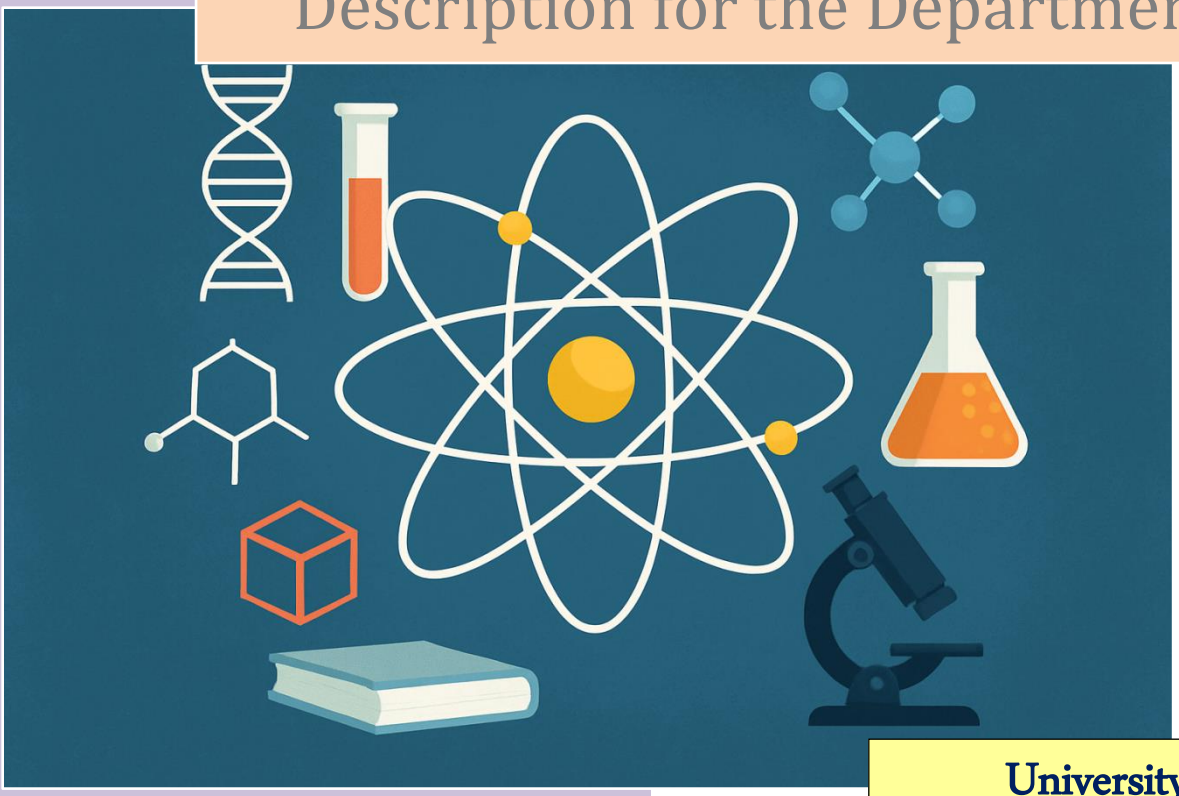
2025

Academic Program and Curriculum Description for the Department of Science



University of Babylon

College of Basic Education

Department of Science

اعداد و تصميم : م.م مروة احمد ابراهيم

Introduction

The Department of Science at the College of Basic Education is a vital department that aims to prepare qualified educational and scientific professionals who possess fundamental knowledge in the natural sciences (Physics, Chemistry, and Biology), in addition to the pedagogical skills necessary for the teaching profession. The department's academic program focuses on integrating scientific and educational training, in alignment with the curricula requirements for basic education levels, and in response to the needs of the community and the job market by preparing a generation of teachers capable of contributing to the development of the educational process.

The program also seeks to enhance students' critical thinking and scientific research abilities and develop their practical skills through field training and laboratory applications. It also aims to instill professional and ethical values that are in line with the college's mission and vision of community service. Through this program, the department aspires to graduate teachers and researchers with scientific competence, practical experience, and educational awareness, who will contribute to elevating the level of basic education and building a solid foundation of knowledge within society.

The academic program at the College of Basic Education – Department of Science aims to prepare teachers and researchers who possess high scientific rigor and educational skills to meet the requirements of basic education and keep pace with cognitive and technological developments. The program focuses on developing scientific knowledge in the fields of Physics, Chemistry, Biology, and Environmental Sciences while enhancing the pedagogical and psychological aspects to ensure the comprehensive scientific and professional preparation of graduates.

The program provides students with a balanced experience between theoretical study and practical application through teaching practice and research projects, which contributes to refining their teaching and scientific research skills and developing their abilities in critical thinking, self-learning, and the use of modern educational technology. The program also emphasizes academic values such as integrity, responsibility, and professional commitment, while guiding students toward community service and promoting sustainable development, environmental protection, and public health.

Thus, the program constitutes a comprehensive framework that combines scientific knowledge and educational application to graduate competent teachers who are capable of fulfilling their educational mission and actively contributing to building a scientific generation that will help develop and advance society.

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وصف البرنامج الاكاديمي

University Name	**University of Babylon**
College	**College of Basic Education**
Scientific Department	**Department of Science**
Name of the Academic or Professional Program	**Bachelor's Degree**
Final Degree Name	**Bachelor of Basic Education in Science**
Study System	**Semester System**
Accredited Program	**Courses and Curricula as per the Ministry**
Other External Factors	**Application in Educational Institutions**
Date of Description Preparation	**1/2/2025**

File audited by Quality Assurance Department manger
Prof.Dr. Ibtisam Sahib Mousa

liaison member Department

Marwa Ahmed Ibrahim

Name of the Assistant Dean for Scientific Affairs:

Prof. Dr. Arif Hatem Mahdi

Head of Department:

Prof. Dr. Osama Abdul Kadhim Mahdi

Approved by the Dean of the College

Prof. Dr. Ali Jabar Abdullah Al-

وتصميم : م.م مروة احمد ابراهيم

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وصف البرنامج الاكاديمي

1- program vision
To be a leader in preparing specialized science teachers who combine scientific competence with educational skills to contribute to the development of basic education and community service.

2- program mission
To prepare qualified science teachers with solid scientific knowledge and modern pedagogical skills, thereby enhancing the quality of basic education and serving the community.

3- program Goals
1. Prepare specialized science teachers with high scientific and educational competence. 2. Develop students' scientific research and critical thinking skills. 3. Enhance students' practical abilities through laboratories and field training. 4. Foster educational and professional values to serve education and the community.

4- Program Accreditation
The accreditation request has been accepted, and we are awaiting the visit of the ministerial committee

5- Is there a sponsor for the program?
The project for developing science curricula in Iraqi universities / two-month field training in schools, and field visits to schools and educational institutions.

اعداد وتصميم : م.م مروة احمد ابراهيم

6- Program Structure				
Program Structure	**Number of Courses**	**Credit hours**	**Percentage**	**Reviews***
Institutional Requirements	11	**22**	10.5%	basic
College Requirements	17	**50**	24%	basic
Department Requirements	70	**137**	65.5%	basic
Other	Sports Activities			
Summer Training	It is in progress.			
Total	98	**209**	100%	

7- Program Description

Credit hours		Course name	code	year	
Practical	Theoretical				
	1	**Democracy and Human Rights**	**Huri.100**	**FIRST YEAR**	**FIRST SEMESTER**
2	**3**	**General Biology**	**Gebi.100**		
2	**1**	**Computer**	**Comp.100**		
	3	**Developmental Psychology**	**Psgr.100**		
2	**3**	**General Chemistry**	**Gech.110**		
	2	**Mathematics**	**Math.130**		
6	14	Total			

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Credit hours		Course name	code	year	
Practical	Theoretical				
2	**3**	**General Physics**	**Geph.150**	**FIRST YEAR**	**SCONDE SEMESTER**
	2	**English Language**	**Engl.100**		
	3	**Fundamentals of Education and Teaching**	**Ased.100**		
	2	**Islamic/Civilization Education**	**Ised.100**		
2	**2**	**Human Biology**	**Hubi.160**		
	2	**Laboratory Safety and Security**	**SesaL.120**		
4	14	Total			

Chemistry

FIRST SEMESTER				
Credit hours		Course name	code	**year**
Practical	Theoretical			
	2	**Arabic Language**	**Arab.200**	**SCONDE YEAR**
	2	**English Language**	**Engl.200**	
	2	**Crimes of the Ba'ath Party**	**Cbp.200**	
2	**2**	**Inorganic Chemistry**	**Inor.200**	
2	**1**	**Curricula and Textbooks**	**Cute.200**	
2	**2**	**Volumetric Analysis**	**Anal.210**	
2	**2**	**Physical Chemistry**	**Phys.240**	

