10% penalty. Each subsequent 24 hours will result in a further 10% penalty.
- In cases where a student misses an assessment on account of a medical reason or with prior permission; in line with University regulations an incomplete grade for the specific assessment will be awarded and an alternative assessment or extension can be arranged.

Student Complaints Policy

Students at The Hashemite University have the right to pursue complaints related to faculty, staff, and other students. The nature of the complaints may be either academic or non-academic. For more information about the policy and processes related to this policy, you may refer to the students' handbook.

COURSE ASSESSMENT

Course Calendar and Assessment

Students will be graded through the following means of assessment and their final grade will be calculated from the forms of assessment as listed below with their grade weighting taken into account. The criteria for grading are listed at the end of the syllabus

Assessment	Grade Weighting	Deadline Assessment
Exam 1	30%	**31/3/2024**
Exam 2	30%	**7/5/2024**
Final Exam (3)	40%	**16 th week**

Description of Exams

Test questions will predominately come from material presented in the lectures. Semester exams will be conducted during the regularly scheduled lecture period. Exam will consist of a combination of multiple choice, short answer, match, true and false and/or descriptive questions.

Homework: Will be given for each chapter, while the chapter in progress you are supposed to work on them continuously and submit in next lecture when I finish the chapter.

You are also expected to work on in-chapter examples, self-tests and representative number of end of chapter problems. The answers of self-tests and end of chapter exercises are given at the end of the book.

Quizzes: Unannounced quizzes will be given during or/and at the end of each chapter based upon the previous lectures. It will enforce that you come prepared to the class.

No make-up exams, homework or quizzes will be given. Only documented absences will be considered as per HU guidelines.

Grades are not negotiable and are awarded according to the following criteria*:

Letter Grade	Description	Grade Points
A+	Excellent	4.00
A		3.75
A-		3.50
B+	Very Good	3.25
B		3.00
B-		2.75
C+	Good	2.50
C		2.25
C-		2.00
D+	Pass	1.75
D	Pass	1.50
F	Fail	0.00
I	Incomplete	-

* يمكن التعديل حسب طبيعة البرنامج (بكالوريوس/دراسات عليا)

WEEKLY LECTURE SCHEDULE AND CONTENT DISTRIBUTION

مثال على التوزيع : مساق الكيمياء العامة 101

"Lecture hours and weeks are approximate and may change as needed"

Note: For Chem 101 sections with 2 lecture periods per week (S/T, M/W or T/R), one lecture period covers 1.5 lecture hours (80 minutes). The course content specifies the sections in chapters 1-10 of the textbook that will be included in quizzes, homework and exams.

Week	Topic	Lecture hours
1-2	**Water and Colloids** -D-definition -Comparison between true, colloids and suspensions -Classification of colloids	2

-Preparation of colloids
-Stability of colloids
-Emulsions
-Foams

2

-Definition

Assessment Rubrics

Classroom Participation: Assessment Criteria

Criteria	Quality				Score
	Excellent (4 points)	**Good (3 points)**	**Satisfactory (2 points)**	**Needs Improvement (1 points)**	
Degree to which student integrates course readings into classroom participation	- often cites from readings; - uses readings to support points; - often articulates "fit" of readings with topic at hand. **6-8**	occasionally cites - from readings; sometimes uses - readings to support points; occasionally - articulates "fit" of readings with topic at hand.	rarely able to cite - from readings; rarely uses - readings to support points; rarely articulates - "fit" of readings with topic at hand	unable to cite from - readings; cannot use readings - to support points; cannot articulates "fit" of readings with topic at hand.	
Interaction / participation in classroom discussions	always a willing - participant, responds frequently to questions; routinely - volunteers point of view .	often a willing - participant, responds - occasionally to questions; occasionally - volunteers point of view .	rarely a willing - participant, rarely able to - respond to questions; rarely volunteers - point of view .	never a willing - participant., never able to - respond to questions; never volunteers - point of view .	
Interaction /participation in classroom learning activities	always a willing - participant; acts appropriately - during all role plays; responds - frequently to questions; routinely - volunteers point of view. **9-10** **11-12** **13**	often a willing - participant; acts appropriately - during role plays; responds - occasionally to questions; occasionally - volunteers point of view.	rarely a willing - participant; occasionally acts - inappropriately during role plays; rarely able to respond to direct questions; rarely volunteers - point of view.	never a willing - participant often acts - inappropriately during role plays;, never able to - respond to direct questions; never volunteers - point of view.	
Demonstration of professional attitude and demeanor	always - demonstrates commitment through thorough preparation; always arrives on - time; often solicits - instructors' perspective outside class. **14-15**	rarely unprepared; - rarely arrives late; occasionally solicits - instructors' perspective outside class .	often unprepared; - occasionally arrives late; rarely solicits - instructors' perspective outside class .	rarely prepared; - often arrives late; - never solicits - instructors' perspective outside class	

