Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic Accreditation
Accreditation Department

Academic Program and Course Description Guide

2025

Introduction:

The educational program is a well—planned set of courses that include procedures and experiences arranged in the form of an academic syllabus. Its main goal is to improve and build graduates' skills so they are ready for the job market. The program is reviewed and evaluated every year through internal or external audit procedures and programs like the External Examiner Program.

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staP together under the supervision of scientific committees in the scientific departments.

This guide, in its second version, includes a description of the academic program after updating the subjects and paragraphs of the previous guide in light of the updates and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual, quaJerly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies T 3/2906 on 3/5/2023 regarding the programs that adopt the Bologna Process as the basis for their work.

In this regard, we can only emphasize the importance of writing an academic programs and course description to ensure the proper functioning of the educational process.

Concepts and terminology:

Academic Program Description: The academic program description provides a brief summary of its vision, mission and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

Course Description: Provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the students to achieve, proving whether they have made the most of the available learning opportunities. It is derived from the program description.

Program Vision: An ambitious picture for the future of the academic program to be sophisticated, inspiring, stimulating, realistic and applicable.

Program Mission: Briefly outlines the objectives and activities necessary to achieve them and defines the program's development paths and directions.

Program Objectives: They are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.

Curriculum Structure: All courses / subjects included in the academic program according to the approved learning system (quarterly, annual, Bologna Process) whether it is a requirement (ministry, university, college and scientific department) with the number of credit hours.

Learning Outcomes: **A** compatible set of knowledge, skills and values acquired by students after the successful completion of the academic program and must determine the learning outcomes of each course in a way that achieves the objectives of the program.

Teaching and learning strategies: They are the strategies used by the faculty members to develop students' teaching and learning, and they are plans that are followed to reach the learning goals. They describe all classroom and extra—curricular activities to achieve the learning outcomes of the program.

Academic Program Description Form

University Name: Tikrit University

Faculty/Institute: College of Food Sciences, Shirqat

Scientific Department: Food Science and Technology

Academic or Professional Program Name: Bachelor's in Food Science

Final Certificate Name: Bachelor's of Food Science and Technology

Academic System: courses

Description Preparation Data: 2025-9- 1

Completion Date: **2025-9- 10**

Signature:

Head of Department Name: Dr. Mohanad Mahdi Jumaa

Date: 2025-9-10

Signature:

Scientific Associate Name: Assis. Prof. Abdul Wahid Abdul Sattar Al-Taluh

Date: 2025-9-10

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department: Lecturer Abdullah Mahmoud Ajil

Date: 2025-9-10

Signature:

Approval of the Dean

1. Program Vision

The College of Food Sciences/Al-Shirqat was established in 2024, and studies commenced in the academic year 2024-2025. The college aims to prepare students for obtaining a bachelor's degree in Food Sciences, enabling graduates to work in scientific institutions, food and dairy factories, with a comprehensive understanding of local food production in Iraq. Faculty members in the Department of Food Science and Technology/College of Food Sciences Al-Shirqat at Tikrit University affirm that students benefit from the Food Sciences specialization through a blend of academic study, practical experiences, and scientific experiments. This combination enhances students' understanding of the scientific and practical methods used by food specialists in conducting research and developing ideas related to the food industry, particularly in Iraq.

2. Program Mission

Faculty members at the College of Food Sciences/Al-Shirqat at Tikrit University undertake a multifaceted mission, with the program aiming to provide all students with foundational knowledge in food technology. This includes a focus on academic and research aspects, both in undergraduate and graduate studies, alongside academic and applied research development. The program addresses challenges related to manufacturing processes, enhancing students' ability to understand real-world industry challenges and preparing them to confront them with innovative and scientific solutions. In addition to the guiding role in serving and advancing work in food science and technology, the college's activities extend to other areas, such as conducting scientific research and providing suitable proposals to solve problems related to food technology. The college also organizes specialized training courses in this field. The curricula are designed to be appropriate for preparing graduates for their professional future, whether they choose to work as specialists in the food industry or pursue advanced degrees in food and dairy sciences. This design aims to enhance students' skills, prepare them to face market challenges and work effectively in their respective fields.

3. Program Objectives

1. Preparing specialized cadres and researchers to work in scientific and governmental institutions, as well as in private factories, laboratories, and research centers focused on food science and technology. This also provides graduates with opportunities to work in health institutions under the Ministry of Health.
2. Providing comprehensive education in food science and technology, focusing

on scientific thinking and problem-solving across a broad range of disciplines.

3. Conducting applied research to address industrial problems and improve the quality of production processes in factories and companies operating in the food manufacturing and preservation sector.
4. Training specialized cadres to work in health control and food fraud prevention departments by equipping graduates with the necessary skills to manage quality control departments. This includes understanding modern systems such as Good Manufacturing Practices (GMP), Hazard Analysis and Critical Control Points (HACCP), and other relevant standards.
5. Preparing students for a variety of post-graduate pathways, including specialized fields such as graduate studies, as well as developing practical and technical skills through training in laboratories, food factories, or quality management. It also includes opportunities for employment in the private sector, such as engaging in food manufacturing companies or in marketing and food consulting.
6. Organizing specialized conferences and scientific seminars on food safety and human nutrition, which enhances the exchange of experiences in the fields of food and dairy science and technology. This includes collaboration with local, national, and global institutions specializing in this field, contributing to the development of innovative solutions and the enhancement of quality and safety standards in the food industry.

4. Program Accreditation

There is no

5. Other external influences

There is no

6 Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews•

Institution Requirements	7	18	7.5	
College Requirements	8	50	20.83	
Department Requirements	30	172	71.66	
Summer Training				Summer Internship for the third year without credits, only 'Pass' or 'Fail
Other				

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
First Year / First Semester	UOT1101	Arabic Language	2	
First Year / First Semester	TUFSFT1102	Physics	2	2
First Year / First Semester	TUFSFT1103	Organic Chemistry	2	2
First Year / First Semester	UOT003	Computer1	2	2
First Year / First Semester	TUFSFT1105	Mathematics	2	
First Year / First Semester	TUFSFT1106	Microbiology	2	2
First Year / Second Semester	TUFSFT1207	English Language	2	
First Year / Second Semester	TUFSFT1208	Analytical Chemistry	2	2
First Year / Second Semester	TUFSFT1209	Biostatistics	2	2
First Year / Second Semester	TUFSFT12010	Biosafety and Biosecurity	2	2
First Year / Second Semester	TUFSFT12011	Human Rights and Democracy	2	
First Year / Second Semester	TUFSFT12012	Fundamentals of Engineering Workshops	2	2
Second Year / First Semester	TUFSFT23013	Biochemistry	2	2
Second Year / First Semester	TUFSFT23014	Biotechnology	2	2
Second Year / First Semester	TUFSFT23015	Food Health and Safety	2	2
Second Year / First Semester	TUFSFT23016	Food Plant Management and Product Marketing	2	
Second Year / First Semester	TUFSFT23117	Computer Applications in Food Laboratories	2	2
Second Year / First Semester	UOT1202	English Language 2	2	
Second Year / Second Semester	UOT1101	Arabic Language 2	2	
Second Year / Second Semester	TUFSFT24018	Principles of Food Manufacturing	2	2
Second Year / Second Semester	TUFSFT24019	Nanotechnology	2	2
Second Year /	TUFSFT24020	Food and Dairy Plant	2	2

Second Semester		Engineering		
Second Year / Second Semester	UOT1104	Computer 2	2	2
Second Year / Second Semester	TUFSFT24021	Ba'ath Party Crimes	2	2
Third Year / First Semester	TUFSFT35022	Food Chemistry	2	2
Third Year / First Semester	TUFSFT35023	Grain Technology	2	
Third Year / First Semester	TUFSFT35124	Food Microbiology	2	2
Third Year / First Semester	TUFSFT35025	Water and Waste Treatment in Food Plants	2	2
Third Year / First Semester	TUFSFT240226	Physical Chemistry	2	2
Third Year / First Semester	TUFSFT35027	Storage and Handling	2	2
Third Year / Second Semester	TUFSFT36028	Quality Control and Quality Assurance	2	2
Third Year / Second Semester	TUFSFT36029	Dairy Chemistry	2	2
Third Year / Second Semester	TUFSFT36030	Date Processing Technology	2	2
Third Year / Second Semester	TUFSFT36131	Food Technology 1	2	2
Third Year / Second Semester	TUFSFT36132	Food Analysis	2	2
Third Year / Second Semester	TUFSFT36133	Food Packaging	2	2
Fourth Year / First Semester	TUFSFT47034	Scientific Research Methodology	2	
Fourth Year / First Semester	TUFSFT47035	Food Additives	2	2
Fourth Year / First Semester	TUFSFT47036	Food Product Development and Evaluation	2	2
Fourth Year / First Semester	TUFSFT47037	Enzymes	2	2
Fourth Year / First Semester	TUFSFT47038	Human Nutrition	2	
Fourth Year / First Semester	TUFSFT47039	Dairy Technology	2	2
Fourth Year / Second Semester	TUFSFT48140	Graduation Project / Thesis	2	2
Fourth Year / Second Semester	TUFSFT48141	Food Technology 2	2	2
Fourth Year / Second Semester	TUFSFT48142	Industrial Microbiology	2	2
Fourth Year / Second Semester	TUFSFT48043	Meat Technology	2	2

Fourth Year / Second Semester	TUFSFT48144	Bread and Pastry	2	2
Fourth Year / Second Semester	TUFSFT48045	Professional Ethics	2	

8. Expected learning outcomes of the program

Knowledge

Graduates will be able to understand the functional composition of food components, the interactions, and the changes that occur in these components. This skill will assist them in analyzing how these interactions affect the quality and safety of food products, enabling them to make informed decisions in the fields of production, preservation, and nutrition.	1. The student must master the basic principles of the required sciences. 2. The student must understand the necessary scientific details related to the subject. 3. The student must be able to analyze new scientific developments.

Skills

Graduates will be able to use laboratory equipment correctly and efficiently while conducting experiments and practical procedures. They will also have the ability to follow appropriate safety protocols to ensure their own safety and the safety of others while working in the laboratory. These skills will contribute to enhancing their ability to analyze data and draw accurate and reliable conclusions.	1. A good understanding of the principles of food industry science and related fields, along with the ability to manufacture various food products. 2. Graduates are capable of conducting laboratory experiments and field studies using scientific requirements and computational techniques. 3. A good familiarity with scientific terminology in the specialization.

Ethics

Scientific Knowledge Graduates will be able to demonstrate a balanced understanding of how scientific and technological knowledge evolves, including the following concepts: • **Conducting practical experiments in food microbiology:** Students will be able to perform tests such as direct microbial counting and total plate count. • **Laboratory experiments in food and dairy chemistry:** Students will be capable of conducting complex experiments related to food quality and food processing operations using a	

variety of laboratory accessories. • **Application of microbiology:** Students will be able to conduct experiments related to general, food, and industrial microbiology. • **Analysis of food components:** Students will be able to conduct experiments related to determining moisture, ash, protein, fats, carbohydrates, and vitamins. • **Management of food production processes:** Students will be able to implement food production processes and procedures while observing appropriate safety protocols, including the principles and fundamentals of food manufacturing. • **Application of nanotechnology:** Students will be able to apply nanotechnology in food and dairy products, as well as understand the technology behind dates, meat, and fish products. • **Human nutrition knowledge:** Graduates will be able to demonstrate a balanced understanding of human nutrition and how modern scientific developments affect our dietary and health habits.	
Outcomes	Commitment to University Institutional Ethics

9. Teaching and Learning Strategies

1. Classroom education through theoretical and practical lectures.
2. Learning through organizing workshops, seminars, and specialized training courses in the field of Food Science and Technology.
3. Preparation of reports and scientific research.

10. Evaluation methods

1. Evaluative examinations.
2. Preparation and scientific discussion of research.
3. Writing reports accurately and in an organized manner.
4. Attendance and participation in daily activities.

11. Faculty						
Faculty Members						
Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Assistant Professor	Food Science	Clinical Nutrition			Sami Khader Said	
Assistant Professor	Food Science	Human Nutrition			Adnan Mohammed Ahmeid Aspak	
Lecturer	Food Science	Food Science			Ahmed Hamad Mohammed Jandal	
Lecturer	Food Science	Food Science			Mohannad Mahdi Jumaa Jandal	
Lecturer	Chemistry	Physical Chemistry			Munaf Khalaf Mahmood	
Assistant Lecturer	Agricultural Science	Agricultural Science			Saad Ahmed Khalaf	
Assistant Lecturer	Agricultural Science	Agricultural Science			Osama Abdullah Ahmeid	
Assistant Lecturer	Chemistry	Analytical Chemistry			Nimir Moayed Khalaf	

Professional Development

Guiding New Faculty Members

New faculty members should be directed to focus on developing the academic curriculum, improving lecture delivery methods, and adopting effective strategies to communicate scientific material to students.

Professional Development for Faculty Members

Efforts should be made to organize training courses and workshops aimed at enhancing the skills and expertise of faculty members. These initiatives will help improve their teaching abilities and keep them updated with the latest developments in their fields.

12. Acceptance Criterion

The central admission determined by the Ministry of Higher Education and Scientific Research for graduates of preparatory school in the scientific branch.

13. The most important sources of information about the program

1. Textbooks and curriculum prescribed by the Ministry of Higher Education and Scientific Research.
2. External scientific sources.
3. Utilizing libraries and the internet.

14. Program Development Plan

The department prepares academic and research plans aimed at developing the department. These plans are formulated by the department head, the scientific committee, and the department council.