اعداد وتصميم : م.م مروة احمد ابراهيم

8	**13**	Total

SCONDE SEMESTER				
Credit hours		Course name	code	**year**
Practical	Theoretical			
2	**1**	**Computer Science**	**Comp.200**	**SCONDE YEAR**
2	**2**	**Psychology of Classroom Thinking Instruction**	**Ptct.200**	
	2	**Educational Psychology**	**Edps.200**	
2	**2**	**Analytical Chemistry**	**Anal.210**	
2	**2**	**Organic Chemistry**	**Orgch.200**	
2	**2**	**Chemistry of Representative Elements**	**Inor.200**	
10	**13**	***Total***		

FIRST SEMESTER				
Credit hours		Course name	code	**year**
Practical	Theoretical			
2	**2**	**Industrial Chemistry**	**Indu.310**	**THIRED YEAR**
2	**2**	**Organic Chemistry**	**Orga.300**	
2	**2**	**Coordination Chemistry**	**Chco.330**	
2	**2**	**General Teaching Methods and Their Applications**	**GemeT.300**	
	2	**Educational Leadership and Management**	**Edadn.300**	
	2	**Measurement and Evaluation**	**Meev.300**	
	2	**Guidance and Education for Special Needs**	**Gesn.300**	
8	**14**	Total		

اعداد وتصميم : م.م مروة احمد ابراهيم

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SCONDE SEMESTER				
Credit hours		Course name	code	year
Practical	Theoretical			
2	2	Sustainable Development	Susd.300	THIRED YEAR
2	2	Environment and Health	Ecoh.300	
	2	Educational Technology and Its Applications	Edte.300	
2	2	Petroleum and Petrochemicals	Etrch.300	
2	2	Biochemistry	Bioc.310	
2	1	Action Research Methodology	Reme.300	
8	13	Total		

FIRST SEMESTER				
Credit hours		Course name	code	year
Practical	Theoretical			
2	2	Instrumental Analysis	Auan.400	FOURTH YEAR
2	2	Organic Diagnosis	Ordi.400	
	2	Clinical Chemistry	Clch.410	
	2	Professional Ethics	Preth.400	
	2	Natural Products Chemistry	Napr.400	
	2	Arabic Literature	Arab.400	
2	2	Specialized Teaching Methods	Spmet.400	
4	1	Teaching Practice 1 (Observation)	ScedV.400	
2		Graduation Research Project	ReprG.430	
12	15	Total		

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SCONDE SEMESTER				
Credit hours		Course name	code	**year**
Practical	Theoretical			
12		**Practical Education 2 (Application)**	**Appl.400**	**FOURTH YEAR**
1		**Graduation Research Project**	**Repr.400**	
13		Total		

BIOLOGY

FIRST SEMESTER				
Credit hours		Course name	code	**year**
Practical	Theoretical			
	2	Arabic Language	**Arab.200**	**SCONDE YEAR**
	2	English Language	**Engl.200**	
2	**3**	Microbiology	**Micb.200**	
2	**1**	Curricula and Textbooks	**Cute.200**	
2	**2**	Cytology (Cell Biology)	**Cyto.200**	
	2	Virology	**Viro.230**	
	2	Crimes of the Ba'ath Regime	**Cbp.200**	
6	**14**	**Total**		

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SCONDE SEMESTER				
Credit hours		Course name	code	**year**
Practical	Theoretical			
2	**1**	Parasitology	**Comp.200**	**SCONDE YEAR**
2	**2**	Animal Physiology	**Ptct.200**	
	2	Plant and Animal Production	**Edps.200**	
2	**2**	General Teaching Methods and Their Applications	**Aver.250**	
2	**2**	Measurement and Evaluation	**Hiems.200**	
	2	Educational Leadership and Management	**BioC.200**	
2	**2**	Guidance and Special Needs Education	**Plph.300**	
10	**13**	**Total**		

FIRST SEMESTER				
Credit hours		Course name	code	**year**
Practical	Theoretical			
2	**2**	Parasitology	**Para.300**	**THIRED YEAR**
2	**2**	Animal Physiology	**Anph.360**	
2	**3**	Plant and Animal Production	**Planp.300**	
2	**2**	General Teaching Methods and Their Applications	**GemeT.300**	
	2	Measurement and Evaluation	**Meev.300**	
	2	Educational Leadership and Management	**Edadn.300**	
	2	Guidance and Special Needs	**Gesn.300**	

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		Education		
8	**15**	**Total**		

SCONDE SEMESTER				
Credit hours		Course name	code	**year**
Practical	Theoretical			
	2	Sustainable Development	**Susd.300**	**THIRED YEAR**
	2	Environment and Health	**Ecoh.300**	
2	**2**	Educational Technology and Its Applications	**Edte.300**	
2	**2**	Immunology	**HlvaS.370**	
2	**2**	Entomology	**Ento.390**	
2	**1**	Action Research Methodology	**Reme.300**	
	2	Plant Classification	**Plcl.300**	
8	**13**	**Total**		

FIRST SEMESTER				
Credit hours		Course name	code	**year**
Practical	Theoretical			
2	**2**	Algae and Fungi	**Alfu.400**	**FOURTH YEAR**
2	**2**	Genetics	**Gepa.410**	
	2	Serums and Vaccines	**Seva.400**	
4	**1**	Teaching Practice 1 (Observation)	**ScedV.400**	
	2	Professional Ethics	**Preth.400**	
	2	Endocrine Gland Physiology	**Enph.400**	
	2	Arabic Literature	**Arab.400**	
2	**2**	Specialized Teaching Methods	**Spmet.400**	
2		Graduation Research Project	**ReprG.430**	
12	**15**	**Total**		

SCONDE SEMESTER				
Credit hours		Course name	code	**year**
Practical	Theoretical			
12		**Practical Education 2 (Application)**	**Appl.400**	**FOURTH YEAR**
1		**Graduation Research Project**	**Repr.400**	
13		**Total**		

PHYSICS

FIRST SEMESTER				
Credit hours		Course name	code	**year**
Practical	Theoretical			
	2	**Arabic Language**	**Arab.200**	**SCONDE YEAR**
	2	**English Language**	**Engl.200**	
2	**2**	**Wave Motion and Sound**	**Waso.210**	
2	**2**	**Classical Mechanics**	**Mech.260**	
	2	**Properties of Matter**	**Prma.220**	
2	**1**	**Curricula and Textbooks**	**Cute.200**	
	2	**Crimes of the Ba'ath Party**	**Cbp.200**	
6	**13**	**Total**		

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SCONDE SEMESTER				
Credit hours		Course name	code	**year**
Practical	Theoretical			
2	**1**	Computer	**Comp.200**	**SCONDE YEAR**
2	**2**	Psychology of Classroom Thinking	**Ptct.200**	
	2	Educational Psychology	**Edps.200**	
2	**2**	Thermodynamics	**Ther.200**	
2	**3**	Electricity and Magnetism	**Elema.200**	
	2	Calculus	**Calc.220**	
2	**2**	Optical Physics	**Opti.250**	
10	**14**	Total		

FIRST SEMESTER				
Credit hours		Course name	code	**year**
Practical	Theoretical			
	2	**Educational Leadership and Management**	**Edadn.300**	**THIRED YEAR**
	2	**Astronomy**	**Astr.390**	
2	**3**	**Modern Physics**	**Moph.310**	
	2	**Measurement and Evaluation**	**Meev.300**	
	2	**Quantum Mechanics**	**Qume.300**	
	2	**Guidance and Special Needs Education**	**Gesn.300**	
2	**2**	**General Teaching Methods and Their Applications**	**GemeT.300**	
4	**15**	**Total**		

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SCONDE SEMESTER				
Credit hours		Course name	code	year
Practical	Theoretical			
	2	Sustainable Development	Susd.300	THIRED YEAR
	2	Environment and Health	Ecoh.300	
2	2	Educational Technology and Its Applications	Edte.300	
2	2	Electronics	Elec.370	
	3	Solid State Physics	Soph.300	
2	1	Action Research Methodology	Reme.300	
2	2	Radioactivity	Radi.380	
8	14	Total		

FIRST SEMESTER				
Credit hours		Course name	code	year
Practical	Theoretical			
2	2	Lasers	Lase.400	FOURTH YEAR
4	1	Teaching Practice 1 (Observation)	ScedV.400	
	2	Plasma Physics	Plaph.400	
	2	Nuclear Physics	Nuph.400	
	3	Electromagnetism	Elec.420	
	2	Professional Ethics	Preth.400	
	2	Arabic Literature	Arab.400	
2	2	Specialized Teaching Methods	Spmet.400	
8	14	Total		

