Ministry of Higher Education and Scientific Research
Al-Farabi University
College of Science
Department of biology

Academic Program Description and Courses for the Biology department (2024–2025)

2024-2025

Academic Program Description and Courses/Department of Biology

Description of the academic program for Biology department

University Name	Al-Farabi University
College/Institute:	College of Science
Scientific Department	Biology
Academic Program Name:	Biology
Final Certificate Name:	Bachelor's degree in Biology
Academic System:	Semester/ Bologna System
Description Preparation Date:	July 13, 2025
File Completion Date:	July 13, 2025

Signature:
Head of Department
Asst. Prof. Dr. Fadhl Ahmed Saeed
Date: 13-7-2025

Signature:
Dean of College
Asst. Prof. Dr. Fadhl Ahmed Saeed
Date: 13-7-2025

Signature:
File reviewed by
Quality Assurance and University Performance Department
Athmar Waleed Hussein
Date: July 15th, 2025

Signature:
Asst. University President Dean for Scientific Affairs
Prof. Dr. Mazen Sameer Al-Hakeem
Date:

Signature:
Approval of University President
Asst. Prof. Dr. Muhannad Mahdi Al-Jubouri
Date: 15/7

Academic Program Description

This academic program description provides a concise overview of the most important features of the biology program and the expected learning outcomes for acquiring skills that prepare students to understand the various biological facts. It is accompanied by a description of each course within the program.

1. Program Vision

Establishing a base of scientific staff in which the capabilities of creativity are available and in which the mind comprehending biology is elevated by preparing competent graduates to work in the fields of biology, spreading awareness and knowledge in the fields of life sciences, dealing with the changes and modern developments taking place in the world, and contributing to the development of scientific, health, industrial and environmental institutions and finding solutions for problems that hinder its progress.

2. Program Mission

Preparing highly qualified graduates that qualify them to work in the fields of life sciences in its various branches, capable of meeting the actual need of the labor market by providing high-level teaching staff, based on the implementation of solid theoretical and practical academic programs and commitment to quality standards and academic accreditation.

3. Program Objectives

The department works to achieve a number of goals that are consistent with its basic work tasks related to teaching, research and development, and contributing to the development of society. The department's goals can be summarized as follows:

1. Keeping pace with global development in all scientific fields in the field of life sciences and providing society, the labor market and state institutions with scientific and technical expertise and contributing to the development of scientific, health, industrial and environmental institutions.

2. Preparing highly qualified cadres in the field of biology who are qualified to compete in the labor market, whether in research laboratories or various pathological analyses.
3. Raising the level of performance and quality to the ranks of advanced international universities, Developing and modernizing scientific curricula, both theoretical and practical, and adopting modern technologies in practical laboratories.
4. Cooperating with various state departments to advance the health, environmental, industrial and agricultural situation by providing scientific expertise, research results and graduate theses to transfer them to reality.
5. Striving to advance society by expanding general horizons related to the importance of life sciences in solving many health, environmental and industrial problems.
6. Supporting student, cultural, social, sporting and artistic activities, as well as training students in scientific, health, industrial and environmental institutions during the summer vacation.
7. Seeking to conclude memorandums of understanding with corresponding departments inside and outside the country for the purpose of knowledge, cultural and scientific exchange and training.
8. Cooperation with corresponding departments in Iraqi universities to ensure the exchange of experience in the field of developing curricula, conducting joint research and studies, and supporting community activities by holding seminars, scientific conferences, and practical courses in various fields of life sciences.
9. Working to open departments for postgraduate studies, master's and doctoral studies, by exploiting the availability of teaching staff with high academic ranks.

4. Program Accreditation

- National Criteria for the Accreditation of Science Majors Programs
- Twinning with the Department of Biology/College of Science/University of Baghdad

5. Other external influences

- Laboratory Practice
- Summer Training
- Training Courses
- Scientific Research
- Field Visits
- Extracurricular Activities
- Volunteer Campaigns
- Library
- Other

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Notes
Institution Requirements	8	18	7.50%	Basic
College Requirements	6	39	16.25%	Basic
Department Requirements	36	183	76.75%	
Summer Training				Complete
Total	50	240	100%	

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
1st/ semester 1	BIO11001	General Zoology	2	2
	COS11002	General Chemistry	2	2
	COS11003	General Mathematics and Biostatistics	2	–
	UOB11004	Computer Skills I	1	2
	BIO11005	Democracy and Human rights	2	–
	UOB11006	Arabic Language I	2	–
1st/ semester 2	BIO12007	General Botany	2	2
	COS12008	Biochemistry	2	2
	UOB12009	Biosafety and Biosecurity	1	–
	BIO12010	Bacteriology	2	2
	COS12011	Biophysics	2	2

	COS12012	English language	2	–
2nd/ semester 3	BIO23013	Invertebrates	2	2
	BIO23014	Entomology	2	2
	BIO23115	Cytology	2	2
	BIO23016	Ecology	2	2
	BIO23117	Plant Anatomy	2	2
	BIO23018	Mycology	2	2
	BIO23019	Arabic Language II	2	–
2nd/ semester 4	BIO24120	Protozoan Parasitology	2	2
	BIO24021	Plant Taxomony	2	2
	UOB24022	Computer Skills II	1	2
	BIO24023	Pollution	2	2
	BIO24024	Phycology and Archegoniates	2	2
	UOB24025	English language	2	–
	UOB24026	The Crimes of the Baath Regime in Iraq	2	–
3rd/ semester 5	BEC326	Ecology	2	2
	BMP327	Microbial Physiology	2	2
	BPP328	Plant Physiology	2	2
	BHI337	Histology	2	2
	BAN335	Antibiotics	2	2
	BIM336	Immunology	2	2
3rd/ semester 6	BPO332	Pollution	2	2
	BMEP334	Medical plants	2	2
	BMY331	Mycology	2	2
	BAP333	Animal Physiology	2	2
	BSE330	Serology & Vaccinology	2	2
4th/ semester 7	MOB4301	Molecular biology & bacterial genetics	2	2
	FOM4211	Food microbiology	2	2
	MB4211	Embryology	2	2
	PAB4222	Pathogenic bacteria	2	2
	HEL4301	Helminthology (elective)	2	2
	ENG4222	English language	2	–

4th/ semester 8	GNE4311	Genetic engineering	2	2
	BIO4240	Biotechnology	2	2
	VIR4322	Virology	2	2
	AQS4222	Aquatic & soil microbiology	2	2
	CMA4217	Comparative anatomy	2	2
	CLA4321	Clinical analysis	2	2
	REP4195	Research project	–	2

8. Expected learning outcomes of the program

A. Knowledge and Understanding

A-1. Provide knowledge of the principles and fundamentals of pure sciences, in addition to providing specialized knowledge in the principles of biology in its various branches.

A-2. Provide students with modern knowledge in the fields of biology and related knowledge.

A-3. Expand students' knowledge by introducing them to the principles of laboratory testing, various laboratory equipment, and their mechanisms of operation.

A-4. Develop students to a high level of competence and qualify them to work in the fields of biology, particularly in laboratories and research centers.

B. Cognitive Abilities

B-1. The ability to use modern laboratory methods, tools, and skills necessary for work in laboratories and research centers.

B-2. See the relevance of course content to future studies in biology.

B-3. Identify, formulate, and solve problems using scientific reasoning based on information obtained and interconnected from various sources.

B-4. Provide students with scientific research skills and the ability to conduct scientific and applied research in their field of specialization and other related scientific disciplines.

C. Personal Skills and Responsibility

A-1. Teaching leadership skills, the importance of commitment, ethical behavior, and respect for others.

A-2. Applying the principles of ethical thinking and decision-making.

A-3. Transparency and honesty in dealing with others and instilling a sense of belonging to the organization.

A-4. Taking responsibility for teamwork and completing all responsibilities on time.

D. Communication Skills and Personal Development

D-1. Communicate effectively with colleagues, both verbally and in writing, using an appropriate tone of voice.

D-2. Demonstrate basic skills and a positive attitude toward teaching others.

D-3. Give others the opportunity and time to speak and avoid interruptions.

D-4. Use information and communication technology to search for, collect, organize, and interpret information in biology.

9. Teaching and Learning Strategies

The biology program relies on modern and diverse teaching strategies aimed at developing students' knowledge, skills, and competencies, preparing them for the job market and fields of scientific research. This is achieved by balancing theoretical and practical aspects, classroom interaction and extracurricular activities, as well as practical laboratory training.

A. Theoretical Lectures:

Lectures aim to build basic knowledge and stimulate students' analytical thinking. Scientific information is presented in a systematic and organized manner using modern educational tools such as:

- PowerPoint presentations
- Explanatory videos
- Educational panels and models

B. Practical Sessions:

Practical sessions form the backbone of the major and are held in laboratories equipped with the latest equipment. Students are divided into small groups to ensure individual and group training. Students are trained in:

- Cultivating and identifying microorganisms
- Using a microscope and dissecting specimens
- Applying biosafety techniques
- Conducting scientific research experiments

C. Seminars and Workshops:

Seminars encourage students to interact and participate in presenting scientific topics, enhancing the skills of:

- Presentation and delivery
- Research and information collection
- Scientific dialogue and constructive criticism

D. Group Work and Projects:

Student groups are assigned simple scientific projects at each stage, aiming to develop skills in collaboration, problem-solving, and creativity in scientific research.

E. Self-Directed Learning:

Students are encouraged to use open and digital learning resources and consult databases and scientific research to enhance their in-depth understanding of the material.

F. Field and Lab Training:

The program provides training opportunities within hospitals, diagnostic centers, and environmental and food institutions, providing students with real-world practical experience and enhancing their professional readiness.

G. Interactive & Technology-Based Learning

Instructors use e-learning tools and university platforms to manage assignments, exams, and in-class and extracurricular activities.

H. Practical and written examinations:

Assessment methods include:

- Short and final exams
- Practical and laboratory reports
- Oral presentations
- Research projects

10.Evaluation methods

Assessment methods in the biology program rely on a variety of measurement and evaluation tools to ensure the achievement of the targeted learning outcomes. These methods assess students' comprehension of theoretical knowledge, their mastery of practical skills, and their ability to think scientifically and be research-oriented. This is achieved through weekly assignments, presentations, classroom activities, participation, and monitoring of individual academic development.

This strategy aims to:

- Continuously diagnose student performance.
- Measure technical and practical skills acquired in laboratories.
- Identify students' strengths and weaknesses.
- Promote interactive and proactive learning.
- Measure the extent to which educational objectives are achieved in each course.

Evaluate information and analytical understanding through:

Evaluation Type	Evaluation Method		Score Weight (%)
Formative Assessment	Quizzes		10
	Assignments and Projects		10
	Reports		10
	Laboratory (Practical)		10
Exam Assessment	Midterm Exam		10
	Final Exam	Final Practical Exam	10
		Final Theoretical Exam	40
Total			100

Graduation project evaluation:	
The graduation project evaluation is according to the following:	
Research effort and academic commitment (supervisor)	**40%**
Discussion in front of the scientific committee (discussion committee)	**60%**
Total score	**100%**

Field Training Evaluation:

- Field training evaluation is as follows
- Performance evaluation by the training provider
- A detailed report from the student on the training
- An evaluation discussion in front of the department committee

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/ Skills (if applicable)	Number of the teaching staff	
	General	Special		Staff	Lecturer
Professor	Biology	Zoology		3	
	Biology	Biotechnology		1	
	Arabic language	Language and Grammar		1	
Assistant Professor	Biology	Microbiology		1	
	Biology	Zoology		1	
	Biology	Ecology		2	
Teacher	Biology	Microbiology		2	
	Biology	Zoology		1	
	Biology	Zoology			1
	Mathematics	Biostatistics		1	

Assistant Teacher	Biology	Microbiology		**5**	
	Biology	Zoology		**1**	
	Biology	Botany		**1**	
	Chemistry	Biochemistry		**2**	

Professional Development

Mentoring new faculty members

- Providing office and electronic supplies with Internet lines for all new faculty members
- Involving new faculty members in training courses, workshops, and seminars inside or outside the university, especially
  - ✓ Teaching Methods Course
  - ✓ Teaching Competency Course

Professional development of faculty members

- Providing modern scientific references and books to keep pace with the rapid progress in science and related fields
- Annual evaluation of the level of performance of faculty and administrative staff members in the department
- Developing faculty competency through training programs and workshops conducted by the Quality Assurance and Academic Performance department, such as:
  - ✓ Teaching and learning strategies
  - ✓ Foundations for developing exam questions
  - ✓ Interactive teaching strategies
  - ✓ Curriculum development strategies
  - ✓ Strategic planning mechanisms
  - ✓ Self-assessment strategies
  - ✓ Course description strategies

12. Acceptance Criterion

General Admission Requirements

- The Biology Department is subject to the admission mechanism in accordance with the central admissions system of the Ministry of Higher Education and Scientific Research/ Private Education Administration.
- Determine the number of students accepted into the department according to the capacity and the department's needs and capabilities.
- The applicant must hold a preparatory school certificate in the scientific, biological, and applied branches or an officially recognized equivalent.
- The student's GPA must not be less than the minimum set by the Ministry for admission to private or public colleges (according to the academic year system).
- The applicant must be physically fit, healthy, and free from diseases that prevent him from performing practical aspects in the laboratories.

Required Documents for Application

- Original academic transcript (certified by the General Directorate of Education).
- Civil ID or unified ID.
- Residence ID or proof of residence.
- (6) personal photos.
- Electronic application receipt (for private colleges).
- Medical examination form.
- Any other requirements according to the system of the Ministry of Higher Education and Scientific Research/ Central Admissions Department

13. The most important sources of information about the program

- The official website of Al-Farabi University: http://www.alfarabiuc.edu.iq
- The website of the electronic platform for the Department of Biology at Al-Farabi University

- The curriculum approved by the Department of Biology/ College of Science/ University of Baghdad
- Signs posted in the university hallways
- Files stored in the department (official documentation)

14. Program Development Plan

- Increase the use of technological techniques in education
- Develop and review the program and curricula
- Encourage scientific research and teamwork
- Develop the academic and professional skills of faculty
- Work to conclude joint cooperation agreements with similar specializations at international universities
- Work to update the program to keep pace with community needs and job opportunities
- Work to update and develop learning outcomes to keep pace with job opportunities
- Develop a plan to improve the program's quality as part of its efforts to obtain program accreditation.

Program Skills Outline																	
Year/Level	Course Code	Course Name	Basic or optional	Required Learning Outcomes of the Program													
				Knowledge and Understanding				Cognitive Abilities				Personal Skills and Responsibility				Communication and Personal Development Skills			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4
1st/ semester 1	BIO11001	General Zoology	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	COS11002	General Chemistry	Basic	√	√	√	√	√	√	√	√		√	√		√	√		
	COS11003	General Mathematics and Biostatistics	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	UOB11004	Computer Skills I	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	BIO11005	Democracy and Human rights	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	UOB11006	Arabic Language I	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

1st/ semester 2	BIO12007	General Botany	Basic	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√
	COS12008	Biochemistry	Basic	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√
	UOB12009	Biosafety and Biosecurity	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	BIO12010	Bacteriology	Basic	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√
	COS12011	Biophysics	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	COS12012	English language	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
2nd/ semester 3	BIO23013	Invertebrates	Basic	√	√			√	√	√	√	√	√	√		√	√	√	
	BIO23014	Entomology	Basic	√	√	√		√	√	√		√	√			√	√		
	BIO23115	Cytology	Basic	√	√	√		√	√	√		√	√	√	√	√	√	√	√
	BIO23016	Ecology	Basic	√	√			√	√	√		√	√	√		√	√	√	
	BIO23117	Plant Anatomy	Basic	√	√	√		√	√			√	√	√		√	√	√	√
	BIO23018	Mycology	Basic	√	√	√		√	√	√	√	√	√	√	√	√	√	√	√
	BIO23019	Arabic Language II	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

2nd/ semester 4	BIO24120	Protozoan Parasitology	Basic	√	√	√		√	√	√		√	√	√	√	√	√	√	√
	BIO24021	Plant Taxomony	Basic	√	√	√		√	√			√	√	√	√	√	√	√	√
	UOB24022	Computer Skills II	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	BIO24023	Pollution	Basic	√	√	√		√	√	√	√	√	√		√	√	√	√	√
	BIO24024	Phycology and Archegoniates	Basic	√	√	√		√	√			√	√	√		√	√	√	√
	UOB24025	English language	Basic	√	√	√		√	√	√	√	√	√	√	√	√	√	√	√
	UOB24026	The Crimes of the Baath Regime in Iraq	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
3rd/ semester 5	BEC326	Ecology	Basic	√	√			√	√			√	√	√		√	√	√	
	BMP327	Microbial Physiology	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	BPP328	Plant Physiology	Basic	√	√	√		√	√	√		√	√	√	√	√	√	√	√
	BHI337	Histology	Basic	√	√	√		√		√	√	√	√	√	√	√	√	√	√
	BAN335	Antibiotics	Optional	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	BIM336	Immunology	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

3rd/ semester 6	BPO332	Pollution	Basic	√	√	√		√	√	√	√	√	√		√	√	√		√
	BMEP334	Medical plants	Basic	√	√	√		√	√	√	√	√	√			√			√
	BMY331	Mycology	Basic	√	√	√		√	√	√	√	√	√	√	√	√	√	√	√
	BAP333	Animal Physiology	Basic	√	√	√		√	√	√		√	√	√	√	√	√	√	√
	BSE330	Serology & Vaccinology	Basic	√	√	√	√	√	√			√			√	√			√
4th/ semester 7	MOB4301	Molecular biology & bacterial genetics	Basic	√	√	√		√		√	√	√	√	√	√	√	√	√	√
	FOM4211	Food microbiology	Basic	√	√	√		√		√	√	√	√		√	√	√	√	√
	MB4211	Embryology	Basic	√	√	√	√	√	√	√		√	√			√	√	√	√
	PAB4222	Pathogenic bacteria	Basic	√	√	√		√		√	√	√			√	√	√	√	√
	HEL4301	Helminthology	Optional	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	ENG4222	English language	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

4th/ semester 8	GNE4311	Genetic engineering	Basic	√	√	√		√	√	√		√	√		√	√	√		√
	BIO4240	Biotechnology	Basic	√	√	√		√	√			√	√	√		√	√	√	√
	VIR4322	Virology	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	AQS4222	Aquatic & soil microbiology	Basic	√	√	√		√	√	√		√	√		√	√	√	√	√
	CMA4217	Comparative anatomy	Optional	√	√	√		√	√	√		√	√		√	√	√	√	√
	CLA4321	Clinical analysis	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	REP4195	Research project	Basic	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

Course Description Form

General Zoology

First year/ First semester

Course Name:	General Zoology	
Course Code:	BIO11001	
Semester / Year:	First semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#-Lecture #-Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours-theory + 2 hours-practical) (8-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Frial Abdulmanaf Mohammed
	Email:	Ferial.abdalmonaf@alfarabiuc.edu.iq

Course Objectives

Upon successful completion of the module a student will be able to:

1. Describe the functional characteristics of animals.
2. Describe the structure, embryology, classification, habits, and distribution of all animals, both living and extinct.
3. Develop a comprehensive understanding of the biology of animals.

Teaching and Learning Strategies

Strategy

This module's contact teaching will be conducted through lecturing (15 lectures) and compulsory 15 practical sessions, which include learning videos and scientific animations. Students will be invited to participate in interactive discussion throughout this program.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Course introduction; Zoology –An Overview	Lecture	Quizzes,

2	**2**		Animal Biology	Lecture	Reports, Assignments, Midterm exam, Final exam
3	**2**		Structure and Function of Animal Cells	Lecture	
4	**2**		The Cytoskeleton	Lecture	
5	**2**		Cell Cycle (cell division cycle)– Mitosis	Lecture	
6	**2**		Cell Cycle (cell division cycle)– Meiosis	Lecture	
7	**2**		Mid–term Exam	Exam	
8	**2**		Genes and Heredity	Lecture	
9	**2**		Animal Tissues	Lecture	
10	**2**		Taxonomy and Systematics of the Organisms	Lecture	
11	**2**		Animals Kingdom– I	Lecture	
12	**2**		Animals Kingdom– II	Lecture	
13	**2**		Evolution	Lecture	
14	**2**		The evolutionary history of biological diversity	Lecture	
15	**2**		Behavioral Biology	Lecture	
16	**2**		Preparatory week before the final Exam	Oral Discussion	

Course Evaluation

Evaluation Method		**Time/Number**	**Weight (Marks)**
Formative assessment	Quizzes	3	20
	Assignments	1	20
Summative assessment	Midterm Exam	1hr.	10
	Final Exam	3hr.	50
Total assessment			100

Learning and Teaching Resources	
Required Texts	1. General Zoology: Karen Reiss (2022) 2. SUBACZ, K. & CHRISTIAN, J. 2019. General Zoology Laboratory Manual.
Recommended Texts	1. Darrell S. and Randy Moore (2023). Biology Laboratory Manual, Thirteenth Edition. Published by McGraw Hill LLC.
Websites	Study Zoology: All you need to know | Study.eu

General Chemistry

First year/ First semester

Course Name:	**General Chemistry**	
Course Code:	COS11002	
Semester / Year:	First semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#-Lecture #-Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours-theory + 2 hours-practical) (8-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Maryam Latif Abdullah Hamad
	Email:	meriem.lateef@alfarabiuc.edu.iq

Course Objectives

Upon successful completion of the module a student will be able to:

1. Provide students with a thorough understanding of the guiding concepts that volumetric analysis, quantitative analysis approaches, and organic chemistry are based on.
2. Develop experts in general chemistry and its practical applications to equip them to meet the country's industrial and developmental needs.
3. Foster a scientifically literate generation that recognizes the value of science as a catalyst for transformative change. This includes cultivating critical thinking skills, promoting analytical thinking, and facilitating adaptability to evolving technologies and societal demands.
4. Strengthen the connection between the university and society by offering advisory counseling, training programs, and professional development opportunities for faculty and staff, ensuring that academic knowledge is effectively applied to real-world contexts.
5. Contribute to the country's overall progress by producing chemistry graduates who possess the skills and knowledge to actively contribute to its development.
6. Address the increasing demand for highly qualified professionals in various sectors that require specialized expertise in chemistry.
7. Encourage exceptional students to serve as teaching assistants within the department, nurturing their potential to become future members of the academic teaching staff and fostering the growth of a knowledgeable and skilled workforce

Teaching and Learning Strategies

Strategy

This The module will be conducted in a student-centered manner with a focus on developing critical thinking abilities and active involvement. Through a combination of classes, interactive tutorials, and purposeful experiments, students will be actively engaged in the learning process, fostering the development of their critical thinking abilities. The aim is to create an interactive and dynamic learning environment that encourages students to actively participate, think critically, and attain a profound comprehension of the subject matter. By adopting this strategy, students will have the opportunity to apply their knowledge, engage in analytical discussions, and enhance their overall learning experience.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Introduction to analytical chemistry, preparing solutions, and methods for the expression of concentration	Lecture	Quizzes, Reports, Assignments, Midterm exam, Final exam
2	2		Volumetric analysis, volumetric analysis reaction types, volumetric calculations	Lecture	
3	2		Ionic equilibria, the hydrogen-ion exponent (pH), hydrolysis	Lecture	
4	2		Titration curves, titration of a solution of strong acid with a strong base, titration of solutions of weak acid or bases, acid-base indicators, titration with strong acid for one base, or a mixture of two bases	Lecture	
5	2		Gravimetric methods of analysis, types of gravimetric methods, and calculation of results from gravimetric data	Lecture	