Program Skills Outline															
				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
First / First course	UOT1101	Arabic Language	B	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT1102	Physics	B	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT1103	Organic Chemistry	C	√	√	√	√	√	√	√	√	√	√	√	√
	UOT003	Computer1	B	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT1105	Mathematics	B	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT1106	Microbiology	C	√	√	√	√	√	√	√	√	√	√	√	√
First / Second course	TUFSFT1207	English Language	B	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT1208	Analytical Chemistry	C	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT1209	Biostatistics	B	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT12010	Biosafety and Biosecurity	B	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT12011	Human Rights and Democracy	B	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT12012	Fundamentals of Engineering Workshops	C	√	√	√	√	√	√	√	√	√	√	√	√
Second / First course	TUFSFT23013	Biochemistry	C	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT23014	Biotechnology	C	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT23015	Food Health and Safety	C	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT23016	Food Plant Management and Product Marketing	C	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT23117	Computer Applications in Food	C	√	√	√	√	√	√	√	√	√	√	√	√

		Laboratories													
	UOT1101	Arabic Language 2	B	√	√	√	√	√	√	√	√	√	√	√	√
Second / Second course	UOT1202	English Language 2	B	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT24018	Principles of Food Manufacturing	B	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT24019	Nanotechnology	C	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT24020	Food and Dairy Plant Engineering	C	√	√	√	√	√	√	√	√	√	√	√	√
	UOT1104	Computer 2	C	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT24021	Ba'ath Party Crimes	B	√	√	√	√	√	√	√	√	√	√	√	√
Third / First course	TUFSFT35022	Food Chemistry	C	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT35023	Grain Technology	C	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT35124	Food Microbiology	C	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT35025	Water and Waste Treatment in Food Plants	C	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT240226	Physical Chemistry	C	√	√	√	√	√	√	√	√	√	√	√	√
Third/second course	TUFSFT35027	Storage and Handling	C	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT36028	Quality Control and Quality Assurance	C	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT36029	Dairy Chemistry	C	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT36030	Date Processing Technology	C	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT36131	Food Technology 1	C	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT36132	Food Analysis	C	√	√	√	√	√	√	√	√	√	√	√	√
Fourth/ First course	TUFSFT36133	Food Packaging	S	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT47034	Scientific Research Methodology	C	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT47035	Food Additives	C	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT47036	Food Product Development and	C	√	√	√	√	√	√	√	√	√	√	√	√

		Evaluation													
	TUFSFT47037	Enzymes	C	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT47038	Human Nutrition	C	√	√	√	√	√	√	√	√	√	√	√	√
Fourth/ Second course	TUFSFT47039	Dairy Technology	B	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT48140	Graduation Project / Thesis	C	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT48141	Food Technology 2	C	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT48142	Industrial Microbiology	C	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT48043	Meat Technology	C	√	√	√	√	√	√	√	√	√	√	√	√
	TUFSFT48144	Bread and Pastry	S	√	√	√	√	√	√	√	√	√	√	√	√

- **Please tick the boxes corresponding to the individual program learning outcomes under evaluation.**

Course Description

1. Course Name:
Biochemistry
2. Course Code:
TTUFSFT23013
3. Semester / Year:
First / 2025
4. Description Preparation Date:
2025-9- 7
5. Available Attendance Forms:
In-person
6. Number of Credit Hours (Total) / Number of Units (Total)
150/ 76
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Mohanad Mahdi Jumaa Email:Mohanad.m.jumaa91@tu.edu.iq

8. Course Objectives	
Course Objectives	1. Understand the chemical composition of basic biomolecules: Study the chemistry of carbohydrates, amino acids, peptides, proteins, lipids, and vitamins, focusing on their structures, properties, and interactions. 2. Analyze structure-function relationships of biomolecules: Connect structural levels (primary to quaternary) with biochemical functions such as enzymatic activity, signal transduction, and the structural and nutritional roles of proteins. 3. Understand enzyme mechanisms and their catalytic roles: Learn about enzyme structure, nomenclature, classification, and study the mechanisms of catalysis and explanatory models (lock and key, induced fit). 4. Recognize vitamins and nucleic acids and their biological functions: Classify vitamins and identify their biological roles, and provide a comprehensive overview of nucleic acids and their roles in protein synthesis. 5. Apply biochemical principles to understand physiological and cellular processes: Use knowledge of chemical composition and function to understand biological processes such as metabolism, cellular regulation, and protein synthesis.
9. Teaching and Learning Strategies	

Strategy	1. Lecture method with interactive whiteboard. 2. Explanation and clarification: Provide students with fundamentals and additional topics related to organic chemical thinking and analysis. 3. Form discussion groups during lectures to discuss organic chemistry topics that require critical thinking. 4. Ask reflective questions during lectures (e.g., what, how, when, and why) for specific topics. 5. Assign homework that requires self-explanation through causal reasoning.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 4 - September	2	Definition of biochemistry, cell and its types, cell components	General Principles of Biochemistry	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 5 - September	2	Carbohydrates, their functions, and classification	Carbohydrates	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - October	2	Types of monosaccharides, disaccharides, and polysaccharides. Classification of polysaccharides	Carbohydrates	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - October	2	Definition of amino acids, amino acid nomenclature, classification, and properties	Amino Acids: Amino Acid Structure	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - October	2	Peptides: peptide bond, resonance patterns, isomerism, physical properties, and chemical reactions	Peptides	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 4 - October	2	Proteins: protein structure and composition, primary structure, secondary structure	Proteins: protein	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 5 - October	2	Proteins: tertiary structure, quaternary structure	Proteins: protein	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - November	2	Proteins: protein structure and composition	Proteins: protein	Lecture, Projector, Whiteboard,	Exams (Monthly, Daily),

				Marker	Homework
Week 2 - November	2	Proteins: classification, structure, cellular functions (enzymes, cell signaling, ligand transport, structural proteins), protein in nutrition	Proteins: protein	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - November	2	Midterm Exam	Midterm Exam		
Week 4 - November	2	Lipids: Introduction, classification, fatty acids (FA), nomenclature of lipids, saturated fatty acids, unsaturated fatty acids, physical and physiological properties of lipids	Lips: Introduction, Classification	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 5 - November	2	Enzymes: structure and mechanisms, nomenclature, classification, catalytic mechanisms	Enzymes	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - December	2	Enzymes: Thermodynamics, Specificity, Lock-and-Key Model, Induced Fit Model	Enzymes	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - December	2	Vitamins: Functions, Vitamin Classification	Vitamins	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - December	2	Vitamin Classification	Vitamins	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

11. Course Evaluation

Module Evaluation					
As		**Time/Number**	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	LO #1 #2 and #10
	Online Assignments	2	10% (10)	2 and 8	LO #3 #4 #6 #7
	Projects / Lab.	1	10% (10)	6	LO #1 #2 #3 #4 and #5
	Report	2	10% (10)	13	LO #5 #8 and #10

Summative assessment	**Midterm Exam**	2hrs	10% (10)	7	LO #1 - #7
	Final Exam	3hrs	50% (50)	16	All
Total assessment			100% (100 Marks)		

12 . **Learning and Teaching Resources**

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Harper's Illustrated Biochemistry, Twenty-Sixth Edition	yes
Recommended Texts	1Harper's Illustrated Biochemistry, Twenty-Sixth Edition	No
Websites	no	

Course Description

1.name The decision:
Practical Biochemistry
2.code The decision:
COFS23013
3.the chapter/year:
First Fall Semester / Second Phase 2025
4.date numbers this Description
1/9/2025
5.Available attendance forms:
My presence/ laboratory
6.Number of study hours (total) / Number of units (total):
30
7.Name of the course administrator (if more than one name is mentioned)
M.M. Namir Mu'ayyad Khalaf Email:namir.mueed@tu.edu.iq
8.Course objectives
• Linking the practical side with the theoretical side to understand the chemical and physiological foundations of biological processes. **• Developing skills in using laboratory equipment and modern techniques in analyzing biological compounds.** **• Providing the student with basic skills in preparation, implementation and recording within a safe laboratory environment.** **• Identify the brain pathwaysTBasic wild for separating and measuring biocomponents such as carbonACarbohydrates, proteins, fats, and enzymesT.** **• Practice detection methods.qualitativeFor sugars,Fats and proteins.** **• Establishing the principles of laboratory safety and security in handling materials and equipment.** **• Enhancing teamwork skills and commitment to scientific ethics within the laboratory.**
9.Teaching and learning strategies
The main strategy for delivering this course will focus on achieving a balance between theoretical knowledge and practical application, and includes the following: **Live demonstration: Provide a hands-on demonstration of basic concepts and steps before starting the experiments. Assign students real-life problems that require the use of technology.DifferentTo solve it.Divide students into small working groups to carry out experiments together, which enhances teamwork and communication skills.** **Role-taking among team members (eg.Preparation(Measurement, Documentation) to develop individual and group skills. Design experiments that give students the opportunity to discover the principles ofBiochemistrythemselves through observation and inference. Ask open-ended questions that encourage them to think critically.Y.Providing digital educational tools and explanations such as videos, virtual reality simulations, and presentations. Train students on safety procedures and proper handling of chemicals and equipment.**

10.Course structure

week	watches	Name of unit or topic	Required learning outcomes	Learning method	Evaluation method
Week 4	2	The effect of acids on	It shows how acids affect the	Paper lecture,	Exams

- Septem ber		carbohydrates	body through the Molisch test, the Bial test, the Sulphonoff test, and the Anthrone test.	projector, whiteboard and pen	(monthly, daily) Homework
Week 5 - Septem ber	2	Carbohydrate classification	The difference between reducing and non-reducing sugars is known through the Benedict test, the Volhard test, and the Wehling test.	Paper lecture, projector, whiteboard and pen	Exams (monthly, daily) Homework
Week 1 - Octobe r	2	Practical test to find an unknown model of carbohydrates	Knowing the type of sugar in the model through previous tests	Paper lecture, projector, whiteboard and pen	Exams (monthly, daily) Homework
Week 2 - Octobe r	2	Discussion of the report for the first three experiments 1, 2 and 3	Preparing a report on previous experiments and discussing the results	Paper lecture, projector, whiteboard and pen	Exams (monthly, daily) Homework
Week 3 - Octobe r	2	An assignment on the topic of carbohydrates	Task on carbohydrates	Paper lecture, projector, whiteboard and pen	Exams (monthly, daily) Homework
Week 4 - Octobe r	2	Color reactions of proteins	Protein detection by biuret detection and ninhydrin detection	Paper lecture, projector, whiteboard and pen	Exams (monthly, daily) Homework
Week 5 - Octobe r	2	Color reactions of proteins	Million Reveal and HoppenCon Reveal-Cole and unoxidized sulfur detection	Paper lecture, projector, whiteboard and pen	Exams (monthly, daily) Homework
Week 1 - Novem ber	2	Practical test on proteins	Identifying an unknown protein model	Paper lecture, projector, whiteboard and pen	Exams (monthly, daily) Homework
9	Midterm exam				
Week 3 - Novem ber	2	Discussion of the protein report for experiments 4, 5, and 6	Discussion of the results obtained	Paper lecture, projector, whiteboard and pen	Exams (monthly, daily) Homework
Week 4 - Novem ber	2	Experiments on the solubility of fats	Testing the solubility of fats in different solvents	Paper lecture, projector, whiteboard and pen	Exams (monthly, daily) Homework
Week 5 - Novem ber	2	properties of fats	Iodine test for fats	Paper lecture, projector, whiteboard and pen	Exams (monthly, daily) Homework
Week 1 - Decem ber	2	Discussion of experiments 7 and 8	Discussion of the results obtained in experiments 7 and 8	Paper lecture, projector, whiteboard and pen	Exams (monthly, daily) Homework

Week 2 - December	2	Properties of enzymes	The effect of temperature on enzymes	Paper lecture, projector, whiteboard and pen	Exams (monthly, daily) Homework
Week 3 - December	2	Properties of enzymes	Effect of light on enzymes	Paper lecture, projector, whiteboard and pen	Exams (monthly, daily) Homework

11.Course Evaluation

Module Evaluation
Course material evaluation

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	5	10	2,3,5,9,11	1, 3 and 4
	Online Assignments	2	5	5 and 9	5
	Projects /Lab.	2	5	10 and 15	4
	Report	10	10	All experiments	3, 4 and 5
Summative assessment	Midterm Exam	1	20	8	1, 3 and 3
	Final Exam	1	50	15	ALL
Total assessment			100% (100 Marks)		

12.Learning and teaching resources

Harper's Illustrated Biochemistry, Twenty-Sixth Edition	Main references

Course Description

1. Course Name:
Practical Biotechnology
2. Course Code:
FST23014
3. Semester / Year:
First Fall Semester / Second Phase 2025
4. Description Preparation Date:
1/9/2025
5. Available Attendance Forms:
My presence/ laboratory
6. Number of Credit Hours (Total) / Number of Units (Total)
30
7. Course administrator's name (mention all, if more than one name)
Name: Nameer Muayad Khalaf Email: namir.mueed@tu.edu.iq

8. Course Objectives	
Course Objectives	1. Providing students with the basics of practical biotechnology: understanding the basic principles and techniques used in laboratories. 2. Linking theory and practice: applying theoretical concepts to concrete practical experiments. 3. Developing scientific research skills: training students in critical thinking and problem-solving using modern biological tools.

9. Teaching and Learning Strategies	
Strategy	1- Understanding the role of biotechnology and its applications in various sciences. 2. Emphasizing the importance of knowing methods for extracting biological materials. 3. Teaching students how to handle equipment in biotechnology laboratories. 4. Developing students' skills in preparing special materials for extracting biological materials. 5. Understanding the concept of biotechnology and its relationship to other sciences. 6. Studying the extraction and characterization of biological materials. 7. How to handle, prepare, and extract different types of biological materials. 8. How to prepare materials and the requirements for extracting biological materials.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 4 - September	2	Laboratory Safety Guidelines	Educating students about biological and chemical hazards	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 5 - September	2	Introduction to Polymerase Chain Reaction (PCR)	Learn about PCR technology	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - October	2	Introduction to Polymerase Chain Reaction (PCR)	Learn about PCR technology	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - October	2	Practical experience in polymerase chain reaction	Practical experience in polymerase chain reaction	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - October	2	Practical experience in polymerase chain reaction	Practical experience in polymerase chain reaction	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 4 - October	2	Midterm exam			
Week 5 - October	2	DNA Extraction	DNA Extraction	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - November	2	DNA Extraction	DNA Extraction	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - November	2	RNA Extraction	RNA Extraction	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - November	2	RNA Extraction	RNA Extraction	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 4 - November	2	cDNA Synthesis	cDNA Synthesis	Lecture, Projector, Whiteboard,	Exams (Monthly, Daily),

				Marker	Homework
Week 5 - November	2	cDNA Synthesis	cDNA Synthesis	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - December	2	Plasmid Extraction	Plasmid Extraction	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - December	2	Plasmid Extraction	Plasmid Extraction	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - December	2	review		Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

11. Course Evaluation

Module Evaluation					
As		**Time/Number**	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10%(10)	5 and 10	LO #1, #2 and #10, #11
	Online Assignments	2	10%(10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10%(10)	Continuous	All
	Report	1	10%(10)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	10%(10)	7	LO #1 - #7
	Final Exam	3hr	50%(50)	16	All
Total assessment			100% (100 Marks)		

12 .

Learning and Teaching Resources		
Learning and Teaching Resources	**Text**	**Available in the Library?**
Required Texts		yes
Recommended Texts		No
Websites		

Course Description

1. Course Name:
Food health and safety
2. Course Code:
TUFSFT23015
3. Semester / Year:
First / 2025-2026
4. Description Preparation Date:
2025/9/1
5. Available Attendance Forms:
My presence
6. Number of Credit Hours (Total) / Number of Units (Total)
150
7. Course administrator's name (mention all, if more than one name)
Name: Assistant Professor Dr. Adnan Mohammed Ahmeed Email: adnan.m.ahmeed@tu.edu.iq

8. Course Objectives

Course Objectives	1. The student should understand that spoiled food, whether due to improper storage or viral or bacterial poisoning, is a major cause of human illness in this modern age, due to fast-paced lifestyles, time constraints, and changing dietary patterns. 2. The student should understand that food safety and quality are of paramount importance to human health. 3. The student should be familiar with proper food handling and the importance of general and personal hygiene, which impacts food. 4. The student should be familiar with the types of food poisoning, whether microbial, chemical, or foods that naturally cause poisoning. 5. The student should be familiar with methods for detecting food poisoning and treating cases of poisoning.

9. Teaching and Learning Strategies

Strategy	1- Encouraging students to review and read the latest scientific findings and methods for devising solutions and addressing manufacturing problems and the numerous cases of food poisoning. 2- Training on the latest detection and control methods and systems in food factories and laboratories. 3- Enabling students to prepare detailed reports on the condition of a product, process, or production line monitoring. 4- Training on the latest poisoning detection technologies and devices.