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SCONDE SEMESTER				
Credit hours		Course name	code	year
Practical	Theoretical			
12		Practical Education 2 (Application)	Appl.400	FOURTH YEAR
1		Graduation Research Project	Repr.400	
13		Total		

8- Expected Program Learning Outcomes	
Knowledge	Learning Outcomes
A-1. Defines basic concepts and terms in natural and educational sciences. A-2. Explains scientific and educational theories and principles in their applied context. A-3. Applies scientific laws and educational concepts in teaching situations. A-4. Analyzes data and experiments to explain natural and educational phenomena.	Interpret scientific and educational concepts and principles in the field of basic education.
Skills	Learning Outcomes
B-1. Uses modern teaching strategies in basic education. B-2. Conducts scientific experiments accurately and utilizes their results in teaching. B-3. Employs educational technology to design and implement lessons. B-4. Innovates educational activities and	Employ teaching strategies and educational technologies in classroom and research practices.

methods that foster critical thinking and creativity.	
Values	Learning Outcomes
C-1. Adheres to professional ethics and academic responsibility. C-2. Promotes the values of citizenship and community service in their practices. C-3. Supports lifelong learning and self-development. C-4. Adheres to the values of sustainable development, environmental protection, and public health.	Commit to professional ethics and promote the values of citizenship and sustainable development.
Teaching Strategies	Learning Strategies
Interactive Lectures Problem-based learning Collaborative and group learning Blended learning Demonstrations and practical experiments	Self-directed and Independent Learning Problem-solving and critical thinking Classroom discussions and active participation Use of electronic and digital resources Learning through projects and applied activities

10-Assessment Methods
• **Written monthly and final exams** • **Quizzes** • **Homework**

11- Teaching Faculty

#	Name	Academic Rank	General Specialization	Specialty	Special skills		No.Focality	
							permanent	temporary
1	Dr. Fadhil Omran Issa	Professor	Chemistry	Organic Chemistry			P	

2	Dr. Osama Abdul Kadhim	Professor	Biology	Microbiology			P	
3	Dr. Wafaa Abdul Razzaq	Professor	Science Teaching Methods	General Science Teaching Methods			P	
4	Dr. Hani Mahmoud Hussein	Professor	Physics	Materials Science (Physics)			P	
5	Amjad Murza Oda	Professor	Chemistry	Physical Chemistry			P	
6	Amna Kadhim Murad	Assistant Professor	Biology	Environmental and Pollution Biology			P	
7	Dr. Ghada Sharif	Assistant Professor	Science Teaching Methods	General Science Teaching Methods			P	
8	Dr. Mahdi Mohammed Jawad	Assistant Professor	Science Teaching Methods	General Science Teaching Methods			P	
9	Dr. Aseel Abdul Sattar	Assistant Professor	Biology	Botany			P	
10	Dr. Intisar Farhan Salman	Assistant Professor	Physics	Nuclear and Radiation Physics			P	
11	Dr. Ibtisam Jaafar Jawad	Assistant Professor	Science Teaching Methods	General Science Teaching Methods			P	
12	Dr. Intisar Rahim	Assistant Professor	Chemistry	Clinical Chemistry			P	
13	Sana Hassan Abdul Ekhwa	Assistant Professor	Agriculture	Horticulture			P	
14	Dr. Amir Ibrahim	Assistant Professor	Biology	Entomology			P	
15	Safeer Abdul Kareem	Assistant Professor	Physics	Experimental Physics			P	
16	Ali Luay Ali	Assistant Professor	Chemistry	Physical Chemistry			P	
17	Dr. Qassem Shaker	Assistant Professor	Physics	Theoretical Physics			P	

18	Dr. Hassan Khader Naji	Lecturer	Chemistry	Inorganic Chemistry			P	
19	Dr. Maher Hassan Rashid	Lecturer	Physics	Nanotechnology (Physics)			P	
20	Dr. Rafid Abdul Redha Tawfiq	Lecturer	Chemistry	Organic Chemistry			P	
21	Suhad Majeed	Lecturer	Science Teaching Methods	General Science Teaching Methods			P	
22	Dr. Tuqa Mohammed Jawad	Lecturer	Physics	Materials Science (Physics)			P	
23	Jassim Mohammed Assi	Assistant Lecturer	Science Teaching Methods	General Science Teaching Methods			P	
24	Marwa Ahmed Ibrahim	Assistant Lecturer	Chemistry	Biochemistry			P	
25	Mohammed Sabah Atiywi	Assistant Lecturer	Biology	Medical Microbiology			P	
26	Noor Al-Huda Jawad Kadhim	Assistant Lecturer	Physics	Materials Science (Physics)			P	
27	Lamia Miri Salih	Assistant Lecturer	Physics	Optics (Physics)			P	
28	Riya Ali Abdul	Assistant Lecturer	Physics	Solid State and Materials (Physics)			P	
29	Ali Mohammed Ali	Assistant Lecturer	Physics	Thin Film Physics			P	
30	Wasan Mohammed Abdul Zahra	Assistant Lecturer	Biology	Environmental Science (Biology)			P	
31	Rasha Hussein Kadhim	Assistant Lecturer	Science Teaching Methods	General Science Teaching Methods			P	
32	Suzan Kadhim Mustafa	Assistant Lecturer	Science Teaching Methods	General Science Teaching Methods			P	
33	Hawra Qusai Jawad	Assistant Lecturer	Science Teaching Methods	General Science Teaching			P	

				Methods				
34	Nawras Kareem Alwan	Assistant Lecturer	Science Teaching Methods	General Science Teaching Methods			P	
35	Fatima Hussein Obaid	Assistant Lecturer	Chemistry	Analytical Chemistry			P	
36	Hind Jassab Karam	Assistant Lecturer	Biology	Zoology			P	
37	Sameem Abbas Hussein	Assistant Lecturer	Biology	Zoology			P	
38	Zahra Hamid Khafif	Assistant Lecturer	Science Teaching Methods	General Science Teaching Methods			P	
39	Ban Salih	Assistant Lecturer	Physics	Materials (Physics)			P	
40	Dina Mohammed Noor	Assistant Lecturer	Science Teaching Methods	General Science Teaching Methods			P	
41	Mohammed Mahdi	Assistant Lecturer	Agriculture	Animal Production (Agricultural Science)			P	
42	Shaimaa Bader Kadhim	Assistant Lecturer	Physics	Condensed Matter Physics			P	
43	Baidaa Kadhim Azzouz	Assistant Lecturer	Physics	Nanophysics				
44	Difaf Qais Jassim	Assistant Lecturer	Physics	Condensed Matter Physics				

12- Professional Development

New Faculty Orientation

The orientation program for new faculty members aims to quickly and effectively integrate them into the academic environment. It ensures they understand the college's policies and procedures. The program includes:

- An overview of the college, its departments, and academic programs.
- An introduction to university policies, teaching regulations, and research guidelines.

- Guidance on using available educational and technical resources.
- Assigning an academic mentor for support during the first year.
- Organizing meetings with senior faculty members to exchange experiences and knowledge

Faculty Professional Development

The continuous professional development program aims to enhance faculty competence and improve the quality of teaching and research. It includes:

- Workshops and training courses to develop teaching and assessment skills.
- Encouraging participation in local and international scientific conferences and seminars.
- Supporting scientific research and innovative projects both inside and outside the university.
- Providing training programs on using modern technology and educational tools.
- Periodically evaluating academic performance and offering guidance for improvement.

13- Admission Criteria

Centralized admission.

14- Key Information Sources for the Program

15- Program Development Plan

1. Reviewing Course Curricula: This involves updating content to align with modern scientific standards and adding courses that enhance both practical and theoretical skills.

2. Developing Teaching Methods: This includes introducing active and blended learning and using modern technologies like digital simulations and multimedia.

3. Evaluating Academic Performance: This involves developing comprehensive assessment tools for students and courses, along with conducting periodic program evaluations.

4. Developing Faculty Members: This is done through ongoing workshops and training courses and encouraging participation in international conferences and programs.

5. Enhancing Scientific Research and Student Projects: This includes supporting joint research projects between students and faculty and providing grants and financial support for outstanding research.

6. Improving the Educational Environment: This involves equipping modern laboratories and facilities to support practical learning and developing digital libraries with access to global resources.