6	**2**		Instrumental methods, instrumental methods of analysis, spectroscopic Instruments, filter photometer	Lecture	
7	**2**		Introduction to organic chemistry – structure and properties	Lecture	
8	**2**		Mid-term exam	Exam	
9	**2**		Alkanes – Structure and nomenclature	Lecture	
10	**2**		Alkanes – Preparation and reactions	Lecture	
11	**2**		Alkenes – Structure, geometric isomers and nomenclature	Lecture	
12	**2**		Alkenes – Preparation and reactions	Lecture	
13	**2**		Alkynes – Structure and nomenclature	Lecture	
14	**2**		Alkynes – Preparation and reactions	Lecture	
15	**2**		Preparatory week before the final Exam	Oral Discussion	

Course Evaluation

Evaluation Method		Time/Number	Weight (Marks)
Formative assessment	Quizzes	2	10
	Assignments	2	10
	Projects / Lab.	1	10
	Report	1	10
Summative assessment	Midterm Exam	2 hr.	10
	Final Exam	3 hr.	50
Total assessment			100

Learning and Teaching Resources	
Required Texts	1. Fundamental of analytical chemistry by Skoog, West, Holler & Crouch, 8th, 2004. 2. Organic Chemistry, Morrison and Boyd book, 6th edition
Recommended Texts	1. Fundamental of analytical chemistry by Skoog, West, Holler, 6th, 1992. 2. Principles of instrumental analysis by Skoog, West, Holler & Crouch, 8th, 2004. 3. K. Burger D, Sc, "Organic regents in metal analysis", 1st, New York, 1973. 4. J.N.Miller & J.C. Miller" Statistical for anal. Chem.", 2nd, New York, 1988.
Websites	

General Mathematics and Biostatistics

First year/ First semester

Course Name:	**General Mathematics and Biostatistics**	
Course Code:	COS11003	
Semester / Year:	First semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#-Lecture	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours-theory) (7-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Sadiq Mawla Jaafar Fandy
	Email:	sadeq.mawla@alfarabiuc.edu.iq

Course Objectives

Upon successful completion of the module a student will be able to:

1. **Developing fundamental mathematical skills:** The first stage of university mathematics education aims to develop students' fundamental mathematical skills, including algebra, geometry, trigonometry, and calculus. Students are expected to master these skills to build a strong foundation for more advanced mathematical concepts.
2. **Promoting critical thinking:** Mathematics education in universities aims to promote critical thinking skills by teaching students to solve problems using logical reasoning, deduction, and analysis. Students learn how to approach complex problems and break them down into simpler, more manageable parts.
3. **Fostering creativity:** Mathematics education can also foster creativity by encouraging students to explore new ideas and develop their own approaches to problem-solving. By encouraging creativity, students can develop a deeper appreciation for the beauty and elegance of mathematics.
4. **Preparing students for advanced study:** The first stage of university mathematics education is often a prerequisite for advanced study in mathematics and related fields. Therefore, one of the primary objectives is to prepare students for more advanced coursework by building a strong foundation in fundamental mathematical skills.
5. **Enhancing career prospects:** Mathematics education can also enhance students' career prospects by providing them with the analytical and problem-solving skills that are highly valued in a wide range of industries, including finance, engineering, and computer science. Thus, the academic program of teaching mathematics at the first stage in universities aims to equip students
6. with the necessary skills and knowledge to succeed in their future careers.

Teaching and Learning Strategies

Strategy

This module's contact teaching will be conducted through lecturing (15 lectures) and compulsory 15 practical sessions, which include learning videos and scientific animations. Students will be invited to participate in interactive discussion throughout this program.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		1. Slope, and equation of line. 2. Functions and their graphs. 3. Shifts, circle, and parabolas	Lecture	Quizzes, Reports, Assignments, Midterm exam, **Final exam**
2	2		1. Limits. 2. Limits involving infinity. 3. Continuous functions. 4. Slopes, tangent lines, and derivatives. 5. Differentiation rules. 6. Velocity, speed, and other rates of change. 7. Derivatives of trigonometric functions. 8. Chain rule. Maxima, minima.	Lecture	
3	2		1. Definite integrals. 2. The fundamental theorem of integral calculus. 3. Indefinite integrals. 4. Integration by substitution. 5. A brief introduction to logarithms and exponentials. 6. Areas between carves, volumes of solids of revolution. 7. Areas of surfaces of revolution.	Lecture	
4	2		1. Inverse function and their derivatives. 2. ln x, e^x , and logarithmic differentiation. 3. Hospital rule. 4. The inverse trigonometric function.	Lecture	

			5. Derivatives of inverse trigonometric functions.		
5	**2**		1. Basic integration formula. 2. Integrations by parts. 3. Trigonometric integrals. 4. Rational functions and partial fractions. 5. Improper integrals.	Lecture	
6	**2**		1. Sequences. 2. Series and absolute convergence. 3. Power series. 4. Taylor's series and Maclaurin series.	Lecture	
7	**2**		1. polar coordinates. 2. Graphing in polar coordinates.	Lecture	
8	**2**		Mid-Term exam	Exam	
9	**2**		Some Basic concepts Statistics, Data, Biostatistics, Variables: Types of Variables, Population, Sample	Lecture	
10	**2**		Descriptive Statistics Frequency Distribution Measures of Central Tendency: Mean, Median, Mode, Percentiles and Quartiles Measures of Central Tendency: Grouped Data Measures of Variation: The Range, The Variance and the Standard Deviation, Moments, Skewness and Kurtosis Measures of Variation: Grouped Data	Lecture	
11	**2**		Basic Probability Concepts Properties of Probability, Probability of an Event, Marginal Probability, Conditional Probability, Baye's Theorem	Lecture	
12	**2**		Discrete Probability Distributions Probability Distributions for Discrete Random Variables, Expected Value and Variance of a Discrete Random Variable, Bernoulli Distribution, Binomial Distribution, Poisson Distribution	Lecture	

13	**2**		Continuous Probability Distributions Continuous Probability Distribution, Expected Value and Variance of a Continuous Random Variable, The Normal Distribution, The Standard	Lecture	
14	**2**		Sampling Distribution Sampling Distribution(definition), Sampling Distribution of the Sample Mean, Sampling from Normal Population	Lecture	
15	**2**		Preparatory week before the final Exam	Oral Discussion	

Course Evaluation

Evaluation Method		Time/Number	Weight (Marks)
Formative assessment	Quizzes	4	10
	Assignments	4	10
	Projects	1	10
	Report	1	10
Summative assessment	Midterm Exam	2 hr.	10
	Final Exam	3 hr.	50
Total assessment			100

Learning and Teaching Resources

Required Texts	1. Stewart. J. “Calculas”, 7th Edition, 2012. 2. Wayne W. Daniel (1995) "Biostatistics: Basic Concepts and Methodology for the Health Sciences", Sixth Edition, John Wiley and Sons M.
Recommended Texts	1. Ataharul Islam, Abdullah Al-Shiha (2018) "Foundations of Biostatistics", Springer
Websites	

Computer Skills I

First year/ First semester

Course Name:	**Computer Skills I**	
Course Code:	UOB11004	
Semester / Year:	First semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(1 hour-Practical) (3-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Ruqayah Gamal Nasser
	Email:	

Course Objectives

1. Upon successful completion of the module a student will be able to:
2. This module sets out essential concepts and skills relating to the use of devices.
3. This module covers the key skills and main concepts relating to computers, devices, file creation and management, web browsing, and data security.
4. Help students to demonstrate the ability to use word processing application to accomplish everyday tasks associated with creating, formatting, finishing small-sized word processing documents, such as letters and other everyday documents.
5. Help students to demonstrate the ability to use a power point application to accomplish tasks associated with creating, and formatting a presentation.
6. Help students to demonstrate the ability to use Excel application to accomplish a spreadsheet for tasks

Teaching and Learning Strategies

Strategy

The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. Different forms of teaching will be used to reach the objective of this module, including power point presentation for the subjects which contains titles, definitions, summary and conclusions, whiteboard will be used and classroom discussion with assignments, the students will be asked to prepare papers on selective topics.

Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	**1**		Introduction to Computers – definition ▪ The purposes of using a computer. ▪ The general–purpose computer models. ▪ The difference between Data and Information concepts. Introduction to windows ▪ Desktop Components ▪ The start menu (its functions and properties)	Practical	Quizzes, Reports, Assignments, Midterm exam, **Final exam**
2	**1**		The Components of a computer: Hardware ▪ System Units (Internal & External components of system units) ▪ Central Processing Unit (Features and components) Windows ▪ Task bar and its functions and properties	Practical	
3	**1**		Memory and its Types ▪ Cache Memory ▪ Primary memory –Comparison between RAM & ROM ▪ Secondary Storage Windows ▪ Files and Folders: All operations on files and folders (selection, creation, saving, moving and renaming	Practical	
4	**1**		Ports and their types ▪ Input Devices, ▪ Output Devices Windows ▪ Delete Files. ▪ Recycle bin. ▪ Creating a Shortcut. ▪ Desktop Icons. ▪ The Windows Explorer Views. ▪ Sort files	Practical	
5	**1**		Software ▪ Types of Software	Practical	

			▪ Operating System ▪ Application Software & their types. ▪ Programming Languages Windows ▪ Customizing the desktop. ▪ –Change screen resolution. ▪ – Change Desktop Background		
6	**1**		▪ Communication Technology ▪ E–mail Windows ▪ Print Screen ▪ Cleaning Up the Disk ▪ Defragmenting the Disk	Practical	
7	**1**		▪ Internet, Browsing the Web (Web Browser) , Search the web (search engine) ▪ Security and keeping information safe ▪ Virus transmission ways to the computer ▪ Protection against viruses ▪ Antivirus, benefits and Types	Practical	
8	**1**		Mid–Term exam	Exam	
9	**1**		Microsoft Word ▪ Word Program Interface ▪ Keyboard Shortcuts in Microsoft Word ▪ The operations on Text ▪ File Menu Home Tab & it commands ▪ Insert Tab (Pages & tables Groups) ▪ Table Tools	Practical	
10	**1**		Microsoft Word ▪ Insert Tab (Illustrations, Header & Footer, Text and Symbols Groups) ▪ Page Layout, References, Review Tabs	Practical	
11	**1**		Microsoft PowerPoint ▪ PowerPoint program Interface. ▪ File Menu	Practical	

			▪ Home Tab & it commands ▪ Operations on the Slides (duplicate, Delete, and Move)		
12	**1**		Microsoft PowerPoint ▪ Insert Tab, Design Tab, Slide Show Tab and their commands ▪ Transitions, and Animations Tabs	Practical	
13	**1**		Microsoft Excel ▪ File Menu, Home Tab & it commands	Practical	
14	**1**		Microsoft Excel ▪ Excel Worksheet Basics ▪ Cell format	Practical	
15	**1**		Preparatory Week	Oral Discussion	
16	**3**		Final Exam	Written Exam	

Course Evaluation

Evaluation Method		Time/Number	Weight (Marks)
Formative assessment	Quizzes	2	10
	Assignments	2	10
	Projects/ Lab	1	10
	Report	1	10
Summative assessment	Midterm Exam	2 hr.	10
	Final Exam	3 hr.	50
Total assessment			100

Learning and Teaching Resources

Required Texts	1.M. E. Vermaat and G. B. Shelly, *Discovering Computers Fundamentals: Living in a Digital World,* Shelly Cashman, 2011 Edition. 2. J. Lambert, J. Cox, and C. Frye, *Microsoft Office Professional 2010 Step by Step,* 1'st Edition, Microsoft Press, 2010, 152P.
Recommended Texts	2. D. Hajek and C. Herrera, **Introduction to Computers 2022 Edition,** independently published, May 19, 2022, 255P.

Websites	1. https://theictbook.com/components-of-the-system-unit-and-their-functions/ 2. https://www.tutorialspoint.com/computer_fundamentals/index.htm 3. https://www.slideshare.net/Jamjolojessa/types-of-application-software?from_action=sav 4. https://www.bbc.co.uk/bitesize/guides/zbfny4j/revision/1 5. https://generalnote.com/Computer-Fundamental/ 6. https://edu.gcfglobal.org/en/word2010/# 7. https://edu.gcfglobal.org/en/powerpoint2010/# 8. https://edu.gcfglobal.org/en/excel2010/# 9. https://antivirus.comodo.com/blog/computer-safety/what-is-antivirus 10. https://thingscouplesdo.com/what-is-the-antivirus-software-that-is-best-for-a- user

Democracy and Human rights

First year/ First semester

Course Name:	**Democracy and Human rights**	
Course Code:	BIO11005	
Semester / Year:	First semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory) (2-Units)	
Course administrator's name (mention all, if more than one name)	Name:	
	Email:	

Course Objectives

1. This course deals with the basic concept of human rights& democracy
2. Clarifying and training students on the most important principles of human rights and democracy.
3. Organizing discussions and presentations on the most vital and basic topics affecting community building, related to human rights and democracy.
4. Adopting teamwork with students to develop their cognitive abilities and create a spirit of cooperation, initiative, creativity and exchange of views in an effort to build the foundations of peaceful community coexistence.
5. Providing society with conscious youth aware of the importance of its role in building society, its unity and cohesion through spreading the culture of human rights and establishing the rules of correct democracy.
6. Human rights guarantee the protection and respect of an individual's interests, even when he or she is not a majority. In a democratic climate, sustainable democratic power cannot be conceived without respecting, protecting and fulfilling human rights. Through their combined influence, they allow the individual a life based on the freedom of self-determination and collective. That is why the protection and realization of human rights truly form the basis of the democratic project.

Teaching and Learning Strategies

Strategy

The main strategy that will be adopted in delivering this module is to encourage students' participation in the discussions, dialogues and group work lectures & exercises, while at the same time refining and expanding their critical thinking skills. There are many teaching and learning methods used, and the most important of these methods are: Theoretical lecture, discussion and dialogue, panel discussions on certain topics, theoretical student research Library and electronic activities (which helps students to reach the following results:

1. The scientific ability to distinguish between correct information and wrong information.
2. Ease of scientific drafting and ease of correction.
3. Ability to memorize and guess.
4. The ability to link concepts and principles with reality.
5. Ability to invoke, link, interpret.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Familiarity with the concept of human rights and the definitions approaching it, discussing, dismantling and criticizing them in a scientific way in order to reach the most accurate and objective. ▪ Definition of right, of human, of the concept of human rights. Human rights qualities, Types of human rights ▪ Categories	Lecture	Quizzes, Reports, Assignments, Midterm exam, **Final exam**
2	2		The historical development of human rights: Orcagina Reforms ▪ Urnamo Law. ▪ The law of Ishtar Bit. ▪ The law of the Kingdom of Eshnuna. ▪ Code of Hammurabi.	Lecture	

3	**2**		Human rights in other ancient civilizations: ▪ Indian and Chinese civilization ▪ Pharaonic civilization of Egypt ▪ Greek civilization ▪ Roman civilization	Lecture	
4	**2**		Human rights in heavenly laws ▪ Human Rights in Judaism, ▪ Human rights in Christianity, ▪ Human Rights in Islam.	Lecture	
5	**2**		Human rights in Renaissance – modern and contemporary societies ▪ Introducing the student to the most important UN document in the field of human rights, which was approved and approved by the Assembly on January 10, 1948 ▪ Universal Declaration of Human Rights 1948	Lecture	
6	**2**		Non-governmental organizations defending human rights: Amnesty International, ▪ International Committee of the Red Cross. Arab Organization for Human Rights.	Lecture	
7	**2**		▪ Definition of the phenomenon of administrative corruption, ▪ Types of administrative corruption, Causes of administrative corruption. ▪ The repercussions of the phenomenon of administrative corruption on human rights and society. ▪ Successful treatments to combat corruption and protect society from it.	Lecture	
8	**2**		Midterm Exam	Exam	
9	**2**		Specifications and duties of the Islamic ruler reading, the era of	Lecture	

			Imam Ali "peace be upon him" to his governor over Egypt: Specifications of the Islamic ruler: ▪ First: The moral and doctrinal components of the ruler ▪ Second: The general culture of the Islamic ruler, ▪ Third: Acumen and good choice: ▪ Fourth: Direct relationship with people: ▪ Fourth: Direct relationship with people. Duties of the Islamic ruler: ▪ First: Social Reform: ▪ Second: Achieving security and defense ▪ Third: The architecture of the country "economic development"		
10	**2**		Forms of democracy: ▪ Direct democracy ▪ Semi-direct democracy ▪ Parliamentary democracy (parliamentary representation) ▪ Liberal Democracy ▪ consociation Democracy ▪ Delegated Democracy.	Lecture	
11	**2**		Conditions for the success of the elements and pillars of the democratic system General conditions for the success of the democratic system: ▪ Respect for human rights ▪ Political pluralism ▪ Peaceful transfer of power ▪ Political equality ▪ Respect the principle of the majority ▪ Existence of the rule of law.	Lecture	

12	**2**		Components or elements of democracy: ▪ Citizenship ▪ Political participation ▪ Elections ▪ MPs and Responsibility ▪ Opposition ▪ Separation of government and parliament ▪ Constitutional legitimacy	Lecture	
13	**2**		The concept of elections and their legal adaptation: ▪ First: The concept of election ▪ Second: Legal adaptation of the Election, ▪ Third: Conditions of Election, ▪ Fourth: Concepts of Elections, ▪ Fifth: Types of Electoral Systems. Assessing the Democratic System, Pros and advantages of the democratic system, Disadvantages and disadvantages of the democratic system, Implementing the democratic system in Iraq.	Lecture	
14	**2**		Lobbyists: ▪ First: the concept and definition. ▪ Second: Types of pressure groups. ▪ Third: The methods of pressure groups that they use to achieve their goals. ▪ Fourth: Lobbying and Democracy.	Lecture	
15	**2**		Preparatory Week	Oral Discussion	
16	**3**		Final Exam	Written Exam	

Course Evaluation

Evaluation Method		Time/Number	Weight (Marks)
Formative assessment	Quizzes	2	10
	Assignments	6	10
	Attending lectures	1	10
	Report	1	10
Summative assessment	Midterm Exam	2 hr.	10
	Final Exam	3 hr.	50
Total assessment			100

Learning and Teaching Resources

Required Texts	1. Martyrdom verses from the Holy Quran 2. Mohammed Al-Tarawneh et al., International Humanitarian Law, ICRC, Amman, 2005 3. Diamond Larry, Democracy: Its Development and Ways to Enhance It, translated by Fawzia Naji, Dar Al-Mamoun for Translation, Iraq, 2005.
Recommended Texts	1. journal.un.org 2. Hadi, Riad Azabz. (2005). Human rights (evolving contents and protection) (Baghdad).
Websites	1. Universal Declaration of Human Rights | United Nations 2. https://sc.uobaghdad.edu.iq/?page_id=8415 3. https://www.youtube.com/@ansamalobidimanagerofhuman2891

Arabic Language I

First year/ First semester

Course Name:	**Arabic Language I**	
Course Code:	UOB11006	
Semester / Year:	First semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory) (2-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Hussein Muhasin Khatlan Hussein
	Email:	hassin.mohaisen@alfarabiuc.edu.iq

Course Objectives

1. تعلم مهارات الكتابة والاملاء والتعبير الصحيح خلال تطبيق قواعد اللغة العربية بشكل مفصل وتطبيقي على نصوص عربية.
2. لفهم الجمع وأنواع الاسماء وكيفية التعامل معها.
3. لفهم العدد واستعماله بشكل صحيح من حيث المطابقة والمخالفة للتفريق بين الضاد والظاء
4. للتفريق ومعرفة استعمال التاء المربوطة والتاء الطويلة.
5. التمييز بين العالمات الاصلية والفرعية.
6. تعلم استعمال الادوات وعمل كل أداة ومعناها في التعبير.

Teaching and Learning Strategies

الاستراتيجية

هي تشجيع الطالب على المشاركة في التمارين، مع تحسين مهارات التفكير النقدي وتوسيعها في نفس الوقت. سيتم تحقيق ذلك من خلال الفصول والبرامج التعليمية التفاعلية ومن خلال النظر في أنواع التجارب البسيطة التي تتضمن بعض أنشطة أخذ العينات التي تهم الطالب

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		▪ عالمات الترقيم والتنقيط والنواسخ	Lecture	Quizzes, Reports,
2	2		▪ المشتقات .	Lecture	

3	2		▪ الجملة الاسمية	Lecture	Assignments, Midterm exam, **Final exam**
4	2		▪ الجملة الفعلية	Lecture	
5	2		▪ الفرق بين الضاد والظاء	Lecture	
6	2		▪ التاء المربوطة والتاء المفتوحة	Lecture	
7	2		▪ الهمزة وانواعها	Lecture	
8	2		الامتحان النصفي	Exam	
9	2		▪ الجمع ▪ العدد	Lecture	
10	2		▪ العالمات الأصلية والعالمات الفرعية	Lecture	
11	2		▪ اعالم عراقيون بدر شاكر السياب والجواهري	Lecture	
12	2		▪ العطف	Lecture	
13	2		▪ حروف الجر	Lecture	
14	2		▪ الاسم المؤنث والاسم المذكر	Lecture	
15	2		▪ مراجعة عامة	Oral Discussion	
16	3		▪ الامتحان النهائي	Written Exam	

Course Evaluation

Evaluation Method		Time/Number	Weight (Marks)
Formative assessment	Quizzes	2	10
	Assignments	2	10
	Attending lectures	1	10
	Report	1	10
Summative assessment	Midterm Exam	2 hr.	10
	Final Exam	3 hr.	50
Total assessment			100

Learning and Teaching Resources	
Required Texts	▪ جامع الدروس العربية وشرح ابن عقيل
Recommended Texts	Electromagnetic theory (book). 2000.vol.1
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering

General Botany

First year/ Second semester

Course Name:	**General Botany**	
Course Code:	BIO12007	
Semester / Year:	Second semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory and 2 hours Practical) (8-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Amal Abdu-Salam Abdu-Rahman Al-Habib
	Email:	amal.abdulsalam@alfarabiuc.edu.iq

Course Objectives

1. Recognize the plant cell and its properties.
2. Recognize the properties of plant cell biochemistry and molecular biology 3- identifying the properties of each tissue in different plant body.
3. Recognize the difference in basal physiological activity in plant cell.
4. Understanding the differences in plant body parts.