10. Course Structure

Week	Hours	Required Learning	Unit or subject	Learning	Evaluation

		Outcomes			method
Week 4 - September	2	- The correct way to wash hands/ Some dangerous types of bacteria that may be present on hands as a result of contact/ Practical experiment	Health of food facility workers and methods of monitoring it	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 5 - September	2	Definition of Hazard Analysis and Critical Control Points (HACCP) / HACCP rules/ Practical experience	Hazard Analysis and Critical Control Points	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - October	2	What is microbial Indicators? Benefits of microbial evidence. Practical experiment.	Microbial Indicators	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - October	2	Methods for estimating bacterial counts: 1- Counting using standard plates (indirect counting) 2- Direct counting using a microscope 3- Most probable counting	Knowing the total number of bacteria	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - October	2	- Definition of pathogenic bacteria/some types of pathogenic bacteria/analytical diagnostic index/Vitec diagnostic system	Diagnosis of pathogenic bacteria	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 4 - October	2	- Definition of mycotoxins/Physical and chemical properties of some mycotoxins/Qualitative and quantitative detection of mycotoxins/Estimation of mycotoxins in foods	mycotoxins	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 5 - October	2	- What is a pesticide? / The most important causes of pesticide pollution / Estimation of pesticides in food	Pesticides in food	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - Novemb	2		First midterm exam		

er					
Week 2 - November	2	Definition of antibiotics/side effects of antibiotics/detection of antibiotics in milk	antibiotics	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - November	2	What is cleaning and disinfection and how to verify it? Disinfection methods/Practical experience	Cleaning and disinfection	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 4 - November	2	- Knowledge of air quality from a microbial perspective/practical experience	Air pollution in a food manufacturing facility	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 5 - November	2	-Hormones in meat/ The widespread use of hormones in fattening/ The risks of hormones in meat on human health/ Detection methods	Hormones in food	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - December	2	- Examination of grain samples and stored materials / Sampling devices / Sampling methods / Methods for estimating the percentage of insect infestation / Types of examination	Grain inspection and storage locations	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - December	2	- Definition of genetically modified foods / Examples of genetically modified foods / Evaluation of the safety of genetically modified foods in general based on several factors / Detection of genetic modification	genetically modified foods	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - December	2	Definition of melamine/ Melamine toxicity/ Sources of melamine in foods/ Methods for estimating melamine in milk.	melamine	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

11. Course Evaluation

Module Evaluation					
As		**Time/Number**	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	LO #1 #2 and #19, #10
	Online Assignments	2	10% (10)	8 and 9	LO #4 and #5
	Projects / Lab.	1	10% (10)	continuous	All
	Report	1	10% (10)	13	LO #8 and #10, #12
Summative assessment	**Midterm Exam**	2hrs	10% (10)	7	LO #1 - #6
	Final Exam	3hrs	50% (50)	16	All
Total assessment			100% (100 Marks)		

12 Learning and Teaching Resources

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Food Health: Theoretical and Practical Parts by Dr. Amer Abdel Rahman	
Recommended Texts	Author: Dr. Khalaf Al-Sufi, book: Microbiology, Practical Part	
Websites	1-www.google.com. 2-Food Poisoning - A Medical Dictionary, Bibliography, and Annotated Research Guide to Internet References.	

Course Description

1. Course Name:
Computer applications in food laboratories
2. Course Code:
TUFSFT23117
3. Semester / Year:
First / 2025
4. Description Preparation Date:
1 -9-2025
5. Available Attendance Forms:
In presence
6. Number of Credit Hours (Total) / Number of Units (Total)
6 /150
7. Course administrator's name (mention all, if more than one name)
Name: Osama Abdullah Aohmyed Email: osama.abdulla@tu.edu.iq

8. Course Objectives

Course Objectives	1. Teaching students to use the computer in designing food processing equipment. 2. Performing engineering calculations and developing food processing through the possibility of conducting preliminary studies for various plants. 3. Introducing students to how to write a program, complete it, and convert it into an executable program using the computer. 4. Introducing students to how to measure and control all the engineering variables that occur in equipment during food processing. 5. Introducing students to the fundamental principles of designing food and dairy plants.

9. Teaching and Learning Strategies

Strategy	1. **Project-Based Learning:** Students are assigned practical projects such as creating a database for food plants or analyzing experimental data using statistical software. 2. **Hands-On Learning:** Direct training in the computer lab on various software (Excel, SPSS, MATLAB, food label design programs). 3. **Collaborative Learning:** Students are divided into groups to solve practical problems, such as designing a digital system for monitoring food product quality. 4. **Problem-Based Learning:** Presenting real problems faced by food plants (e.g., calculating loss rates or

	evaluating product quality) for students to solve using the computer. 5. **Simulation:** Using simulation software for production lines or food processing operations to link theory with practice. 6. **Interactive Demonstration:** The instructor explains software tools through demonstrations and practical videos with student participation. 7. **Self-Learning:** Encouraging students to explore new tools and software related to the food industry and apply them. 8. **Blended Learning:** Combining traditional classroom lectures with online platforms and e-training.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 4 - September	2	Learn how to convert units from one unit system to another.	Unit conversion program	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 5 - September	2	Calculating nutrient quantities using special programs such as the USDA program.		Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - October	2	Performing heat and mass transfer calculations in foods		Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - October	2	Be able to perform calculations for food density and moisture.		Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - October	2	Knowledge of the basics of food design and manufacturing using specialized software.		Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 4 - October	2	Learn how to use simulation software in food manufacturing processes.		Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 5 - October	2	Ability to calculate thermal conductivity and thermal diffusivity coefficients.		Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - Novemb	2	Ability to use Excel programs in food		Lecture, Projector,	Exams (Monthly,

er		manufacturing calculations.		Whiteboard, Marker	Daily), Homework
Week 2 - November	2	Working on Excel programs to perform calculations in food and dairy engineering		Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - November	2	Working on SPSS to perform calculations in food laboratories		Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 4 - November	2	A detailed explanation of the SPSS program and how to determine the required samples		Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 5 - November	2	Working on descriptive statistics and finding Pearson and Spearman coefficients		Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - December	2	Conducting the analysis using SPSS and finding the one-way and three-way variance		Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - December	2	Finding a t-test and finding food samples and their safety		Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

11. Course Evaluation

Module Evaluation					
As		**Time/Number**	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5 and 11	LO #1 #4 and #10
	Online Assignments	2	10% (10)	6 and 12	LO #3 #4 and #9 , #10
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	1 - 15	All
Summative assessment	**Midterm Exam**	2hrs	10% (10)	7	LO #1 - #7
	Final Exam	3hrs	50% (50)	16	All
Total assessment			100% (100 Marks)		

12 .

Learning and Teaching Resources

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	Computer Applications in Food Engineering, Asaad Rahman Saeed Al-Halfi, 2012	yes
Recommended Texts	Thermodynamic an Engineering Approach, Yuns A. Cengel, 2006	No
Websites		

Course Description

1. Course Name:
Food factory management and product marketing
2. Course Code:
TUFSFT23016
3. Semester / Year:
First / 2025
4. Description Preparation Date:
1 -9-2025
5. Available Attendance Forms:
In presence
6. Number of Credit Hours (Total) / Number of Units (Total)
125/6
7. Course administrator's name (mention all, if more than one name)
Name: saad Ahmed Khalaf Email: saad.khalaf21@tu.edu.iq

8. Course Objectives

Course Objectives	6. 1. Identify the characteristics and features of successful food factory management. 7. 2. Identify the importance of the work planning function performed by the manager. 8. 3. Identify the importance of the organizational function and how it is performed for the project's success. 9. 4. Understand how the manager performs the oversight function. 10. 5. Understand the functions of an institution, company, or factory, including production management and human resources. 11. 6. Understand the importance of marketing to food factories. 12. 7. Teach the student modern marketing methods and how to enter markets.

9. Teaching and Learning Strategies

Strategy	9. The learning strategy for the Laboratory Management course enables the student to understand successful laboratory management and its role in the success of food projects, to know successful management and its role in the success of food industry projects, to know bad management and to identify its causes, and to create a suitable atmosphere for the student to pay attention during the lecture, which makes him apply what he has learned on the ground in public life

10. Course Structure

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

Week 4 - September	2	Establishing food factories and the conditions that must be met.		Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 5 - September	2	Planning in food factories		Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - October	2	Sanitary conditions required in food factories		Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - October	2	Detergents used in washing and sterilizing food factories.		Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - October	2	. Prevention and industrial safety in food factories and plants		Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 4 - October	2	Control and health regulations in food factories		Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 5 - October	2	National food control systems		Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - November	2	Food monitoring and epidemiological data		Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - November	2	Food control principles		Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - November	2	Planning and implementing control measures in food factories		Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 4 - November	2	Strengthening organizational structures in food control systems		Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 5 - November	2	Coordination in the food control system		Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - Decemb	2	Financing food control systems		Lecture, Projector,	Exams (Monthly,

er				Whiteboard, Marker	Daily), Homework
Week 2 - December	2	Hazard Analysis and Critical Control Points System		Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

11. Course Evaluation

Module Evaluation					
As		**Time/Number**	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5 and 11	LO #1 #4 and #10
	Online Assignments	2	10% (10)	6 and 12	LO #3 #4 and #9 , #10
	seminar	1	10% (10)	Continuous	LO1 #2#3 #4 #5 #8 and
	Report	2	10% (10)	1 - 15	LO #5 #8 and #10
Summative assessment	**Midterm Exam**	2hrs	10% (10)	7	LO #1 - #7
	Final Exam	3hrs	50% (50)	16	All
Total assessment			100% (100 Marks)		

12 . Learning and Teaching Resources

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	-1. Principles of Business Administration: Fundamentals and Modern Trends, Dr. Ahmed Abdulrahman Al-Shammari/Management and Marketing/King Saud University 2009 2. Production and Operations Management Book, Second Edition, 2018, Dr. Ithar Abdulhadi Al-Faihan 3. Principles of Modern Marketing Between Theory and Practice Dr. Zakaria Ahmed Azzam and others 2008	yes
Recommended Texts	Industrial Management, Kingdom of Saudi Arabia - General Organization for Vocational Training - General Administration for Curriculum Design and Development	No
Websites	https:www.uobaghdad.edu.iq	

Course Description

1. Course Name:
Arabic Language
2. Course Code:
UOT1101
3. Semester / Year:
First / First
4. Description Preparation Date:
2025-9-1
5. Available Attendance Forms:
In-person
6. Number of Credit Hours (Total) / Number of Units (Total)
50 / 2
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Mohammad Abdullah Ghathwan

8. Course Objectives	
Course Objectives	• Developing love for the Arabic language, the language of the Quran. • Understanding the elements of beauty in the Arabic language and its literature. • Enhancing the ability to study various aspects of the Arabic language. • Learning vocabulary, structure, and the correct style of Arabic. • Developing the ability to read Arabic correctly and use the language effectively in communication to improve presentation and expression. • Enhancing students' literary sense so they can recognize the aesthetic aspects in presentation and meaning. • Improving students' spelling and handwriting skills. • Enabling students to understand complex linguistic structures and ambiguous forms of expression and to think critically. • Teaching students to follow the rules of dialogue and respect differing viewpoints.

9. Teaching and Learning Strategies	
Strategy	I will use various teaching methods ranging from traditional to modern ones: 1. **Inductive Method:** This method starts from specific examples and reaches general conclusions. It begins by presenting diverse grammatical examples related to a specific topic on the board and explaining them interactively

	with students, allowing conclusions to be drawn naturally. 2. **Discovery Learning Method:** This method is the opposite of rote learning. In this case, the student is responsible for discovering knowledge and reaching conclusions independently. 3. **Dialogue Method:** This method depends on dialogue and discussion between the teacher and the students. I will prepare a series of questions related to the topic to help the student be prepared for the lesson and reach correct answers.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 4 - September	2	Arabized and indeclinable nouns, verbs: past, present, and imperative; meaningful and structural letters.	Parts of Speech: Noun, Verb, Preposition	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 5 - September	2	Diacritical marks: damma (ُ), fatha (َ), kasra (ِ), and sukun (ْ); alif, waw, and ya; the addition and omission of the nun.	Original and Derivative Case Markers	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - October	2	Dualization of nouns, their declension signs, and their analogous forms.	Dual Forms	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - October	2	Nouns and their declension signs, along with their analogous forms in both masculine and feminine plural.	Masculine Plural	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - October	2	The difference between indefinite and definite nouns, their categories, and how to convert an indefinite noun to a definite one.	Feminine Plural	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 4 - October	2	The five verb forms, their conjugations, and their declension signs.	Indefinite and Definite Nouns	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

Week 5 - October	2	Types of hamza on alif, waw, ya, and on the line, with clarification of some common misused words and their corrections	The Five Verbs	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - November	2	Midterm Exam	Midterm Exam	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - November	2	Rules for Writing Hamza and Correcting Common Language Errors	Rules for Writing Hamza and Correcting Common Language Errors	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - November	2	Sections of numerical sentences and types of numbers.	Numbers and Their Nouns	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 4 - November	2	Tied and untied ta’ and the difference between them.	Rules for Writing the Letter "T" at the End of a Word	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 5 - November	2	An overview of literature in the Islamic era, including the poem Banat Su’ad by Ka’b bin Zuhayr.	Literature in the Islamic Era	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - December	2	A poem by Abdul Baqi Al-Omari in praise of Imam Ali (peace be upon him).	Memorizing a Poem about Imam Ali (PBUH)	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - December	2	The definition of rhetoric, Its founders, and the science of embellishment (al-badi’).	Rhetorical Arts and Their Techniques	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - December	2	Diacritical marks: damma, fatha, kasra, sukun; alif, waw, ya; the addition and omission of the nun.	Original and Derivative Case Markers (Repeated)	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

11. Course Evaluation

Module Evaluation					
As		**Time/Number**	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	3	10% (10)	3,7 and 14	LO #2 and #6 #13
	Assignments	2	10% (10)	5 and 12	LO #4 and #11
	نشاط لاصفي	1	10% (10)	13	LO #12
	Report	1	10% (10)	11	LO #7 #9 and #10
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

12. Learning and Teaching Resources

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	البلاغة فنونها وافنانها علم البيان والبديع . د. غضل حسن عباس، دار الفرقان للنشر والتوزيع ، 2005، عمان – الأردن الشامل في اللغة العربية ، د.عبدالله النقراط، دار قتيبة ط1، 2003	yes
Recommended Texts	العربية الجامعية لغير المختصين، د.عبده الراجحي، دار النهضة الحديثة، بيروت-لبنان، 2007	no
Websites	https://www.almrsal.com/post/874898 https://kenoozarabia.com/2019/12/20/	

Course Description Form

1. Course Name:
Computer 1
2. Course Code:
UOT003
3. Semester / Year:
First / First
4. Description Preparation Date:
2025-9-1
5. Available Attendance Forms:
In-person
6. Number of Credit Hours (Total) / Number of Units (Total)
75 / 3
7. Course administrator's name (mention all, if more than one name)
Name: Saad Ahmad Khalaf

8. Course Objectives

Course Objectives	• Using computers to enhance students' skills. • Learning the basic concepts related to computers. • Analyzing the application software used for preparing reports, research papers, and graduation projects, with a focus on applications like Microsoft Word, PowerPoint, and Excel. • Learning the basic concepts of using the internet and enabling students to search for topics and materials online.