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Program Skills Outline														
Required program Learning outcomes														
Year/Level	Course Name	Course Code	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
First/First Semester	Democracy and Human Rights	Huri.100	basic	*						*			*		
	General Biology	Gebi.100	basic	*	*	*	*		*	*				*	*
	Computer	Comp.100	basic	*				*	*	*				*	*
	Developmental Psychology	Psgr.100	basic	*	*					*		*		*	
	General Chemistry	Gech.110	basic	*	*	*	*		*	*					*
	Mathematics	Math.130	basic		*	*	*	*		*				*	
	General Physics	Geph.150	basic	*	*	*	*		*	*					*
First/Second Semester	English Language	Engl.100	basic	*				*						*	
	Principles of Education	Ased.100	basic	*	*			*		*		*		*	
	Islamic Education/Civilization	Ised.100	basic	*									*	*	
	Human Biology	Hubi.160	basic	*	*	*	*		*	*					*

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	Laboratory Safety and Security	SesaL.120	basic	*	*	*	*		*	*					*
Second/Chemistry Branch/First Semester	Arabic Language	Arab.200	basic	*				*						*	
	English Language	Engl.200	basic	*				*						*	
	Crimes of the Ba'ath Party	Cbp.200	basic	*	*	*		*	*	*					*
	Inorganic Chemistry	Inor.200	basic	*	*	*		*	*	*					*
	Curricula and Textbooks	Cute.200	basic	*	*	*			*	*					*
	Volumetric Analysis	Anal.210	basic	*	*		*			*	*	*	*	*	
	Physical Chemistry	Phys.240	basic	*						*	*	*	*		
Second/Biology Branch/First Semester	Arabic Language	Arab.200	basic	*				*						*	
	English Language	Engl.200	basic	*				*						*	
	Microbiology	Micb.200	basic	*	*	*		*	*	*					*
	Curricula and Textbooks	Cute.200	basic	*	*		*	*		*	*	*	*	*	
	Cytology	Cyto.200	basic	*	*	*			*	*					*
	Virology	Viro.230	basic	*	*	*		*	*	*					*
	Crimes of the Ba'ath Party	Cbp.200	basic	*						*	*	*	*		

Second/Physics Branch/First Semester	Arabic Language	Arab.200	basic	*										*	
	English Language	Engl.200	basic	*										*	
	Wave Motion and Sound	Waso.210	basic	*				*		*	*	*	*		
	Classical Mechanics	Mech.260	basic	*	*	*	*	*	*	*					*
	Properties of Matter	Prma.220	basic	*	*		*	*		*	*	*	*	*	
	Curricula and Textbooks	Cute.200	basic	*	*	*	*	*	*	*					*
	Crimes of the Ba'ath Party	Cbp.200	basic	*	*	*	*		*	*					*
Third/Physics Branch/First Semester	Educational Leadership and Management	Edadn.300	basic	*	*		*			*	*	*	*	*	
	Astronomy	Astr.390	basic	*	*	*	*			*					*
	Modern Physics	Moph.310	basic	*	*	*	*	*		*					*
	Measurement and Evaluation	Meev.300	basic	*	*		*	*		*	*	*	*	*	
	Quantum Mechanics	Qume.300	basic	*	*	*	*			*					*
	Guidance and Education for Special Needs	Gesn.300	basic	*	*		*	*		*	*	*	*	*	
	General Teaching Methods and Applications	GemeT.300	basic	*	*		*	*		*	*	*	*	*	

Third/Chemistry Branch/First Semester	Industrial Chemistry	Indu.310	basic	*	*	*	*	*	*	*					*
	Organic Chemistry	Orga.300	basic	*	*	*	*		*	*					*
	Coordination Chemistry	Chco.330	basic	*	*	*	*		*	*					*
	General Teaching Methods and Applications	GemeT.300	basic	*	*		*			*	*	*	*	*	
	Educational Leadership and Management	Edadn.300	basic	*	*		*	*		*	*	*	*	*	
	Measurement and Evaluation	Meev.300	basic	*	*		*			*	*	*	*	*	
	Guidance and Education for Special Needs	Gesn.300	basic	*	*		*	*		*	*	*	*	*	
Third/Biology Branch/First Semester	Parasitology	Para.300	basic	*	*	*	*	*	*	*					*
	Animal Physiology	Anph.360	basic	*	*	*	*	*	*	*					*
	Plant and Animal Production	Planp.300	basic	*	*	*	*	*	*	*					*
	General Teaching Methods and Applications	GemeT.300	basic	*	*		*	*		*	*	*	*	*	
	Measurement and Evaluation	Meev.300	basic	*	*		*	*		*	*	*	*	*	
	Guidance and Education for Special	Gesn.300	basic	*	*		*	*		*	*	*	*	*	

	Needs															
	Educational Leadership and Management	Edadn.300	basic	*	*		*			*	*	*	*	*		
Fourth year (Physics branch / Second semester)	Practical Education 2 (Application)	Appl.400	basic	*	*	*	*		*	*				*	*	
	Graduation Research Project	Repr.400	basic	*	*		*			*	*	*	*	*		
Fourth year (biology branch / Second semester	Practical Education 2 (Application(	Appl.400	basic	*	*	*	*		*	*				*	*	
	Graduation Research Project	Repr.400	basic	*	*	*	*	*	*	*		*	*	*	*	
Fourth year (chemistry branch / Second semester	Practical Education 2 (Application(	Appl.400	basic	*	*	*	*	*	*	*				*	*	
	Graduation Research Project	Repr.400	basic	*		*		*	*			*	*		*	

1. Course Name:
Practical Education (View)
2. Course Code:
3. Semester / Year:
First semester of the academic year 2024-2025
4. Description Preparation Date:
2/1/2025
5. Available Attendance Forms:
In-person + field work and school visits
6. Number of Credit Hours (Total) / Number of Units (Total) (4)/ (4)
7. Course administrator's name (mention all, if more than one name)
Name: Wafaa Abdel Razzaq, Hawra Qusay Jawad, Rasha Hussein and Riyam Ali Email: bsclec.hawraa.qusay@uobabylon.edu.iq
8. Course Objectives

Course Objectives	1- Knowing science education and its objectives 2- Knowing how to write study plans 3- Training on performing lessons in the application stage

	4- Knowing how to perform classroom management 5- Knowing the means of reinforcement 6- Training them on preparing means for the lesson 7- Employing breaking the ice in the classroom 8- Knowing how to distribute classroom questions to all students in the classroom.

9. Teaching and Learning Strategies

Strategy	1- Lecture and delivery 2- Discussion and interrogation 3- Groups and using some strategies including (hot seat and mobile reporter method, information tree, brainstorming, postman, ice cream sticks)

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4		Definition of practical education and its objectives		
2	4		Visit Al-Mudhariyah Elementary School and write a report about it		
3	4		Students present their reports about the school that was visited		

4	4		Explaining the five-year plan		
5	4		Applying the five-year plan in groups		
6	4		Implementing the five-year plan and employing it in the lesson		
7	4		Training students on how to give a lesson		
8	4		Dividing students into groups for the purpose of implementing the lesson and evaluating them		
9	4		Visiting Al-Mazaya School and writing a report about it		
10	4		Training them on how to manage the class and distribute the class time within the lesson in terms of preparation, exploration, explanation, interpretation, evaluation, expansion, enrichment and implementation by the students individually		
11	4		Training them on using positive reinforcement and negative reinforcement		
12	4		Training students on how to prepare a tool that serves the lesson and through their preparation of the tool within the class and in groups		

13	4		Using icebreakers (such as the rain deal, the point of order, the sports deal and the scientific activity in order to endear the students to the scientific material		
14	4		Training them on distributing classroom questions to all students		

11. Course Evaluation
Theoretical aspect 50 points
Practical aspect 30 points
Extracurricular activities, reports and daily tests 20 points

12 Learning resources

Required textbooks (methodology if any)

Modern Curricula and Teaching Methods by Dr. Ali Attia 2010 Amman Publishing House

Al-Jabry, Kazem Karim (2011): Research Methods in Education and Psychology, 1st ed., Al-Naimi Office for Printing and Copying, Baghdad.

Saada, Jawdat Ahmed, Fawaz Aql, Majdi Zamel, Jamil Ishtia, and Huda Abu Arqoub (2006): Active Learning between Theory and Application, 1st ed., Dar Al-Shorouk, Amman.

Recommended supporting books and references (scientific journals - reports .....)