Teaching and Learning Strategies

Strategy

The general botany strategies are aimed to identified the internal structure, physiology and molecular of plant cell as well as it's aimed to understanding the differences in plant body by using different theoretical and laboratory skills to create student knowledge can be used in different scientific specialties and researches.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Plant cell structures (living organelles)	Lecture	Quizzes,

2	**2**		Plant cell structures (non-living organelles)	Lecture	Reports, Assignments, Midterm exam, **Final exam**
3	**2**		Biochemistry compounds, their types, classification, and properties	Lecture	
4	**2**		Secondary plant chemicals, their types, classification, and properties	Lecture	
5	**2**		Molecular biology of plant cell (DNA structure)	Lecture	
6	**2**		Molecular biology of plant cell (RNA structures)	Lecture	
7	**2**		Cell division (mitosis and meiosis)	Lecture	
8	**2**		Midterm Exam	Exam	
9	**2**		Diversity in Plant Life	Lecture	
10	**2**		Photosynthesis	Lecture	
11	**2**		Respiration	Lecture	
12	**2**		Plant growth regulators	Lecture	
13	**2**		Exchange through the cell membrane	Lecture	
14	**2**		Plant tissues	Lecture	
15	**2**		Preparatory Week	Oral Discussion	
16	**3**		Final Exam	Written Exam	

Course Evaluation

Evaluation Method		Time/Number	Weight (Marks)
Formative assessment	Quizzes	5	10%
	Assignments	2	10%
	Project/lab	5	10%
	Report	1	10%
Summative assessment	Midterm Exam	2 hr.	10%
	Final Exam	3 hr.	50%
Total assessment			100

Learning and Teaching Resources	
Required Texts	1. Plant anatomy 2ed – Introduction to Botany, Alexey Shipunov, 2018 2. General Cytology, Plant Science, Essentials of Genetics
Recommended Texts	1. D.G.Mackean,2004.GCSE Biology. Third edition 2. Bowsher, C.,M.Steer, and Tobin. 2008. Plant 3. Biochemistry. London: garland science 4. William, S. Klug and Michael R. Cumming Essential of Genetic., 1990. Fifth edition. 5. Hopkins, W.G., AND N. A.P.Honer.2004.
Websites	Introduction to Plant Physiology. 3rd ed. Hoboken, NJ:John Wiley and Sons.

Biochemistry

First year/ Second semester

Course Name:	**Biochemistry**	
Course Code:	COS12008	
Semester / Year:	Second semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory and 2 hours Practical) (6-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Hamed Abdu-Latif Hassan Hamid
	Email:	hamad.abd@alfarabiuc.edu.iq

Course Objectives

Teaching the subject of biochemistry for the second stage (Department of Biological Technologies) aims:

1. To introduce the biochemical structure of living systems mainly dealing with biomolecules like carbohydrates, proteins, lipids, and nucleic acids.
2. To provide and display the most important foundations necessary to understand the relationship of chemistry to the functions of the body through multiple examples that depend on modern information. It also aims to clarify the chemical reactions and changes that occur within the body in normal and pathological conditions.
3. To give students basic concepts of biochemistry and its nature of interdisciplinary importance.
4. To expose students in basic biochemistry practical laboratory to see basic tools used in practical. To acquire confidence, interest, challenge and discipline laboratory behavior in biochemistry practical.
5. The course gives an idea for the maintenance of laboratory and the practices that should be accomplished in a laboratory. The course explains how to prepare solutions and reagents, various methods of qualitative tests for proteins, carbohydrates and lipids.
6. Preparing specialists with a solid foundation in biochemical processes, to develop analytical, technical and critical thinking skills and to make them scientifically literate so as to contribute to the discipline after graduation.

Teaching and Learning Strategies

Strategy

Clarifying the scientific material through approved biochemistry books, creating electronic lectures to clarify the mechanisms and some chemical structures. Motivate students to conduct reports and research regarding the subjects they study, use modern technologies in research, and develop their research skills. Preparing some electronic courses and seminars that have a great role in educating students and constructive discussion between the student and tutor.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Carbohydrate's overview: principles of carbohydrates include their important and roles in the living organisms.	Lecture	Quizzes, Reports, Assignments, Midterm exam, **Final exam**
2	2		Carbohydrate's classification: monosaccharides, disaccharides, oligosaccharides and polysaccharides Carbohydrates physical properties: carbohydrate isomers, enantiomers, epimers, fisher and Haworth projection formula etc.	Lecture	
3	2		Disaccharides: disaccharides properties, conjugation and glycosidic bond formation.	Lecture	
4	2		Polysaccharides: polysaccharides properties, important and their types.	Lecture	
5	2		Lipid's overview: principles of lipids include their important and roles in the living organisms.	Lecture	
6	2		Lipid's properties and classification: simple, compound and derived lipids.	Lecture	

7	**2**		The important of compound and complex lipids.	Lecture	
8	**2**		Mid Term Exam	Exam	
9	**2**		The role of lipids in cell membrane.	Lecture	
10	**2**		Amino acids overview: principles of amino acids include their important and roles in the living organisms.	Lecture	
11	**2**		Amino acids properties and classification: polar, nonpolar, acidic and basic amino acids.	Lecture	
12	**2**		Protein's structure and important: primary, secondary, tertiary, quaternary structures.	Lecture	
13	**2**		Protein functions and roles.	Lecture	
14	**2**		Nucleic acids overview: principles of nucleic acids include their important and roles in the living organisms.	Lecture	
15	**2**		Nucleic acids classification: purines and pyrimidines.	Oral Discussion	
16	**3**		Final Exam	Written Exam	

Course Evaluation

Evaluation Method		Time/Number	Weight (Marks)
Formative assessment	Quizzes	2	10%
	Assignments	2	10%
	Project/lab	1	10%
	Report	1	10%
Summative assessment	Midterm Exam	2 hr.	10%
	Final Exam	3 hr.	50%
Total assessment			100%

Learning and Teaching Resources	
Required Texts	3. Nelson D. & Cox M., “Lehninger Principles of Biochemistry”, W.H. Freeman and Company, New York, 8th ed. 2021. 4. Abali EA, et al. “Lippincott's illustrated reviews: Biochemistry”. 8th, Wolters Kluwer Health; 2022. 5. Naik P. “Essentials of Biochemistry”, 1st ed. 2012. 6. Campbell NA and Reece JB. Biology, 9th edition 2009.
Recommended Texts	1. Kennelly PJ, Botham KM, McGuinness O, Rodwell VW, Weil PA. Harper's illustrated biochemistry. McGraw Hill Professional; 32th, 2022.
Websites	

Biosafety and Biosecurity

First year/ Second semester

Course Name:	**Biosafety and Biosecurity**	
Course Code:	UOB12009	
Semester / Year:	Second semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture	
Number of Credit Hours (Total) / Number of Units (Total)	(1 hour- Theory) (3-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Abdul-Hussein Hassan Kadhim Hassoun
	Email:	kadhim.ah@alfarabiuc.edu.iq

Course Objectives

The student learns the basic concepts in safety and biosecurity, the student learns how to deal with laboratory materials, biological devices and equipment, the student learns how infection and pathogens are transmitted and how to deal with them with care, the student learns how to protect himself and his colleagues by following the international guidelines for safety and biosecurity, Teaching the student the ethics of scientific research and not disclosing important information

Teaching and Learning Strategies

The use of modern projectors and films, the use of drawings and charts on the board, the use of PowerPoint to present information, written tests, Ask intellectual questions during the lecture

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	1		Occupational Safety and Health, Biosafety, Technical Definitions, Biological waste	Lecture	Quizzes, Reports,

2	**1**		Treatment and drainage methods, Mitigation and drainage	Lecture	Assignments, Midterm exam, **Final exam**
3	**1**		Procedures and methods of trading and dealing with laboratory waste	Lecture	
4	**1**		The responsibility of management in achieving safety at work sites	Lecture	
5	**1**		Why we need Biosafety? What is Biosecurity? Biosafety is related to several fields, Biosafety containment levels	Lecture	
6	**1**		Biohazard Symbol, Biosafety Issues, What are biological hazards?	Lecture	
7	**1**		Biohazards Materials, Types of pathogens, Biohazardous Materials	Lecture	
8	**2**		Mid term exam	Exam	
9	**1**		Control of biological hazards, Methods of control biological hazards	Lecture	
10	**1**		Biological Agent, Standard Microbiological Practices	Lecture	
11	**1**		Biological Safety Cabinets (BSCs), Biohazardous Waste Containers, Transportation	Lecture	
12	**1**		Some factors influencing biosecurity, What are the Biosecurity hazards?	Lecture	
13	**1**		Biosecurity in laboratories, Laboratory Risks, A Biosecurity Risk Assessment and Management Process	Lecture	
14	**1**		Biosecurity risks, Laboratory biosecurity program, The Virtual Biosecurity Center (VBC)	Lecture	
15	**1**		Nucleic acids classification: purines and pyrimidines.	Oral Discussion	
16	**3**		Final Exam	Written Exam	

Course Evaluation

Evaluation Method		Time/Number	Weight (Marks)
Formative assessment	Quizzes	10	20%
	Assignments	7	20%
Summative assessment	Midterm Exam	2 hr.	10%
	Final Exam	3 hr.	50%
Total assessment			100%

Learning and Teaching Resources

Required Texts	Salerno, R.M and Gaudioso, J. Laboratory Biosecurity Handbook , CRC Press. 2007
Recommended Texts	Harding, A.L., and Brandt Byers, K. Epidemiology of laboratory-associated infections . In: Fleming, D.O., and Hunt, D.L. Biological safety: principles and practices. Washington, DC: ASM Press, 2000;35-54
Websites	Salerno, R.M and Gaudioso, J. Laboratory Biosecurity Handbook , CRC Press. 2007

Bacteriology

First year/ Second semester

Course Name:	**Bacteriology**	
Course Code:	BIO12010	
Semester / Year:	Second semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory and 2 hours Practical) (6-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Fadhl Ahmed Saeed
	Email:	dr.fadhl.ahmed@alfarabiuc.edu.iq

Course Objectives

1. Getting general information about bacteria.
2. Understanding the technique of isolating and identification of bacteria
3. Understanding cellular structure and metabolic mechanisms of bacteria
4. Getting information about the genotype and phenotype of bacteria.

Teaching and Learning Strategies

Strategy

This module's contact teaching will be conducted through lecturing (15 lectures) and compulsory 15 practical sessions, which include learning videos and scientific animations. Students will be invited to participate in interactive discussions throughout this program

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Introduction to bacteriology	Lecture	Quizzes, Reports, Assignments,
2	2		Structure of bacterial cells	Lecture	
3	2		Cytoplasmic ultra-structures	Lecture	
4	2		Microbial genetics, DNA replication	Lecture	
5	2		RNA, Protein synthesis	Lecture	

6	**2**		Microbial metabolism	Lecture	Midterm exam, **Final exam**
7	**2**		Microbial Enzymes	Lecture	
8	**2**		Mid-Term Exam	Exam	
9	**2**		Microbial Growth and multiplication	Lecture	
10	**2**		Types of bacterial culture, Growth curve	Lecture	
11	**2**		Factors affecting growth: Temperature, Hydrostatic pressure	Lecture	
12	**2**		Factors affecting growth: pH, Osmotic pressure, Radiation	Lecture	
13	**2**		Nutrition of microorganisms	Lecture	
14	**2**		Control of microbial growth by physical techniques	Lecture	
15	**2**		Control of microbial growth by biological and chemical techniques	Oral Discussion	
16	**3**		Final Exam	Written Exam	

Course Evaluation

Evaluation Method		Time/Number	Weight (Marks)
Formative assessment	Quizzes	6	10%
	Assignments	3	10%
	Project/lab	5	10%
	Report	2	10%
Summative assessment	Midterm Exam	2 hr.	10%
	Final Exam	3 hr.	50%
Total assessment			100%

Learning and Teaching Resources

Required Texts	1. Riedel, S., Morse, S., Mietzner, T., and Miller, S. (2019). Jawetz, Melnick, and Adelberg's Medical Microbiology, 28 ed. McGraw-Hill New York. 2. Trivedi, P. C., Pandey,S., Bhadauria, S. Text book of microbiology. Aavishkar Publishers, India
Recommended Texts	1. Shors, T. (2009). Understanding viruses. 1st ed. Jones and Bartlett Publishers, Sudbury, Massachusetts, 639 pp.
Websites	https://www.cdc.gov; www.who.int

Biophysics

First year/ Second semester

Course Name:	**Biophysics**	
Course Code:	COS12011	
Semester / Year:	Second semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory and 2 hours Practical) (5-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Sadiq Mawla Jaafar Fandy
	Email:	sadeq.mawla@alfarabiuc.edu.iq

Course Objectives

1. Teaching students the basic principles of physics.
2. Preparing specialists in the field of general physics and its practical applications, which bears the responsibility of studying the country's need for development and progress and capable of meeting the needs of the job market in state institutions and industry sectors.
3. Preparing an educated generation armed with science and adopts it as a sound basis to bring about radical changes and assign scientific knowledge and scientific methods in thinking, analysis and adaptation with the development of technologies, to keep up with the expansion of human needs.
4. Effective contribution for deepening and documenting the connection of the university with the society through the implementation of advisory counseling, training and development of teaching and administrative staff.
5. The service of preparing graduates specialized in physics who contribute to development in the country.
6. Meeting the needs of various sectors with highly qualified personals in the field of physics.
7. Encouraging the distinguished in this field to work as teaching assistants in the department to be part of the academic teaching staff in the future.

Teaching and Learning Strategies

Strategy

Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Moment of inertia for flywheel	Lecture	Quizzes, Reports, Assignments, Midterm exam, **Final exam**
2	2		Simple pendulum	Lecture	
3	2		Surface tension	Lecture	
4	2		Speed of sound	Lecture	
5	2		Glass refractive index	Lecture	
6	2		diffraction grating	Lecture	
7	2		Equilibrium forces	Lecture	
8	2		Mid. term exam.	Exam	
9	2		Ohm's law	Lecture	
10	2		Viscosity	Lecture	
11	2		Wheatstone bridge	Lecture	
12	2		Inclined plane	Lecture	
13	2		Archimedes principle	Lecture	
14	2		focal length of the lens	Lecture	
15	2		standing waves	Oral Discussion	
16	3		Final Exam	Written Exam	

Course Evaluation

Evaluation Method		Time/Number	Weight (Marks)
Formative assessment	Quizzes	4	10%
	Assignments	3	10%
	Project/lab	1	10%
	Report	2	10%
Summative assessment	Midterm Exam	2 hr.	10%
	Final Exam	3 hr.	50%
Total assessment			100%

Learning and Teaching Resources

Required Texts	1. Fundamental of Physics (Halliady, Resnick, and Walker).
Recommended Texts	
Websites	

English language

First year/ Second semester

Course Name:	**English language**	
Course Code:	COS12012	
Semester / Year:	Second semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory) (2-Units)	
Course administrator's name (mention all, if more than one name)	Name:	
	Email:	

Course Objectives

New Headway Beginner Plus is a Beginner course in English intended to provide students with the fundamentals of the language and a foundation at First Year students / college of science, moving towards a higher level of proficiency at this stage.

1. Listening Objectives:
   - Understand and respond to basic greetings, introductions, and simple instructions.
   - Comprehend and extract information from short, simple spoken passages related to everyday topics.
   - Identify and understand common vocabulary and expressions in spoken English.
2. Speaking Objectives:
   - Engage in basic conversations using simple greetings, introductions, and expressions related to personal information.
   - Ask and answer simple questions about personal details, daily routines, and familiar topics.
   - Participate in short dialogues and role-plays to practice communication skills.
3. Reading Objectives:
   - Read and comprehend simple texts, such as signs, labels, short passages, and dialogues.
   - Recognize and understand basic vocabulary words and phrases in context.
   - Extract information from texts related to everyday situations and topics.

4. Writing Objectives:
    - Write short sentences and paragraphs about personal information, experiences, and familiar topics.
    - Fill out basic forms with personal details, such as name, age, and nationality.
    - Write simple messages, notes, and emails related to everyday situations.
5. Vocabulary and Grammar Objectives:
    - Acquire a basic vocabulary related to common topics, such as greetings, numbers, time, family, food, and everyday objects.
    - Understand and use basic grammatical structures, including present simple, present continuous, simple past, and basic question forms.
    - Recognize and use common prepositions, articles, and basic sentence structures.
6. Cultural Awareness Objectives:
    - Develop an understanding of cultural customs and practices related to greetings, social norms, and everyday interactions in English-speaking countries.
    - Gain exposure to cultural elements through reading or listening to texts about customs, traditions, and holidays.

Teaching and Learning Strategies

Strategy

1. Communicative Approach: Emphasize communicative activities that promote interaction among students. Encourage pair and group work, role-plays, and discussions to practice language skills in meaningful contexts.
2. Integrated Skills: Integrate the four language skills (speaking, listening, reading, and writing) in lessons to create a balanced approach to language learning. Provide opportunities for students to use and develop these skills simultaneously.
3. Vocabulary Expansion: Incorporate vocabulary-building exercises and activities throughout the course. Use real-life contexts, visuals, and practical examples to help students learn and remember new words.
4. Grammar Focus: Teach and reinforce grammar structures in a systematic and progressive manner. Provide clear explanations, examples, and practice exercises to ensure students understand and can apply the grammar rules correctly.
5. Authentic Materials: Include authentic texts, such as articles, newspaper clippings, songs, and videos, to expose students to real-world language usage. This helps develop their reading and listening comprehension skills and exposes them to cultural aspects of

English-speaking countries.

6. Cultural Awareness: Integrate cultural topics and discussions into the lessons to foster cultural awareness and sensitivity. Encourage students to share their own cultural backgrounds and experiences to promote understanding and appreciation of diverse perspectives.
7. Error Correction: Provide constructive feedback and error correction during speaking and writing activities. Help students identify and correct their mistakes, focusing on accuracy while encouraging fluency and self-expression.
8. Technology Integration: Utilize technology tools, such as interactive whiteboards, online resources, and language learning apps, to engage students and enhance their language learning experience. Incorporate multimedia materials for listening and speaking practice.
9. Regular Assessment: Assess students' progress regularly through quizzes, tests, and assignments. Provide timely feedback to guide their learning and address areas that need improvement.
10. Individualization: Cater to the individual needs and learning styles of students. Offer differentiated tasks and activities to ensure all learners are appropriately challenged and supported.
11. Cooperative Learning: Promote collaboration and teamwork among students through pair work, group projects, and peer feedback. This encourages active participation and a supportive learning environment.
12. Review and Revision: Schedule regular review sessions to consolidate previously learned material. Encourage students to revise and practice independently, providing resources for self-study and additional practice.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		**Hello**! p6 am/are/is, my/your I'm Pablo. My name's Judy. What's your name? p6 This is … This is Ben.	Lecture	Quizzes, Reports, Assignments,

			Nice to meet you. p7		Midterm exam, **Final exam**
2	**2**		**Your world** p12 he/she/they, his/her He's from the United States. Her name's Karima. p13 They're on holiday. p16 Questions What's his name? Where's she from? p13	Lecture	
3	**2**		**All about you** p18 am/are/is We're all singers. p20 Negatives She isn't a nurse. p18 I'm not from Scotland. p20 They aren't builders. p20 Questions What's her address? How old is she? Is she married? p19 Short answers Yes, she is. / No, she isn't. p20	Lecture	
4	**2**		**Family and friends** p24 Possessive adjectives my, your, our, their p24 Possessive 's Annie's husband Jim's office p24 has/have I have a small hotel. She has a job. We have three sons. p27 Adjective + noun a small hotel a big house a good job p27apples, beer, bread, cake p36 Shopping newsagent's, chemist's, off-licence p36 Can you come for dinner? Would you like some more rice? Could you pass the salt, please? How would you like your coffee? This is delicious! p37	Lecture	
5	**2**		**The way I live** p32 Present Simple I/you/we/they I like ice-cream. I don't like	Lecture	

			tennis. Do you like football? p33 Where do you work? Do you live in Dundee? p34 In Brazil they speak Portuguese. p36 a and an a waiter, an actor, an Italian restaurant p34 Adjective + noun an American car Spanish oranges p37		
6	**2**		**Every day** p40 Present Simple he/she He gets up at 6.00. He has lunch in his office. p42 She lives in a small house. p44 Questions and negatives What time does he have breakfast? He doesn't live in London. p43 Adverbs of frequency He always works late. He never goes out. p42	Lecture	
7	**2**		**My favourites** p48 Question words who, where, why, how p48 Pronouns Subject/Object/Possessive I/me/my we/us/our they/them/ their p49 this and that I like this wine. Who's that? p50	Lecture	
8	**2**		**Mid. term exam.**	Exam	
9	**2**		**Where I live** p56 There is/are … There's an old sofa. Are there any armchairs? There are some books. p57 Prepositions in, on, under, next to p58	Lecture	
10	**2**		**Times past** p64 was/were born When were you born?	Lecture	

			I was born in 1996. p65 Past Simple – irregular verbs went, came, saw She went shopping. p68		
11	**2**		**We had a great time!** p72 Past Simple – regular and irregular played, got, watched, did p72 Questions What did you do? Did you go out? p73 Negatives They didn't go to work. p73 I went to Rome ten years ago. p78	Lecture	
12	**2**		**I can do that!** p80 can/can't He can speak French. I can't draw. Can she run fast? p80 Adverbs I can cook a little bit. I can't cook at all. really well, fluently p82 Requests and offers Can you tell me the time? Can I help you? p83	Lecture	
13	**2**		**Please and thank you** p88 I'd like … I'd like some ham. How much would you like? p88 some and any I'd like some cheese. Do you have any Emmental? I don't have any apple juice. p89 like and would like I like Coke. I like going to the cinema. I'd like to go out. p91	Lecture	
14	**2**		**Here and now** p96 Present Continuous She's wearing a T-shirt. What's he doing? p97 Present Simple and Present Continuous He lives in London.	Lecture	

			They're staying in a hotel. p98		
15	**2**		**It's time to go!** p104 Future plans They're going on holiday. Which countries are you going to visit? I'm leaving on Tuesday. What are you doing this evening? p104 Revision Question words – when, where, who, how p106 Tenses – present, past, and future tenses p110	Oral Discussion	
16	**3**		**Final Exam**	Written Exam	

Course Evaluation

Evaluation Method		Time/Number	Weight (Marks)
Formative assessment	Quizzes	2	10%
	Assignments	2	10%
	Project	1	10%
	Report	1	10%
Summative assessment	Midterm Exam	2 hr.	10%
	Final Exam	3 hr.	50%
Total assessment			100%

Learning and Teaching Resources

Required Texts	▪ Soars, John and Liz, (2011), New Headway Plus, Special Edition, Beginner Level, Oxford University Press.
Recommended Texts	▪ New Headway Plus provides an integrated skills course with each unit divided into grammar, vocabulary, skills work and everyday English segments
Websites	▪ Oxford University Press: The New Headway series is published by Oxford University Press. Visit their website at www.oup.com and search for "New Headway Plus, Special Edition, Beginner Level " or browse their English language teaching section for information on the course.

Invertebrates

Second year/ First semester

Course Name:	**Invertebrates**	
Course Code:	BIO23013	
Semester / Year:	First semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory and 2 hours Practical) (5-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Saja Amer Ahmed Saleh
	Email:	saji.aamir@alfarabiuc.edu.iq

Course Objectives

1. Study the taxonomic, anatomical and physiological characteristic features of the Invertebrates.
2. Considering the main taxonomic Phyla of invertebrates down to the lower taxonomic ranks (Class, Order), with an example for each taxonomic rank.
3. Considering the comparisons between the animal phyla in terms of structure and their impact on the environment and their importance (benefits and harms).