9. Teaching and Learning Strategies

Strategy	The main strategy used in this course is to encourage students to use computers effectively and understand how they work. It also aims to improve and expand critical thinking skills. These objectives are achieved through interactive teaching, practical lessons, and a focus on hands-on computer applications and exercises.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 4 - September	2	Introduction to Computers	Introduction to Computers	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 5 -	2	Basic Computer	Basic Computer	Lecture,	Exams

September		Fundamentals	Fundamentals	Projector, Whiteboard, Marker	(Monthly, Daily), Homework
Week 1 - October	2	Computer Components	Computer Components	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - October	2	Hardware Components	Hardware Components	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - October	2	Software Components	Software Components	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 4 - October	2	Introduction to Operating Systems	Introduction to Operating Systems	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 5 - October	2	Introduction to Operating Systems	Introduction to Operating Systems	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - November	2	Introduction to Microsoft Office Suite	Introduction to Microsoft Office Suite	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - November	2	Midterm Exam	Midterm Exam	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - November	2	Word Program: Part 1 – Basic Word Features & Study	Word Program: Part 1 – Basic Word Features & Study	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 4 - November	2	Excel Program: Basic Excel Features	Excel Program: Basic Excel Features	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 5 - November	2	Excel Study	Excel Study	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - December	2	PowerPoint Program & Basic PowerPoint Features	PowerPoint Program & Basic PowerPoint Features	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - December	2	PowerPoint Study 2	PowerPoint Study 2	Lecture, Projector, Whiteboard,	Exams (Monthly, Daily),

				Marker	Homework
Week 3 - December	2		Internet Programs: Basic Program Features	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

13. Course Evaluation

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	6 and 10	LO #5 and #9
	Assignments	2	10% (10)	3 and 12	LO #2 and #11
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	14	LO #13
Summative assessment	**Midterm Exam**	2hr	10% (10)	9	LO #1 - #8
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

14. Learning and Teaching Resources

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	*Green on Green: Basic Computer Essentials,"* Khadr Ali Khadr, 2016	
Recommended Texts	*Fundamentals of Computer Technology,"* Thwar Thabet Aref, 2004 *"Microsoft Office Encyclopedia,"* Mohamed Gamal Qabeha, 2002, Dar Al-Ratib Publishing, Egypt *Habraken, Joe (Author). (1901). Microsoft Office Inside Out (Office 2021 and Microsoft 365), Pearson Education.* Link *Lambert, J., Frye, C. (2018). Microsoft Office 2019 Step by Step, Microsoft Press, USA*	
Websites	noor-book.com/z9dwej	

Course Description Form

1. Course Name:

Applied Physics

2. Course Code:

TUFSFT1102

3. Semester / Year:

First / First

4. Description Preparation Date:

2025-9-1

5. Available Attendance Forms:

In-person

6. Number of Credit Hours (Total) / Number of Units (Total)

150 / 6

7. Course administrator's name (mention all, if more than one name)

Name: Dr. Manaf Khalaf Mahmoud

8. Course Objectives

Course Objectives	1. This course deals with the basic concepts of physics. 2. This course is an introduction to biophysics. 3. This course aims to improve problem solving skills through the application of various techniques. 4. This course is designed to develop an understanding of the interaction of heat, temperature, and pressure in food components. 5. Solve mathematical problems related to biophysical concepts.

9. Teaching and Learning Strategies

Strategy	The main strategy for delivering this module will focus on maintaining student interest by utilizing a straightforward format for teaching physics. This approach involves explaining concepts clearly, showing them through practical examples, and using simple analogies. Once students understand these concepts, they will be able to apply them in a variety of contexts in the future.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 4 - September	2	The student will be able to define viscosity as a measure of a fluid's resistance to flow. The student will be	Viscosity	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

		able to distinguish between dynamic viscosity and dynamic viscosity. The student will be able to identify how factors such as temperature, pressure, and chemical composition affect the viscosity of fluids. The student will be able to identify the units used to measure viscosity such as Pascal-second (Pa·s) or Millipasso (mPa·s). The student will understand how viscosity is used in various fields such as the petroleum industry, chemical engineering, and food industries			
Week 5 - September	2	The student will be able to define mechanical properties such as strength, stress, strain, elasticity, hardness, and ductility. The student will understand how stress (such as mechanical stress) and strain affect the behavior of materials. Know the difference between tensile stress, shear stress, and bending stress. The student will be able to analyze the behavior of materials under constant or variable loads, such as tension, compression, and bending.	The Mechanical properties of materials	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - October	2	The student should be able to define heat as energy transferred between objects due to	Heat and Temperature	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

		a difference in temperature. To understand the difference between temperature (as a measure of thermal energy) and heat (the amount of energy transferred). To know the units used to measure temperature (such as Celsius, Fahrenheit, and Kelvin) and how to convert temperatures between these units.			
Week 2 - October	2	The student will be able to define motion in one dimension as the movement of an object in one direction along a given axis. The student will understand the relationship between position, time, and velocity in linear motion. The student will recognize the difference between physical variables such as position (displacement), velocity, and acceleration, and how each affects motion.	Motion in one Dimension	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - October	2	The student will be able to define a laser as a device that produces coherent and collimated light radiation in a specific direction. The student will know the physical basics of	Laser and medical application	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

		laser operation, including stimulated emission and the interaction between electrons and energy. The student will be able to explain the properties of a laser beam such as wavelength, frequency, power, focus and coherence, and how these properties affect medical applications.			
Week 4 - October	2	Optics	Introduction to optics	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 5 - October	2	Midterm Exam	Midterm exam	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - November	2	The student will understand the laws of reflection and refraction, such as Snell's law of refraction and how to apply it in different media. The student will know how to calculate the angle of refraction and the angle of reflection in different fluids and materials. The student will be able to explain the basic properties of light such as reflection, refraction, diffraction, and interference. The student will know how to measure wavelength and frequency, and how these properties affect the behavior of light.	Effects of Radiation on Humans	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 -	2	The student will know	Physical Properties of	Lecture,	Exams

November		the basic physical properties of fluids such as density, viscosity, liquid pressure, specific heat, and surface tension. The student will be able to explain how density affects the behavior of fluids in different environments and how to calculate density using the relationship between mass and volume.	Fluid	Projector, Whiteboard, Marker	(Monthly, Daily), Homework
Week 3 - November	2	The student should be able to define electric current as the movement of electric charges through a conductor. Know the difference between direct current (DC) and alternating current (AC), and distinguish between the properties of each. The student should understand the basic unit of measurement of electric current, which is the ampere, and how to measure it using an ampere meter.	Electric Current	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 4 - November	2	The student will be able to distinguish between physical reactions (such as melting, freezing, and hydrolysis) and chemical reactions (such as oxidation, reaction with acids, or carbonyls) in food materials. The student will be able to identify the chemical and physical reactions that occur	Physical-Chemical Interactions of food	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

		when food is heated, such as caramelization, pasteurization, and the reaction between proteins and fats during cooking. The student will be able to explain the oxidation reactions that occur in fats (such as the smell of burnt oils) and how these reactions affect the quality of food.			
Week 5 - November	2	The student should know the definition of pressure as a force acting on a unit area (N/m^2) and distinguish between types of pressure such as atmospheric pressure, pressure inside liquids, and pressure resulting from gases. The student should be able to interpret Boyle's law which states that the pressure and volume of a gas are inversely proportional at a constant temperature.	Pressure and temperature	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - December	2	The student should know the definition of heat transfer by conduction as a process of transferring thermal energy through a substance from a region of high temperature to a region of low temperature as a result of friction between the particles of the substance.	Conductive Heat Transfer	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - December	2	The student will know the definition of radiation as forms of energy that can be used to kill bacteria and parasites in food,	Effect of Irradiation on Food safety and quality	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

		and improve its safety and quality. The student will know the types of radiation used in food processing such as X-rays, gamma rays, and ultraviolet rays.			
Week 3 - December	2	The student should know the definition of polymers as materials composed of large molecules consisting of repeating units called building blocks or monomers. To identify the types of polymers such as natural polymers (such as cellulose and proteins) and synthetic polymers (such as polyethylene and polyvinyl chloride).	Polymers in Industry	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

11. Course Evaluation

Module Evaluation					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1- #4 and #5- #9
	Assignments	2	10% (10)	4 and 8	LO #4 #3 and #7, #8
	Projects / Lab.	1	10% (10)	7 and 15	LO #1- #7 and #7- #15
	Report	1	10% (10)	14	LO #1 -#15
Summative assessment	Midterm Exam	2hrs	10% (10)	7	LO #1 - #7
	Final Exam	3hrs	50% (50)	16	All
Total assessment			100% (100 Marks)		

12. Learning and Teaching Resources

Learning and Teaching Resources		
	Text	Available in the Library?
Required Texts	Biophysics: An Introduction, Dadan Rosana , Mechanical and Electrical Technology, Guanghsu Chang, Jieh-Shian Young and Wirachman Wisnoe,2015	no
Recommended Texts	APPLIED BIOPHYSICS, Paata J. Kervalishvili,2021	No
Websites	https://ia800204.us.archive.org/30/items/biophysicsconcep00case/biophysicsconcep00case.pdf	

Course Description Form

1. Course Name:
ORGANIC CHEMISTRY
2. Course Code:
TUFSFT1103
3. Semester / Year:
First / First
4. Description Preparation Date:
2025-9-1
5. Available Attendance Forms:
In-person
6. Number of Credit Hours (Total) / Number of Units (Total)
175 / 7
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Mohanad Mahdi Jumaa

8. Course Objectives	
Course Objectives	1. Educate students on organic chemical reactions, chemical structures, and the various forms of organic compounds, including methods for their synthesis. 2. Illuminate the mechanisms of organic reactions and their practical applications, aiming to align with advancements in the field of organic chemistry. 3. Provide students with comprehensive knowledge essential for their qualification to work and conduct research in all areas of organic chemistry.

9. Teaching and Learning Strategies	
Strategy	1. Lectures will be given in parallel with interactive whiteboards. 2. Explanations and explanations will be provided to familiarize students with basic knowledge and supplementary topics in chemical thinking and organic analysis. 3. Discussion groups will be formed during the lecture to address topics in organic chemistry that require critical thinking and analysis. 4. During the lecture, ask students a series of introspective questions related to the specific topic, such as “what,” “how,” “when,” and “why. 5. Assign homework assignments that encourage students to self-explain through causal reasoning.

10. Course Structure

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

Week 4 - September	2	Introduction, Elements and Compounds, Orbitals, Chemical Bonds, Electronegativity, Bond Dissociation Energy, Resonance	General principles in organic chemistry	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 5 - September	2	Introduction, Alkyl Groups, Types of Carbon Atoms, Nomenclature, Physical Properties, Preparation of Alkanes, Reactions	Saturated aliphatic hydrocarbons. Alkanes	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - October	2	Introduction, Nomenclature, Methods of Preparation, Reactions	cycloalkanes	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - October	2	Introduction to them, Classification	unsaturated hydrocarbons	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - October	2	Introduction, Geometric Symmetry, Nomenclature, Properties, Preparation, Reactions	Alkenes.	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 4 - October	2	Introduction, Nomenclature, Properties, Preparation, Reactions	Alkyne.	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 5 - October	2	Introduction to Alcohols, Nomenclature, Properties, Preparation, Reactions	Alcohols.	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - November	2	Midterm Exam	Mid-term exam	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - November	2	Introduction to them, Nomenclature, Properties, Preparation, Reactions	Ethers.	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - November	2	Introduction to them, Nomenclature, Properties, Preparation, Reactions	Simple carbonyl compounds such as aldehydes and ketones.	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 4 - November	2	Introduction to them, Nomenclature, Properties, Preparation, Reactions	Carboxylic acids.	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 5 -	2	Introduction to them,	Amines.	Lecture,	Exams

November		Nomenclature, Properties, Preparation, Reactions		Projector, Whiteboard, Marker	(Monthly, Daily), Homework
Week 1 - December	2	Introduction to them, Nomenclature, Properties, Preparation, Reactions	Amide.	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - December	2	Introduction to them, Nomenclature, Properties, Preparation, Reactions	Esters.	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - December	2	Introduction to them, Nomenclature, Properties, Preparation, Reactions	Aromatic compounds	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

11. Course Evaluation

Module Evaluation					
As		**Time/Number**	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	4, 10	LO #1 #3 #8 #10
	Assignments	2	10% (10)	5 and 9	LO #2 #10
	Projects / Lab.	2	10% (10)	7 and 13	LO #7 #13
	Report	5	10% (10)	2, 4, 6, 8, 10	LO #1-10
Summative assessment	**Midterm Exam**	1	10% (10)	8	LO #1 - #7
	Final Exam	1	50% (50)	15	All
Total assessment			100% (100 Marks)		

13. Learning and Teaching Resources

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	1- Organic chemistry, Morrison and Boyd . 2- Chemistry, Clayden J., Creeves N., Warren S and Wother P., Oxford, 2001.	
Recommended Texts	Organic chemistry	
Websites	https://en.wikipedia.org/wiki/Organic_chemistry	

Course Description Form

1. Course Name:
Mathematics
2. Course Code:
TUFSFT1105
3. Semester / Year:
First / First
4. Description Preparation Date:
2025-9-1
5. Available Attendance Forms:
In-person
6. Number of Credit Hours (Total) / Number of Units (Total)
125 /5
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Manaf Khalaf Mahmoud
8. Course Objectives

Course Objectives	1. demonstrate proficiency in problem solving and logical reasoning skills 2. demonstrate a comprehensive understanding of mathematical theory 3. demonstrate proficiency in rudimentary statistics 4. mathematics is a powerful tool for developing mental discipline and logical reasoning skills 5. systematically organize, represent, analyze, and interpret data to draw conclusions and make predictions based on the results

9. Teaching and Learning Strategies	
Strategy	This module provides a thorough introduction to essential concepts in mathematics and calculus, including topics such as functions, inequalities, limits, derivatives, and integrals. The main objective of this module is to enhance students' mathematical skills and problem-solving abilities across diverse disciplines. Emphasis is placed on understanding theoretical concepts and applying them to real-world situations. The module will include periodic quizzes, a mid-term exam, and a final exam to assess students' progress and understanding.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 4 - September	2	Define a function and distinguish it from other relationships. The ability to plot	Introduction to Functions	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

		functions on the coordinate plane (x, y) and understand the relationship between values. Distinguish between different types of functions such as linear, quadratic, radical, and trigonometric functions.			
Week 5 - September	2	Define inequality and distinguish it from an equation. Understand the different types of inequalities such as linear and nonlinear inequalities, and inequalities with positive and negative coefficients Be able to solve inequalities using appropriate techniques such as simplification, distribution, and division depending on the case. Be able to deal with inequalities that involve adding or subtracting two or more inequalities (such as compound inequalities).	Inequalities	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - October	2	The ability to calculate limits using direct values, division by zero, and applying algebraic laws and special algebras. Study limits as a variable approaches infinity or negative infinity, and understand the behavior of a function in these cases.	Limits	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

		Understand the relationship between limits and continuity and how the value of a limit at a point equals the value of a function at that point in the case of continuity.			
Week 2 - October	2	Defining the derivative as calculating the instantaneous rate of change of a function at a given point, and relating it to the concept of velocity or time change. Calculating the derivative using basic derivative rules such as: Power rule Product rule Quotient rule Chain rule Ability to derive basic functions such as: Linear functions Quadratic functions Radical functions Trigonometric functions	Derivatives (Part 1)	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - October	2	Learn how to calculate derivatives of complex functions using the chain rule. Use derivatives to analyze velocity, slope, and real-world problems such as determining maximum and minimum values (practical applications such as calculations in motion, economics, and engineering).	Derivatives (Part 2)	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 4 - October	2	After this lecture, students can find solutions to all functions and find their derivatives by	Applications of Derivatives	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

		knowing the applications of derivatives.			
Week 5 - October	2	Mid-Term Exam	Mid-Term Exam	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - November	2	Identify types of indefinite integrals in mathematics, such as and , and understand how these types of expressions do not have a definite value directly. Identify situations that result in indefinite transactions when trying to calculate limits, derivatives, or integrals.	Indefinite Integrals	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - November	2	Students can answer all exercises and questions related to indefinite integrals.	Practice problems and exercises	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - November	2	Identify cases that contain transactions that have a specific value in mathematics, such as where and are two non-zero constants, and understand how these values are calculated directly. The ability to calculate limits that lead to specific values as the variable approaches a certain point, whether the limit is direct or through other techniques such as division and simplification.	Definite Integrals (Part 1)	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 4 - November	2	Understand the difference between specific and non-specific transactions (such as) and apply the correct solutions	Definite Integrals (Part 2)	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

		based on the type of transaction.			
Week 5 - November	2	After this lecture, students can find solutions to all integrals of functions and find their solutions. By knowing the applications of integration.	Applications of Integration	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - December	2	Definition of differential equations and their types (ordinary differential equations and partial differential equations) with understanding the relationship between differential equations and unknown functions.	Differential Equations	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - December	2	Understand how to work with functions that depend on more than one variable. Derivatives in Multiple Variables: Learn how to calculate derivatives of functions that contain more than one variable using partial derivatives.	Multivariable Calculus (Optional)	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - December	2	Preparatory week before the final Exam	Preparatory week before the final Exam	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

11. Course Evaluation

Module Evaluation					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	LO #1- #4 and #5- #9
	Online Assignments	2	10% (10)	4 and 14	LO #1 #3 and #10, #13
	onsite Assignments	2	10% (10)	4 and 8	LO #1- #3 and #7- #7
	seminars	1	10% (10)	14	LO #1- #14
Summative assessment	**Midterm Exam**	2hrs	10% (10)	7	LO #1 - #7
	Final Exam	3hrs	50% (50)	16	All
Total assessment			100% (100 Marks)		

14. Learning and Teaching Resources

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	An Introduction to Higher Mathematics, Patrick Kee,f2021 No 5 AN INTRODUCTION TO MATHEMATICS, A. N. WHITEHEAD,2020	no
Recommended Texts	COMMON CORE STATE STANDARDS for MATHEMATICS, William Schmidt,2018	No
Websites	https://www.mrbartonmaths.com/resources/keystage3/the-maths-ebook.pdf	

Course Description Form

1. Course Name:
Microbiology
2. Course Code:
TUFSFT1106
3. Semester / Year:
First / First
4. Description Preparation Date:
2025-9-1
5. Available Attendance Forms:
In-person
6. Number of Credit Hours (Total) / Number of Units (Total)
175 /7
7. Course administrator's name (mention all, if more than one name)
Name: Assoc. Prof. Sami khudhur saeed
8. Course Objectives

Course Objectives	1. Understand the structural similarities and differences between microorganisms, along with the unique structure-function relationships of prokaryotic cells. 2. Understand the basic concepts of dairy microbiology. 3. Understand the diversity of dairy microorganisms and microbial communities in milk and dairy products and recognize how these microorganisms cope with the fundamental challenges posed by the environment. 4. Recognize the basic principles of epidemiology and pathogenicity of diseases associated with milk and dairy products.