Electronic references - Internet sources

1. Course Name: Human Biology

2. Course Code: Hubi.160

3. Semester / Year:2024-2025 Second Semester

4. Description Preparation Date:4-1-2025

5. Available Attendance Forms:WEAKLY

6. Number of Credit Hours (Total)60Hours / Number of Units (Total)3unit

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

Name:
Email:
Asst. Prof. Amenah Kadhim Murad Al-Mansouri
basic.amenah.kadhim@uobabylon.edu.iq

8. Course Objectives

Appreciate the greatness of the Creator in the creation of humans. • Understand the structure of the skeletal system. • Identify the components of the digestive system, muscles, circulatory system, respiratory system, and nervous system. • Recognize common diseases affecting these systems.	• • •

9. Teaching and Learning Strategies

Strategy	Lectures. • Discussions. • Use of electronic whiteboards.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Axial structure and ribs	Sections of the skeletal system	lecture	Unspecified essay test
2	2	Appendicular structure and skeletal functions	Sections of the skeletal system	lecture	True and false test
3	2	Parts of the digestive system	Digestive system	lecture	Unspecified essay test
4	2	Accessory glands of the digestive system and their functions	Digestive system	Use of electronic whiteboard	Unspecified essay test with question
5	2	Types of muscles (skeletal, smooth and cardiac)	Muscular System	Use of electronic whiteboard	True and false test
6	2	Components of the circulatory system (veins, arteries and heart)	Circulatory System	Use of electronic whiteboard	True and false test
7	2	Blood, its components and blood types	Circulatory System	Use of electronic whiteboard	Unspecified essay test with question
8	2	Components of the respiratory system	Respiratory system	Use of electronic whiteboard	Unspecified essay test with question
9	2	Internal and external respiration and respiratory movements	Respiratory system	Use of electronic whiteboard	Unspecified essay test with question
10	2	Components of the nervous system (brain, spinal cord and nerves)	Nervous system	Use of electronic whiteboard	Unspecified essay test with question
11	2	Sympathetic and parasympathetic	Nervous system	Use of electronic whiteboard	True and false test

12	2	Kidney, ureter and bladder structure	Urinary system	Use of electronic whiteboard	True and false test
13	2	Some diseases that affect the skeletal and digestive system	Diseases of the organs	Use of electronic whiteboard	True and false test
14	2	Some diseases affecting the circulatory and respiratory systems)	Diseases of the organs	Use of electronic whiteboard	True and false test
15	2	Some diseases affecting the nervous and urinary systems	Diseases of the organs	Use of electronic whiteboard	True and false test

11. Course Evaluation
12. Learning and Teaching Resources

Monthly Exam: 20 marks • Practical Assessment: 16 marks • Participation and Activities: 4 marks.

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Al-Haj, Hamid Ahmed (2010). Human Biology. Dar Al-Maseerah for Publishing and Distribution, Amman, Jordan.
• Electronic References: Reliable scientific websites.

1. Course Name: General Biology
2. Course Code:
3. Semester / Year:2024-2025 First Semester
4. Description Preparation Date:4-1-2025
5. Available Attendance Forms: WEAKLY
6. Number of Credit Hours (Total)60Hours / Number of Units (Total)3unit

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

Name:
Email:

Asst. Prof. Amenah Kadhim Murad Al-Mansouri

basic.amenah.kadhim@uobabylon.edu.iq

8. Course Objectives

General Biology 1-He appreciates the greatness of the Creator, Glory be to Him, in His creation. 2-He appreciates the role of scientists and their efforts in this field. 3- To know the student 4- Definition of biology and its branches 5- The origin of the Earth and theories of the origin of life and religion 6- Taxonomy, its historical stages, fields and systems 7- Scientific nomenclature and its rules 8-The modern system of dividing living things into kingdoms 9-The cell is a unit of structure and function 10- Genetic material, its duplication and reproduction, and Mendel's laws 11- The concept of evolution 12 - Animal and plant hormones 13-Immunology: a historical overview, types and organs responsible for it 14- Viruses: a brief history and characteristics 15 - Photosynthesis and cellular respiration 16- Mitosis and Meiosis	• • •

9. Teaching and Learning Strategies

Strategy	Lectures. • Discussions. • Use of electronic whiteboards.

10. Course Structure

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

1	3	Definition of biology, a historical overview, its branches, and its importance	General Biology	lecture	Unspecified essay test
2	3	The origin of the Earth and theories of the origin of life	origin of life	lecture	True and false test
3	3	Definition of taxonomy, its historical stages, fields and systems	Taxonomy	lecture	Unspecified essay test
4	3	Kingdoms (Archaea, Protista)	Modren Taxonomy	Use of Electronic screen	Unspecified essay test with question
5	3	Kingdom Protista. Fungi, Plants, Animals)	Modren Taxonomy	Use of Electronic screen	True and false test
6	3	Definition, types and contents	The Cell	Use of Electronic screen	True and false test
7	3	Organize, multiply and reproduce	Genetic material	Use of Electronic screen	Unspecified essay test with question
8	3	Mendel's laws and mutations	Genetics	Use of Electronic screen	Unspecified essay test with question
9	3	Definition of the mechanisms of evolution and its evidence	Evolution	Use of Electronic screen	Unspecified essay test with question
10	3	Definition, types and effects	Animal hormones	Use of Electronic screen	Unspecified essay test with question
11	3	Definition, types and effects	Plant hormones	Use of Electronic screen	True and false test

12	3	Definition and types of immunity	Immunology	Use of Electronic screen	True and false test
13	3	Definition and characteristics of viruses	Virology	Use of Electronic screen	True and false test
14	3	The mechanism of photosynthesis and cellular respiration	Photosynthesis and cellular respiration	Use of Electronic screen	True and false test
15	3	Mitosis and Meiosis	Cell Cycle	Use of Electronic screen	True and false test

11. Course Evaluation

12. Learning and Teaching Resources	Monthly Exam: 20 marks • Practical Assessment: 16 marks • Participation and Activities: 4 marks.
Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

References:

Al-Rubaie, Abbas Hussein Mughair.**Biological Sciences** (2020) .Safaa Publishing and Distribution House Amman. Jordan

1. Course Name: **Histology and embryology**

2. Course Code:Hist.260

3. Semester / Year: second semester of the academic year 2024-2025

4. Description Preparation Date: 21/2/2025

5. Available Attendance Forms: My presence

6. Number of Credit Hours (Total) / Number of Units (Total) (4)/ (2)

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

Name: Hind chassab karam
Email:bas404.hind.jsab@uobabylon.edu.iq

8. Course Objectives

Course Objectives	1. Explains the general concepts related to histology and embryology. 2. Explains the fundamental processes in embryonic development. 3. Enables the student to distinguish between normal and pathological tissues. 4. Teaches students how to use modern tools and techniques in the study of tissues and embryos. .

9. Teaching and Learning Strategies

Strategy	Interactive lecture dialogue and discussion brainstorming.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4		Introduction of Histology		
2	4		Simple epithelial tissue		
3	4		Stratified epithelial tissue		
4	4		-connective tissue		
5	4		First exam		
6	4		-specialized connective tissue (bone and cartilage)		
7	4		Blood		
8	4		Nervous tissue		
9	4		Muscular tissue		
10	4		Second exam		
11	4		Embryology		
12	4		Main Features of Embryonic Formation		
13	4		Fate Map of the Frog		
14	4		Formation of the Notochord		

11. Course Evaluation Theoretical aspect 34 points Practical aspect 16 points
12 Learning resources
Required textbooks (methodology if any)
1. Al-Rubaie, Abbas Hussein Moghair (2020). Life Sciences. Safaa Publishing and Distribution House. Hashemite Kingdom of Jordan. Dar Al-Sadiq Foundation. Iraq, Babylon. 2. Al-Hajj, Hamid Ahmed (2013). Principles of Histology. Dar Al-Maseera for Publishing, Distribution, and Printing. First Edition. Amman, Jordan.
Recommended supporting books and references (scientific journals - reports .....)
Electronic references - Internet sources

1. Course Name: **Invertebrate science**

2. Course Code:

3. Semester / Year: First semester of the academic year 2024-2025

4. Description Preparation Date: 2/1/2025

5. Available Attendance Forms: My presence

6. Number of Credit Hours (Total) / Number of Units (Total) (4)/ (3)

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

Name: Ameer Ibrahim Abdulzahra
Email:bsc.st.amer.ebadi@uobabylon.edu.iq

8. Course Objectives

Course Objectives	1- The student will be able to identify the importance of invertebrates within the animal kingdom. 2- The student will acquire the skills to differentiate between invertebrate phyla. .....