Teaching and Learning Strategies

Using presentation lecture (discussion, survey, brainstorming). Support by showing pictures and showing some videos the movement and feeding of some invertebrates Give the student an opportunity to search for similar materials and discuss them in the next lesson.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Phylum Protozoa ▪ Structure and physiology ▪ Type of nutrition ▪ Digestion and excretion ▪ Respiration	Lecture	Quizzes, Reports, Assignments,

			▪ Locomotion ▪ Reproduction Classification ▪ Class Sarcodina (Amoeba, Globigerina) Class Flagellata (Euglena, Opalina, Paramecium, Ephelota)		Midterm exam, **Final exam**
2	**2**		Phylum Porifera ▪ Main characters ▪ Types of sponges ▪ Classification Structure and physiology Phylum Porifera ▪ Main characters ▪ Types of sponges Classification	Lecture	
3	**2**		Phylum: Cnidaria ▪ Main characters ▪ Classification a) Class Hydrozoa (Hydra, Obelia) b) Class Scyphozoa (Aurelia) c) Class Anthozoa	Lecture	
4	**2**		Phylum: Cnidaria ▪ Main characters ▪ Classification a) Class Hydrozoa (Hydra, Obelia) b) Class Scyphozoa (Aurelia) c) Class Anthozoa	Lecture	
5	**2**		Phylum Protozoa ▪ Structure and physiology ▪ Type of nutrition ▪ Digestion and excretion ▪ Respiration ▪ Locomotion ▪ Reproduction Classification ▪ Class Sarcodina (Amoeba, Globigerina) Class Flagellata (Euglena,	Lecture	

			Opalina, Paramecium, Ephelota)		
6	**2**		Phylum Annelida ▪ Main characters ▪ Classification a) Class Polychaeta (Nereis) b) Class Oligochaeta (Lumbricus) Class Hirudinea (Hirudo medicinalis)	Lecture	
7	**2**		Phylum Arthropoda ▪ Main characters ▪ Classification a) Subphylum Onchophora (*Peripatus)*	Lecture	
8	**2**		**Mid-Term Exam**	Exam	
9	**2**		Phylum: Arthropoda ▪ Class: Diplopoda (Julus) a) Subphylum Chelicerata Class:Arachnida(Buthus,Argiope)	Lecture	
10	**2**		Phylum: Mollusca ▪ Main characters ▪ Classification a) Class: Aplacophora (Neomenia) b) Class: Polyplacophora (Chiton) c) Class: Monoplacophora (Neopilina) d) Class: Gastropoda(Helix) e) Class: Scaphopoda(Dentalium)	Lecture	
11	**2**		a) Class: Pelecypoda (Andonata) b) Class: Cephalopoda (Sepia, Octopus, Nautilus) ▪ Economic importance of Mollusca	Lecture	
12	**2**		a) Class: Pelecypoda (Andonata) b) Class: Cephalopoda	Lecture	

			(Sepia, Octopus, Nautilus) ▪ Economic importance of Mollusca		
13	**2**		Phulum: Arthropoda ▪ Class:Diplopoda(Julus) a) Subphylum Chelicerata Class: Arachnida (Buthus,Argiope)	Lecture	
14	**2**		▪ Class: Echinoidea (Echinus) ▪ Class: Holothuroidea (Holothuria) ▪ Class: Crinoidea (Antedon)	Lecture	
15	**2**		**Review before the exam**	Oral Discussion	
16	**3**		**Final Exam**	Written Exam	

Course Evaluation

Evaluation Method		Time/Number	Weight (Marks)
Formative assessment	Quizzes	6	10%
	Assignments	2	10%
	Project/lab	1	10%
	Report	1	10%
Summative assessment	Midterm Exam	2 hr.	10%
	Final Exam	3 hr.	50%
Total assessment			100%

Learning and Teaching Resources

Required Texts	1. Verma, P. S. Invertebrate Zoology (Multicolour Edition). S. Chand Publishing, 2001.
Recommended Texts	1. Moore, Janet. An introduction to the invertebrates. Cambridge University Press, 2001. 2. Brusca, Richard C., and Gary J. Brusca. Invertebrates. No. Ed. 2. Sinauer Associates Incorporated, 2002.
Websites	https://www.northwestinvertebrates.org.uk/taxon-group-overviews/ https://lanwebs.lander.edu/faculty/rsfox/invertebrates/

Entomology

Second year/ First semester

Course Name:	**Entomology**	
Course Code:	BIO23014	
Semester / Year:	First semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory and 2 hours Practical) (5-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Emad Ahmed Mahmoud
	Email:	emad.ahmed@alfarabiuc.edu.iq

Course Objectives

Study of the class of Insect, in general and their Morphology, Anatomy Developments and life histories of insects Relationships and their habits and habitats

Teaching and Learning Strategies

Preparation of PowerPoint lectures and the use of the presentation screen, using charts of the most prominent information from modern sources

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Introduction in Entomology	Lecture	Quizzes, Reports, Assignments, Midterm exam, **Final exam**
2	2		Basic Insect Morphology / Head, Mouthparts types	Lecture	
3	2		Head appendage / Antennae	Lecture	
4	2		Thorax / Thorax appendages / Insect legs / Insect wings	Lecture	
5	2		Thorax/ Insect wings	Lecture	
6	2		Insect Abdomen/ Abdomen	Lecture	

			Appendages		
7	2		Integument (the body wall)	Lecture	
8	2		**Mid-Term Exam**	Exam	
9	2		Internal anatomy /Digestive system	Lecture	
10	2		Internal anatomy: Respiratory system	Lecture	
11	2		Internal anatomy: Nervous system	Lecture	
12	2		Internal anatomy: Nervous system	Lecture	
13	2		Internal anatomy: Circulatory system	Lecture	
14	2		Internal anatomy: Circulatory system and Reproductive system	Lecture	
15	2		**Review before the exam**	Oral Discussion	
16	3		**Final Exam**	Written Exam	

Course Evaluation

Evaluation Method		Time/Number	Weight (Marks)
Formative assessment	Quizzes	6	10%
	Assignments	3	10%
	Project/lab	1	10%
	Report	1	10%
Summative assessment	Midterm Exam	2 hr.	10%
	Final Exam	3 hr.	50%
Total assessment			100%

Learning and Teaching Resources

Required Texts	1. Imms outlines of entomology, O.W Richards and R. G. Davies, chapman and hall , 1978
Recommended Texts	1. Principle of insect morphology, E.J. Boell, R. E. Snodgrass 1935 new york and london 2. The insects structure and function.
Websites	https://www.jstor.org/stable/10.7591/j.ctv1nhm1j.3 https://doi.org/10.4039/Ent67183-8

Cytology

Second year/ First semester

Course Name:	**Cytology**	
Course Code:	BIO23115	
Semester / Year:	First semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory and 2 hours Practical) (5-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Frial Abdulmanaf Mohammed
	Email:	Ferial.abdalmonaf@alfarabiuc.edu.iq

Course Objectives

1. This module will provide an introduction to the structure, function and diversity of eukaryote cells.
2. The main methods of studying cells will be first outlined and will cover topics such as cell fractionation, organelle purification and various microscopic techniques.
3. The following organelle systems will be described: cell membranes, the nucleus and cell cycle; the cytoskeleton and its cellular functions; the cellular endomembrane system and exo- and endocytosis and their role in cell function.

Teaching and Learning Strategies

This module's contact teaching will be conducted through lecturing (15 lectures) and compulsory 15 practical sessions, which include learning videos and scientific animations. Students will be invited to participate in interactive discussion throughout this program.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		The Cell: An Overview	Lecture	Quizzes,

2	**2**		Prokaryotic and Eukaryotic Cells	Lecture	Reports, Assignments, Midterm exam, **Final exam**
3	**2**		The Living Cellular Components	Lecture	
4	**2**		The Non-living Cellular Inclusions	Lecture	
5	**2**		The Chemistry of Life	Lecture	
6	**2**		Cytoskeleton	Lecture	
7	**2**		Membrane Transport Mechanisms	Lecture	
8	**2**		**Mid-Term exam**	Exam	
9	**2**		Energy-releasing pathways (Cellular Respiration)	Lecture	
10	**2**		Replication of DNA	Lecture	
11	**2**		Protein Synthesis	Lecture	
12	**2**		Cell Division-Mitosis	Lecture	
13	**2**		Internal anatomy: Circulatory system	Lecture	
14	**2**		Internal anatomy: Circulatory system and Reproductive system	Lecture	
15	**2**		**Review before the exam**	Oral Discussion	
16	**3**		**Final Exam**	Written Exam	

Course Evaluation

Evaluation Method		Time/Number	Weight (Marks)
Formative assessment	Quizzes	6	10%
	Assignments	3	10%
	Project/lab	1	10%
	Report	1	10%
Summative assessment	Midterm Exam	2 hr.	10%
	Final Exam	3 hr.	50%
Total assessment			100%

Learning and Teaching Resources	
Required Texts	1. George Plopper, David Sharp, Eric Sikorski (2015) Lewin's cells. 3rd ed. Jones & Bartlett Learning. 2. Alberts,Bruce, Hopkin, Karen, Johnson, Alexander D., Morgan, David, Raff, Martin, Roberts, Keith, Walter, Peter. (2018). Essential Cell Biology: Fifth International Student Edition. W.W. Norton & Company,
Recommended Texts	1. Edmund S. Cibas & Barbara S. Ducatman (2021). Cytology, 5th Edition. Elsevier Publishing Company
Websites	https://www.cytology-iac.org/

Ecology

Second year/ First semester

Course Name:	**Ecology**	
Course Code:	BIO23016	
Semester / Year:	First semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory and 2 hours Practical) (5-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Ali Abdul-Aziz Abdel Rasoul Aziz
	Email:	ali.abdulaziz@alfarabiuc.edu.iq

Course Objectives

1. Introducing students to the concept of ecology.
2. Ecology and its relationship with other sciences.
3. Explanation and description of variation patterns of environment and the divisions of Ecological systems.

Teaching and Learning Strategies

1. Ecology is the link to several sciences such as genetics, behavior, physiology and atmospheric science, all of which are useful in how to control the balance and health of the ecosystem.
2. learning how the ecosystems keep their hemostasis by the relationships and communication through the biogeochemical cycles from hand and the association among the living organism with each other from another hand.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Introduction to ecology and ecosystem.	Lecture	Quizzes,

2	**2**		Ecosystem structure: Abiotic environment factors	Lecture	Reports, Assignments, Midterm exam, **Final exam**
3	**2**		The physical factors as limiting factors.	Lecture	
4	**2**		Temperature and light, biological clocks	Lecture	
5	**2**		Water, Atmospheric gases, currents and pressure.	Lecture	
6	**2**		Biotic components of ecosystems	Lecture	
7	**2**		Population growth models	Lecture	
8	**2**		**Mid-Term exam**	Exam	
9	**2**		Concept of ecological dominance.	Lecture	
10	**2**		Ecosystem function-energy flow through ecosystem	Lecture	
11	**2**		Productivity of ecosystem	Lecture	
12	**2**		Biogeochemical cycles	Lecture	
13	**2**		Sedimentary cycles	Lecture	
14	**2**		Ecosystem diversity	Lecture	
15	**2**		**Review before the exam**	Oral Discussion	
16	**3**		**Final Exam**	Written Exam	

Course Evaluation

Evaluation Method		Time/Number	Weight (Marks)
Formative assessment	Quizzes	4	10%
	Assignments	2	10%
	Project/lab	1	10%
	Report	1	10%
Summative assessment	Midterm Exam	2 hr.	10%
	Final Exam	3 hr.	50%
Total assessment			100%

Learning and Teaching Resources	
Required Texts	1. Fundamentals of Ecology –Odum
Recommended Texts	1. Ecology and pollution –Dr.Hussain Ali Al-Saadi
Websites	https://www.amazon.com/Fundamentals-Ecology-Eugene-Odum/dp/0534420664

Plant Anatomy

Second year/ First semester

Course Name:	**Plant Anatomy**	
Course Code:	BIO23117	
Semester / Year:	First semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory and 2 hours Practical) (4-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Amal Abdu-Salam Abdu-Rahman Al-Habib
	Email:	amal.abdulsalam@alfarabiuc.edu.iq

Course Objectives

1. Recognize the plant cell wall and its pits.
2. Recognize the properties of living and nonliving cell component. 3- identifying the properties of each tissue in different plant body.
3. Recognize the difference between monocot and dicot plant sections.

Teaching and Learning Strategies

The plant anatomy strategies is aimed to identified the internal structure of plant body by using different theoretical and laboratory skills to create student knowledge can be used in different scientific specialties and researches.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Plant cell wall	Lecture	Quizzes, Reports, Assignments,
2	2		pits	Lecture	
3	2		Cell living content	Lecture	

4	**2**		Cell non–living content	Lecture	Midterm exam, **Final exam**
5	**2**		**Mid–Term exam 1**	Lecture	
6	**2**		Meristematic tissue	Lecture	
7	**2**		Epidermal tissue	Lecture	
8	**2**		Parenchyma tissue and collenchyma tissue	Exam	
9	**2**		Sclerenchyma tissue	Lecture	
10	**2**		**Mid–Term exam 2**	Lecture	
11	**2**		Xylem tissue	Lecture	
12	**2**		Phloem tissue	Lecture	
13	**2**		Secondary growth	Lecture	
14	**2**		Dicot stem Monocot stem	Lecture	
15	**2**		**Review before the exam**	Oral Discussion	
16	**3**		**Final Exam**	Written Exam	

Course Evaluation

Evaluation Method		Time/Number	Weight (Marks)
Formative assessment	Quizzes	4	10%
	Assignments	2	10%
	Project/lab	4	10%
	Report	1	10%
Summative assessment	Midterm Exam	2 hr.	10%
	Final Exam	3 hr.	50%
Total assessment			100%

Learning and Teaching Resources	
Required Texts	1. General Plant Anatomy 2ed
Recommended Texts	1. Ash, A.; L.J. Hickey; P. Wilf; B. Ellis; K. Johnson and S. Wing. 1999. Manual of Leaf architecture Morphological description and categorization of Dicotyledonous and net-veined Monocotyledonous angiosperms. Leaf architecture working Group, Smithsonian Institution, 65 pp 2. Carpenter, K. J. 2006. Specialized structures in the leaf epidermis of basal Angiosperm's morphology, distribution, and homology. Amer. J. Bot. 93(5):665- 681 3. Fahn, A. 1974. Plant anatomy 2end ed. Pergamon press, New York. USA
Websites	Research gate Google scholar Academia

Mycology

Second year/ First semester

Course Name:	**Mycology**	
Course Code:	BIO23018	
Semester / Year:	First semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory and 2 hours Practical) (4-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Muayad Sabry Shawkat Jassim
	Email:	moayad.sabri@alfarabiuc.edu.iq

Course Objectives

1. Providing a broad understanding of fungi, with an emphasis on the most important species of pathogenic fungus for plants and humans.
2. Defining the student how to classify and diagnose fungi.
3. Explain the fungi's life cycle.
4. Studying its epidemiology and different control methods.
5. Studying some pathogenic fungi for humans, symptoms, causes, and treatment of infection.

Teaching and Learning Strategies

This module's contact teaching will be conducted through lecturing (15 lectures) and compulsory 15 practical sessions, which include learning videos and scientific animations. Students will be invited to participate in interactive discussions throughout this program.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Defining fungi, their benefits, and harms	Lecture	Quizzes,

2	**2**		Fungal reproduction, methods of feeding them, and culture media for fungi	Lecture	Reports, Assignments, Midterm exam, **Final exam**
3	**2**		Classification of fungi: Division 1: Myxomycota.	Lecture	
4	**2**		Division 2: Eumycota; Sub-division 1:- Mastigomycotina: Class 1: Chytridiomycetes; Class 2: Hypochytridiomycetes	Lecture	
5	**2**		Class 3: Oomycetes:	Lecture	
6	**2**		Sub-division 2: Zygomycotina:- Class 1: Zygomycetes	Lecture	
7	**2**		Sub-division 3: Ascomycotina: - Class 1: Hemiascomycetes;	Lecture	
8	**2**		**Mid-Term Exam**	Exam	
9	**2**		Class 2: Plectomycetes; Class 3: Pyrenomycetes:-	Lecture	
10	**2**		Class 4: Discomycetes; Class 5: Loculoascomycetes	Lecture	
11	**2**		Sub-division 4: Basidiomycotina:- Class 1: Teliomycetes:	Lecture	
12	**2**		Class 2: Hymenomycetes; Class 3: Gasteromycetes:	Lecture	
13	**2**		Sub-division 5: Deutrromycotina:- Class 1: Hyphomycetes; Class 2: Coelomycetes	Lecture	
14	**2**		Medical mycology: Fungal Pathogenicity; Clinical groupings for fungal infections	Lecture	
15	**2**		**Review before the exam**	Oral Discussion	
16	**3**		**Final Exam**	Written Exam	

Course Evaluation

Evaluation Method		Time/Number	Weight (Marks)
Formative assessment	Quizzes	3	10%
	Assignments	2	10%
	Project/lab	4	10%
	Report	1	10%
Summative assessment	Midterm Exam	2 hr.	10%
	Final Exam	3 hr.	50%
Total assessment			100%

Learning and Teaching Resources

Required Texts	1. Webster, J. and Weber, R. (2007). Introduction to fungi. 3ed. Cambridge.
Recommended Texts	1. Alexopoulos, J.; Mims, C. W. and Blackwell, M. M. (1996). 2. Introductory Mycology. 4th ed. John Wiley. New York.
Websites	https://www.tandfonline.com/toc/tmyc/current) https://drfungus.org/

Arabic Language II

Second year/ First semester

Course Name:	**Arabic Language II**	
Course Code:	BIO23019	
Semester / Year:	First semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory) (2-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Hussein Muhasin Khatlan Hussein
	Email:	hassin.mohaisen@alfarabiuc.edu.iq

Course Objectives

1. تهدف إلى تنمية روح الإعتزاز باللغة العربيَّة للمحافظة على الهوية العربيَّة.
2. تهدف إلى تأهيل الطلبة بالمعارف والمخرجات الخاصة علم النحو، والصرف، والإملاء؛ لتمكنه من الكتابة الصحيحة والتعبير السليم وتقويم لسانه.
3. تهدف إلى تنمية ذوق الطالب الأدبي وإثراء تحصيله وإغناء زاده من الفكر العربي والإسلامي.
4. تهدف إلى تطوير مهارات الطلاب اللغويَّة التي تؤهلهم للإبداع المتميز.
5. تهدف إلى تنمية مهارات التحدث بـ (اللغة العربيَّة).
6. تهدف إلى الارتقاء بمستوى الطلبة من الجانب المهني والبحثي.

Teaching and Learning Strategies

الاستراتيجية الرئيسية التي سيتم تبنيها في تقديم هذه الوحدة هي تشجيع الطلاب على المشاركة في التمارين والتطبيقات النحوية والإملائية، مع تحسين مهارات التفكير والتحليل في الوقت نفسه. ويتم تحقيق ذلك عن طريق الفصول والبرامج التعليمية التفاعلية والنظر في أنواع التطبيقات التي تتضمن بعض الأنشطة التي تهم الطلبة.

Course Structure

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

1	2		الظواهر اللغويَّة: الترادف ، المشترك اللفظي، التضاد.	Lecture	Quizzes, Reports, Assignments, Midterm exam, **Final exam**
2	2		قواعد كتابة الألف اللينة في آخر الكلمة.	Lecture	
3	2		الإستثناء.	Lecture	
4	2		الحال.	Lecture	
5	2		التمييز.	Lecture	
6	2		المفاعيل الخمسة: المفعول به، المفعول فيه، المفعول المطلق، المفعول لأجله، المفعول معه.	Lecture	
7	2		حروف الجر ومعانيها.	Lecture	
8	2		امتحان نصف الفصل.	Exam	
9	2		الاسم المذكر والمؤنث.	Lecture	
10	2		الحروف من حيث النطق والكتابة: اللام الشمسية والقمرية، الحذف والزيادة.	Lecture	
11	2		الوقف.	Lecture	
12	2		نص من سورة لقمان.	Lecture	
13	2		الشاعر المتنبي.	Lecture	
14	2		الشاعرة نازك الملائكة.	Lecture	
15	2		مراجعة للمنهج قبل الإمتحان النهائي.	Oral Discussion	
16	3		امتحان ختامي.	Written Exam	

Course Evaluation

Evaluation Method		Time/Number	Weight (Marks)
Formative assessment	Quizzes	3	10%
	Assignments	2	10%
	Project	1	10%
	Report	1	10%
Summative assessment	Midterm Exam	2 hr.	10%
	Final Exam	3 hr.	50%
Total assessment			100%

Learning and Teaching Resources

Required Texts	1. القرآن الكريم 2. – الأدب العربي في العصر العباسي: د. ناظم رشيد. 3. – إعراب القرآن وبيانه: محيي الدين درويش. 4. – التطبيق الصرفي: د. عبده الراجحي. 5. – تفسير الكشاف: للزمخشري. 6. – جامع الدروس العربيَّة: الشيخ مصطفى الغلاييني. 7. – ديوان المتنبي. 8. – ديوان نازك الملائكة
Recommended Texts	1. شرح ابن عقيل: ابن عقيل، تحقيق: محمد محي الدين عبد الحميد. 2. الشعر العراقي الحديث مرحلة وتطور: د. جلال الخياط 3. فقه اللغة العربيَّة وخصائصها: د. إميل بديع يعقوب.
Websites	

Protozoan Parasitology

Second year/ Second semester

Course Name:	**Protozoan Parasitology**	
Course Code:	BIO24120	
Semester / Year:	Second semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory and 2 hours Practical) (**6**-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Emad Ahmed Mahmoud
	Email:	emad.ahmed@alfarabiuc.edu.iq

Course Objectives

1. Providing a broad understanding and diagnosing the the most important species of pathogenic and non-pathogenic parasites that parasitize humans and its domestic animals.
2. Explaining the stages of the parasite and its life cycle.
3. Demonstrating how to diagnose the parasite and its epidemiology.
4. Outlining control modalities and different types of treatment.

Teaching and Learning Strategies

This module's contact teaching will be conducted through lecturing (15 lectures) and compulsory 15 practical sessions

5. Preparing a Power Point lecture and using the Data Show in its presentation.
6. Using modern sources from the information network to obtain accurate information and graphics.
7. Students will be invited to participate in interactive discussion throughout this program.

