هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission
اعتماد
NCAAA
2024
TP-153

Course Specification
(Bachelor)

Course Title:	Food Chemistry
Course Code:	CHM 1326
Program:	Bachelor of Science in Chemistry
Department:	Chemistry
College:	Science
Institution:	Imam Mohammed Ibn Saud Islamic University
Version:	2024 V1 1
Last Revision Date:	14 October 2024

Table of Contents

A. General information about the course:

-1. Course Identification

1. Credit hours: 2 (2,0, 0)					
2(2 Lectures, 0 Tutorials, 0 Lab)					
2. Course type					
A.	☐University	☐College	☒ Department	☐Track	☐Others
B.	☐ Required		☒ Elective		
3. Level/year at which this course is offered: Level 5,6 / year 3					
4. Course general Description:					
In this module, the students will study the following topics: Water and water quality, carbohydrates, amino acids and proteins, lipids and oils, minerals and vitamins, food quality control.					
5. Pre-requirements for this course (if any)**:**					
Organic Chemistry (2)- CHM 1221					
6. Co-requisites for this course (if any)**:**					
None					
7. Course Main Objective(s):					
At the end of this course the student will be able to: ▪ **At the end of this course the student will be able to:** ▪ **The aim of the course is to give students information dealing with main analytical approaches useful to assess purity and quality of selected foods, namely waters, fats and oils, dairy products and honey.** ▪ **Practical exercised will be performed, too and each student will individually carry out some analytical evaluation on authenticfood samples.** ▪ **The course prepares students to compete in jobs related to food industry.**					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	**30**	**100%**
2	E-learning	**0**	**0**
3	Hybrid • Traditional classroom • E-learning	**0**	**0**
4	Distance learning	**0**	**0**

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	**30**
2.	**Laboratory/Studio**	**0**
3.	**Field**	**0**
4.	**Tutorial**	**0**
5.	**Others (specify)**	**0**
Total		30

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	**To recognize the basic principles of food analysis**	**K1; K3;**	• Two hours are weekly, containing lectures. • A Private study including work on the home exam.	• Quizzes • Assignments • Oral Discussion • Participation.
1.2	**To list the components of food and their experimental determinination procedures.**	**K1; K3**	• Two hours are weekly containing lectures with group discussion. • Group discussion	• Assignments. • Quizzes. • Final exam.
1.3	**To describe ways of food contamination and ways of its detection.**	**K3;**	• Group discussions. • A Private study, including work on homework. • Think and talk about food contamination detection	• Midterms. • Assignments. • Oral test • Quizzes. • Final exam.
2.0	Skills			
2.1	**To develop ways to avoid food contamination.**	**S1,S2**	• Lectures activity • Think and outline avoiding food contaminations	• Questions in Lectures. • Short Quizzes and Exams. • Participation through Classwork and Homework.

Code	Course Learning Outcomes	Code of PLOs aligned with program	Teaching Strategies	Assessment Methods
2.2	**To differentiate between saturated and unsaturated fat**	**S1, S2, S3**	Introduce some examples of saturated and unsaturated fats in daily life used	• Questions in Lectures. • Short Quizzes and Exams. • Participation • Oral Discussion and Homework.
2.3	**To analyze reports about a real cases of food pollution**	**S1; S3**	Encourage students to exchange ideas about food pollution detection and treatments	• Questions in Lectures. • Short Quizzes and Exams. • Participation. • Oral Discussion and Homework
3.0	Values, autonomy, and responsibility			
3.1	**To develop ways to avoid food contamination.**	**V1,V2**	▪ Group Discussion and Assignments.	▪ Oral Tests and Assignments Marks