9. Teaching and Learning Strategies

Strategy	1- Lecture and presentation 2- Discussion 3- Interrogation 4- Laboratory 5- Reports

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4		Know (Invertebrates)		
2	4		Protozoa		

3	4		Classification of Protozoa		
4	4		Euglena		
5	4		Phylum Spongiformes		
6	4		Phylum Cnidaria (coelomate)		
7	4		Phylum Platyhelminthes		
8	4		Phylum Planaria		
9	4		Phylum Nematoda (Cylindrical)		
10	4		Genus Ascaris		
11	4		Phylum Mollusca (Softworms)		
12	4		Classification of Softworms		
13	4		Phylum Echinoderms		
14	4		Class Serpentinae		

11. Course Evaluation Theoretical aspect 20 points Practical aspect 10 points Extracurricular activities, reports and daily tests 20 points
12 Learning resources
Required textbooks (methodology if any)
A Brief Introduction to Invertebrates, Hussein Fadhel Hassan, 2018, University of Kirkuk.
Recommended supporting books and references (scientific journals - reports .....)
Electronic references - Internet sources

1. Course Name: Virology
2. Course Code:
3. Semester / Year: The first semester of the academic year 2023-2024
4. Description Preparation Date: 25/2/2024
5. Available Attendance Forms:
6. Number of Credit Hours (2) / Number of Units (2)
7. Course administrator's name : Mohammed Sabah Otaiwi mohammad.atwi.bscle@uobabylon.edu.iq
8. Course Objectives

Course Objectives	1. Know what viruses are 2. Distinguishing between types of viruses 3. Identify the factors that help viruses spread 4. Identifying the parts and components of viruses (nucleic acid and the envelope that surrounds it) 5. Study methods of prevention and treatment of viruses

9. Teaching and Learning Strategies

Strategy	Lecture, discussion and questioning

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2		Introduction to viruses		
2	2		The Origin		
3	2		Virus installation		
4	2		Chemical structure of viruses		
5	2		Infection and spread of the virus		
6	2		The effect of physical and chemical factors on the virus		
7	2		Transportation methods		
8	2		How diseases occur		
9	2		Influenza virus		
10	2		Hepatitis viruses		
11	2		Measles and German measles		

12	2		Mumps and smallpox virus		
13	2		Rabies virus		
14	2		Immunodeficiency virus (HIV		

11. Course Evaluation
12. Learning and teaching Resources
Viruses, A Very Short Introduction, Dorothy H. Crawford, 2014
Life Sciences, Abbas Hussein Mughir, 2020, University of Babylon
Basics of Medical Virology, Ahmed Sami Salman, 2019, Dar Al-Furat for Culture and Media in Hilla

1. Course Name:The **Miicrobiology**
2. Course Code: Micr.210
3. Semester / Year: Year:2024-2025First Semester
4. Description Preparation Date: 2\1\2025
5. Available Attendance Forms: Attendance

6. Number of Credit Hours (Total) 5 / Number of Units (Total) 4

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

Ausama Abed Alkadhum Mahdi
basic.ausama.abed@uobabylon.edu.iq

8. Course Objectives

Course Objectives	1- Knowledge of microbiology and how it originated 2-Learn how microscopic organisms are named and how they are classified 3-Distinguish between prokaryotic and eukaryotic cells 4-Identifying bacteria and their most important phenotypic characteristics 5-Distinguish between bacterial forms 6-Distinguish between bacterial forms 7-Mention the structures involved in bacterial movement 8-Study of cell wall components 9-Distinguishing between Gram-positive bacteria and Gram-negative bacteria 10-Identify the genetic material and cytoplasm inside the cell 11-Mention the types of spores and their locations within the cell 12-Identify microbial nutrition and the most important nutritional needs 13-Distinguish between growth stages and the most important nutrients 14-Definition and classification of viruses and parasites 15-Identify fungi and their assemblies.

9. Teaching and Learning Strategies	
Strategy	The lecture discussions Interrogation Laboratory Reports

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Definition of microbiology and a historical overview of the development of self-reproducing microbiology			
2	5	Naming microorganisms, classification methods, and the difference between prokaryotic and eukaryotic cells			
3	5	Definition and study of bacteria			
4	5	Antiseptic properties of bacteria			
5	5	The bacteria shapes			
6	5	External components of bacteria			
7	5	Structures involved in bacterial movement			
8	5	Bacterial cell wall and the difference between positive and negative bacteria			

9	5	Internal structures of the bacterial cell			
10	5	Genetic material, cytoplasm and spores			
11	5	Microbial nutrition and the most important nutritional needs			
12	5	Stages of growth and the most important factors affecting growth			
13	5	Definition and classification of viruses			
14	5	Definition and classification of fungi			
15	5	Definition and classification of parasites			

11. Course Evaluation
12. Learning and teaching Resources
Required textbooks (curricular books,if any) : Diagnostic Microbiology(2014) Baron E.J., et.al. Medical Microbiology(2018) jawetz, Melinck& Adelbergs
Main references (sources):
Recommended supporting books and references (scientific journals - reports .....):
Electronic references,Websites

1. Course Name: **Parasitology**
2. Course Code:
3. Semester / Year: First semester of the academic year 2024-2025
4. Description Preparation Date: 2/1/2025
5. Available Attendance Forms: My presence
6. Number of Credit Hours (Total) / Number of Units (Total) (4)/ (3)
7. Course administrator's name (mention all, if more than one name)
Name: Ameer Ibrahim Abdulzahra Email:bsc.st.amer.ebadi@uobabylon.edu.iq
8. Course Objectives

Course Objectives	1- Knowing the relationships between living organisms 2- Distinguishing between types of parasites and hosts 3- Identify the adaptations caused by parasites 4- Identify the types of intestinal parasites

	5- Distinguish between intestinal ciliates and intestinal flagellates 6- Identify the pathogen and host of intestinal ciliates and flagellates 7- Distinguish between the life cycles of ciliates and intestinal flagellates 8- Study of diagnostic methods for intestinal ciliates and dinoflagellates 9- Identify blood and tissue parasites. 10- Identify the pathogen and host of blood and tissue parasites 11- Distinguish between the life cycles of blood and tissue supernatants 12- Study diagnostic methods for blood and tissue parasites

9. Teaching and Learning Strategies

Strategy	1- Lecture and presentation 2- Discussion 3- Interrogation 4- Laboratory 5- Reports

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4		Parasitology definition, historical overview, types of parasites and hosts		
2	4		Adaptation in parasites		
3	4		Parasitic protozoa		
4	4		Intestinal parasitic protozoa		
5	4		Intestinal parasitic protozoa		
6	4		Intestinal parasitic		

			protozoa		
7	4		Intestinal parasitic protozoa		
8	4		Intestinal parasitic protozoa		
9	4		Intestinal parasitic protozoa		
10	4		Intestinal parasitic protozoa		
11	4		Intestinal parasitic protozoa		
12	4		Blood and tissue parasitic protozoa		
13	4		Blood and tissue parasitic protozoa		
14	4		Parasitic worms		

11. Course Evaluation Theoretical aspect 20 points Practical aspect 10 points Extracurricular activities, reports and daily tests 20 points
12 Learning resources
Required textbooks (methodology if any)
Parasitology, Ismail Abdul Wahab Al-Hadith and Abdul Hussein Habash Awad (2000) University of Basra. Parasitism and parasitology, Yahya Asani and Ghassan Abdul Rahman (2005), University of Aleppo - Faculty of Science. Fundamentals of Parasitology, Ismail Muslim Abdul Aal (2009) Academic Library, Cairo - Arab Republic of Egypt. Main references (sources)
Recommended supporting books and references (scientific journals - reports .....)
Electronic references - Internet sources

1. Course Name: Animal physiology

2. Course Code: Anph.360

3. Semester / Year:2024-2025First Semester

4. Description Preparation Date: 4-1-2025

5. Available Attendance Forms: weekly

6. Number of Credit Hours (Total)60Hours / Number of Units (Total)3unit

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

Name:
Email:
Asst. Prof. Amenah Kadhim Murad Al-Mansouri
basic.amenah.kadhim@uobabylon.edu.iq

8. Course Objectives

1- Appreciate the greatness of the Creator, Glory be to Him, in His creation. 2- Appreciates the role of scientists and their efforts in this field. -3- Know the science of animal physiology and a historical overview of this science. 4- The student should know the physiological effect of temperature and thermoregulation. -5- The student should know the functional means of thermoregulation. -6- Explains how water balance occurs inside our bodies. 7- List the types of body fluids, the percentage of each type, and its importance. To know how the urinary system performs its functions The student should know how the digestive system performs its functions. 10. The student should know how the muscular system performs its functions. -11- The student should know how the respiratory system performs its functions. -12- The student should know how the circulatory system performs its functions.	• ..... • ..... • .....