Course Structure

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

1	**2**		Introduction to Parasitology and importance of pathogenic parasites	Lecture	Quizzes, Reports, Assignments, Midterm exam, **Final exam**
2	**2**		Classification of parasites, Taxonomical categories	Lecture	
3	**2**		Phylum Protozoa: Sarcodina (Entameba histolytica, Entameba coli)	Lecture	
4	**2**		Phylum Protozoa: Sarcodina (Endolimax nana, Iodameba butchlii, Entamoeba gingivalis)	Lecture	
5	**2**		Phylum Protozoa: Ciliata	Lecture	
6	**2**		Phylum Protozoa: Intestinal Flagellate	Lecture	
7	**2**		Phylum Protozoa: Tissue Flagellate	Lecture	
8	**2**		**Mid-term Exam**	Exam	
9	**2**		Phylum Protozoa: Hemoflagellate (Leishmania spp.)	Lecture	
10	**2**		Phylum Protozoa: Hemoflagellate (Trypanosoma spp.)	Lecture	
11	**2**		Phylum Protozoa: Apicomplexa (Plasmodium spp.)	Lecture	
12	**2**		Phylum Protozoa: Apicomplexa (Toxoplasma, Isospora)	Lecture	
13	**2**		Phylum Protozoa: Apicomplexa (Cryptosporidum , Cyclospora and Sarcocystis)	Lecture	
14	**2**		**Seminar**	Lecture	
15	**2**		**Review before the exam**	Oral Discussion	
16	**3**		**Final Exam**	Written Exam	

Course Evaluation

Evaluation Method		Time/Number	Weight (Marks)
Formative assessment	Quizzes	3	10%
	Assignments	2	10%
	Project/lab	4	10%
	Report	1	10%
Summative assessment	Midterm Exam	2 hr.	10%
	Final Exam	3 hr.	50%
Total assessment			100%

Learning and Teaching Resources

Required Texts	1. Lectures scheduled by the professors of the subject and according to the available methodological books related to parasitology. 2. Cox F.E.G. (1990). Modern Parasitology (Second Edition). Blackwell Science. 3. Anthony J.Nappi, Emily Vas. (2002). Parasites of Medical 4. Importance. Lands Bioscience. Texas, U.S.A.
Recommended Texts	1. Rohela Mahmud, Yvonne Ai Lian Lim, Amirah Amir. (2017). Medical parasitology. Springer International Puplishing. 2. Buton J. Bogitsh, Clint E. Carter, Thomas N. Oel Tmann. (2013). 3. Human Parasitology. Elsevier Inc.USA.
Websites	https://ia802700.us.archive.org/6/items/b21996763/b21996763.pdf https://www.cartercenter.org/resources/pdfs/health/ephti/library/lecture_not es/health_science_students/MedicalPara sitology.pdf https://www.slideshare.net/meducationdotnet/parasitology -lecture-series

Computer Skills II

Second year/ Second semester

Course Name:	**Computer Skills II**	
Course Code:	UOB24022	
Semester / Year:	Second semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(1 hours- Theory and 2 hours Practical) (3-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Ruqayah Gamal Nasser
	Email:	

Course Objectives

1. This module sets out essential concepts and skills relating to the use of devices.
2. The module covers the key skills and main concepts relating to computers, devices, file creation and management, web browsing, and data security.
3. Help students to demonstrate the ability to use a power point application to accomplish tasks associated with creating, and formatting a presentation.
4. Help students to demonstrate the ability to use Excel application to accomplish a spreadsheet for tasks.

Teaching and Learning Strategies

The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. Different forms of teaching will be used to reach the objective of this module, including power point presentation for the subjects which contains titles, definitions, summary and conclusions, whiteboard will be used and classroom discussion with assignments, the students will be asked to prepare papers on selective topics.

Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	**2**		Introduction to Computer skills Identify the main type of computers Communication Technology Computer Network E-mail	Lecture	Quizzes, Reports, Assignments, Midterm exam, **Final exam**
2	**2**		Internet, Browsing the Web (Web Browser), Search the web (search engine)	Lecture	
3	**2**		Security and keeping information safe Virus transmission ways to the computer Protection against viruses Antivirus, benefits and Types	Lecture	
4	**2**		System Settings Install/Uninstall Applications Screen Resolution Print Screen Connect/Disconnect a new device (USB flash drive, Digital Camera, Media Player)	Lecture	
5	**2**		Microsoft PowerPoint ▪ PowerPoint program Interface. ▪ File Menu	Lecture	
6	**2**		Microsoft PowerPoint ▪ Home Tab & it commands ▪ Operations on the Slides (duplicate, Delete, and Move)	Lecture	
7	**2**		Microsoft PowerPoint ▪ Insert Tab, Design Tab, Slide Show Tab and their commands	Lecture	
8	**2**		**Mid-term Exam**	Exam	
9	**2**		Microsoft PowerPoint ▪ Transitions, and Animations	Lecture	

			Tabs		
10	**2**		Microsoft Excel ▪ File Menu, Home Tab & it commands	Lecture	
11	**2**		Microsoft Excel ▪ Excel Worksheet Basics	Lecture	
12	**2**		Microsoft Excel ▪ Cell format	Lecture	
13	**2**		Microsoft Excel ▪ Cell values (Functions)	Lecture	
14	**2**		Microsoft Excel ▪ Insert tab & it commands	Lecture	
15	**2**		**Review before the exam**	Oral Discussion	
16	**3**		**Final Exam**	Written Exam	

Course Evaluation

Evaluation Method		Time/Number	Weight (Marks)
Formative assessment	Quizzes	2	10%
	Assignments	2	10%
	Project/ lab	4	10%
	Report	1	10%
Summative assessment	Midterm Exam	2 hr.	10%
	Final Exam	3 hr.	50%
Total assessment			100%

Learning and Teaching Resources

Required Texts	1. Lambert, J.Cox , and C. Frye, *Microsoft Office Professional 2010 Step by Step* , 1'st Edition, ,Microsoft Press, 2010, 152P.
Recommended Texts	1. D. Hajek and C. Herrera, *Introduction to Computers 2022 Edition,* Independently published, May 19, 2022, 255P.
Websites	1. https://generalnote.com/Computer-Fundamental/ 2. https://edu.gcfglobal.org/en/powerpoint2010/# 3. https://edu.gcfglobal.org/en/excel2010/# 4. https://antivirus.comodo.com/blog/computer-safety/what-is-antivirus 5. https://thingscouplesdo.com/what-is-the-antivirus-software-that-is-best-for-a- user

Pollution

Second year/ Second semester

Course Name:	**Pollution**	
Course Code:	BIO24023	
Semester / Year:	Second semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(1 hours- Theory and 2 hours Practical) (6-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Ali Abdul-Aziz Abdel Rasoul Aziz
	Email:	ali.abdulaziz@alfarabiuc.edu.iq

Course Objectives

This subject aims to provide:

5. An understanding of the global environmental problems caused by human activities
6. The importance of pollution in our lives
7. The main sources of pollutants and their various effects on man and the environment
8. Fundamental concepts of air, noise, water, solid waste and nuclear pollution: their nature, generation and impact on the environment

Teaching and Learning Strategies

This course aiming at arousing students' interest and awareness in multiple complex problems in our environment caused by pollution produced by human activities at the international and national levels. In addition to the traditional classroom lectures, small-group discussions will be used whenever appropriately.

In order to understand the multi-dimensional pollution problems including their generation, effects on our community, inter-changes between different types, and monitoring and control, students need to search and learn the fundamental knowledge in environmental pollution. Every student is also required to complete a mini project, regarding the pollution problems encountered in Iraq and their possible solutions and produce a written report to satisfy the writing requirement.

Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	**2**		Definition of environmental pollution and characteristics of important pollutants	Lecture	Quizzes, Reports, Assignments, Midterm exam, **Final exam**
2	**2**		Air pollution and the most important air pollutants, their sources and effects	Lecture	
3	**2**		Environmental phenomena related to air pollution, especially global warming and the ozone hole	Lecture	
4	**2**		This week, students will learn about radiation and its different biological effects	Lecture	
5	**2**		This week, the student learns an introduction to water pollutants, water properties, and water quality indicators	Lecture	
6	**2**		In this lecture, the student learns about the types of water pollutants	Lecture	
7	**2**		Nutrient and eutrophication and the traditional and advanced methods of water treatment	Lecture	
8	**2**		**Mid-term Exam**	Exam	
9	**2**		The student will be familiar with the concept of heavy metals, the sources and fate in ecosystem	Lecture	
10	**2**		The general effect of heavy metals especially on human	Lecture	
11	**2**		This week, the student learns about a general introduction to the topic of soil pollution and soil properties	Lecture	
12	**2**		This week, students will learn about the most important soil pollutants	Lecture	
13	**2**		Students learn concentrated on agricultural chemicals and	Lecture	

			agricultural pollution concepts		
14	**2**		This week, the student will learn about the types of pesticides and their properties	Lecture	
15	**2**		**Review before the exam**	Oral Discussion	
16	**3**		**Final Exam**	Written Exam	

Course Evaluation

Evaluation Method		Time/Number	Weight (Marks)
Formative assessment	Quizzes	2	10%
	Assignments	2	10%
	Project/ lab	4	10%
	Report	1	10%
Summative assessment	Midterm Exam	2 hr.	10%
	Final Exam	3 hr.	50%
Total assessment			100%

Learning and Teaching Resources

Required Texts	1. Hodges, L. Environmental Pollution. Edition, 2, illustrated. Publisher, Holt, Rinehart and Winston, 1977.
Recommended Texts	1. Warneck, P., *Chemistry of the Natural Atmosphere*, International Geophysics Series. Vol. 41, Academic Press,San Diego, 1988. 2. Owa , F. W. Water pollution: sources, effects, control and management. *International Letters of Natural Sciences*, 2014.
Websites	1. https://www.worldwildlife.org/threats/pollution 2. https://www.livescience.com/22728-pollution-facts.html

Phycology and Archegoniates

Second year/ Second semester

Course Name:	**Phycology and Archegoniates**	
Course Code:	BIO24024	
Semester / Year:	Second semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(1 hours- Theory and 2 hours Practical) (6-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Saja Amer Ahmed Saleh
	Email:	saji.aamir@alfarabiuc.edu.iq

Course Objectives

This subject aims to provide:

1. Providing a broad understanding of plant groups with an emphasis on the most important species.
2. Explaining the characters of plant groups.
3. Study the main characters of plant group.
4. Comparison between plant groups

Teaching and Learning Strategies

This module's contact teaching will be conducted through lecturing (15 lectures) and compulsory 15 practical sessions, which include learning videos and scientific animations. Students will be invited to participate in interactive discussion throughout this program.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Overview	Lecture	Quizzes, Reports, Assignments,
2	2		Study algae Habitat and distributions	Lecture	
3	2		Study algal thallus structures and reproduction	Lecture	

4	**2**		Study of blue green algae	Lecture	Midterm exam, **Final exam**
5	**2**		Study of green algae	Lecture	
6	**2**		Study of phaeophyta	Lecture	
7	**2**		Study of Rhodophyta	Lecture	
8	**2**		**Midterm Exam**	Exam	
9	**2**		Study of charophyta	Lecture	
10	**2**		Study of Bacillariophyta	Lecture	
11	**2**		Study of chrysophyta	Lecture	
12	**2**		Study of marchantia	Lecture	
13	**2**		Overview of sphagnium	Lecture	
14	**2**		Overview	Lecture	
15	**2**		**Review before the exam**	Oral Discussion	
16	**3**		**Final Exam**	Written Exam	

Course Evaluation

Evaluation Method		Time/Number	Weight (Marks)
Formative assessment	Quizzes	5	10%
	Assignments	2	10%
	Project/ lab	2	10%
	Report	1	10%
Summative assessment	Midterm Exam	2 hr.	10%
	Final Exam	3 hr.	50%
Total assessment			100%

Learning and Teaching Resources

Required Texts	1. Genesel, P.G.,Wamser,A.F.(2001).Introduction to the plant Kingdom.Cambridge University Press.
Recommended Texts	1. Judd,W.s., kellogg, E.A., Stevens ,P.F.,Donghue, M,J.(2020). Plant Systematics: A phylogenetic Approach. Sinauer Associates
Websites	

English language

Second year/ Second semester

Course Name:	**English language**	
Course Code:	UOB24025	
Semester / Year:	Second semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture	
Number of Credit Hours (Total) / Number of Units (Total)	(1 hours- Theory and 2 hours Practical) (2-Units)	
Course administrator's name (mention all, if more than one name)	Name:	
	Email:	

Course Objectives

A pre-intermediate level course aiming to build and further improve language proficiency for second year students/ college of science,

1. Listening Objectives:
   - Understand and respond appropriately to a variety of spoken English in familiar contexts.
   - Comprehend main ideas, specific details, and implied information in spoken texts.
   - Develop listening strategies to enhance understanding.
2. Speaking Objectives:
   - Engage in conversations on a range of topics using appropriate vocabulary and grammar.
   - Express opinions, preferences, and experiences.
   - Develop speaking strategies for effective communication, such as turn- taking and seeking clarification.
3. Reading Objectives:
   - Read and understand a variety of texts, including articles, stories, and informational passages.
   - Comprehend main ideas, details, and implied information in written texts.
   - Develop reading strategies for comprehension and vocabulary acquisition.
4. Writing Objectives:
   - Write coherent paragraphs and short texts on different topics.
   - Express ideas clearly and logically using appropriate grammar and vocabulary.
   - Develop writing strategies for organization, coherence, and accuracy.

5. Grammar and Vocabulary Objectives:
   - Develop a solid understanding and usage of a wide range of grammatical structures appropriate for the pre-intermediate level.
   - Expand vocabulary knowledge to include a broader range of words, idiomatic expressions, and collocations.
   - Apply grammar and vocabulary knowledge to express oneself accurately and effectively.
6. Pronunciation and Intonation Objectives:
   - Improve pronunciation accuracy of individual sounds, stress patterns, and intonation.
   - Use appropriate rhythm, stress, and intonation for effective communication.
   - Recognize and produce connected speech features to enhance fluency and naturalness.
7. Cultural Awareness Objectives:
   - Develop an understanding of cultural practices, customs, and social norms in English-speaking countries.
   - Demonstrate cultural sensitivity and adapt communication accordingly.
   - Recognize the impact of culture on language use and communication styles.

Teaching and Learning Strategies

1. Communicative Approach: Emphasize communicative activities that promote interaction among students. Encourage pair and group work, role-plays, and discussions to practice language skills in meaningful contexts.
2. Integrated Skills: Integrate the four language skills (speaking, listening, reading, and writing) in lessons to create a balanced approach to language learning. Provide opportunities for students to use and develop these skills simultaneously.
3. Vocabulary Expansion: Incorporate vocabulary-building exercises and activities throughout the course. Use real-life contexts, visuals, and practical examples to help students learn and remember new words.
4. Grammar Focus: Teach and reinforce grammar structures in a systematic and progressive manner. Provide clear explanations, examples, and practice exercises to ensure students understand and can apply the grammar rules correctly.
5. Authentic Materials: Include authentic texts, such as articles, newspaper clippings, songs, and videos, to expose students to real-world language usage. This helps develop their reading and listening comprehension skills and exposes them to cultural aspects of English-speaking countries.
6. Cultural Awareness: Integrate cultural topics and discussions into the lessons to foster cultural awareness and sensitivity. Encourage students to share their own cultural backgrounds and experiences to promote understanding and appreciation of diverse perspectives.
7. Error Correction: Provide constructive feedback and error correction during speaking and

writing activities. Help students identify and correct their mistakes, focusing on accuracy while encouraging fluency and self-expression.

8. Technology Integration: Utilize technology tools, such as interactive whiteboards, online resources, and language learning apps, to engage students and enhance their language learning experience. Incorporate multimedia materials for listening and speaking practice.
9. Regular Assessment: Assess students' progress regularly through quizzes, tests, and assignments. Provide timely feedback to guide their learning and address areas that need improvement.
10. Individualization: Cater to the individual needs and learning styles of students. Offer differentiated tasks and activities to ensure all learners are appropriately challenged and supported.
11. Cooperative Learning: Promote collaboration and teamwork among students through pair work, group projects, and peer feedback. This encourages active participation and a supportive learning environment.
12. Review and Revision: Schedule regular review sessions to consolidate previously learned material. Encourage students to revise and practice independently, providing resources for self-study and additional practice.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Getting to know you p6 Tenses Present, past, future p6 Questions Where were you born? What do you do? p6 Question words Who …?, Why …?, How much …? p7 Right word, wrong word Verbs of similar meaning speak/talk, say/tell Adjectives and nouns that go together Prepositions to, from, at, about, of, on, in, etc. Words with two meanings I met my husband on a blind date. Dates are good for you. p12 Social expressions	Lecture	Quizzes, Reports, Assignments, Midterm exam, **Final exam**

			Have a good weekend! Same to you. p13		
2	**2**		Whatever makes you happy p14 Present tenses Present Simple She lives alone in Bristol. p14 Present Continuous She's planning … p14 have/have got He has his own company. I've got an idea for … p15 Things I like doing play games have a lie-in get up late p17 Making conversation What a lovely day it is today! Are you having a good time in London? Have a good weekend! p21	Lecture	
3	**2**		What's in the news? p22 Past tenses Past Simple How far did he walk? I had a shower last night. p23 Past Continuous I was having a shower when … p23 Adverbs drive carefully speak furiously work hard p28 Saying when What's the date today? It's June the twentysecond. When did you last go to the cinema? Two weeks ago. p29	Lecture	
4	**2**		Eat, drink, and be merry! p30 Quantity much and many How much milk? How many eggs? p31 some and any some apples, any bananas p31	Lecture	

			a few, a little, a lot/lots of p31 something / someone / somewhere p32 Articles a shopkeeper, an old village, the north of England, He came by bus. p32 Food apples, beer, bread, cake p36 Shopping newsagent's, chemist's, off-licence p36 Can you come for dinner? Would you like some more rice? Could you pass the salt, please? How would you like your coffee? This is delicious! p37		
5	**2**		Looking forward p38 Verb patterns want/hope to do like/enjoy doing looking forward to doing 'd like to p38 Future forms going to, will and Present Continuous I'm going to stay with a friend. I'll call or text you. I'm working late this evening. p40 Phrasal verbs – literal move back take away grow up p44 Phrasal verbs – idiomatic give up take off look after p44 Expressing doubt and certainty of course he will. He might do. Mmm … maybe. I doubt it. No chance. p45	Lecture	
6	**2**		The way I see it p46 What … like? What's your teacher like? p46 Comparative and superlative adjectives big, bigger, biggest	Lecture	

			good, better, best p47 as … as It isn't as hot as Dubai. p47 Relative pronouns who/that/which/where p110 Synonyms and antonyms lovely, beautiful brilliant, terrible p52 What's on? How much is it to go in the museum? Is it open on Sunday? What film is suitable for children? p53		
7	**2**		Living history p54 Present Perfect John has lived there for three years. p55 for and since for two hours since six o'clock p55 ever and never Have you ever been …? I've never been to South America. p56 Present Perfect or Past Simple Have you had an ordinary job? I worked in a restaurant. p57 Word endings Jobs philosopher, historian, economist p57 Nouns and adjectives competition, famous p57 Word stress danger, dangerous invite, invitation p57 Agree with me! It's wonderful, isn't it? You come from Scotland, don't you? It wasn't easy, was it? You've lived here for years, haven't you? p61	Lecture	
8	**2**		**Midterm Exam**	Exam	

9	**2**		Girls and boys p62 have to She has to train hard. I don't have to train every day. Do you have to work at weekends? p63 should You should show him this letter. p64 must He must get professional help. p64 Things to wear belt, cap, boots, jumper, make-up p68 Materials leather, wool, denim, cotton p68 Situations job interview, party, beach holiday p68 At the doctor's a sore throat, flu, food poisoning I've got a fever. My body aches. My glands are swollen. p69	Lecture	
10	**2**		Time for a story p70 Past Perfect They had walked twenty miles. p71 Narrative tenses They saw a bear. They were looking for work. p71 Joining sentences although, because when, while, before, after, as, until, as soon as p72 Feelings angry, nervous, delighted, stressed p76 Exclamations with so and such I was so scared! It was such a shock! We had such	Lecture	

			terrible weather! I've got so much work! p77		
11	**2**		Our interactive world p78 Passives Mobile phones are used by almost 6 billion people. The first mobile phone call was made in 1973. Camera phones have been sold since 2002. Landline telephones will be replaced by mobile phones. p79 Words that go together Noun + noun text message, businessman p81 Verb + noun take notes, send a text message p81 Adverb + adjective well-known, badly-behaved p81 On the phone 07700 900333 Can I speak to Patrick, please? I'm calling because … Sorry, you're breaking up … p85	Lecture	
12	**2**		Life's what you make it! p86 Present Perfect Continuous He's been making programmes since 2007. How long has she been working there? p87 Present Perfect Simple versus Continuous He's made three programmes. He's been teaching for three years. p87 Birth, marriage, death pregnant, born engaged, divorced funeral, died of p92 Good news, bad news Congratulations! That's fantastic news! What a shame! I'm so sorry. p93	Lecture	

13	**2**		Just wondering … p94 First conditional if + will If it's sunny, we'll go for a picnic. We won't go out if it rains. p95 going to and might What are you going to do tonight? I might go out … p95 Second conditional if + would If I had a brother, I'd play with him. If I were you, I'd stop smoking. p96 Prepositions connected to on a date listen to think about p100 Thank you and goodbye! It's late. I must be going now. Thank you for a lovely evening. My pleasure! p101	Lecture	
14	**2**		Living in a stately home Living history Chatsworth House and the family who call it home p58 A family history David Taylor Bews from Perth, Australia researches his family history p60 What do you think? Stately homes Aristocracy Inherited wealth p58 Talking about you Have you ever …? p57 The lives of your grandparents p60 What do you think? Family history p60 A biography Ordering paragraphs: Two Kennedys Researching facts about a famous person and writing a biography p111	Lecture	
15	**2**		**Review before the exam**	Oral Discussion	
16	**3**		**Final Exam**	Written Exam	

Course Evaluation

Evaluation Method		Time/Number	Weight (Marks)
Formative assessment	Quizzes	5	10%
	Assignments	2	10%
	Project	2	10%
	Report	1	10%
Summative assessment	Midterm Exam	2 hr.	10%
	Final Exam	3 hr.	50%
Total assessment			100%

Learning and Teaching Resources

Required Texts	1. The core textbook is Soars, John and Liz, (2011), New Headway Plus Pre-Intermediate Student's Book, Special Edition, Oxford University Press
Recommended Texts	1. New Headway Plus provides an integrated skills course with each unit divided into grammar, vocabulary, skills work and everyday English segments
Websites	Oxford University Press: The New Headway series is published by Oxford University Press. Visit their website at www.oup.com and search for "New Headway Plus, Special Edition, pre-Intermediate" or browse their English language teaching section for information on the course.