9. Teaching and Learning Strategies	
Strategy	The main strategy for delivering this module is to encourage students' active participation in the exercises while at the same time refining and enhancing their critical thinking skills. This will be accomplished through engaging lessons, interactive tutorials, and the incorporation of simple experiments with sampling activities to make it educational and interesting for students.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 4 - September	2	Definition of microbiology, famous microbiologists, classification of	Introduction to the microbial world	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

		microbiology, the role of microbiology in the environment - the relationship of microbiology to human health			
Week 5 - September	2	Structure of living organisms Microbial cell/surface layer, the difference between the cell wall and cell membrane Means of movement	Microbial Cell Structure and Function	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - October	2	Concept of microbial metabolism, basics of microbial metabolism, metabolic pathways, enzymes, and catalysts of metabolism	Microbial Metabolism	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - October	2	What is microbial growth / Stages of microbial growth / Microbial growth factors / Microbial growth and reproduction / How to count microbial cells	Microbial Growth	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - October	2	Genetic composition / types of nucleic acids / composition of nucleic acids / importance of microbial genetics in the fields of life	Microbial genetics	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 4 - October	2	What is molecular information, what is protein structure, and how to process it?	Molecular Information Flow and Protein Processing	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 5 - October	2		Mid-term Exam	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - November	2	Relationships between humans and microorganisms - Beneficial relationship - Types of relationships	Microbial Symbioses with Humans	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - November	2	What are viruses, their properties, structure, classification, and relationship to living	Virology	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

		organisms, their reproduction, and methods of diagnosis			
Week 3 - November	2	Strep throat - tuberculosis, salmonella, chickenpox, HIV	Person to Person Bacterial and Viral Diseases	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 4 - November	2	Dengue fever, anthrax, yellow fever, brucellosis	Vector borne and Soilborne Bacterial and Viral Disease	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 5 - November	2	Cholera, Enterobacteriaceae, Salmonella, Hepatitis viruses ROTAVIRUS	Waterborne and Foodborne Bacterial and Viral Diseases	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - December	2	General introduction to mycology, why do we study fungi, their types, fungal development, fungal reproduction	Introduction to mycology	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - December	2	General introduction to parasites, types of protozoan parasites/worms	Introduction to Parasitology	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - December	2	What is algae science, nomenclature, types of algae, benefits, shape, living	Introduction to algology	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

11. Course Evaluation

Module Evaluation					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1 #2 and #10
	Assignments	2	10% (10)	2 and 12	LO #3 #4 #6 #7
	Projects / Lab.	1	10% (10)	continuous	All
	Report	1	10% (10)	13	LO #5 #8 and #10
Summative assessment	Midterm Exam	2hrs	10% (10)	7	LO #1 - #7
	Final Exam	3hrs	50% (50)	16	All
Total assessment			100% (100 Marks)		

12. Learning and Teaching Resources

Learning and Teaching Resources		
	Text	Available in the Library?
Required Texts	Riedel S, & Hobden J.A., & Miller S, & Morse S.A., & Mietzner T.A., & Detrick B, & Mitchell T.G., & Sakanari J.A., & Hotez P, & Mejia R(Eds.), (2019). *Jawetz, Melnick, & Adelberg's Medical Microbiology, 28e*. McGraw Hill. https://accesspharmacy.mhmedical.com/content.aspx?bookid=2629&sectionid=217768734	yes
Recommended Texts	WILLEY, J. M., SHERWOOD, L. M., WOOLVERTON, C. J., & PRESCOTT, L. M. (2012). *Prescott's principles of microbiology*. New York, McGraw-Hill.	No
Websites	https://www.coursera.org/courses?query=microbiology	

Course Description Form

1. Course Name:
Microbiology (practical)
2. Course Code:
TUFSFT1106
3. Semester / Year:
First / First
4. Description Preparation Date:
2025-9-1
5. Available Attendance Forms:
In-person
6. Number of Credit Hours (Total) / Number of Units (Total)
30 hours (practical)
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Ala Saleh Ali
8. Course Objectives

Course Objectives	1. Understand the structural similarities and differences between microorganisms, along with the unique structure-function relationships of prokaryotic cells. 2. Understand the basic concepts of dairy microbiology. 3. Understand the diversity of dairy microorganisms and microbial communities in milk and dairy products and recognize how these microorganisms cope with the fundamental challenges posed by the environment. 4. Recognize the basic principles of epidemiology and pathogenicity of diseases associated with milk and dairy products.

9. Teaching and Learning Strategies	
Strategy	The main strategy for delivering this module is to encourage students' active participation in the exercises while at the same time refining and enhancing their critical thinking skills. This will be accomplished through engaging lessons, interactive tutorials, and the incorporation of simple experiments with sampling activities to make it educational and interesting for students.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 4 - September	2	Safety precautions, laboratory hazards, laboratory safety	Lab 1: General instructions about safety in Lab	Lecture, Projector, Whiteboard,	Exams (Monthly, Daily),

		guidelines		Marker	Homework
Week 5 - September	2	Sterilizers, petri dishes, test tubes, microscopes	2: Equipment and tools used in microbiology lab	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - October	2	Microscope, types of microscopes, mechanical parts, optical parts, working principle of the microscope	Lab 3: Microscope parts and their usage	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - October	2	Definition of bacteria in terms of their internal components, various forms, types, and methods of diagnosis	Lab 4: bacterial cells components, shapes and types	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - October	2	What are the culture media in terms of consistency, physical and chemical state? How to prepare the culture media	Lab 5: Cultural media types	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 4 - October	2	Types of stains, method, staining with Gram stain, comparison between Gram negative and Gram positive bacteria	Lab 6: Gram stain: Positive and Negative bacterial cells	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 5 - October	2		Mid-term exam	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - November	2	Sterilization techniques, incubator oven, disinfection with alcohol and other sterilants, how to deal with contaminants	Lab 7: Disinfection and Sterilization techniques	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - November	2	Definition of dilution, its types, and methods of dilution. What is the dilution factor?	Lab 9: dilution types and usages	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - November	2	**Methyl red MR–VP**	Lab 10: Biochemical tests and its usage in bacterial identification	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 4 - November	2	What is the storage of bacterial isolates? Isolation methods from natural and industrial	Lab 11: Bacterial isolates storage: short, medium and long storage techniques	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

		sources / Preserving bacteria in a sterile solution			
Week 5 - November	2	Fungal cell structure, types of fungal cells, their shapes, types of pathogenic and beneficial fungi, their diagnosis	Lab 12: Fungal cells structure and morphology	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - December	2	What are parasites? What is the structure of the cell? Types of parasites? Diagnosis methods	Lab 13: Parasite cells structures and morphology	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - December	2	What are algae, cell structure, types, classification of algae	Lab 14: algal cells structure and morphology	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - December	2	Bacterial conjugation, assembly of genetic material of microbial cells	Lab 15: Microbial cells genetic materials studies	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

11. Course Evaluation

Module Evaluation					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	LO #1 #2 and #10
	Assignments	2	10% (10)	2 and 12	LO #3 #4 #6 #7
	Projects / Lab.	1	10% (10)	continuous	All
	Report	1	10% (10)	13	LO #5 #8 and #10
Summative assessment	**Midterm Exam**	2hrs	10% (10)	7	LO #1 - #7
	Final Exam	3hrs	50% (50)	16	All
Total assessment			100% (100 Marks)		

13. Learning and Teaching Resources

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Riedel S, & Hobden J.A., & Miller S, & Morse S.A., & Mietzner T.A., & Detrick B, & Mitchell T.G., & Sakanari J.A., & Hotez P, & Mejia R(Eds.), (2019). *Jawetz, Melnick, & Adelberg's Medical Microbiology, 28e*. McGraw Hill. https://accesspharmacy.mhmedical.com/content.aspx?bookid=2629&sectionid=217768734	yes
Recommended Texts	WILLEY, J. M., SHERWOOD, L. M., WOOLVERTON, C. J., & PRESCOTT, L. M. (2012). *Prescott's principles of microbiology*. New York, McGraw-Hill.	No
Websites	https://www.coursera.org/courses?query=microbiology	

Course Description Form

1. Course Name:
Physics (Practical)
2. Course Code:
TUFSFT1102
3. Semester / Year:
First / First
4. Description Preparation Date:
2025-9-1
5. Available Attendance Forms:
In-person
6. Number of Credit Hours (Total) / Number of Units (Total)
30 hours (practical)
7. Course administrator's name (mention all, if more than one name)
Name: Osama Abdullah Ahmed
8. Course Objectives

Course Objectives	1. This course covers the basic concepts of physics. 2. This course is an introduction to biophysics. 3. This course aims to improve problem solving skills through the application of various techniques. 4. This course is designed to develop an understanding of the interaction of heat, temperature and pressure in food components. 5. Solve mathematical problems related to biophysical concepts.

9. Teaching and Learning Strategies

Strategy	The main strategy for delivering this course will focus on maintaining student interest by using a simple format for teaching physics. This approach involves explaining concepts clearly, demonstrating them through practical examples, and using simple analogies. Once students understand these concepts, they will be able to apply them in a variety of contexts in the future.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 4 - September	2	Students' knowledge of the laboratory in which the operations are carried out, including the devices (voltage and capacity devices and	Lab 1: Laboratory introduction and basic tools and safety procedures.	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

		piezoelectric devices), and the safety tools that must be followed when entering the laboratory (gloves and laboratory clothing), as well as their knowledge of laboratory tools and analysis tools inside laboratories, and laboratory security and safety.			
Week 5 - September	2	Students' knowledge of gravitational acceleration, units of measurement, how to perform the experiment inside the laboratory, and the tools used in the experiment, which include (a thread of negligible mass, a small ball, a metric ruler, and a stopwatch, through which the acceleration of gravity on the surface of the Earth is found.	Lab 2: Measure the acceleration due to gravity (g) using a simple pendulum.	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - October	2	Students' knowledge of the tools used in the experiment, which are (a helical spring, a metric ruler, weights, and a weight holder), as well as their knowledge of the theory of the experiment, the method of work, and obtaining readings through the experiment practically, and finding the graph and slope.	Lab 3: Measure the spring constant using Hooke's law	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - October	2	Students' knowledge of the objective of the experiment, which is to find the focal length using the graphical method, as well as	Lab 4: Focal length of a convex lens by object distance and image distance.	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

		their knowledge of the tools used in the experiment, which are (a light bulb, a convex lens, supports or supports, a meter ruler). The readings are recorded practically inside the laboratory and then represented on the graph to find the focal length and lens power.			
Week 3 - October	2	The tools used in the experiment are identified, which are (battery, variable resistors, voltmeter, ammeter, resistance, switch). These tools are connected practically in the laboratory and readings are obtained with different resistors and readings and represented graphically.	Lab 5: Ohm's law investigation.	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 4 - October	2	Students know how to connect resistors in series and find the equivalent resistance, as well as in parallel connection. This is done by using Ohm's Law.	Lab 6: Resistors in series and parallel.	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 5 - October	2		Lab 7: **Midterm exam**	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - November	2	The objective of the experiment is how to determine the viscosity value of glycerin using Stokes' law.	Calculation of the viscosity of a liquid using the Stokes method	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - November	2	The experiment aims to familiarize the student with the characteristics of the Kaiker meter and find	Lab 8: (Characteristics of Geiger counter)	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

		the relative stability area, then find the operating voltage, and inform the students of the safety precautions and the dead time, which is considered in a state of instability, then draw the curve of the Kaiker meter and represent the points practically.			
Week 3 - November	2	Identify the half-life, which is defined as the time during which half of the original number of radioactive nuclei decays, as well as identify the age of the radioactive sample to be measured and find the decay constant.	Lab 9: Half – life for source of radiation	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 4 - November	2	The idea of this experiment is based on mixing a known amount of cold water with another known amount of hot water. The heat capacity is defined as the number of calories absorbed when the temperature of the calorimeter is raised by one degree Celsius. Then the practical application is done through the data taken practically.	Lab 10:Determined the heat capacity for Calorimeter	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 5 - November	2	Learn about Young's coefficient	Lab 11:Determined Young's modulus	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - December	2	The latent heat of ice refers to the amount of energy that ice requires or releases to change its state from solid to liquid (or vice versa) without changing its temperature.	Lab 12:Determined latent heat for ice	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

Week 2 - December	2	Students' knowledge of (Stefan-Boltzmann Law)	Lab 13 Stefan–Boltzmann low	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - December	2	The measurement of the linear expansion of a material is concerned with the study of how solids expand when their temperature changes. The basic law that describes this expansion is	Lab14:Measure length expansion for material	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

11. Course Evaluation

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	LO #1- #4 and #5- #9
	Assignments	2	10% (10)	4 and 8	LO #4 #3 and #7, #8
	Projects / Lab.	1	10% (10)	7 and 15	LO #1- #7 and #7- #15
	Report	1	10% (10)	14	LO #1 -#15
Summative assessment	**Midterm Exam**	2hrs	10% (10)	7	LO #1 - #7
	Final Exam	3hrs	50% (50)	16	All
Total assessment			100% (100 Marks)		

12. Learning and Teaching Resources

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Biophysics: An Introduction, Dadan Rosana , Mechanical and Electrical Technology, Guanghsu Chang, Jieh-Shian Young and Wirachman Wisnoe,2015	no
Recommended Texts	APPLIED BIOPHYSICS, Paata J. Kervalishvili,2021	No
Websites	https://ia800204.us.archive.org/30/items/biophysicsconcep00case/biophysicsconcep00case.pdf	

Course Description Form

1. Course Name:
Computer (Practical)
2. Course Code:
UOT003
3. Semester / Year:
First / First
4. Description Preparation Date:
2025-9-1
5. Available Attendance Forms:
In-person
6. Number of Credit Hours (Total) / Number of Units (Total)
30 hours (practical)
7. Course administrator's name (mention all, if more than one name)
Name: Osama Abdullah Ahmed
8. Course Objectives

Course Objectives	1. Using computers to develop students' skills. 2. Learning basic computer concepts. 3. Analyzing application programs used in preparing reports, research and graduation projects, with a focus on applications such as Microsoft Word, PowerPoint and Excel. 4. Learning basic concepts of using the Internet and enabling students to search for topics and materials on the Internet.