13 The student should know how the nervous system performs its functions	

9. Teaching and Learning Strategies

Strategy	Lectures. • Discussions. • Use of electronic whiteboards.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Definition of physiology and a historical overview	Introduction to physiology	lecture	Unspecified essay test
2	2	Thermoregulation	Thermal regulation of the human body	lecture	True and false test
3	2	Shivering and sweating and their effect on regulating body temperature	Functional means of thermoregulation	lecture	Unspecified essay test
4	2	Thermoregulation of some desert animals and its comparison with humans	Functional means of thermoregulation	Use of electronic whiteboard	Unspecified essay test with question
5	2	Body fluids, their types and proportions	Bodily fluids	Use of electronic whiteboard	True and false test
6	2	Water balance in the human body	Bodily fluids	Use of electronic whiteboard	True and false test

7	2	The work of the parts of the urinary system and how urine is formed	Urinary system physiology	Use of electronic whiteboard	Unspecified essay test with question
8	2	Muscle action and mechanism of muscle contraction	Muscular system	Use of electronic whiteboard	Unspecified essay test with question
9	2	Functions of the digestive system and the mechanism of action of its organs	Digestive system physiology	Use of electronic whiteboard	Unspecified essay test with question
10	2	Functions of the respiratory system parts and mechanism of action	respiratory system	Use of electronic whiteboard	Unspecified essay test with question
11	2	Respiratory movements and lung volumes and capacities	Respiratory system	Use of electronic whiteboard	True and false test
12	2	Physiology of the heart, cardiac cycle time, source of heartbeat and control of it	circulatory system	Use of electronic whiteboard	True and false test
13	2	Hormonal and nervous regulation Heartbeats, blood properties, clotting mechanism	circulatory system	Use of electronic whiteboard	True and false test
14	2	brain, spinal cord, and nerve cells)	nervous system	Use of electronic whiteboard	True and false test
15	2	How nerve impulses are generated and transmitted in nerve fibers	Physiology of the nervous system	Use of electronic whiteboard	True and false test

11. Course Evaluation
12. Learning and Teaching Resources

Monthly Exam: 20 marks • Practical Assessment: 16 marks • Participation and Activities: 4 marks.

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Al-Aluji, Sabah Nasser (1994) Physiology

• Electronic References: Reliable scientific websites.

1. Course Name: The environment and health
2. Course Code:
3. Semester / Year:2024-2025First Semester
4. Description Preparation Date: 22-9-2025

5. Available Attendance Forms: Attendance

6. Number of Credit Hours (Total) Hours 4 / Number of Units (Total) unit 2

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

Name:
Wasan
Moham
med
Abdulza
hra

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asan.ab
dulzahr
a.bscle
@uobab
ylon.ed
u.iq

8. Course Objectives

1-It aims to provide the student with an understanding of the environment and its relationship with the living organisms surrounding it. 2-It aims to learn about the ways and methods of health education and how to maintain health, 3-It aims to educate students about diseases resulting from eating unhealthy food and following bad health habits	• • •

9. Teaching and Learning Strategies

Strategy	The Lecture. presentation .

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	1	Definition of the ecology	lecture	Unspecified essay test
2	4	2	The ecosystem	lecture	True and false test
3	4	3	The public health and its fields	lecture	Unspecified essay test
4	4	4	The health education	Use of electronic whiteboard	Unspecified essay test with question
5	4	5	The first test	Use of electronic whiteboard	True and false test
6	4	6	The methods and styles of the health education	Use of electronic whiteboard	True and false test
7	4	7	The school health	Use of electronic whiteboard	Unspecified essay test with question
8	4	8	The food elements	Use of electronic whiteboard	Unspecified essay test with question
9	4	9	Some diseases of malnutrition	Use of electronic whiteboard	Unspecified essay test with question
10	4	10	The first test	Use of electronic whiteboard	Unspecified essay test with question
11	4	11	The pollination	Use of electronic whiteboard	True and false test

12	4	12	The diseases that infect the children	Use of electronic whiteboard	True and false test
13	4	13	Some harmful habits(the smoking, the alcohol, the drug addiction)	Use of electronic whiteboard	True and false test
14	4	14	The first aid	Use of electronic whiteboard	True and false test
15	4	15	The home pharmacy	Use of electronic whiteboard	True and false test

11. Course Evaluation
Distribution of the grads out of 50 according to the tasks assigned to the students ,such as daily preparation for daily ad monthly exams

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Sources\
The environmental and health education book\ Abbas Hussein Mughair Al-Rubaie
The environment and pollution book\ Hussein Ali Al-Saadi
• Electronic References: Electronic websites.

1. Course Name:
entomology
2. Course Code:
3. Semester / Year:
First semester of the academic year 2024-2025
4. Description Preparation Date:
2/1/2025
5. Available Attendance Forms:
My presence
6. Number of Credit Hours (Total) / Number of Units (Total) (4)/ (3)

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

Name: Ameer Ibrahim Abdulzahra
Email:bsc.st.amer.ebadi@uobabylon.edu.iq

8. Course Objectives

Course Objectives	1- Know the difference between insects and other classes of the Arthropoda phylum 2- Distinguish between insect orders 3- Identify the factors that helped insects adapt 4- Identify the parts of the insect body (head, thorax, abdomen) 5- Distinguish between the types of wings and legs 6- Study insect hunting methods 7- Identify insect preservation methods

9. Teaching and Learning Strategies

Strategy	1- Lecture and presentation 2- Discussion 3- Interrogation 4- Laboratory 5- Reports

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4		Order Arthropoda		
2	4		Class Insects		
3	4		Factors that helped spread insects		
4	4		Parts of the insect body		
5	4		Insect head		
6	4		Types of head in insects		
7	4		Insect thorax		

8	4		Thorax appendages		
9	4		Wings		
10	4		Abdomen		
11	4		Reproductive and non-reproductive appendages		
12	4		Nutrition in insects		
13	4		Nutrition adaptations		
14	4		Life cycles		

11. Course Evaluation Theoretical aspect 20 points Practical aspect 10 points Extracurricular activities, reports and daily tests 20 points
12 Learning resources
Required textbooks (methodology if any)
1- Basics of Practical Entomology, Mohamed Tanani, 2017, Faculty of Science, Al-Azhar University, Cairo 2- Basics of Insect Classification, Radwan Mohamed Tawfik, 2010, Giza University 3- Basics of Medical and Veterinary Entomology, Sayed Hassan Shorba, 2012, Academic Library, Alexandria
Recommended supporting books and references (scientific journals - reports .....)
Electronic references - Internet sources

1. Course Name: plant and Animal production
2. Course Code:
3. Semester / Year:2024-2025 First Semester
4. Description Preparation Date:4-1-2025
5. Available Attendance Forms: WEAKLY
6. Number of Credit Hours (Total)60Hours / Number of Units (Total)3unit
7. Course administrator's name (mention all, if more than one name)

Name:
Email:
Asst. Prof.Sana Hasan abd_Alekwaa
basic.sana.hasan@uobabylon.edu.iq

8. Course Objectives

Plants Taxonomy 1-He appreciates the greatness of the Creator, Glory be to Him, in His creation. 2-He appreciates the role of scientists and their efforts in this field. 3- To know the student 4- Definition of biology and its branches 5- The origin of the Earth and theories of the origin of life and religion 6- Taxonomy, its historical stages, fields and systems 7- Scientific nomenclature and its rules 8-The modern system of dividing living things into kingdoms 9-The cell is a unit of structure and function 10- Genetic material, its duplication and reproduction, and Mendel's laws 11- The concept of evolution 12 - Animal and plant hormones 13-Immunology: a historical overview, types and organs responsible for it 14- Viruses: a brief history and characteristics 15 - Photosynthesis and cellular respiration 16- Mitosis and Meiosis	• • •

9. Teaching and Learning Strategies

Strategy	Lecture. • Discussions. • Use of electronic whiteboards.