The Crimes of the Baath Regime in Iraq

جرائم نظام البعث في العراق

Second year/ Second semester

Course Name:	**The Crimes of the Baath Regime in Iraq**	
Course Code:	UOB24026	
Semester / Year:	Second semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture	
Number of Credit Hours (Total) / Number of Units (Total)	(1 hours- Theory) (2-Units)	
Course administrator's name (mention all, if more than one name)	Name:	
	Email:	

Course Objectives

1. بيان الأجيال الحالية لم تعيش فترة الدكتاتورية والكثير منهم لا يعرف معاناة الشعب والجرائم التي ارتكبها النظام المقبور .
2. بيان مدى سوء حكم النظام الشمولي والذي لم يقتصر فقط على داخل العراق بل على الدول المجاور له
3. توعية الطلبة على الأضرار الكثيرة التي احدثها النظام البائد والجرائم التي ارتكبها بحق الشعب العراقي .
4. أظهرا الاضرار الاقتصادية والاجتماعية والتنموية التي أحدثها النظام السابق .
5. بيان مدى وحشية النظام البائد والإعدامات الجماعية .
6. باين الأساليب القمعية التي مارسها النظام البائد والتهجر القصري .
7. كبح الحركات العامة وتدهور مستوى الاعلام والثقافة .
8. توضيح الأضرار البيئة والزراعية التي ظهرت آثارها في السنوات السابقة والحالية .
9. بيان مدى سوء حكم النظام الشمولي والذي لم يقتصر فقط على داخل العراق بل على دول المجاورة ايضا .
10. ان الهدف من تدرس هذه المادة لمعرفة تاريخ تلك الحقبة السوداء .
11. الهدف من هذه المادة بان الحكم في العراق لن تدوم باستخدام أدوات العنف والقوة مهما كانت مفرطة

Teaching and Learning Strategies

الإستراتيجية المهمة التي تم تبناها في هذه الوحدة هي توعية الطلبة وعملية تنمية مداركهم العقلية على فهم النظام السياسي العراقي البائد ومعرفة الجرائم التي ارتكبها النظام البائد وعمليه تحفيز الطلبة على التأمل والتفكير في تحليل هذه الجرائم وانعكاساتها والعمل على محاربة الظلم ولاستبداد ورفض اي شكل من اشكال الدكتاتورية وذلك باستخدام البرامج التفاعلية والتعلمية في استخدام الادوات التحليلية والنقدية وتشجيع الطلبة على الحديث والحوار والنقاش على اسس معرفية تستند الى

عملات الحديث العلمي والتدقيق والقراءة العميقة والفهم الجاد والرصانة العلمية وذلك استخدام الوسائل العلمية والأساليب التفاعلية سواء اكنت المسموعة والمرئية واعطاء الادلة المادية الواضحة على وحشية النظام السابق لكي يطلع الطلبة وتصبح لديهم قناعة علمية راسخيه على هذه الحقيقة السوداء والجرائم التي لم تشهد لها البشرية مثال .كذلك تنمية القدرة الذهنية والفكرية لدى الطلبة على معرفة الأنظمة الصالحة وذلك تفعيل الدور الأخلاقي وزرع الأخلاق والقيم والمبادئ الحميدة لدى الطلبة

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		مقدمة عن انتهاكات الحقوق والحرا ت	Lecture	Quizzes, Reports, Assignments, Midterm exam, **Final exam**
2	2		نبذة وصفية عن الانظمة السياسية في العراق	Lecture	
3	2		انتهاكات النظام البعثي للحقوق والحريات العامة	Lecture	
4	2		اثار سلوكيات النظام البعثي في المجتمع وتسلطه على الدولة	Lecture	
5	2		اثار المرحلة الانتقالية في محاربة السياسة الاستبدادية	Lecture	
6	2		الميدان النفسي والاجتماعي	Lecture	
7	2		الدين والدولة	Lecture	
8	2		**Midterm Exam**	Exam	
9	2		عسكرة المجتمع والثقافة والاعلام	Lecture	
10	2		اثار القمع والحروب على البيئة والسكان	Lecture	
11	2		التلوث البيئي واستعمال الاسلحة المحرمة دوليا	Lecture	
12	2		سياسة الارض المحروقة وتجفف الاهوار	Lecture	
13	2		المقابر الجماعة وتدمير البيئة الزارعة	Lecture	
14	2		مراجعة	Lecture	
15	2		مراجعة	Oral Discussion	
16	3		**Final Exam**	Written Exam	

Course Evaluation

Evaluation Method		Time/Number	Weight (Marks)
Formative assessment	Quizzes	4	10%
	Assignments	2	10%
	Project	2	10%
	Report	1	10%
Summative assessment	Midterm Exam	2 hr.	10%
	Final Exam	3 hr.	50%
Total assessment			100%

Learning and Teaching Resources

Required Texts	▪ منهاج جرائم حزب البعث البائد 2023/جمهورية العراق/وازرة التعلم العالي والبحث العلمي/دائرة الدارسات والتخطيط
Recommended Texts	
Websites	

Ecology

Third year/ First semester

Course Name:	**Ecology**	
Course Code:	BEC326	
Semester / Year:	First semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory and 2 hours Practical) (3-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Ali Abdul-Aziz Abdel Rasoul Aziz
	Email:	ali.abdulaziz@alfarabiuc.edu.iq

Course Objectives

4. Introducing students to the concept of ecology.
5. Ecology and its relationship with other sciences.
6. Explanation and description of variation patterns of environment and the divisions of Ecological systems.

Teaching and Learning Strategies

3. Ecology is the link to several sciences such as genetics, behavior, physiology and atmospheric science, all of which are useful in how to control the balance and health of the ecosystem.
4. learning how the ecosystems keep their hemostasis by the relationships and communication through the biogeochemical cycles from hand and the association among the living organism with each other from another hand.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Introduction to ecology and ecosystem.	Lecture	Quizzes, Reports,
2	2		Ecosystem structure: Abiotic	Lecture	

			environment factors		Assignments, Midterm exam, **Final exam**
3	**2**		The physical factors as limiting factors.	Lecture	
4	**2**		Temperature and light, biological clocks	Lecture	
5	**2**		Water, Atmospheric gases, currents and pressure.	Lecture	
6	**2**		Biotic components of ecosystems	Lecture	
7	**2**		Population growth models	Lecture	
8	**2**		**Mid-Term exam**	Exam	
9	**2**		Concept of ecological dominance.	Lecture	
10	**2**		Ecosystem function-energy flow through ecosystem	Lecture	
11	**2**		Productivity of ecosystem	Lecture	
12	**2**		Biogeochemical cycles	Lecture	
13	**2**		Sedimentary cycles	Lecture	
14	**2**		Ecosystem diversity	Lecture	
15	**2**		**Review before the exam**	Oral Discussion	
16	**3**		**Final Exam**	Written Exam	

Course Evaluation

Evaluation Method			**Weight (Marks)**
Semester assessment	**Theoretical Part Assessment**	Electronic Exams	**5%**
		Quizzes	**3%**
		Assignments	**2%**
		Midterm Exam	**10%**
	Practical Part Assessment	Project/lab	**3%**
		Report	**2%**
		Midterm Exam	**10%**
Summative assessment	**Final Exam Assessment**	Practical Exam	**20%**
		Theoretical Exam	**40%**
Total assessment			**100%**

Learning and Teaching Resources	
Required Texts	1. Fundamentals of Ecology –Odum
Recommended Texts	1. Ecology and pollution –Dr.Hussain Ali Al-Saadi
Websites	https://www.amazon.com/Fundamentals-Ecology-Eugene-Odum/dp/0534420664

Microbial Physiology

Third year/ First semester

Course Name:	**Microbial Physiology**	
Course Code:	BMP327	
Semester / Year:	First semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory and 2 hours Practical) (3-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Ban Muwafaq Abdul-Hadi Tawfiq
	Email:	baan.mowaffak@alfarabiuc.edu.iq

Course Objectives

Study the Microbial cell's structure, fine molecular structures of cellular organelles, function of different organelles, assembly & biogenesis of cellular structures, Study in details different pathways that taking place within microbial cells and how these affected the pathogenicity of pathogenic microorganism, and how to adapt prokaryotes to serve human in various fields

Teaching and Learning Strategies

Use of different available teaching tools, like schemes, posters, presentation of educational videos related to the physiology subject besides of data show.

Participation of students in open discussions, and how they can reacts to oral and editorial questions to assess the extent how much they benefited from the subject and how they can employ it in future in their working life.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Microbial cells kingdom	Lecture	Quizzes,

2	**2**		Structures of microbial cells	Lecture	Reports, Assignments, Midterm exam, **Final exam**
3	**2**		Structures of the cell walls	Lecture	
4	**2**		Cytoplasmic cell membrane	Lecture	
5	**2**		Requirements of bacterial growth	Lecture	
6	**2**		Microbial cultivation	Lecture	
7	**2**		Microbial growth	Lecture	
8	**2**		**Mid-term exam**	Exam	
9	**2**		Environmental factors affecting growth	Lecture	
10	**2**		Microbial bioenergetics	Lecture	
11	**2**		Microbial enzymes	Lecture	
12	**2**		The effects of environment on enzymes activity	Lecture	
13	**2**		Microbial metabolism and anabolic pathways	Lecture	
14	**2**		Microbial Respiration	Lecture	
15	**2**		**Review before the exam**	Oral Discussion	
16	**3**		**Final Exam**	Written Exam	

Course Evaluation

Evaluation Method			**Weight (Marks)**
Semester assessment	**Theoretical Part Assessment**	Electronic Exams	**5%**
		Quizzes	**3%**
		Assignments	**2%**
		Midterm Exam	**10%**
	Practical Part Assessment	Project/lab	**3%**
		Report	**2%**
		Midterm Exam	**10%**
Summative assessment	**Final Exam Assessment**	Practical Exam	**20%**
		Theoretical Exam	**40%**
Total assessment			**100%**

Learning and Teaching Resources

Required Texts	1. Microbioal Physiology, Moat AG, Foster JW, Spector MP. 4th Edition, 2014. 2. Brock Biology of microorganisms, 2016. Brock, TD.
Recommended Texts	1. Baily and scott' diagnostic microbiology 14 edition
Websites	www.bio .org and online

Plant Physiology

Third year/ First semester

Course Name:	**Plant Physiology**	
Course Code:	BPP328	
Semester / Year:	First semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory and 2 hours Practical) (3-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Latif Abdullah Hamad Zouin
	Email:	latif.abdallah@alfarabiuc.edu.iq

Course Objectives

1. Studying the functions of plant organs and identifying their general characteristics.
2. Studying the mechanisms of plant physiological functions such as photosynthesis and respiration.
3. Identify the chemical and physical properties of water and the mechanisms of absorption of water and salts in plants.
4. Identify the types of plant growth regulators.

Teaching and Learning Strategies

1. Use Data Show to display the topic
2. Use the PPT to display the lectures
3. Show films related to the processes of photosynthesis, respiration, and the electron transport chain in plants.
4. Download the lectures as PDF files in the electronic classroom
5. Download the video lectures in the electronic classroom.

Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	**2**		Water relationship, Diffusion, Osmosis	Lecture	Quizzes, Reports, Assignments, Midterm exam, **Final exam**
2	**2**		Diffusion pressure deficit D.P.D, Plasmolysis, Imbibition	Lecture	
3	**2**		Absorption of water	Lecture	
4	**2**		Transpiration and Mechanisms of stomata opening	Lecture	
5	**2**		Ascent of sap	Lecture	
6	**2**		Absorption of mineral salts	Lecture	
7	**2**		Photosynthesis, Light reaction Z scheme	Lecture	
8	**2**		**Mid-term Exam**	Exam	
9	**2**		Photosynthesis, Dark reaction Calvin cycle	Lecture	
10	**2**		Respiration, Glycolysis, Kreps cycle	Lecture	
11	**2**		Electron Transport System (ETS) and Phosphorylation, Pentose phosphate pathway	Lecture	
12	**2**		Plant hormones, Auxins, Gibberellins	Lecture	
13	**2**		Plant hormones, Cytokinins, Abscisic acid, Ethylene, Brassinosteroids	Lecture	
14	**2**		Plant tissue culture, Basics of plant cell and tissue culture, MS media, callus and cell culture	Lecture	
15	**2**		**Review before the exam**	Oral Discussion	
16	**3**		**Final Exam**	Written Exam	

Course Evaluation

Evaluation Method			Weight (Marks)
Semester assessment	Theoretical Part Assessment	Electronic Exams	5%
		Quizzes	3%
		Assignments	2%
		Midterm Exam	10%
	Practical Part Assessment	Project/lab	3%
		Report	2%
		Midterm Exam	10%
Summative assessment	Final Exam Assessment	Practical Exam	20%
		Theoretical Exam	40%
Total assessment			100%

Learning and Teaching Resources

Required Texts	1. Taiz; Zeiger, E; Moller, S.M. and Murphy, A. (2020) Plant physiology and Development. 6th Edition, Sinauer Association, Inc., Sunderland, USA. 2. Introduction to Plant Physiology by W.G. Hopkins 3. and N. P. A. Huner (2008).
Recommended Texts	1. Plant physiology journal 2. Plant physiology by Vince Ördög
Websites	www.livescience.com nature.com www. Estrellamountain.edu

Antibiotics

Third year/ First semester

Course Name:	**Antibiotics**	
Course Code:	BAN335	
Semester / Year:	First semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory and 2 hours Practical) (3-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Yahya Fadhil Abbas Barhi
	Email:	yahiye.fadhel@alfarabiuc.edu.iq

Course Objectives

1. Student will learn about the history of antibiotics
2. What are the antibiotics and how they work
3. Introducing student to the basic principles of appropriate antibiotic use, demonstrate how to apply these principles to the management of common infections.
4. What is antimicrobial resistance
5. Explaining the Mechanisms of resistance and their phenotypic and genotypic detection, Quick methods, Test criteria, interpretation and report of the ATB susceptibility test.

Teaching and Learning Strategies

This module's contact teaching will be conducted through lecturing (15 lectures) and compulsory 15 practical sessions, which include PowerPoint presentations, and learning videos. Students will be invited to participate in interactive discussion throughout this program.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Introduction, History Definition, Characteristics of Antibiotics	Lecture	Quizzes,

2	**2**		Antibiotic classes, Beta–Lactam Antibiotics, Penicillin	Lecture	Reports, Assignments, Midterm exam, **Final exam**
3	**2**		Cephalosporins	Lecture	
4	**2**		Other beta– lactam,Carbapenems, Monobactams (aztreonam)	Lecture	
5	**2**		Tetracycline : Naturally occurring : Tetracycline, Chlortetracycline, Oxytetracycline Semi–synthetic : Doxycycline, Lymecycline, Mesocyclone, Metacycline, Minocycline, Rolitetracycline	Lecture	
6	**2**		Aminoglycosides (Tobramycin, Streptomycin, Neomycin, Kanamycin, Amikacin)	Lecture	
7	**2**		Macrolides and Lincosamides	Lecture	
8	**2**		**Mid–Term exam**	Exam	
9	**2**		Quinolones	Lecture	
10	**2**		Rifamycin	Lecture	
11	**2**		Antimetabolites	Lecture	
12	**2**		Miscellaneous antibiotics	Lecture	
13	**2**		Antibiotic Resistance	Lecture	
14	**2**		Glycopeptide antibiotics	Lecture	
15	**2**		**Review before the exam**	Oral Discussion	
16	**3**		**Final Exam**	Written Exam	

Course Evaluation

Evaluation Method			Weight (Marks)
Semester assessment	**Theoretical Part Assessment**	Electronic Exams	**5%**
		Quizzes	**3%**
		Assignments	**2%**
		Midterm Exam	**10%**
	Practical Part Assessment	Project/lab	**3%**
		Report	**2%**

		Midterm Exam	10%
Summative assessment	Final Exam Assessment	Practical Exam	20%
		Theoretical Exam	40%
Total assessment			100%

Learning and Teaching Resources

Required Texts	1. Walsh C. "Antibiotics: actions, origins, resistance". 1st Ed. ASM Press, Washington, DC (2003): 345. 2. Russell AD. "Types of antibiotics and synthetic antimicrobial agents". In: Denyer S. P., Hodges N. A and German S. P. (eds.) Hugo and Russells pharmaceutical microbiology. 7th Ed.Blackwell Science UK (2004): 152-186. 3. Calderon CB and Sabundayo BP. "Antimicrobial classifications:Drugs for bugs". In: Schwalbe R, Steele-Moore L and Goodwin AC (eds). Antimicrobial susceptibility testing protocols. CRCPress, Taylor and Frances group (2007). 4. Riedel, S., Morse, S., Mietzner, T., and Miller, S. (2019). Jawetz, Melnick, and Adelberg's Medical Microbiology, 28 ed. McGraw-Hill New York. 5. Handbook Of Experimental Pharmacology- S. K. Kulkarni.(2021). Pragati Book Centre.
Recommended Texts	1. Antibiotics: Targets, Mechanisms and Resistance Editor(s):Claudio O. Gualerzi, Letizia Brandi, Attilio Fabbretti, Cynthia L. Pon. (2014).Wiley-VCH Verlag GmbH & Co. KGaA. 2. Clinical and Laboratory Standards Institute (CLSI). Performance Standards for Antimicrobial Susceptibility Testing. 33th ed. CLSIsupplement M100. USA, 2023.
Websites	https://clsi.org/standards/products/webinars/education/ https://bpac.org.nz/antibiotics/guide.aspx https://pocketdentistry.com/38-principles-of-antibiotic-therapy /https://target-webinars.com/ http://infuvn.lf1.cuni.cz/file/75/principles-of-antibiotic-use.pdf

Immunology

Third year/ First semester

Course Name:	**Immunology**	
Course Code:	BIM336	
Semester / Year:	First semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory and 2 hours Practical) (3-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Ahmed Fliah Hassan Alwan
	Email:	ahmed.fleih@alfarabiuc.edu.iq

Course Objectives

1. Providing a broad understanding of immunological processes and host defense.
2. Diagnosis of different pathogens by immunological processes.
3. Outlining the natural defense and adaptive defense.
4. Understanding how to make a vaccine from the pathogens.

Teaching and Learning Strategies

This module's contact teaching will be conducted through lecturing (15 lectures) and compulsory 15 practical sessions, which include learning videos and scientific animations. Students will be invited to participate in interactive discussions throughout this program.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Introduction and historical aspect	Lecture	Quizzes, Reports, Assignments,
2	2		Natural resistance and acquired immunity	Lecture	
3	2		Humoral immunity and cellular immunity with their component	Lecture	

4	**2**		Phagocytosis process	Lecture	Midterm exam, **Final exam**
5	**2**		Primary and second lymphoid organ and their role immune response	Lecture	
6	**2**		Antigen, chemical composition and their receptor	Lecture	
7	**2**		Antibody and their types, b cells stimulation to antibody production	Lecture	
8	**2**		**Mid-term Exam**	Exam	
9	**2**		Antigen – antibody reactions and factors affect reaction	Lecture	
10	**2**		Immunological tests	Lecture	
11	**2**		Complement system	Lecture	
12	**2**		Major histocompatibility complex	Lecture	
13	**2**		Hypersensitivity	Lecture	
14	**2**		Passive immunization	Lecture	
15	**2**		**Review before the exam**	Oral Discussion	
16	**3**		**Final Exam**	Written Exam	

Course Evaluation

Evaluation Method			Weight (Marks)
Semester assessment	**Theoretical Part Assessment**	Electronic Exams	**5%**
		Quizzes	**3%**
		Assignments	**2%**
		Midterm Exam	**10%**
	Practical Part Assessment	Project/lab	**3%**
		Report	**2%**
		Midterm Exam	**10%**
Summative assessment	**Final Exam Assessment**	Practical Exam	**20%**
		Theoretical Exam	**40%**
Total assessment			**100%**

Learning and Teaching Resources	
Required Texts	1. Gerd- Rudiger , B. and Antoni Pezzuutto, M.D. (2003). Color Atlas of immunology 2. peter, JDelves., Seamus J.Martin, ,J , Dennis R. Burton,. (2017). Roitts essential immunology
Recommended Texts	1. Subhash C Parjia ,. (2012). Textbook of microbiology and immunology
Websites	https://www.cdc.gov; www.who.int

Pollution

Third year/ Second semester

Course Name:	**Pollution**	
Course Code:	BPO332	
Semester / Year:	Second semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory and 2 hours Practical) (3-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Ali Abdul-Aziz Abdel Rasoul Aziz
	Email:	ali.abdulaziz@alfarabiuc.edu.iq

Course Objectives

This subject aims to provide:

1. An understanding of the global environmental problems caused by human activities
2. The importance of pollution in our lives
3. The main sources of pollutants and their various effects on man and the environment
4. Fundamental concepts of air, noise, water, solid waste and nuclear pollution: their nature, generation and impact on the environment

Teaching and Learning Strategies

This course aiming at arousing students' interest and awareness in multiple complex problems in our environment caused by pollution produced by human activities at the international and national levels. In addition to the traditional classroom lectures, small-group discussions will be used whenever appropriately.

In order to understand the multi-dimensional pollution problems including theirgeneration, effects on our community, inter-changes between different types, and monitoring and control, students need to search and learn the fundamental knowledge in environmental pollution. Every student is also required to complete a mini project, regarding the pollution problems encountered in Iraq and their possible solutions and produce a written report to satisfy the writing requirement.

Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	**2**		Definition of environmental pollution and characteristics of important pollutants	Lecture	Quizzes, Reports, Assignments, Midterm exam, **Final exam**
2	**2**		Air pollution and the most important air pollutants, their sources and effects	Lecture	
3	**2**		Environmental phenomena related to air pollution, especially global warming and the ozone hole	Lecture	
4	**2**		This week, students will learn about radiation and its different biological effects	Lecture	
5	**2**		This week, the student learns an introduction to water pollutants, water properties, and water quality indicators	Lecture	
6	**2**		In this lecture, the student learns about the types of water pollutants	Lecture	
7	**2**		Nutrient and eutrophication and the traditional and advanced methods of water treatment	Lecture	
8	**2**		**Mid-term Exam**	Exam	
9	**2**		The student will be familiar with the concept of heavy metals, the sources and fate in ecosystem	Lecture	
10	**2**		The general effect of heavy metals especially on human	Lecture	
11	**2**		This week, the student learns about a general introduction to the topic of soil pollution and soil properties	Lecture	
12	**2**		This week, students will learn about the most important soil pollutants	Lecture	
13	**2**		Students learn concentrated on agricultural chemicals and	Lecture	

			agricultural pollution concepts		
14	**2**		This week, the student will learn about the types of pesticides and their properties	Lecture	
15	**2**		**Review before the exam**	Oral Discussion	
16	**3**		**Final Exam**	Written Exam	

Course Evaluation

Evaluation Method			**Weight (Marks)**
Semester assessment	**Theoretical Part Assessment**	Electronic Exams	**5%**
		Quizzes	**3%**
		Assignments	**2%**
		Midterm Exam	**10%**
	Practical Part Assessment	Project/lab	**3%**
		Report	**2%**
		Midterm Exam	**10%**
Summative assessment	**Final Exam Assessment**	Practical Exam	**20%**
		Theoretical Exam	**40%**
Total assessment			**100%**

Learning and Teaching Resources

Required Texts	1. Hodges, L. Environmental Pollution. Edition, 2, illustrated. Publisher, Holt, Rinehart and Winston, 1977.
Recommended Texts	1. Warneck, P., *Chemistry of the Natural Atmosphere*, International Geophysics Series. Vol. 41, Academic Press, San Diego, 1988. 2. Owa , F. W. Water pollution: sources, effects, control and management. *International Letters of Natural Sciences*, 2014.
Websites	https://www.worldwildlife.org/threats/pollution https://www.livescience.com/22728-pollution-facts.html

Medicinal plants

Third year/ Second semester

Course Name:	**Medicinal plants**	
Course Code:	BMEP334	
Semester / Year:	Second semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory and 2 hours Practical) (3-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Latif Abdullah Hamad Zouin
	Email:	latif.abdallah@alfarabiuc.edu.iq

Course Objectives

This subject aims to provide:

1. Studying the Classification of medicinal and aromatic plants.
2. Studying the Medicinal Uses and Health benefits.
3. Identify the chemical medicinal plants compounds.
4. study the functions of secondary metabolites in medicinal plant.