C. Course Content

No	List of Topics	Contact Hours
1.	**Source, functions of food** – food groups – food guide – basic five food groups.	**3**
2.	**Water:** Purification processes – Ion exchangers, reverse osmosis, activated charcoal treatment. Use of chlorination, ozone, and UV light disinfection. Specification of drinking water.	**3**
3.	**Proteins:** amino acids – peptides – proteins animal and plant sources, Analysis of proteins – principles in the determination of moisture content, ash content, nitrogen content. Milk: Composition and effectiveness as a diet. Fat content in milk.	**3**
4.	**Classification**, structure and reactions of monosaccharides, sucrose and starch.	**3**
5.	**Lipids:** nomenclature and classification. Emulsions and emulsifiers, rancidity of fats – chemistry of fat and oil processing – function and storage of fats. heat treatment on the nutritive value of oilseeds, nuts and oil-seed meals.	**3**
6.	**Minerals and vitamins:** Sources, functions, bioavailability and deficiency of the following minerals (calcium, iron, iodine, fluorine, sodium and potassium (elementary treatment). Vitamins - classification, sources, functions and deficiencies of fat- soluble vitamins – A, D, E and K, water-soluble vitamins – C.	**3**
7.	**Beverages:** Soft drinks, fruit juices, carbonation	**3**
8.	**Food additives:** Artificial sweeteners – saccharin– food flavours – esters. Antioxidants. Food colours.	

		3
9.	**Adulterants:** Common adulterants in different foods – milk and milk products, vegetable oils, and fats, spices and condiments, cereals. Principles involved in the analysis of detection and prevention of food adulteration.	3
10.	**Quality control:** Specifications and standards: PFA, FPO, FDA, drug license, WHO standards, ISI specifications, packing and label requirements, essential commodities act, consumer protection act. AGMARK	3
Total		30

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quizzes, Attendance, Participation, Home Exams	All the semester	20 %
2.	Midterm Exam 1	Around 6th & 7th week	20 %
3.	Midterm Exam 2	Around 11th & 12th week	20 %
4.	Final Exam	Around 16-17th week	40 %
5.	Total		100%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	**Food Analysis Laboratory Manual**, S. Suzanne Nielsen, 4th Edition, 2010. Springer Science &Business Media ISBN 978-1-4419-1477-4.
Supportive References	1. **Food science,** Norman N. Potter, 5th ed, 2007. CBS publishers and distributors, New Delhi. 1994 ISBN 10: 812390472X / ISBN 13: 9788123904726. 2. **Food Chemistry**, Owen R Fennema, 3rd Edition 1996, Marcel Decker Inc., New York. 1996. ISBN 10: 0824793463 / ISBN 13: 9780824793463
Electronic Materials	• Blackboard
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Each of the class room should be equipped with a whiteboard and a projector, with a maximum of 20 students.
Technology equipment (projector, smart board, software)	The rooms are equipped with data show, Smart Board, WI-FI access.
Other equipment (depending on the nature of the specialty)	• None

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	**Students**	**Direct:** Questionnaire.
	Course Responsible	**Direct:** Course e-Portfolio. **Indirect:** Second examiner checklist-Course report.
	Peer Reviewer	**Direct:** Questionnaire. **Indirect:** External assessor report.
Effectiveness of Students assessment	**Program Leaders**	**Direct:** Course e-Portfolio. **Indirect:** Course report.
Quality of learning resources	**Students**	**Indirect:** Second examiner checklist-Course report.
	Faculty (Academic Advisory)	**Direct:** course Entrance/Exit. **Indirect:** Observations - Accreditation review.
	Program Leaders	**Direct:** Course e-Portfolio. **Indirect:** Course evaluation survey- Observations- Syllabus review- Accreditation review.
The extent to which CLOs have been achieved	**Course Responsible**	**Direct:** Exams - Course e-Portfolio. **Indirect:** Second examiner checklist-Course report.
	Program Leaders	**Indirect:** Exams.
Lab Performance	**Students** **Course Responsible**	**Direct:** Lab reports, Final Lab exam, Course e-Portfolio.

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	COUNCIL OF DEPARTMENT OF CHEMISTRY
REFERENCE NO.	7 (NO. 2/3)
DATE	29/3/1446 - 2/10/2024