9. Teaching and Learning Strategies

Strategy	The main strategy used in delivering this course is to encourage students to use computers effectively and understand how they work. It also aims to improve and expand critical thinking skills. These objectives are achieved through interactive teaching, interactive lessons, and an emphasis on practical computer exercises and applications.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 4 - September	2	Identify the physical parts of the computer such as input units (mouse, keyboard, scanner), output units, and the central	Computer Lab: Familiarizing with the hardware components and how each part works	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

		processing unit.			
Week 5 - September	2	Computer operating systems, including Windows, Linux, and Android, how these systems have evolved, and how each system works.	Computer Lab: Introduction to the computer operating system in the lab	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - October	2	Teaching students how to operate the computer through the control panel and how each unit within the system works and enabling them to operate and connect the computer to the electrical circuit and turn it off through the off button through the shortcuts on the desktop	Computer Lab: How to operate the computer	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - October	2	Students learn how to operate the Word program, how to write on this program, create a table, change the font size, and some elements, the most important of which is saving the document after being able to edit it, as well as the shortcuts that distinguish Word through the keyboard.	Computer Lab: Using Word	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - October	2	Enabling them to open a document and write on it through practical application in the laboratory and create tables as well as page borders and save the file by the student in the computer clipboard	Using Word	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 4 - October	2	Teach them how to save the file to PDF format and how to convert the document from Word format to PDF format.	Using Word	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

Week 5 - October	2	Learn about the Excel program and how to open a worksheet for the document and write numbers on it, as well as their knowledge of some arithmetic operations such as addition, subtraction, and other things that the student needs	Computer Lab: Using Excel	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - November	2	Their knowledge of how to create special tables in Excel, how to navigate between cells, and how to sum vertically and horizontally.	Computer Lab: Using Excel	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - November	2		Midterm Exam	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - November	2	Practical application in the laboratory for all students divided into groups through which data is entered for first-year students and how to save this data and export it to the computer	Computer Lab: Using Excel	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 4 - November	2	Students' knowledge of the PowerPoint program and how to create a special presentation for each student by entering the program and creating a presentation that enables them to create a presentation and formulate it through shapes, slide show, and transitions between one slide and another.	Computer Lab: Using PowerPoint	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 5 - November	2	After writing on the slide, the student will learn how to place transitions and	Computer Lab: Using PowerPoint	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

		movements, in addition to how to attach a video or pictures and upload them to the presentation, then save the presentation and export it to the desktop.			
Week 1 - December	2	Giving students a practical lesson using the computers in the lab and enabling them to create presentations, save them, and display them on the slide show device (data show) and display the lecture in a smooth and distinctive manner.	Computer Lab: Using PowerPoint	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - December	2	Students know how to use the Internet, how to create a URL, how to get these links, and how to extract the link address in URL format.	Computer Lab: Using the Internet	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - December	2	Students will learn how to create servers, as well as some of the features of the Internet, how to access the Internet via a computer, and how to connect a computer to the Internet via external connections.	Computer Lab: Using the Internet	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

11. Course Evaluation

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	6 and 10	LO #5 and #9
	Assignments	2	10% (10)	3 and 12	LO #2 and #11
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	14	LO #13
Summative assessment	**Midterm Exam**	2hr	10% (10)	9	LO #1 - #8
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

14. Learning and Teaching Resources

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Greens on Greens Researcher 2016. Computer Basics	
Recommended Texts	Thawwar Thabet Aref. (2004). Basics of Computer Technology. Muhammad Jamal Qabiha. (2002). Microsoft Office Encyclopedia. Egypt: Dar Al-Rateb University Habraken Joe (author). (1901). *Microsoft Office Inside Out (Office 2021 and Microsoft 365)*. Pearson Education. https://www.vlebooks.com/vleweb/product/openreader?id=none&isbn=9780137564187 Lambert, J., Frye, C2018) .). Microsoft Office 2019 Step by Stepالولايات المتحدة .: Microsoft Press.	
Websites	noor-book.com/z9dwej	

Course Description Form

1. Course Name:
ORGANIC CHEMISTRY
2. Course Code:
TUFSFT1103
3. Semester / Year:
First / First
4. Description Preparation Date:
2025-9-1
5. Available Attendance Forms:
In-person
6. Number of Credit Hours (Total) / Number of Units (Total)
30 hours (practical)
7. Course administrator's name (mention all, if more than one name)
Name: Nameer Muayad khalaf
8. Course Objectives

Course Objectives	1. Educate students on organic chemical reactions, chemical structures, and the various forms of organic compounds, including methods for their synthesis. 2. Illuminate the mechanisms of organic reactions and their practical applications, aiming to align with advancements in the field of organic chemistry. 3. Provide students with comprehensive knowledge essential for their qualification to work and conduct research in all areas of organic chemistry.

9. Teaching and Learning Strategies	
Strategy	1. Lectures will be given in parallel with interactive whiteboards. 2. Explanations and explanations will be provided to familiarize students with basic knowledge and supplementary topics in chemical thinking and organic analysis. 3. Discussion groups will be formed during the lecture to address topics in organic chemistry that require critical thinking and analysis. 4. During the lecture, ask students a series of introspective questions related to the specific topic, such as “what,” “how,” “when,” and “why. 5. Assign homework assignments that encourage students to self-explain through causal reasoning.

10. Course Structure

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

Week 4 - September	2	Laboratory safety and Acquaintance with glassware and apparatus in the organic chemistry laboratory	Laboratory safety and Acquaintance with glassware and apparatus in the organic chemistry laboratory	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 5 - September	2	Determine the melting point by means of a capillary tube for some organic substances.	Determine the melting point by means of a capillary tube for some organic substances.	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - October	2	determine the boiling point of some solid compounds.	determine the boiling point of some solid compounds.	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - October	2	Re-crystallization	Re-crystallization	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - October	2	Re-crystallization	Re-crystallization	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 4 - October	2	Extraction technique	Extraction technique	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 5 - October	2	Liquid-Liquid extraction	Liquid-Liquid extraction	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - November	2	Mid-term exam	Mid-term exam	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 2 - November	2	Liquid-solid extraction	Liquid-solid extraction	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - November	2	acid-base extraction	acid-base extraction	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 4 - November	2	acid-base extraction	acid-base extraction	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 5 - November	2	Distillation techniques	Distillation techniques	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 1 - Decemb	2	Distillation techniques (known samples).	Distillation techniques (known samples).	Lecture,	Exams

er				Projector, Whiteboard, Marker	(Monthly, Daily), Homework
Week 2 - December	2	Distillation techniques (unknown samples).	Distillation techniques (unknown samples).	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
Week 3 - December	2	Preparatory week before the final Exam	Preparatory week before the final Exam	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

11. Course Evaluation

Module Evaluation					
As		**Time/Number**	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	4, 10	LO #1 #3 #8 #10
	Assignments	2	10% (10)	5 and 9	LO #2 #10
	Projects / Lab.	2	10% (10)	7 and 13	LO #7 #13
	Report	5	10% (10)	2, 4, 6, 8, 10	LO #1-10
Summative assessment	**Midterm Exam**	1	10% (10)	8	LO #1 - #7
	Final Exam	1	50% (50)	15	All
Total assessment			100% (100 Marks)		

12. Learning and Teaching Resources

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	1- Organic chemistry, Morrison and Boyd . 2- Chemistry, Clayden J., Creeves N., Warren S and Wother P., Oxford, 2001.	
Recommended Texts	Organic chemistry	
Websites	https://en.wikipedia.org/wiki/Organic_chemistry	

Course Description

1. Course Name:
Principles of Engineering
2. Course Code:
TUFSFT12012
3. Semester / Year:
Second/2025
4. Description Preparation Date:
2025-3-2
5. Available Attendance Forms:
In-person
6. Number of Credit Hours (Total) / Number of Units (Total)
150/ 76
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Mohanad Mahdi Jumaa Email:Mohanad.m.jumaa91@tu.edu.iq

8. Course Objectives

Course Objectives	1. Understand the dimensions, units, and engineering quantities and their derivations. 2. Learn about types of motion and their transmission methods within food manufacturing workshops. 3. Study power transmission methods and how liquids are transported and handled in food factories. 4. Familiarize with the water and electrical installations used in food factories. 5. Learn about refrigeration and freezing equipment and methods for storing agricultural products.

9. Teaching and Learning Strategies

Strategy	The strategy for delivering the material involves theoretical lectures, solving mathematical problems, conducting some practical experiments, and also carrying out field visits to food factories.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
March - Week 2	2	The student's understanding of the dimensions and engineering units used in the field of food science.	Dimensions and Engineering Units	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
March -	2	The student's	Motion and Its Types	Lecture,	Exams

Week 3		knowledge of the concept of motion, its types, and applications.		Projector, Whiteboard, Marker	(Monthly, Daily), Homework
March - Week 4	2	The student's understanding of the types of power transmission methods based on friction.	Power Transfer Methods Based on Friction	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
April - Week 1	2	The student's knowledge of power transmission methods based on coupling and the use of gears.	Power Transfer Methods Based on Coupling	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
April - Week 2	2	The student's understanding of power transmission methods based on direct transfer.	Power Transfer Methods Based on Direct Transfer	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
April - Week 3	2	The student's recognition of power transmission methods based on fluids such as water and gases.	Power Transfer Methods Based on Fluids	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
April - Week 4	2	Midterm Exam	Midterm Exam		
May - Week 1	2	The student's knowledge of pumps, their basic operation, and methods for controlling water levels in a tank.	Pumps and Their Basic Operation, Methods for Controlling Water Levels in a Tank	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
May - Week 2	2	The student's recognition of electrical symbols for switches, outlets, and lights.	Main Electricity (Electrical Power Transmission)	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
May - Week 3	2	The student's understanding of Ohm's Law and the mathematical relations used in food science.	Ohm's Law	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
May - Week 4	2	The student's knowledge of the electrical systems of refrigeration equipment and how to diagnose related faults.	Electrical Circuit of Refrigeration Equipment	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
June - Week 1	2	The student's ability to control temperature, humidity, and environmental	Controlling Environmental Conditions in Food Factories	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

		conditions within food factories.			
June - Week 2	2	Cooling and freezing in food factories.	Cooling and Freezing in Food Factories	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
June - Week 3	2	Repairing refrigeration and freezing equipment.	Repairing Refrigeration and Freezing Equipment	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
June - Week 4	2	Welding refrigeration and freezing system pipes.	Welding Refrigeration and Freezing System Pipes	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

11. Course Evaluation

Module Evaluation					
As		**Time/Number**	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	LO #1 #2 and #10
	Online Assignments	2	10% (10)	2 and 8	LO #3 #4 #6 #7
	Projects / Lab.	1	10% (10)	6	LO #1 #2 #3 #4 and #5
	Report	2	10% (10)	13	LO #5 #8 and #10
Summative assessment	**Midterm Exam**	2hrs	10% (10)	7	LO #1 - #7
	Final Exam	3hrs	50% (50)	16	All
Total assessment			100% (100 Marks)		

12 . Learning and Teaching Resources

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Engineering Principles for Food Factory Workshops by Lutfi Hussein Mohammed Ali	yes
Recommended Texts	Food Manufacturing Technology / Principles of Food Science / 1429 H Edition	No
Websites	Link to Google Drive Resource https://drive.google.com/file/d/1n1mk677-6gMh3k-vaiDue45f2gYZJiBG/view	

Course Description

1. Course Name:

Biostatistics (Theory)

2. Course Code:

TUFSFT1209

3. Semester / Year:

Second/2025

4. Description Preparation Date:

2025-3-2

5. Available Attendance Forms:

In-person

6. Number of Credit Hours (Total) / Number of Units (Total)

120/ 6

7. Course administrator's name (mention all, if more than one name)

Name: Saad Ahmed Khalaf Email: saad.khalaf21@tu.edu

8. Course Objectives

Course Objectives	1. Teaching students how to apply statistical systems, including data collection, presentation, and analysis, as well as studying measures of central tendency, dispersion, statistical measures for continuous and discrete distributions, and correlation between variables. 2. Developing students' skills in statistical analysis of a dataset related to a specific problem using various statistical measurement methods, determining the degree of data clustering or dispersion, and assessing the correlation between them. 3. Equipping students with the knowledge and skills required in the field of biostatistics.

9. Teaching and Learning Strategies

Strategy	- Enhancing students' statistical skills. - Encouraging students' active participation. - Using interactive teaching methods.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
March - Week 2	2	Understanding the fundamentals of statistics.	Introduction to Statistics / General Concepts and Importance of Statistics	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
March - Week 3	2	Ability to memorize and comprehend basic statistical concepts.	Population and Sample	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

March - Week 4	2	Knowledge of key statistical measures and tests.	Frequency Distributions and Graphical Representation	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
April - Week 1	2	Proficiency in conducting statistical tests.	Measures of Central Tendency 1	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
April - Week 2	2	Understanding the significance of statistical processes.	Measures of Central Tendency 2	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
April - Week 3	2	Calculation of range.	Measures of Dispersion 1	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
April - Week 4	2	Calculation of variance.	Measures of Dispersion 2		
May - Week 1	2	Cognitive objectives related to statistical analysis.	First Monthly Exam	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
May - Week 2	2	Extraction of Pearson correlation coefficient.	Pearson Correlation and Regression	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
May - Week 3	2	Extraction of Spearman correlation coefficient.	Spearman Correlation and Regression	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
May - Week 4	2	Understanding the properties of statistical measures.	Chi-Square Test	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
June - Week 1	2	Finding the Z-score.	Z-Test	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
June - Week 2	2	Determining the T-value.	T-Test	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
June - Week 3	2	Determining the T-value.	T-Test	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
June - Week 4	2	Understanding the fundamentals of statistics.	Second Monthly Exam	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

Course Evaluation

11.

Module Evaluation تقييم المادة الدراسية					
As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1 #2 and #10
	Online Assignments	2	10% (10)	2 and 8	LO #3 #4 #6 #7
	Projects / Lab.	1	10% (10)	6	LO #1 #2 #3 #4 and #5
	Report	2	10% (10)	13	LO #5 #8 and #10
Summative assessment	Midterm Exam	2hrs	10% (10)	7	LO #1 - #7
	Final Exam	3hrs	50% (50)	16	All
Total assessment			100% (100 Marks)		

12. Learning and Teaching Resources

Learning and Teaching Resources		
	Text	Available in the Library?
Required Texts	1. **Principles of Biostatistics** – Mohamed Mahmoud Salem, 2009, Al-Majma' Al-Arabi Publishing. 2. **Principles of Descriptive and Inferential Statistics** – Salem Issa Badr, 2010, Dar Al-Maysarah.	yes
Recommended Texts		No
Websites		

Course Description

1. Course Name:

Human Rights and Democracy

2. Course Code:

UOT004

3. Semester / Year:

Second/2025

4. Description Preparation Date:

2025-3-2

5. Available Attendance Forms:

In-person

6. Number of Credit Hours (Total) / Number of Units (Total)

50/ 2

7. Course administrator's name (mention all, if more than one name)

Name: Saad Ahmed Khalaf Email: saad.khalaf21@tu.edu

8. Course Objectives

Course Objectives	1. Defining the students, the human being, and his conditions towards his society. 2. Shed light on democracy and its various forms. 3. Highlighting the importance of knowing the rights of the individual in carrying out his duties to the fullest. 4. Good on the individual's right to express his thoughts and beliefs. 5. Explain the role that democracy plays in determining the right of society. 6. Learn about the history of human rights and democracy and stages through the ages.