Teaching and Learning Strategies

1. Use Data Show to display the topic
2. Use the PPT to display the lectures
3. Show films related to the processes of photosynthesis, respiration, and the electron transport chain in plants.
4. Download the lectures as PDF files in the electronic classroom
5. Download the video lectures in the electronic classroom.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		History of medicinal plants	Lecture	Quizzes,

2	**2**		Classification of medicinal and aromatic plants.	Lecture	Reports, Assignments, Midterm exam, **Final exam**
3	**2**		Lower plants: Medicinal uses	Lecture	
4	**2**		Functions of Secondary Metabolites in Plant	Lecture	
5	**2**		Importance of Plant Secondary Metabolites for Humans	Lecture	
6	**2**		Major Classes of Secondary Metabolites, Alkaloids	Lecture	
7	**2**		Major Classes of Secondary Metabolites, Terpenoides	Lecture	
8	**2**		**Mid-term exam**	Exam	
9	**2**		Major Classes of Secondary Metabolites, Phenolics	Lecture	
10	**2**		METHOD OF EXTRACTION	Lecture	
11	**2**		HPLC/MS and GC/MS identify a bioactive phytocompound	Lecture	
12	**2**		SECRETORY STRUCTURES IN PLANTS	Lecture	
13	**2**		Herbs & Natural Supplements	Lecture	
14	**2**		Discovery and Development the Herbal Drug	Lecture	
15	**2**		**Review before the exam**	Oral Discussion	
16	**3**		**Final Exam**	Written Exam	

Course Evaluation			
Evaluation Method			**Weight (Marks)**
Semester assessment	**Theoretical Part Assessment**	Electronic Exams	**5%**
		Quizzes	**3%**
		Assignments	**2%**
		Midterm Exam	**10%**
	Practical Part Assessment	Project/lab	**3%**
		Report	**2%**
		Midterm Exam	**10%**
Summative assessment	**Final Exam Assessment**	Practical Exam	**20%**
		Theoretical Exam	**40%**
Total assessment			**100%**

Learning and Teaching Resources	
Required Texts	1. PDR for Herbal Medicines. 2nd. ed-1563633612
Recommended Texts	1. Fighting Multidrug Resistance with Herbal Extracts, Essential Oils and Their Components 2013.
Websites	https://www.sciencedirect.com/science/article/abs/pii/B9780123985392000112

Mycology

Third year/ Second semester

Course Name:	**Mycology**	
Course Code:	BMY331	
Semester / Year:	Second semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory and 2 hours Practical) (3-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Muayad Sabry Shawkat Jassim
	Email:	moayad.sabri@alfarabiuc.edu.iq

Course Objectives

This subject aims to provide:

1. Providing a broad understanding of fungi, with an emphasis on the most important species of pathogenic fungus for plants and humans.
2. Defining the student how to classify and diagnose fungi.
3. Explain the fungi's life cycle.
4. Studying its epidemiology and different control methods.
5. Studying some pathogenic fungi for humans, symptoms, causes, and treatment of infection.

Teaching and Learning Strategies

This module's contact teaching will be conducted through lecturing (15 lectures) and compulsory 15 practical sessions, which include learning videos and scientific animations. Students will be invited to participate in interactive discussions throughout this program.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Defining fungi, their benefits, and harms	Lecture	Quizzes,

2	**2**		Fungal reproduction, methods of feeding them, and culture media for fungi	Lecture	Reports, Assignments, Midterm exam, **Final exam**
3	**2**		Classification of fungi: Division 1: Myxomycota.	Lecture	
4	**2**		Division 2: Eumycota; Sub-division 1:- Mastigomycotina: Class 1: Chytridiomycetes; Class 2: Hypochytridiomycetes	Lecture	
5	**2**		Class 3: Oomycetes:	Lecture	
6	**2**		Sub-division 2: Zygomycotina:- Class 1: Zygomycetes	Lecture	
7	**2**		Sub-division 3: Ascomycotina: - Class 1: Hemiascomycetes;	Lecture	
8	**2**		**Mid-Term Exam**	Exam	
9	**2**		Class 2: Plectomycetes; Class 3: Pyrenomycetes:-	Lecture	
10	**2**		Class 4: Discomycetes; Class 5: Loculoascomycetes	Lecture	
11	**2**		Sub-division 4: Basidiomycotina:- Class 1: Teliomycetes:	Lecture	
12	**2**		Class 2: Hymenomycetes; Class 3: Gasteromycetes:	Lecture	
13	**2**		Sub-division 5: Deutrromycotina:- Class 1: Hyphomycetes; Class 2: Coelomycetes	Lecture	
14	**2**		Medical mycology: Fungal Pathogenicity; Clinical groupings for fungal infections	Lecture	
15	**2**		**Review before the exam**	Oral Discussion	
16	**3**		**Final Exam**	Written Exam	

Course Evaluation			
Evaluation Method			**Weight (Marks)**
Semester assessment	**Theoretical Part Assessment**	Electronic Exams	**5%**
		Quizzes	**3%**
		Assignments	**2%**
		Midterm Exam	**10%**
	Practical Part Assessment	Project/lab	**3%**
		Report	**2%**
		Midterm Exam	**10%**
Summative assessment	**Final Exam Assessment**	Practical Exam	**20%**
		Theoretical Exam	**40%**
Total assessment			**100%**

Learning and Teaching Resources	
Required Texts	1. Webster, J. and Weber, R. (2007). Introduction to fungi. 3ed. Cambridge.
Recommended Texts	2. Alexopoulos, J.; Mims, C. W. and Blackwell, M. M. (1996). 3. Introductory Mycology. 4th ed. John Wiley. New York.
Websites	https://www.tandfonline.com/toc/tmyc/current) https://drfungus.org/

Animal Physiology

Third year/ Second semester

Course Name:	**Animal Physiology**	
Course Code:	BAP333	
Semester / Year:	Second semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory and 2 hours Practical) (3-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Frial Abdulmanaf Mohammed
	Email:	Ferial.abdalmonaf@alfarabiuc.edu.iq

Course Objectives

This subject aims to provide:

1. This course deals with mechanisms of the function of different organs in the body.
2. To understand the relationship among the function of these organs to perform their biological processes.
3. To understand the structure of these organs and their impacts on the function.

Teaching and Learning Strategies

The main strategy in this module is to develop the student's skills in laboratory analyses and encourage students for the scientific discussion and thinking through classes and interactive tutorials (15 lectures) and performing simple experiments and analysis (15 practical laboratory).

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Introduction to Physiology	Lecture	Quizzes, Reports,
2	2		Thermal regulation	Lecture	

3	**2**		Body temperature	Lecture	Assignments, Midterm exam, **Final exam**
4	**2**		Nerve system structure	Lecture	
5	**2**		Nerve physiology	Lecture	
6	**2**		Physiology of digestion	Lecture	
7	**2**		Circulatory system	Lecture	
8	**2**		**Mid-term exam**	Exam	
9	**2**		Physiology of circulation	Lecture	
10	**2**		Respiratory system	Lecture	
11	**2**		Physiology of respiration	Lecture	
12	**2**		Urinary system	Lecture	
13	**2**		Urine formation	Lecture	
14	**2**		Lymphatic system	Lecture	
15	**2**		**Review before the exam**	Oral Discussion	
16	**3**		**Final Exam**	Written Exam	

Course Evaluation

Evaluation Method			Weight (Marks)
Semester assessment	**Theoretical Part Assessment**	Electronic Exams	**5%**
		Quizzes	**3%**
		Assignments	**2%**
		Midterm Exam	**10%**
	Practical Part Assessment	Project/lab	**3%**
		Report	**2%**
		Midterm Exam	**10%**
Summative assessment	**Final Exam Assessment**	Practical Exam	**20%**
		Theoretical Exam	**40%**
Total assessment			**100%**

Learning and Teaching Resources	
Required Texts	1. Principle of Animal Physiology. (2014) By: Christopher D. Moyes & Patricia Schulte 2. Anatomy & Physiology. (2020) By: Rose & William
Recommended Texts	1. Essential of Animal Physiology (2016) By:Rastogi
Websites	www.physiology.org

Molecular biology & bacterial genetics

Fourth year/ First semester

Course Name:	**Molecular biology & bacterial genetics**	
Course Code:	MOB4301	
Semester / Year:	First semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory and 2 hours Practical) (3-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Sura Talib Jassim Hammadi
	Email:	sura.taleb@alfarabiuc.edu.iq

Course Objectives

This subject aims to provide:

1. The student should know the structural basis of the basic molecules that make up the genetic material
2. Introducing the student to the term central dogma of life by defining the most important processes that take place on the genetic material, such as replication, transcription and translation.
3. Studying gene expression and its regulation mechanism.
4. Studying the methods of transmission of genetic material.

Teaching and Learning Strategies

These modules contact teaching will be conducted through 15 lectures and compulsory 15 practical sessions which include learning videos pictures and scientific animations.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		▪ Definition of molecular biology ▪ The Structure of DNA and	Lecture	Quizzes,

			RNA		Reports, Assignments, Midterm exam, **Final exam**
2	**2**		▪ Meselson and Stahl experiment ▪ Replication in prokaryotes	Lecture	
3	**2**		▪ Chromosomes Structure ▪ The Replication of DNA in eukaryotes	Lecture	
4	**2**		▪ Topoiomerase I and II ▪ Telomerase	Lecture	
5	**2**		▪ Mutations	Lecture	
6	**2**		▪ DNA Repair mechanisms	Lecture	
7	**2**		▪ Transcription in prokaryotes Type of RNA	Lecture	
8	**2**		**Midterm Exam**	Exam	
9	**2**		▪ RNA polymerase and Promoter recognition ▪ Transcription process	Lecture	
10	**2**		▪ Translation in prokaryotes ▪ Genetic code	Lecture	
11	**2**		▪ Translation Process	Lecture	
12	**2**		▪ Regulation of gene in prokaryotes	Lecture	
13	**2**		▪ Lac operon ▪ Trp operon	Lecture	
14	**2**		▪ Types of gene transfer in bacteria I	Lecture	
15	**2**		**Review before the exam**	Oral Discussion	
16	**3**		**Final Exam**	Written Exam	

Course Evaluation			
Evaluation Method			**Weight (Marks)**
Semester assessment	**Theoretical Part Assessment**	Electronic Exams	**5%**
		Quizzes	**3%**
		Assignments	**2%**
		Midterm Exam	**10%**
	Practical Part Assessment	Project/lab	**3%**
		Report	**2%**
		Midterm Exam	**10%**
Summative assessment	**Final Exam Assessment**	Practical Exam	**20%**
		Theoretical Exam	**40%**
Total assessment			**100%**

Learning and Teaching Resources	
Required Texts	Robert F. Weaver (2012). Molecular Biology. Fifth edition, USA.
Recommended Texts	JAMES D. WATSON (2013). Molecular Biology of the Gene. Seventh edition.
Websites	https://www.researchgate.net/publication/331302105_DNA_Replication https://www.researchgate.net/publication/325827703_Transcription_and_trans lation

Food microbiology

Fourth year/ First semester

Course Name:	**Food microbiology**	
Course Code:	FOM4211	
Semester / Year:	First semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory and 2 hours Practical) (3-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Osama Zuhair Nouri Qasim
	Email:	osama.zouhir@alfarabiuc.edu.iq

Course Objectives

This subject aims to provide:

1. Providing an understanding of the basic concepts and principles of food microbiology.
2. Developing knowledge and skills in the detection, enumeration, and identification of microorganisms in food samples.
3. Exploring the role of microorganisms in food spoilage and foodborne illnesses.
4. Promoting awareness of the regulatory frameworks and standards governing food safety and microbiological quality assurance.
5. Exploring the importance of good manufacturing practices (GMP) and hazard
6. analysis critical control point (HACCP) systems in ensuring food safety.

Teaching and Learning Strategies

The teaching strategy for this module will involve a combination of lectures (15 sessions) and practical sessions (15 sessions). The practical sessions will include learning videos and scientific animations to enhance the learning experience. Additionally, students will be actively encouraged to engage in interactive discussions throughout the module.

Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	**2**		**Introduction:** The relationship between food and microorganisms and the new branches of food microbiology	Lecture	Quizzes, Reports, Assignments, Midterm exam, **Final exam**
2	**2**		Sources of the Microbial contamination of food	Lecture	
3	**2**		Indicator Bacteria of Food Contamination & Microbiological Standards of Food	Lecture	
4	**2**		Microbial Spoilage of Food	Lecture	
5	**2**		Intrinsic & Extrinsic Factors Affecting Microbial Spoilage of Food	Lecture	
6	**2**		Foodborne intoxications	Lecture	
7	**2**		Foodborne infections, Investigation and inspection of food disease outbreaks	Lecture	
8	**2**		**Mid-term Exam**	Exam	
9	**2**		Foodborne Listeriosis and Mycotoxins in foods	Lecture	
10	**2**		General principles of food preservations	Lecture	
11	**2**		Food protection with Low temperature	Lecture	
12	**2**		Food protection with high temperature	Lecture	
13	**2**		Use of chemicals in food preservation	Lecture	
14	**2**		Use of radiation in food	Lecture	

			preservation		
15	**2**		**Review before the exam**	Oral Discussion	
16	**3**		**Final Exam**	Written Exam	

Course Evaluation

Evaluation Method			Weight (Marks)
Semester assessment	**Theoretical Part Assessment**	Electronic Exams	**5%**
		Quizzes	**3%**
		Assignments	**2%**
		Midterm Exam	**10%**
	Practical Part Assessment	Project/lab	**3%**
		Report	**2%**
		Midterm Exam	**10%**
Summative assessment	**Final Exam Assessment**	Practical Exam	**20%**
		Theoretical Exam	**40%**
Total assessment			**100%**

Learning and Teaching Resources

Required Texts	1. Matthews, K.R., Kniel, K.E. and Montville, T.J., 2017. *Food microbiology: an introduction*. John Wiley & Sons. Jay, J.M., Loessner, M.J. and Golden, D.A., 2008. Modern food microbiology. Springer Science & Business Media.
Recommended Texts	1. Robinson, R.K., 2014. Encyclopedia of food microbiology. Academic press. 2. Banwart, G., 2012. Basic food microbiology. Springer Science & Business Media.
Websites	https://www.fda.gov/ https://www.fao.org/fao-who-codexalimentarius/home/en/ https://www.efsa.europa.eu/en

Embryology

Fourth year/ First semester

Course Name:	**Embryology**	
Course Code:	MB4211	
Semester / Year:	First semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory and 2 hours Practical) (3-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Abdul-Hussein Hassan Kadhim Hassoun
	Email:	kadhim.ah@alfarabiuc.edu.iq

Course Objectives

This subject aims to provide:

1. To be learn the term embryology and the start of the embryo development, during the formation of the gametes and zygote produce through the organogenesis.
2. The student will be learning some terms about the tissue, chemical and functional changes that occur during this stage until the stage of adulthood of the organism and its impact on its external environment
3. Studying the extent of similarity and difference in the early embryonic stages of different animals and identifying points of difference in the following stages using a comparative method.
4. Enabling the student to Understand how organs and tissues are formed in different animal models and compare them with humans, and learn about the
5. concept of evolution in the life history of a living organism

Teaching and Learning Strategies

1. Use the drawings on the board
2. Using the data show screen
3. Linking the theoretical material with the practical part and applying it

Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	**2**		Insight of Embryology and development Biology– the stages of the embryogenesis of the animal specie	Lecture	Quizzes, Reports, Assignments, Midterm exam, **Final exam**
2	**2**		Cell cycle and Chromosomes	Lecture	
3	**2**		Cell division – mitosis & meiosis	Lecture	
4	**2**		Gametogenesis– Spermatogenesis: Spermatocytogenesis Spermeiogenesis	Lecture	
5	**2**		Oogenesis. Amount and distribution of yolk and types of eggs Comparison with spermatogenesis	Lecture	
6	**2**		Ovulation Fertilization– Oocyte activation	Lecture	
7	**2**		Cleavage Products of the cleavage – planes of cleavage Gastrulation Histogenesis & Organogenesis	Lecture	
8	**2**		**Mid–term Exam**	Exam	
9	**2**		Embryogenesis of Amphioxus ▪ Reproduction ▪ Ovulation and spawning ▪ Fertilization ▪ Fate map ▪ Cleavage and Blastulation	Lecture	
10	**2**		Nervous system Mesoderm Notochord Foregut	Lecture	
11	**2**		Embryogenesis of the Amphibians Reproduction	Lecture	

			▪ The membranes surrounding the amphibians' eggs ▪ Fertilization Penetration and Copulation		
12	**2**		Cleavage and Blastulation in frog Fate map of blastula of frog Gastrulation Neurulation	Lecture	
13	**2**		Formation of the Notochord Differentiation of the mesoderm Differentiation of the endoderm	Lecture	
14	**2**		Embryogenesis of chick egg Anatomy of the ovary Ovulation The layers of the ovum Fertilization Cleavage and blastulation Fate map of discoblastula	Lecture	
15	**2**		**Review before the exam**	Oral Discussion	
16	**3**		**Final Exam**	Written Exam	

Course Evaluation

Evaluation Method			**Weight (Marks)**
Semester assessment	**Theoretical Part Assessment**	Electronic Exams	**5%**
		Quizzes	**3%**
		Assignments	**2%**
		Midterm Exam	**10%**
	Practical Part Assessment	Project/lab	**3%**
		Report	**2%**
		Midterm Exam	**10%**
Summative assessment	**Final Exam Assessment**	Practical Exam	**20%**
		Theoretical Exam	**40%**
Total assessment			**100%**

Learning and Teaching Resources	
Required Texts	1- Sadler, T.W. 2019. Medical embryology. 4th edition Wolters Kluwer Health. 2- Ghosh, R.K. 2013.Essentials of Veterinary Histology and Embryology, 2nd Edition
Recommended Texts	1. McGeady,A.T. et.,al. 2017 Veterinary Embryology, 2nd Edition.Willy Black well
Websites	https://vetbooks.ir/essentials-of-veterinary-histology-and-embryology-2nd-edition/

Pathogenic bacteria

Fourth year/ First semester

Course Name:	**Pathogenic bacteria**	
Course Code:	PAB4222	
Semester / Year:	First semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory and 2 hours Practical) (3-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Fadhl Ahmed Saeed
	Email:	dr.fadhl.ahmed@alfarabiuc.edu.iq

Course Objectives

This subject aims to provide:

1. Providing a broad understanding of pathogenic bacteria, with an emphasis on the most important species.
2. Explaining the role of microbes in various diseases.
3. Outlining the bacterial pathogen transmission pathways.
4. Demonstrating how to keep bacterial infections under control.

Teaching and Learning Strategies

This module's contact teaching will be conducted through lecturing (15 lectures) and compulsory 15 practical sessions, which include learning videos and scientific animations. Students will be invited to participate in interactive discussion throughout this program.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Overview	Lecture	Quizzes,
2	2		Pathogenesis of bacterial	Lecture	Reports,

			infections		Assignments, Midterm exam, **Final exam**
3	**2**		Enterobacteriaceae	Lecture	
4	**2**		Vibrio	Lecture	
5	**2**		Staphylococci	Lecture	
6	**2**		Streptococci	Lecture	
7	**2**		Gram-negative cocci	Lecture	
8	**2**		**Mid-term Exam**	Exam	
9	**2**		Aerobic pore-formers	Lecture	
10	**2**		Anaerobic pore-formers	Lecture	
11	**2**		Spirochetes	Lecture	
12	**2**		Rickettsia	Lecture	
13	**2**		Mycobacteria	Lecture	
14	**2**		Mycoplasma and chlamydia	Lecture	
15	**2**		**Review before the exam**	Oral Discussion	
16	**3**		**Final Exam**	Written Exam	

Course Evaluation

Evaluation Method			**Weight (Marks)**
Semester assessment	**Theoretical Part Assessment**	Electronic Exams	**5%**
		Quizzes	**3%**
		Assignments	**2%**
		Midterm Exam	**10%**
	Practical Part Assessment	Project/lab	**3%**
		Report	**2%**
		Midterm Exam	**10%**
Summative assessment	**Final Exam Assessment**	Practical Exam	**20%**
		Theoretical Exam	**40%**
Total assessment			**100%**

Learning and Teaching Resources	
Required Texts	1. Harley, J.P. (2016). Laboratory Exercises in Microbiology. 10th ed. McGraw.Hill Higher Education. New York. 2. (2019). Jawetz, Melnick, and Adelberg's Medical Microbiology, 28 ed. McGraw-Hill New York.
Recommended Texts	Tille PM. Bailey & Scott's Diagnostic Microbiology. 15 ed: Elsevier; 2021.
Websites	www.cdc.gov

Helminthology (elective)

Fourth year/ First semester

Course Name:	**Helminthology (elective)**	
Course Code:	HEL4301	
Semester / Year:	First semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory and 2 hours Practical) (3-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Sabah Abdul-Hamid Abdul-Rahman Hamad
	Email:	sabah.abdulhamid@alfarabiuc.edu.iq

Course Objectives

This subject aims to provide:

1. Studying and diagnosing the pathogenic helminthes that parasitize humans and its domestic animals.
2. Study the stages of the helminthes and its life cycle.
3. Study how to diagnose the helminthes and its epidemiology.
4. Study control modalities and different types of treatment.

Teaching and Learning Strategies

1. Preparing a Power Point lecture and using the Data Show in its presentation.
2. Using modern sources from the information network to obtain accurate information and graphics.
3. The increasing use of information technology or Internet references, and changes in content as a result of keeping pace with the great development in
4. the world of technology and information

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Introduction to Helminthology	Lecture	Quizzes,

2	**2**		Phylum Platyhelminthes: Class Trematoda– Liver Flukes part II + Lung Flukes	Lecture	Reports, Assignments, Midterm exam, **Final exam**
3	**2**		Phylum Platyhelminthes: Intestinal + Flukes	Lecture	
4	**2**		Seminar	Lecture	
5	**2**		Phylum Platyhelminthes: Blood Flukes	Lecture	
6	**2**		Phylum Platyhelminthes: Class Cestoda part I	Lecture	
7	**2**		Phylum Platyhelminthes: Class Cestoda part II	Lecture	
8	**2**		**Mid–term Exam**	Exam	
9	**2**		Phylum Aschelminthes: Introduction	Lecture	
10	**2**		Phylum Aschelminthes: Phasmidia – Intestinal nematodes part I	Lecture	
11	**2**		Phylum Aschelminthes: Phasmidia – Intestinal nematodes part II	Lecture	
12	**2**		Phylum Aschelminthes: Hook–worms and Strongyloides	Lecture	
13	**2**		Phylum Aschelminthes: Blood and Tissue nematodes	Lecture	
14	**2**		Phylum Aschelminthes: Trichinellidae and kidney nematodes	Lecture	
15	**2**		**Review before the exam**	Oral Discussion	
16	**3**		**Final Exam**	Written Exam	

Course Evaluation

Evaluation Method			Weight (Marks)
Semester assessment	Theoretical Part Assessment	Electronic Exams	5%
		Quizzes	3%
		Assignments	2%
		Midterm Exam	10%
	Practical Part Assessment	Project/lab	3%
		Report	2%
		Midterm Exam	10%
Summative assessment	Final Exam Assessment	Practical Exam	20%
		Theoretical Exam	40%
Total assessment			100%

Learning and Teaching Resources

Required Texts	1. Lectures scheduled by the professors of the subject and according to the available methodological books related to parasitology.
Recommended Texts	1. A textbook of Medical Parasiology, Mahmud, et al., Springer, 2017 2. Parasitology for medical and clinical laboratory professionals, J.W.Ridely, 2012 ,DELMAR Engage Learning. 3. Medical Parasitology, Satoskar, et al., LANDES Bioscience, 2009
Websites	1. https://ia802700.us.archive.org/6/items/b21996763/b21996763.pdf 2. https://www.cartercenter.org/resources/pdfs/health/ephti/library/lecture_not es/health_science_students/MedicalPara sitology.pdf 3. https://www.slideshare.net/meducationdotnet/parasitology -lecture-series

English language

Fourth year/ First semester

Course Name:	**English language**	
Course Code:	ENG4222	
Semester / Year:	First semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory and 2 hours Practical) (3-Units)	
Course administrator's name (mention all, if more than one name)	Name:	
	Email:	

Course Objectives

This subject aims to provide:

1. To help students further develop their language skills
2. To achieve a high level of proficiency in English.
3. To focus on building on the foundation established in the previous levels.
4. To Expand students' vocabulary, grammar, reading, writing, listening, and speaking abilities.
5. To enhance students' understanding of cultural aspects related to the English
6. language.