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-Milk proteins
-Egg proteins
-Wheat proteins
-Soybean proteins

Carbohydrates:

-Structure
-Classification of carbohydrates (caramelization, mono, oligo and polysaccharides
-Reactions of carbohydrates formation of furfural derivatives-Structure, properties of some
-Occurance,
-Sweetness of carbohydrates
-Modified starch
-Corn and fructose syrups,

Lipids:

-Definition
-Classification of lipids
-Structure and classification of fatty acids
-Structure and properties of lipid components (phospholipids, sterols,)
-Classification of fat according to their source and their characteristics
-Fat deterioration (Lipolysis, autooxidation)
-Fat refining processing of crude oils
-Fat inter-esterification
-Fat Hydrogenation

Food Additives:

Topics in food chemistry for discussion

Original articles for discussion

Classroom Participation: Oral Presentation										
Element	**Excellent**		**Satisfactory**			**Needs Improvement**				
	8	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**	
Organization	▪ There is a logical sequence of information. ▪ Title slide and closing slide are included appropriately.		▪ There is some logical sequence of information. ▪ Title slide and closing slides are included.			▪ There is little or no logical sequence of information. ▪ Title slide and/ or closing slides are not included.				
Slide Design (text, colors, background, illustrations, size, titles, subtitles)	Presentation is attractive and appealing to viewers.		Presentation is somewhat appealing to viewers.			Little to no attempt has been made to make presentation appealing to viewers.				
Content	▪ Presentation covers topic completely and in depth. ▪ Information is clear, appropriate, and accurate.		▪ Presentation includes some essential information. ▪ Some information is somewhat confusing, incorrect, or flawed.			▪ Presentation includes little essential information. ▪ Information is confusing, inaccurate, or flawed.				
Language	▪ Spelling, grammar, usage, and punctuation are accurate. ▪ Fluent and effective		There are minor problems in spelling, grammar, usage, and/or punctuation.			▪ There are persistent errors in spelling, grammar, usage, and/or punctuation. ▪ Less or not fluent and effective.				
Delivery	▪ Ideas were communicated with enthusiasm, proper voice projection and clear delivery. ▪ There was sufficient eye contact with audience. ▪ There were sufficient use of other non-verbal communication skills. ▪ Appropriate delivery pace was used.		▪ There was some difficulty communicating ideas due to voice projection, lack of preparation, incomplete work, and/or insufficient eye contact. ▪ Insufficient use of non-verbal communication skills. ▪ Delivery pace is somewhat appropriate.			▪ There was great difficulty communicating ideas due to poor voice projection, lack of preparation, incomplete work, and/or little or no eye contact. ▪ No use of non verbal communication skills. ▪ Inappropriate delivery pace was used.				
Interaction with Audience	▪ Answers to questions are coherent and complete. ▪ Answers demonstrate confidence and extensive knowledge.		▪ Most answers to questions are coherent and complete.			▪ Answers to questions are neither coherent nor complete.				

		▪ Answers somehow demonstrate confidence and extensive knowledge.	▪ Is tentative or unclear in responses.	
Total score				***= (y*5/16)***