9. Teaching and Learning Strategies

Strategy	The strategy involved in this model is that public support for human rights will continue to pressure governments to protect human rights. This approach usually also promotes critical thinking and the ability to apply a human rights framework when analyzing political issues...

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
March - Week 2	2	Students' understanding of the definition of human rights and their characteristics.	Introduction to rights	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
March - Week 3	2	Students' knowledge of the historical development of human rights.	Human rights in ancient civilizations	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
March -	2	Students' awareness of human rights in	Human rights in the Iraqi civilization	Lecture,	Exams

Week 4		ancient civilizations and societies, including the civilizations of Mesopotamia, Greece, and Rome.		Projector, Whiteboard, Marker	(Monthly, Daily), Homework
April - Week 1	2	Students' understanding of the concept of Islam.	Human rights in the Iraqi civilization	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
April - Week 2	2	Students' knowledge of the Islamic perspective on human rights.	Human rights in the Iraqi constitution	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
April - Week 3	2	Students' understanding of human rights in the modern era and their knowledge of prominent activists advocating for liberation and freedom.	Pictures and forms of democracy	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
April - Week 4	2	Midterm Exam	Midterm Exam		
May - Week 1	2	Students' knowledge of the Constitution of the Republic of Iraq (2005) and their understanding of the types of rights outlined in the Iraqi Constitution.	semi-direct democracy+ direct democracy	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
May - Week 2	2	Students' understanding of popular voting, electoral laws, and criminal laws.	popular vote	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
May - Week 3	2	Students' knowledge of the guarantees of human rights, including constitutional, political, and judicial guarantees.	popular referendum	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
May - Week 4	2	Students' understanding of the concept of democracy, its components, and the characteristics of a democratic society, including political pluralism and the peaceful transfer of power.	Human rights guarantees	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

June - Week 1	2	Students' awareness of Islam's position on democracy as a special system under a general framework.	The concept of democracy	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
June - Week 2	2	Students' knowledge of different forms of democracy, including direct democracy, representative democracy, liberal democracy, and consensual democracy.	historical dimension	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
June - Week 3	2	Definition of Popular Referendum, Public Objection, and Public Proposal, and understanding the differences between them.	Pictures and forms of democracy	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
June - Week 4	2	Students' knowledge of indirect democracy, also known as representative or parliamentary democracy.	Human rights in the Iraqi civilization	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

11. Course Evaluation

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1 #2 and #10
	Online Assignments	2	10% (10)	2 and 12	LO #3 #4 #6 #7
	seminar	1	10% (10)		
	Report	1	10% (10)	13	LO #5 #8 and #10
Summative assessment	Midterm Exam	2hrs	10% (10)	7	LO #1 - #7
	Final Exam	3hrs	50% (50)	16	All
Total assessment			100% (100 Marks)		

12. Learning and Teaching Resources

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	human rights democracy Public freedoms	yes

	referendum	
Recommended Texts	1- Human Rights, prepared by a Prof. Dr. Star Abdul Hassan 2. Human rights between text and application. Dr.. Ali Shukri 3. Human rights. Dr.. Maher Allawi	No
Websites		

Course Description

1. Course Name:
Principles of Engineering

2. Course Code:
TUFSFT12012
3. Semester / Year:
Second/2025
4. Description Preparation Date:
2025-3-2
5. Available Attendance Forms:
In-person
6. Number of Credit Hours (Total) / Number of Units (Total)
30
7. Course administrator's name (mention all, if more than one name)
Name: Osama Abdullah Ahmed Email: osama.abdulla@tu.edu.iq

8. Course Objectives

Course Objectives	1. Understand the dimensions, units, and engineering quantities and their derivations. 2. Learn about types of motion and their transmission methods within food manufacturing workshops. 3. Study power transmission methods and how liquids are transported and handled in food factories. 4. Familiarize with the water and electrical installations used in food factories. 5. Learn about refrigeration and freezing equipment and methods for storing agricultural products.

9. Teaching and Learning Strategies

Strategy	The strategy for delivering the material involves theoretical lectures, solving mathematical problems, conducting some practical experiments, and also carrying out field visits to food factories.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
March - Week 2	2	Students will learn about all types of pressure and temperature measurement devices, and how they are displayed on screens, gaining familiarity with these instruments through their responses and participation.	Measurement Devices (Temperature and Pressure)	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
March -	2	Students will be	Measurement Devices	Lecture,	Exams

Week 3		familiarized with pressure devices, their functions, and the purposes they serve, allowing them to engage with and respond to related discussions.	(Pressure)	Projector, Whiteboard, Marker	(Monthly, Daily), Homework
March - Week 4	2	Students will learn about power transmission devices, specifically the gearbox, and how these are presented using educational tools and screen displays.	Power Transmission Devices (Gearbox)	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
April - Week 1	2	Students will be able to interpret all types of pump curve diagrams and understand their operation.	Reading Pump Curves Diagram	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
April - Week 2	2	Students will be introduced to the tools and equipment used in water installations and understand the benefits of each tool.	Tools and Equipment Used in Water Installations	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
April - Week 3	2	Students will receive a practical explanation of how to create sealed tanks using laboratory screens and demonstrations.	Practical Application: Tank	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
April - Week 4	2	Students' knowledge will be assessed through the midterm exam, focusing on key questions that align with the topics covered, to gauge their understanding.	Midterm Exam		
May - Week 1	2	Students will learn about Ohm’s Law, its meaning, units of measurement, and the distinction between voltage and current.	Ohm's Law	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
May - Week 2	2	Students will become familiar with all tools used in electrical installations and the various forms and	Tools and Equipment Used in Electrical Installations	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

		types of electrical systems.			
May - Week 3	2	Students will learn about the symbols used in electrical installations, their poles, and how they function.	Electrical Installation Symbols	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
May - Week 4	2	Students will understand how air distribution systems work, the correct placement of distribution points in engineering workshops, and how to maintain laboratory safety.	Air Distribution Systems in the Laboratory and Control Methods	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
June - Week 1	2	Students will learn how to test refrigeration equipment and diagnose faults, along with methods to resolve these issues.	Cooling Equipment Inspection and Fault Diagnosis	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
June - Week 2	2	Students will be introduced to welding equipment and the components of refrigeration devices.	Welding Equipment for Refrigeration Devices	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
June - Week 3	2	After learning about these devices and systems, students will take a comprehensive exam that covers all topics discussed.	Second Monthly Exam	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
June - Week 4	2	A thorough review of all topics will be conducted in the laboratory or through solving questions and discussions with students to ensure a rapid and clear response to the material.	Review	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

11. Course Evaluation

Module Evaluation				
	Time/Nu	**Weight**	**Week Due**	**Relevant**

As		mber	(Marks)		Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1 #2 and #10
	Online Assignments	2	10% (10)	2 and 8	LO #3 #4 #6 #7
	Projects / Lab.	1	10% (10)	6	LO #1 #2 #3 #4 and #5
	Report	2	10% (10)	13	LO #5 #8 and #10
Summative assessment	Midterm Exam	2hrs	10% (10)	7	LO #1 - #7
	Final Exam	3hrs	50% (50)	16	All
Total assessment			100% (100 Marks)		

12 .

Learning and Teaching Resources		
Learning	and Teaching Resources Text	Available in the Library?
Required Texts	Engineering Principles for Food Factory Workshops by Lutfi Hussein Mohammed Ali	yes
Recommended Texts	Food Manufacturing Technology / Principles of Food Science / 1429 H Edition	No
Websites	Link to Google Drive Resource https://drive.google.com/file/d/1n1mk677-6gMh3k-vaiDue45f2gYZJiBG/view	

Course Description

1. Course Name:
Biostatistics (Practical)
2. Course Code:
TUFSFT1209

3. Semester / Year:
Second/2025
4. Description Preparation Date:
2025-3-2
5. Available Attendance Forms:
In-person
6. Number of Credit Hours (Total) / Number of Units (Total)
30 h Practical
7. Course administrator's name (mention all, if more than one name)
Name: Osama Abdullah Ahmed Email: osama.abdulla@tu.edu.iq

8. Course Objectives

Course Objectives	1. Teaching students how to apply statistical systems, including data collection, presentation, and analysis, as well as studying measures of central tendency, dispersion, statistical measures for continuous and discrete distributions, and correlation between variables. 2. Developing students' skills in statistical analysis of a dataset related to a specific problem using various statistical measurement methods, determining the degree of data clustering or dispersion, and assessing the correlation between them. 3. Equipping students with the knowledge and skills required in the field of biostatistics.

9. Teaching and Learning Strategies

Strategy	- Enhancing students' statistical skills. - Encouraging students' active participation. - Using interactive teaching methods.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
March - Week 2	2	"Introduce students to the most important statistical concepts and symbols by explaining each concept	Explanation of key statistical concepts and symbols used	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
March - Week 3	2	Familiarize students with how to extract a sample through practical application by solving some examples.	Practical application of how to extract a sample	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
March - Week 4	2	Teach students how to find frequency	Solving exercises on frequency distributions	Lecture, Projector,	Exams (Monthly,

		distributions and how to present them graphically on the display screen.	and their graphical representation	Whiteboard, Marker	Daily), Homework
April - Week 1	2	Introduce students to each measure of central tendency and teach them how to find the median and mean.	Applications of measures of central tendency (median and arithmetic mean)	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
April - Week 2	2	Familiarize students with each measure of central tendency, including the weighted mean, and the difference between them.	Applications of measures of central tendency (weighted arithmetic mean and weighted average)	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
April - Week 3	2	Solve exercises with active student participation in the classroom, ensuring they understand and can compute the results of each measure.	Solving exercises on measures of dispersion (1)	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
April - Week 4	2	Solve exercises with active student participation in the classroom, ensuring they understand and can compute the results of each measure.	Solving exercises on measures of dispersion (2)	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
May - Week 1	2	After completing the previous topics, the first month's exam will assess students' understanding and their ability to answer the questions.	First monthly exam		
May - Week 2	2	Familiarize students with practical application on the SPSS program to find the Pearson correlation coefficient.	Practical application of correlation and regression measures (Pearson)	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
May - Week 3	2	Familiarize students with practical application on the SPSS program to find the Spearman correlation coefficient and regression.	Practical application of correlation and regression measures (Spearman)	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

May - Week 4	2	Solve exercises for the Chi-square test on the board and find the Chi-square value.	Solving chi-square test exercises	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
June - Week 1	2	Teach students how to find the Z-test using correlation programs and display the results on the screen.	Practical application of the z-test	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
June - Week 2	2	Teach students how to find the t-test using correlation programs and display the results on the screen."	Practical application of the t-test	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
June - Week 3	2	After completing the previous topics, the first month's exam will assess students' understanding and their ability to answer the questions.	Practical application of the f-test	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
June - Week 4	2	Second monthly exam	Second monthly exam	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

11. Course Evaluation

Module Evaluation

تقييم المادة الدراسية

As		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1 #2 and #10
	Online Assignments	2	10% (10)	2 and 8	LO #3 #4 #6 #7
	Projects / Lab.	1	10% (10)	6	LO #1 #2 #3 #4 and #5
	Report	2	10% (10)	13	LO #5 #8 and #10
Summative assessment	Midterm Exam	2hrs	10% (10)	7	LO #1 - #7
	Final Exam	3hrs	50% (50)	16	All
Total assessment			100% (100 Marks)		

12. Learning and Teaching Resources

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	1. **Principles of Biostatistics** – Mohamed Mahmoud Salem, 2009, Al-Majma' Al-Arabi Publishing.	yes

	2. **Principles of Descriptive and Inferential Statistics** – Salem Issa Badr, 2010, Dar Al-Maysarah.	
Recommended Texts		No
Websites		

Course Description

1. Course Name:
English Language
2. Course Code:
UOT002
3. Semester / Year:

Second/2025

4. Description Preparation Date:

2025-3-2

5. Available Attendance Forms:

In-person

6. Number of Credit Hours (Total) / Number of Units (Total)

50 / 2

7. Course administrator's name (mention all, if more than one name)

Name: Atheer J. Mohammed Email: atherjandal@tu.edu.iq

8. Course Objectives

Course Objectives	1. To assist the learner to develop the language, literacy and numeracy skills related to English as a Foreign Language through the medium of the module themes and content. 2. To enable the learner to communicate effectively and appropriately in real life situation. 3. To facilitate the learner to read, interpret and comprehend a variety of materials using a range of media. 4. To develop interest in and appreciation of English language and grammar. 5. To develop and integrate the use of the four language skills i.e. Reading, Listening, Speaking and Writing. 6. To revise and reinforce structure already learnt.

9. Teaching and Learning Strategies

Strategy	Focus on academic language, literacy and vocabulary. Link background knowledge and culture to learning. Increase comprehensible input and language output. Promote classroom interaction. Stimulate higher-order thinking skills and use of learning strategies.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
March - Week 2	2	Greetings and Farewells.	Greetings and Farewells.	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
March - Week 3	2	Your World/ Countries and Nationalities.	Your World/ Countries and Nationalities.	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
March - Week 4	2	All about you/ Jobs/ Personal Information and Social Expressions.	All about you/ Jobs/ Personal Information and Social Expressions.	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
April -	2	Family and Friends/ Adjective+ Nouns	Family and Friends/ Adjective+ Nouns	Lecture,	Exams

Week 1				Projector, Whiteboard, Marker	(Monthly, Daily), Homework
April - Week 2	2	The Way I live/ Languages and Nationalities/ Numbers and Prices	The Way I live/ Languages and Nationalities/ Numbers and Prices	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
April - Week 3	2	Every day/ The Present Time/ Days of the Week. My Faviourites/ Food / Drinks/ Sports/ Pronouns	Every day/ The Present Time/ Days of the Week. My Faviourites/ Food / Drinks/ Sports/ Pronouns	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
April - Week 4	2	Mid-term Exam	Mid-term Exam	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
May - Week 1	2	Where I live/ Rooms and Furniture/ Directions and Prepositions.	Where I live/ Rooms and Furniture/ Directions and Prepositions.		
May - Week 2	2	Times past/ Past tense/ Saying Years/ Irregular Verbs….	Times past/ Past tense/ Saying Years/ Irregular Verbs….	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
May - Week 3	2	We had a great time/ Questions and Negatives.	We had a great time/ Questions and Negatives.	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
May - Week 4	2	I can do that/ Requests and Offers/ Adverbs.	I can do that/ Requests and Offers/ Adverbs.	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
June - Week 1	2	Please and thank you/ Some and any/ Like and I would like.	Please and thank you/ Some and any/ Like and I would like.	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
June - Week 2	2	Weather and Forecast.	Weather and Forecast.	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
June - Week 3	2	Here and now/ Present continuous and Present simple.	Here and now/ Present continuous and Present simple.	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
June - Week 4	2	It's time to go/ Future plans/ Revision.	It's time to go/ Future plans/ Revision.	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

11. Course Evaluation

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1 #2 and #10
	Online Assignments	2	10% (10)	2 and 12	LO #3 #4 #6 #7
	Onsite Assignments	1	10% (10)	6	LO #1 #2 #3 #4 and #5
	Report	1	10% (10)	13	LO #5 #8 and #10
Summative assessment	Midterm Exam	2hrs	10% (10)	7	LO #1 - #7
	Final Exam	3hrs	50% (50)	16	All
Total assessment			100% (100 Marks)		

12 . Learning and Teaching Resources

Learning and Teaching Resources		
	Text	Available in the Library?
Required Texts	**John and Liz Soarse, *New Headway Plus: Beginner*. Oxford: Oxford University Press, 2014.**	yes
Recommended Texts	John and Liz Soarse, New Headway Plus: Intermediate. Oxford: Oxford University Press, 2010.	yes
Websites	**https://learnenglish.britishcouncil.org/**	

Course Description

1. Course name:
Analytical ChemistryAnd(Theoretical)
2. Course code:
TUFSFT1208
3. the chapter/Year:Annual
2nd/2025

4. Date this description was prepared
2025-3-2
5. Available attendance forms:
My presence
6. Number of study hours (total) / Number of units (total):
175/7
7. Name of the course administrator (if more than one name is mentioned)
M.MNamir Moayed Khalaf
8. Course objectives
1. The student learns about the importance of analytical chemistry and its types. 2. The student learns about methods of finding concentrations of chemicals and types of chemical titration. **3**. - The student learns the basic principles of quantitative and qualitative analysis methods in analytical chemistry.
Teaching and learning strategies .9
The main strategy for delivering this course will focus on maintaining student interest by using a simple format for teaching theAnalytical ChemistryThis method involves explaining concepts clearly, presenting them through practical examples, and using simple analogies. Once students understand these concepts, they will be able to apply them in a variety of contexts in the future..