Teaching and Learning Strategies

1. Communicative Approach: Emphasize communicative activities that promote interaction among students. Encourage pair and group work, role-plays, and discussions to practice language skills in meaningful contexts.
2. Integrated Skills: Integrate the four language skills (speaking, listening, reading, and writing) in lessons to create a balanced approach to language learning. Provide opportunities for students to use and develop these skills simultaneously.
3. Vocabulary Expansion: Incorporate vocabulary-building exercises and activities throughout the course. Use real-life contexts, visuals, and practical examples to help students learn and remember new words.
4. Grammar Focus: Teach and reinforce grammar structures in a systematic and

progressive manner. Provide clear explanations, examples, and practice exercises to ensure students understand and can apply the grammar rules correctly.

5. Authentic Materials: Include authentic texts, such as articles, newspaper clippings, songs, and videos, to expose students to real-world language usage. This helps develop their reading and listening comprehension skills and exposes them to cultural aspects of English-speaking countries.
6. Cultural Awareness: Integrate cultural topics and discussions into the lessons to foster cultural awareness and sensitivity. Encourage students to share their own cultural backgrounds and experiences to promote understanding and appreciation of diverse perspectives.
7. Error Correction: Provide constructive feedback and error correction during speaking and writing activities. Help students identify and correct their mistakes, focusing on accuracy while encouraging fluency and self-expression.
8. Technology Integration: Utilize technology tools, such as interactive whiteboards, online resources, and language learning apps, to engage students and enhance their language learning experience. Incorporate multimedia materials for listening and speaking practice.
9. Regular Assessment: Assess students' progress regularly through quizzes, tests, and assignments. Provide timely feedback to guide their learning and address areas that need improvement.
10. Individualization: Cater to the individual needs and learning styles of students. Offer differentiated tasks and activities to ensure all learners are appropriately challenged and supported.
11. Cooperative Learning: Promote collaboration and teamwork among students through pair work, group projects, and peer feedback. This encourages active participation and a supportive learning environment.
12. Review and Revision: Schedule regular review sessions to consolidate previously learned material. Encourage students to revise and practice independently, providing resources for self-study and additional practice.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Unit 1: Life Stories ▪ Vocabulary: Describing personalities, relationships, and experiences.	Lecture	Quizzes, Reports,

			▪ Grammar: Narrative tenses (past simple, past continuous, and past perfect). ▪ Skills: Discussing personal experiences and telling stories.		Assignments, Midterm exam, **Final exam**
2	**2**		Unit 2: Highs and Lows ▪ Vocabulary: Phrasal verbs related to emotions and relationships. ▪ Grammar: Comparatives and superlatives, inversion for emphasis. ▪ Skills: Expressing opinions and talking about experiences.	Lecture	
3	**2**		Unit 3: Changing Lives ▪ Vocabulary: Life-changing events and personal development. ▪ Grammar: Used to and would for past habits, expressing regrets. ▪ Skills: Discussing life changes and their impact.	Lecture	
4	**2**		Unit 4: Getting Away ▪ Vocabulary: Travel and holiday-related vocabulary. ▪ Grammar: Future forms (will, going to, present continuous). ▪ Skills: Planning a trip and discussing travel experiences.	Lecture	
5	**2**		Unit 5: Communication Breakdown ▪ Vocabulary: Communication problems and strategies. ▪ Grammar: Reported speech (statements, questions, and commands). ▪ Skills: Dealing with misunderstandings and resolving conflicts.	Lecture	
6	**2**		Unit 6: The Business World ▪ Vocabulary: Business and	Lecture	

			workplace terminology. ▪ Grammar: Zero and first conditionals, expressions for giving advice. ▪ Skills: Discussing business topics and presenting ideas.		
7	**2**		Unit 7: Technology and Society ▪ Vocabulary: Technology-related words and phrases. ▪ Grammar: Passive voice, defining relative clauses. ▪ Skills: Discussing the impact of technology on society.	Lecture	
8	**2**		**Mid-term Exam**	Exam	
9	**2**		Unit 8: The Art of Persuasion ▪ Vocabulary: Persuasive language and techniques. ▪ Grammar: Modal verbs for deduction and speculation. ▪ Skills: Persuading and arguing a point of view.	Lecture	
10	**2**		Unit 9: Health Matters ▪ Vocabulary: Health and well-being vocabulary. ▪ Grammar: Unreal past conditionals, expressing hypothetical situations. ▪ Skills: Discussing health issues and giving advice.	Lecture	
11	**2**		Unit 10: The World of Work ▪ Vocabulary: Work-related vocabulary and collocations. ▪ Grammar: Indirect questions, expressing purpose. ▪ Skills: Discussing career goals and work-related topics.	Lecture	
12	**2**		Unit 11: Cross-cultural Encounters ▪ Vocabulary: Cultural differences and customs. ▪ Grammar: Third conditional,	Lecture	

			expressions for giving opinions. ▪ Skills: Discussing cultural experiences and adapting to different cultures.		
13	**2**		Unit 11: Cross-cultural Encounters ▪ Skills: Discussing cultural experiences and adapting to different cultures.	Lecture	
14	**2**		Unit 12: The Environment ▪ Vocabulary: Environmental issues and sustainability. ▪ Grammar: Future perfect, expressing speculation and possibility. ▪ Skills: Discussing environmental problems and solutions.	Lecture	
15	**2**		**Review before the exam**	Oral Discussion	
16	**3**		**Final Exam**	Written Exam	

Course Evaluation

Evaluation Method			**Weight (Marks)**
Semester assessment	**Theoretical Part Assessment**	Electronic Exams	**5%**
		Quizzes	**3%**
		Assignments	**2%**
		Midterm Exam	**10%**
	Practical Part Assessment	Project/lab	**3%**
		Report	**2%**
		Midterm Exam	**10%**
Summative assessment	**Final Exam Assessment**	Practical Exam	**20%**
		Theoretical Exam	**40%**
Total assessment			**100%**

Learning and Teaching Resources	
Required Texts	▪ Textbook: Soars, Liz and John (2003). *New Headway* Upper *Intermediate*. Student's book.
Recommended Texts	▪ New Headway Plus provides an integrated skills course with each unit divided into grammar, vocabulary, skills work and everyday English segments
Websites	Oxford University Press: The New Headway series is published by Oxford University Press. Visit their website at www.oup.com and search for "New Headway Plus, Special Edition, Upper-Intermediate" or browse their English language teaching section for information on the course.

Genetic engineering

Fourth year/ Second semester

Course Name:	**Genetic engineering**	
Course Code:	GNE4311	
Semester / Year:	Second semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory and 2 hours Practical) (3-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Sura Talib Jassim Hammadi
	Email:	sura.taleb@alfarabiuc.edu.iq

Course Objectives

This subject aims to provide:

1. Introducing the student to the genetic materials responsible for the transmission of traits and the possibility of using these materials to improve traits in living organisms
2. Study the most important techniques used to transfer genetic traits.
3. Understanding the mechanism of cutting genes, using restriction enzymes, and determining the method for selecting the most efficient ones.
4. Find out the genetic sequence of DNA and determine the type and site of
5. mutations.

Teaching and Learning Strategies

This module's contact teaching will be conducted through lecturing (15 lectures) and compulsory 15 practical sessions, which include learning videos and scientific animations. Students will be invited to participate in interactive discussion throughout this program.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Introduction	Lecture	Quizzes,

2	**2**		Restriction enzymes	Lecture	Reports, Assignments, Midterm exam, **Final exam**
3	**2**		Cloning vectors	Lecture	
4	**2**		Bacteriophage	Lecture	
5	**2**		Nucleic acid Hybridization	Lecture	
6	**2**		Hybridization Techniques	Lecture	
7	**2**		Recombinant DNA technology	Lecture	
8	**2**		**Mid-term Exam**	Exam	
9	**2**		Genomic and cDNA Libraries	Lecture	
10	**2**		Polymerase chain reaction (PCR)	Lecture	
11	**2**		qPCR and RT-qPCR	Lecture	
12	**2**		RAPD and RFLP	Lecture	
13	**2**		DNA sequencing	Lecture	
14	**2**		Mapping Genomes	Lecture	
15	**2**		**Review before the exam**	Oral Discussion	
16	**3**		**Final Exam**	Written Exam	

Course Evaluation

Evaluation Method			**Weight (Marks)**
Semester assessment	**Theoretical Part Assessment**	Electronic Exams	**5%**
		Quizzes	**3%**
		Assignments	**2%**
		Midterm Exam	**10%**
	Practical Part Assessment	Project/lab	**3%**
		Report	**2%**
		Midterm Exam	**10%**
Summative assessment	**Final Exam Assessment**	Practical Exam	**20%**
		Theoretical Exam	**40%**
Total assessment			**100%**

Learning and Teaching Resources	
Required Texts	1. Harley, J.P. (2016). Laboratory Exercises in Microbiology. 10th ed. McGraw.Hill HigherEducation. New York. 2. Riedel, S., Morse, S., Mietzner, T., and Miller, S. (2019). Jawetz, Melnick, and Adelberg's Medical Microbiology, 28 ed. McGraw-Hill New York. 3. Green, M.R. and Sambrook, J., 2012. Molecular cloning. A Laboratory Manual 4th. 4. Brown TA. Gene cloning and DNA analysis: an introduction. John Wiley & Sons; 2020 Nov 23. 5. Choi SY, Ro H, Yi H. DNA cloning: a hands-on approach. Springer Netherlands; 2019 Apr 17.
Recommended Texts	▪ Tille PM. Bailey & Scott's Diagnostic Microbiology. 15 ed: Elsevier; 2021.
Websites	www.cdc.gov

Biotechnology

Fourth year/ Second semester

Course Name:	**Biotechnology**	
Course Code:	BIO4240	
Semester / Year:	Second semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory and 2 hours Practical) (3-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Muayad Sabry Shawkat Jassim
	Email:	moayad.sabri@alfarabiuc.edu.iq

Course Objectives

This subject aims to provide:

1. Understanding biotechnology as a term and application.
2. Understanding the stages of biotechnology development and the most important achievements in its various fields.
3. Identify the most important techniques used to develop and improve products from living organisms
4. Linking between the theoretical information that the student had previously
5. learned in the previous stages and the applications of biotechnology

Teaching and Learning Strategies

This module's contact teaching will be conducted through lecturing (15 lectures) and compulsory 15 practical sessions, which include learning videos and scientific animations. Students will be invited to participate in interactive discussion throughout this program.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Introduction into biotechnology	Lecture	Quizzes,

2	**2**		Biotechnological process	Lecture	Reports, Assignments, Midterm exam, **Final exam**
3	**2**		Fermentation by microorganisms	Lecture	
4	**2**		Types of fermentation	Lecture	
5	**2**		Products of fermentation	Lecture	
6	**2**		Downstreaming processing	Lecture	
7	**2**		Purification of biological products	Lecture	
8	**2**		**Midterm Exam**	Exam	
9	**2**		Enzyme technology	Lecture	
10	**2**		Immobilization	Lecture	
11	**2**		Biosensors	Lecture	
12	**2**		Gold biotechnology	Lecture	
13	**2**		Plant biotechnology	Lecture	
14	**2**		Animal biotechnology	Lecture	
15	**2**		**Review before the exam**	Oral Discussion	
16	**3**		**Final Exam**	Written Exam	

Course Evaluation

Evaluation Method			**Weight (Marks)**
Semester assessment	**Theoretical Part Assessment**	Electronic Exams	**5%**
		Quizzes	**3%**
		Assignments	**2%**
		Midterm Exam	**10%**
	Practical Part Assessment	Project/lab	**3%**
		Report	**2%**
		Midterm Exam	**10%**
Summative assessment	**Final Exam Assessment**	Practical Exam	**20%**
		Theoretical Exam	**40%**
Total assessment			**100%**

Learning and Teaching Resources	
Required Texts	1. Biotechnology 5th.ed.(2009) John E. Smith. 2. Microbial Biotechnology:Fundamentals of Applied Microbiology, 2nd. ed. (2007) Alexander N. Glazer & Hiroshi Nikaido /Cambridge University Press , UK
Recommended Texts	▪ Medical biochemistry and biotechnology (2011) Dr. Mohammed Amanullah, New central book agency, London
Websites	www.bio.org www.khanacademy.org www.nature.com

Virology

Fourth year/ Second semester

Course Name:	**Virology**	
Course Code:	BIO4240	
Semester / Year:	Second semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory and 2 hours Practical) (3-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Osama Zuhair Nouri Qasim
	Email:	osama.zouhir@alfarabiuc.edu.iq

Course Objectives

This subject aims to provide:

1. Providing a broad understanding of animal viruses, with an emphasis on the most important human virus, emergency, and novel species.
2. Explaining the role of viruses in different human diseases.
3. Outlining the viral transmission and entry to the host body.
4. Demonstrating how to reduce the risk of viral infections and its clinical benefit.

Teaching and Learning Strategies

This module's contact teaching will be conducted through lecturing (15 lectures) and compulsory 15 practical sessions, which include learning videos and scientific animations. Students will be invited to participate in interactive discussions throughout this program.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Introduction of virology	Lecture	Quizzes, Reports,

2	**2**		Chemical composition of viruses	Lecture	Assignments, Midterm exam, **Final exam**
3	**2**		Viral classification	Lecture	
4	**2**		DNA and RNA Viruses (Enveloped and non- enveloped)	Lecture	
5	**2**		Immunity of Viruses	Lecture	
6	**2**		Viruses of human medically important	Lecture	
7	**2**		Vaccines and antiviral drugs	Lecture	
8	**2**		**Mid-term Exam**	Exam	
9	**2**		Viral replications	Lecture	
10	**2**		Entry of viruses to the host body and viral transmission	Lecture	
11	**2**		Viral Pathogenesis	Lecture	
12	**2**		Effect of viral infections on the host cell	Lecture	
13	**2**		Transformation	Lecture	
14	**2**		Viral genetic changes and new progeny	Lecture	
15	**2**		**Review before the exam**	Oral Discussion	
16	**3**		**Final Exam**	Written Exam	

Course Evaluation

Evaluation Method			Weight (Marks)
Semester assessment	Theoretical Part Assessment	Electronic Exams	5%
		Quizzes	3%
		Assignments	2%
		Midterm Exam	10%
	Practical Part Assessment	Project/lab	3%
		Report	2%
		Midterm Exam	10%
Summative assessment	Final Exam Assessment	Practical Exam	20%
		Theoretical Exam	40%
Total assessment			100%

Learning and Teaching Resources

Required Texts	1. Knipe, D.M. and Howley, P.M. (2017). Field Virology, 7th ed. Volume two. Lippincott Williams and Wilkins, 3091 pp. 2. Riedel, S., Morse, S., Mietzner, T., and Miller, S. (2019). Jawetz, Melnick, and Adelberg's Medical Microbiology, 28 ed. McGraw-Hill New York.
Recommended Texts	▪ Shors, T. (2009). Understanding viruses. 1st ed. Jones and Bartlett Publishers, Sudbury, Massachusetts, 639 pp.
Websites	https://www.cdc.gov; www.who.int

Aquatic & soil microbiology

Fourth year/ Second semester

Course Name:	**Aquatic & soil microbiology**	
Course Code:	AQS4222	
Semester / Year:	Second semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory and 2 hours Practical) (3-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Yahya Fadhil Abbas Barhi
	Email:	yahiye.fadhel@alfarabiuc.edu.iq

Course Objectives

This subject aims to provide:

1. Understanding soil and aquatic microbiology as a term and branch of microbiology.
2. Outlining the role of microorganism in soil and water bodies.
3. Explaining the role of microbes in mineral cycles and aquatic ecosystem.
4. Explaining water associated diseases in world and Iraq.

Teaching and Learning Strategies

This module's contact teaching will be conducted through lecturing (15 lectures) and compulsory 15 practical sessions, which include learning videos and scientific animations. Students will be invited to participate in interactive discussion throughout this program.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		The definition of soil, how it is formed, and the types of soils, explaining some of their physical	Lecture	Quizzes, Reports,

			properties		Assignments, Midterm exam, **Final exam**
2	**2**		The microbial flora in the soil and its importance.	Lecture	
3	**2**		The role of microorganisms in the carbon cycle.	Lecture	
4	**2**		The role of microorganisms in the nitrogen cycle.	Lecture	
5	**2**		The role of microorganisms in the sulfur and phosphorous cycle.	Lecture	
6	**2**		Biodegradation and microbial decomposition of hydrocarbons, solid waste and pesticides.	Lecture	
7	**2**		Biological treatment and its types	Lecture	
8	**2**		**Mid-Term exam**	Exam	
9	**2**		Introduction of Aquatic microbiology and Specific zonations in water Column	Lecture	
10	**2**		Microbial Water Pollution and Water-associated diseases	Lecture	
11	**2**		Indicators of microbial water quality	Lecture	
12	**2**		Indicators detection methods and Microbiological standards for water	Lecture	
13	**2**		Water and wastewater Treatment	Lecture	
14	**2**		Biofilms in Drinking Water Distribution Systems	Lecture	
15	**2**		**Review before the exam**	Oral Discussion	
16	**3**		**Final Exam**	Written Exam	

Course Evaluation

Evaluation Method			Weight (Marks)
Semester assessment	Theoretical Part Assessment	Electronic Exams	5%
		Quizzes	3%
		Assignments	2%
		Midterm Exam	10%
	Practical Part Assessment	Project/lab	3%
		Report	2%
		Midterm Exam	10%
Summative assessment	Final Exam Assessment	Practical Exam	20%
		Theoretical Exam	40%
Total assessment			100%

Learning and Teaching Resources

Required Texts	1. Soil microbiology authorRobert L. Tate first published: 30 september 2020, john wiley & sons ,inc. 2. Droop MR, editor. Advances in aquatic microbiology. Elsevier; 2012 Dec 2.
Recommended Texts	▪ Wang Y, Hammes F, De Roy K, Verstraete W, Boon N. Past, present and future applications of flow cytometry in aquatic microbiology. Trends in biotechnology. 2010 Aug 1;28(8):416-24.
Websites	https://www.who

Clinical analysis

Fourth year/ Second semester

Course Name:	**Clinical analysis**	
Course Code:	CMA4217	
Semester / Year:	Second semester/ 2024-2025	
Description Preparation Date:	13/7/2025	
Available Attendance Forms:	#- Lecture #- Lab	
Number of Credit Hours (Total) / Number of Units (Total)	(2 hours- Theory and 2 hours Practical) (3-Units)	
Course administrator's name (mention all, if more than one name)	Name:	Fadhl Ahmed Saeed
	Email:	dr.fadhl.ahmed@alfarabiuc.edu.iq

Course Objectives

This subject aims to provide:

1. Give students an understanding of how samples are collected.
2. Provide an understanding and experience of basic methods of dealing with Specimens.
3. Give students an understanding of how procedures used to investigate bacteria and other infectious agents from clinical materials.
4. Teach the student how to collect and examine pathological and serological samples.
5. He also learns how to conduct analyzes for the diagnosis of infectious

Teaching and Learning Strategies

This module's contact teaching will be conducted through lecturing (15 lectures) and compulsory 15 practical sessions, which include data show presentations and learning videos. Students will be invited to participate in interactive discussion throughout this program.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Diagnosis of infectious disease, Upper respiratory tract infections	Lecture	Quizzes,

2	**2**		Diagnosis of Gastrointestinal tract infections	Lecture	Reports, Assignments, Midterm exam, **Final exam**
3	**2**		Diagnosis of Urinary tractinfections	Lecture	
4	**2**		Laboratory Diagnosis of Sexually Transmitted Infections (STDs) in women	Lecture	
5	**2**		Laboratory Diagnosis of Sexually Transmitted Infections (STDs) in men	Lecture	
6	**2**		Leptospirosis,	Lecture	
7	**2**		Skin, wound and soft tissueInfections	Lecture	
8	**2**		Mid-term Exam	Exam	
9	**2**		Bacteremia and Meningitis	Lecture	
10	**2**		Mycology	Lecture	
11	**2**		Clinical Pathology	Lecture	
12	**2**		Acute and Chronic inflamation	Lecture	
13	**2**		Introduction to Serology Serological test of some infectious diseases	Lecture	
14	**2**		Autoimmune diseases	Lecture	
15	**2**		**Review before the exam**	Oral Discussion	
16	**3**		**Final Exam**	Written Exam	

Course Evaluation

Evaluation Method			Weight (Marks)
Semester assessment	Theoretical Part Assessment	Electronic Exams	5%
		Quizzes	3%
		Assignments	2%
		Midterm Exam	10%
	Practical Part Assessment	Project/lab	3%
		Report	2%
		Midterm Exam	10%
Summative assessment	Final Exam Assessment	Practical Exam	20%
		Theoretical Exam	40%
Total assessment			100%

Learning and Teaching Resources

Required Texts	1. Kenneth J. R. (2022). Sherris & Ryan's Medical Microbiology, Eighth Edition. McGraw.Hill Higher Education. New York. 2. Miller, J. M., Binnicker, M. J., Campbell, S., Carroll, K. C., Chapin, K. C., Gilligan, P. H., Gonzalez, M. D., Jerris, R. C., Kehl, S. C., Patel, R., Pritt, B. S., Richter, S. S., Schwartzman, J. D., Snyder, J. W., Telford, S., Theel, E. S., Thomson, 3. R. B., Weinstein, M. P., & Yao, J. D. (2018). A Guide to Utilization of the Microbiology Laboratory for Diagnosis of Infectious Diseases: 2018 Update by the Infectious Diseases Society of America and the American Society for Microbiology. Clinical Infectious Diseases, 67(6), e1–e94. https://doi.org/10.1093/cid/ciy381.
Recommended Texts	▪ Tille PM. Bailey & Scott's Diagnostic Microbiology. 15 ed: Elsevier; 2021.
Websites	www.bio.org www.khanacademy.org www.cdc.gov