10. Course structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	The week
Exams (monthly, daily) Homework	Paper lecture, projector screen, whiteboard and pen	Scope of analytical chemistry and concentration units	Description and definition of analytical chemistry Methods of expressing concentration in solutions	2	March - Second week
Exams (monthly, daily) Homework	Paper lecture, projector screen, whiteboard and pen	Quantitative analysis	Introduction to Quantitative Analysis	2	March - Third week
Exams (monthly, daily) Homework	Paper lecture, projector screen, whiteboard and	Volumetric analysis	Definition of correction, its types and calculationpH	2	March - Fourth week

	pen				
Exams (monthly, daily) Homework	Paper lecture, projector screen, whiteboard and pen	Gravimetric analysis	Introduction to gravimetric analysis and its types (sedimentation, volatility)	2	April - First week
Exams (monthly, daily) Homework	Paper lecture, projector screen, whiteboard and pen	chemical equilibrium	Learn about chemical equilibrium and the factors affecting it	2	April - Second week
Exams (monthly, daily) Homework	Paper lecture, projector screen, whiteboard and pen	Weight factors, ionic balance	Learn about ionic equilibrium	2	April - Third week
Midterm Exam	Midterm Exam	Midterm Exam	Midterm Exam	2	April - Fourth week
Exams (monthly, daily) Homework	Paper lecture, projector screen, whiteboard and pen	Solution oforganizer	Learn about buffer solutions and how to calculate their pH.	2	May - First week
Exams (monthly, daily) Homework	Paper lecture, projector screen, whiteboard and pen	precipitation reaction	Introduction to Chemical Precipitation	2	May - Second Week
Exams (monthly, daily) Homework	Paper lecture, projector screen, whiteboard and pen	Introduction to automated methods of analysis	Learn about the working principle of devices used in analytical chemistry	2	May - Third Week
Exams (monthly, daily) Homework	Paper lecture, projector screen, whiteboard and pen	Spectral analysis	Definition of the optical spectrum, division of the spectrum regions, and understanding how electronic transitions occur	2	May - Fourth week
Exams (monthly, daily)	Paper lecture,	Beer–Lambert	Definition of Beer's	2	June - First

Homework	projector screen, whiteboard and pen	law and calculations	Law–Lambert and its applications to find concentration		week
Exams (monthly, daily) Homework	Paper lecture, projector screen, whiteboard and pen	Conductive analysis	Introduction to conductivity and finding concentration through electrical conductivity	2	June - Week 2
Exams (monthly, daily) Homework	Paper lecture, projector screen, whiteboard and pen	conduction calibration	Introduction to conductive correction and finding electrical potential difference	2	June - Third week
Exams (monthly, daily) Homework	Paper lecture, projector screen, whiteboard and pen	Potentiometric methods of analysis	Introduction to Jihadist Methods and Their Applications to SuccessDthe focus	2	June - Week 4

11. Course Evaluation

Module Evaluation

Course material evaluation

Relevant Learning Outcome	Week Due	Weight (Marks)	Time/Number	As	
LO #1 #2 and #10	5 and 10	10% (10)	2	**Quizzes**	**Formative assessment**
LO #3 #4 #6 #7	2 and 8	10% (10)	2	**Online Assignments**	
LO #1 #2 #3 #4 and #5	6	10% (10)	1	**Projects /Lab.**	
LO #5 #8 and #10	13	10% (10)	2	**Report**	
LO #1 - #7	7	10% (10)	2hrs	**Midterm Exam**	**Summative assessment**
All	16	50% (50)	3hrs	**Final Exam**	
		100% (100 Marks)	**Total assessment**		

12. Learning and teaching resources

7th Edition of Analytical Chemistry Fundamentals of Analytical Chemistry Principles and Practice of Analytical Chemistry	Required textbooks (methodology if any)
Modern Analytical Chemistry.	Main References (Sources)
https://en.wikipedia.org/wiki/Analytical_chemistry	Electronic references, websites

Course Description

1. Course name:
Analytical ChemistryAnd(practical)
2. Course code:
TUFSFT1208
3. the chapter/Year:Annual
2nd/2025
4. Date this description was prepared

2025-3-2

5. Available attendance forms:

My presence

6. Number of study hours (total) / Number of units (total):

30 working hours

7. Name of the course administrator (if more than one name is mentioned)

M.M Nameer Muayad Khalaf

8. Course objectives

1. The student learns about the importance of analytical chemistry and its types.

2. The student learns about methods of finding concentrations of chemicals and types of chemical titration.

3. - The student learns the basic principles of quantitative and qualitative analysis methods in analytical chemistry.

9. Teaching and learning strategies

The main strategy for delivering this course will focus on maintaining student interest by using a simple format for teaching theAnalytical ChemistryThis method involves explaining concepts clearly, presenting them through practical examples, and using simple analogies. Once students understand these concepts, they will be able to apply them in a variety of contexts in the future.

10. Course structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	The week
Exams (monthly, daily) Homework	Paper lecture, projector screen, whiteboard and pen	Laboratory Safety and Familiarization with Glassware and Apparatus in Analytical Chemistry Laboratory	Identify laboratory hazards, safety guidelines, warning signs, and laboratory tools and glassware.	**2**	March - Second week
Exams (monthly, daily) Homework	Paper lecture, projector screen, whiteboard and pen	Ways to express focus	Learn different ways to express focus.	2	March - Third week
Exams (monthly, daily) Homework	Paper lecture, projector screen, whiteboard and pen	Tools and equipment used	Identifying the equipment in the analytical chemistry laboratory	2	March - Fourth week

Exams (monthly, daily) Homework	Paper lecture, projector screen, whiteboard and pen	Experiment 1: Prepare 0.1 M hydrochloric acid solution.	How to prepare a liquid substance, calculate the required volume of acid, and how to add acid to water	2	April - First week
Exams (monthly, daily) Homework	Paper lecture, projector screen, whiteboard and pen	Experiment 2: Preparation of 0.1 M sodium chloride powder	Learn how to prepare a solid and calculate the required weight.	2	April - Second week
Exams (monthly, daily) Homework	Paper lecture, projector screen, whiteboard and pen	Experiment 3: Titration of hydrochloric acid with sodium hydroxide	Practical application of neutralization of strong acid with strong base	2	April - Third week
Midterm Exam	Midterm Exam	Midterm Exam	Midterm Exam	2	April - Fourth week
Exams (monthly, daily) Homework	Paper lecture, projector screen, whiteboard and pen	Experiment 4: Precipitation of positive ions (silver, mercury, and lead ions)	Apply and understand how to separate group 1 (positive) ions	2	May - First week
Exams (monthly, daily) Homework	Paper lecture, projector screen, whiteboard and pen	Experiment 5: Precipitation of negative ions (chlorine and bromine ions)	Practical application and understanding of how negative ions are deposited	2	May - Second Week
Exams (monthly, daily) Homework	Paper lecture, projector screen, whiteboard and pen	Experiment 6: Detection of mercury ion +2	Practical application and understanding of how it is doneMercury ion detection	2	May - Third Week
Exams (monthly, daily) Homework	Paper lecture, projector screen, whiteboard and pen	Experiment 7: Detection of lead 2+ ion	Practical application and understanding of how lead ion is detected	2	May - Fourth week
Exams (monthly, daily) Homework	Paper lecture, projector screen, whiteboard and pen	Experiment 8: Titration of sodium carbonate with hydrochloric acid (titration of strong acid with	Practical application and understanding of how a strong acid is neutralized with a weak	2	June - First week

		weak base)	base and how the acidity function is calculated		
Exams (monthly, daily) Homework	Paper lecture, projector screen, whiteboard and pen	Experiment 9: Titration of a strong acid with a strong base	Correction of strong acid with strong base	2	June - Week 2
Exams (monthly, daily) Homework	Paper lecture, projector screen, whiteboard and pen	Experiment 10: Determining the concentration of calcium ionsCa+2 using spectroscopy	Practical application and understanding of how a spectrophotometer is used to calculate calcium concentration.	2	June - Third week
Exams (monthly, daily) Homework	Paper lecture, projector screen, whiteboard and pen	Experiment 11: Determine the concentration of iron ionsFe+2 using spectroscopy	Practical application and understanding of how a spectrophotometer is used to calculate iron concentration	2	June - Week 4

11. Course Evaluation

Module Evaluation

Course material evaluation

Relevant Learning Outcome	Week Due	Weight (Marks)	Time/Number	As	
LO #1 #2 and #10	5 and 10	10% (10)	2	**Quizzes**	**Formative assessment**
LO #3 #4 #6 #7	2 and 8	10% (10)	2	**Online Assignments**	
LO #1 #2 #3 #4 and #5	6	10% (10)	1	**Projects /Lab.**	
LO #5 #8 and #10	13	10% (10)	2	**Report**	
LO #1 - #7	7	10% (10)	2hrs	**Midterm Exam**	**Summative assessment**
All	16	50% (50)	3hrs	**Final Exam**	
		100% (100 Marks)		**Total assessment**	

12. Learning and teaching resources

7th Edition of Analytical Chemistry Fundamentals of Analytical Chemistry Principles and Practice of Analytical	Required textbooks (methodology if any)

Chemistry	
Modern Analytical Chemistry.	Main References (Sources)
https://en.wikipedia.org/wiki/Analytical_chemistry	Electronic references, websites

Course Description

1. Course Name:
safty and Biosecurity
2. Course Code:
TUFSFT12010
3. Semester / Year:
Second/2025
4. Description Preparation Date:

2025-3-2

5. Available Attendance Forms:

In-person

6. Number of Credit Hours (Total) / Number of Units (Total)

175/ 7

7. Course administrator's name (mention all, if more than one name)

Name: Assist. Prof. Dr. Adnan Muhammad Ahmeed
Email: Adnanmoh77@gmail.com

8. Course Objectives

Course Objectives	1. Demonstrating an understanding of the structural differences and similarities between microorganisms and the unique relationship between structure and function in prokaryotic cells. 2. Understanding the fundamentals of food microbiology. 3. Estimating the diversity of microorganisms and microbial communities in foods and food products, and recognizing how microorganisms solve fundamental problems posed by their environments. 4. Recognizing the basic principles of epidemiology, diseases, and pathogenicity in foods and food products.

9. Teaching and Learning Strategies

Strategy	- Enhancing students' statistical skills. - Encouraging students' active participation. - Using interactive teaching methods.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
March - Week 2	2	What is occupational safety and health - General objectives of occupational safety and health. - Work injury - Occupational diseases	Introduction to biosafety and security	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
March - Week 3	2	- What is biosafety - A brief history of the emergence of biosafety. - Biosafety in microbiology laboratories	Biosafety barriers in labs	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

March - Week 4	2	- What are biological hazards? - Infectious diseases - Common diseases caused by biological agents	Biosafety level	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
April - Week 1	2	- Control of biological risks Methods of controlling biological risks First: - Establishing, designing and furnishing the laboratory Second: Training and qualifying laboratory workers Third: Appropriate selection of laboratory workers Fourth: Work permit Fifth: Human relations Sixth: Psychological state and mental health Seventh: Work division system Eighth: Continuous follow-up and inspection Ninth: Issuing instructions and enacting laws when needed.	Biological agents	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
April - Week 2	2	Combating biological hazards - Liability for valuable biological materials - Potential for misuse of biological sciences - Forensic research, codes of conduct and codes of practice.	Biorisk and biohazard	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
April - Week 3	2	Biosafety Levels -Level 1 -Level 2 -Level 3 -Level 4	Containment level	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
April - Week 4	2	Mid-term Exam	Mid-term Exam		
May - Week 1	2	What is waste and its types 1-Hazardous waste. 2-Biological waste.	Biorisk management system	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework

		3-Mitigation and disposal. 4-Decontamination process in microbiology laboratories			
May - Week 2	2	Procedures and methods for handling and dealing with laboratory waste - Management's responsibility for achieving safety at the workplace - Workers' responsibility for achieving safety at the workplace	Types of biohazardousl wastes	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
May - Week 3	2	What is meant by biosecurity? 2- The goal of biosecurity. 3- The context of modern biosecurity. 4- Some factors that affect biosecurity	Disinfection and decontamination	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
May - Week 4	2	- Rules or objectives for biosecurity and safety - Those concerned with biosecurity	Accident response	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
June - Week 1	2	- What is meant by disinfection and sterilization - Types of disinfectants - Decontamination	Hazardous chemicals	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
June - Week 2	2	Risk Management Methodology - To Develop a Biosafety Program - Biosecurity Risk Management and Assessment	Overview of biological safety equipment	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
June - Week 3	2	Biosafety Program Elements - Program Management - Personal Management - Inventory and Accounting	Overview security equipment	Lecture, Projector, Whiteboard, Marker	Exams (Monthly, Daily), Homework
June - Week 4	2	-Information Security -Transportation of	Biosecurity	Lecture, Projector,	Exams (Monthly,

		Biological Materials -Incidents, Injuries and Incident Response Plans -Security Updates and Re-Evaluation		Whiteboard, Marker	Daily), Homework

11. Course Evaluation

Module Evaluation تقييم المادة الدراسية					
As		**Time/Number**	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	LO #1 #2 and #10
	Online Assignments	2	10% (10)	2 and 8	LO #3 #4 #6 #7
	Projects / Lab.	1	10% (10)	6	LO #1 #2 #3 #4 and #5
	Report	2	10% (10)	13	LO #5 #8 and #10
Summative assessment	**Midterm Exam**	2hrs	10% (10)	7	LO #1 - #7
	Final Exam	3hrs	50% (50)	16	All
Total assessment			100% (100 Marks)		

12. Learning and Teaching Resources

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	Riedel S, & Hobden J.A., & Miller S, & Morse S.A., & Mietzner T.A., & Detrick B, & Mitchell T.G., & Sakanari J.A., & Hotez P, & Mejia R(Eds.), (2019). *Jawetz, Melnick, & Adelberg's Medical Microbiology, 28e*. McGraw Hill. https://accesspharmacy.mhmedical.com/content.aspx?bookid=2629&sectionid=217768734	yes
Recommended Texts	WILLEY, J. M., SHERWOOD, L. M., WOOLVERTON, C. J., & PRESCOTT, L. M. (2012). *Prescott's principles of microbiology*. New York, McGraw-Hill.	No
Websites	https://www.coursera.org/courses?query=microbiology	