10. Course Structure

	Hours	**Required Learning Outcomes**			**Evaluation method**
1	2	Definition of biology, a historical overview, its branches, and its	Plant production	lecture	Unspecified essay test

		importance			
2	2	The origin of the Earth and theories of the origin of life	Wheat	lecture	True and false test
3	2	Definition of taxonomy, its historical stages, fields and systems	Barley	lecture	Unspecified essay test
4	2	Kingdoms (Archaea, Protista)	Rice	Use of Electronic screen	Unspecified essay test with question
5	2	Kingdom Protista. Fungi, Plants, Animals)	Yellow Corn	Use of Electronic screen	True and false test
6	2	Definition, types and contents	Potatoes	Use of Electronic screen	True and false test
7	2	Organize, multiply and reproduce	Sugar beets	Use of Electronic screen	Unspecified essay test with question
8	2	Mendel's laws and mutations	Ground pistachios	Use of Electronic screen	Unspecified essay test with question
9	2	Definition of the mechanisms of evolution and its evidence	Fish	Use of Electronic screen	Unspecified essay test with question
10	2	Definition, types and effects	Poultry	Use of Electronic screen	Unspecified essay test with question
11	2	Definition, types and effects	Sheeb	Use of Electronic screen	True and false test

12	2	Definition and types of immunity	Cows	Use of Electronic screen	True and false test
13	2	Definition and characteristics of viruses	Animal diseases	Use of Electronic screen	True and false test
14	2	The mechanism of photosynthesis and cellular respiration	Animal habitats	Use of Electronic screen	True and false test
15	2	Mitosis and Meiosis	Goat	Use of Electronic screen	True and false test

11. Course Evaluation

12. Learning and Teaching Resources	Monthly Exam: 20 marks • Practical Assessment: 16 marks • Participation and Activities: 4 marks.
Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

المصادر

Al-Haj, Hamid Ahmed (2010). Human Biology. Dar Al-Maseerah for Publishing and Distribution, Amman, Jordan.
• Electronic References: Reliable scientific websites.

1. Course Name: plants Taxonomy

2. Course Code:

3. Semester / Year:2024-2025 First Semester

4. Description Preparation Date:4-1-2025

5. Available Attendance Forms: WEAKLY

6. Number of Credit Hours (Total)60Hours / Number of Units (Total)3unit

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

Name:
Email:
Asst. Prof.Sana Hasan abd_Alekwaa
basic.sana.hasan@uobabylon.edu.iq

8. Course Objectives

Plants Taxonomy 1-He appreciates the greatness of the Creator, Glory be to Him, in His creation. 2-He appreciates the role of scientists and their efforts in this field. 3- To know the student 4- Definition of biology and its branches 5- The origin of the Earth and theories of the origin of life and religion 6- Taxonomy, its historical stages, fields and systems 7- Scientific nomenclature and its rules 8-The modern system of dividing living things into kingdoms 9-The cell is a unit of structure and function 10- Genetic material, its duplication and reproduction, and Mendel's laws 11- The concept of evolution 12 - Animal and plant hormones 13-Immunology: a historical overview, types and organs responsible for it 14- Viruses: a brief history and characteristics 15 - Photosynthesis and cellular respiration 16- Mitosis and Meiosis	• • •

9. Teaching and Learning Strategies

Strategy	Lectures. • Discussions. • Use of electronic whiteboards.

10. Course Structure

	Hours	Required Learning Outcomes			Evaluation method
1	2	Definition of biology, a historical overview, its branches, and its importance	General Biology	lecture	Unspecified essay test
2	2	The origin of the Earth and theories of the origin of life	origin of life	lecture	True and false test
3	2	Definition of taxonomy, its historical stages, fields and systems	Taxonomy	lecture	Unspecified essay test
4	2	Kingdoms (Archaea, Protista)	Modren Taxonomy	Use of Electronic screen	Unspecified essay test with question
5	2	Kingdom Protista. Fungi, Plants, Animals)	Modren Taxonomy	Use of Electronic screen	True and false test
6	2	Definition, types and contents	The Roots	Use of Electronic screen	True and false test
7	2	Organize, multiply and reproduce	The Leef	Use of Electronic screen	Unspecified essay test with question

8	2	Mendel's laws and mutations	The Steem	Use of Electronic screen	Unspecified essay test with question
9	2	Definition of the mechanisms of evolution and its evidence	Evolution	Use of Electronic screen	Unspecified essay test with question
10	2	Definition, types and effects	The Buds	Use of Electronic screen	Unspecified essay test with question
11	2	Definition, types and effects	Plant hormones	Use of Electronic screen	True and false test
12	2	Definition and types of immunity	Immunology	Use of Electronic screen	True and false test
13	2	Definition and characteristics of viruses	Virology	Use of Electronic screen	True and false test
14	2	The mechanism of photosynthesis and cellular respiration	Photosynthesis and cellular respiration	Use of Electronic screen	True and false test
15	2	Mitosis and Meiosis	The Flour	Use of Electronic screen	True and false test

11. Course Evaluation
12. Learning and Teaching Resources

Monthly Exam: 20 marks • Practical Assessment: 16 marks • Participation and Activities: 4 marks.

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

المصادر

Al-Haj, Hamid Ahmed (2010). Human Biology. Dar Al-Maseerah for Publishing and Distribution, Amman, Jordan.
• Electronic References: Reliable scientific websites.

1. Course Name: **The immunology**
2. Course Code:
3. Semester / Year: Year:2023-2024 First Semester
4. Description Preparation Date:25\2\2024
5. Available Attendance Forms: Attendance

6. Number of Credit Hours (Total) 4 / Number of Units (Total) 3

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

Ausama Abed Alkadhum Mahdi
basic.ausama.abed@uobabylon.edu.iq

8. Course Objectives

Course Objectives	1-Preparing teachers who are scientifically and pedagogically qualified, armed with faith and patriotism 2-Conducting practical research in the department's various specializations related to the national development plan 3-Providing scientific advice related to the department's specializations to various community institutions 4-Providing graduates of the department with the skills and knowledge that qualify them to complete their graduate studies

9. Teaching and Learning Strategies

Strategy	The lecture discussions Interrogation

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Definition of immunology and an overview of the development of immunology		The lecturer	
2	2	Types of Immune		The lecturer	

3	2	Immune System		The lecturer	
4	2	Immune Organs		The lecturer	
5	2	Immune Cells		The lecturer	
6	2	T-lympocytes		The lecturer	
7	2	B-cells		The lecturer	
8	2	Antibodies		The lecturer	
9	2	Antigens		The lecturer	
10	2	Antibody and Antigen		The lecturer	
11	2	Complement		The lecturer	
12	2	Humoral and cellular immune response		The lecturer	
13	2	Hypersensitivity		The lecturer	
14	2	immunodeficiency		The lecturer	

11. Course Evaluation:

12. Learning and teaching Resources:

Required textbooks (curricular books,if any) :nothing

11. Course Evaluation
Theoretical aspect 20 points
Practical aspect 10 points
Extracurricular activities, reports and daily tests 20 points

12 Learning resources

Required textbooks (methodology if any)

General Genetics, Abdul Hussein Al-Faisal (1999), First Edition, Al-Ahliya for Publishing and Distribution, Amman
Basics of Genetics, Maha Ali Fahmy Sidqi (2013), First Edition, Dar Al-Fikr Al-Arabi, Cairo.
Genetic Engineering, Abdul Hussein Al-Faisal (1990), First Edition, Dar Al-Shorouk for Publishing and Distribution, Amman - Jordan.

Recommended supporting books and references (scientific journals - reports .....)

Electronic references - Internet sources

Main references (sources): IMMUNOLOGY Lippincott(2018) Thao D. et. al.

Recommended supporting books and references (scientific journals - reports .....): Basic of immunology(2009) Dr.Mohammed Abd Alaziz
Immunology (2015) Dr.Abo Baker Maarof

Electronic references,Websites

1. Course Name: **Endocrinology**

2. Course Code:

3. Semester / Year: First semester of the academic year 2024-2025

4. Description Preparation Date:

21/11/2025

5. Available Attendance Forms: My presence

6. Number of Credit Hours (Total) 4/ Number of Units (Total) 2

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

Name: Hind chassab karam
Email:bas404.hind.jsab@uobabylon.edu.iq

8. Course Objectives

Course Objectives	1. Explains the general concepts related to endocrine and hormones. 2-Clarifies the normal vital functions of the endocrine glands in different parts of the body. 3-Explains the mechanism by which each of the endocrine hormones works. 4- Distinguishes between the function of each endocrine gland and the diseases resulting from their disorders. 5- Promotes awareness about the importance of hormones and their role in maintaining body health and preventing diseases.

9. Teaching and Learning Strategies

Strategy	Interactive lecture dialogue and discussion brainstorming.

10. Course Structure

Week	Hours	Required Learning	Unit or subject	Learning	Evaluation

		Outcomes			method
1	2		Introduction of endocrinology		
2	2		Major endocrine glands in the human body		
3	2		Hypothalamus		
4	2		-the pituitary gland		
5	2		First exam		
6	2		-the adrenal gland		
7	2		Anatomical structure of the thyroid gland.		
8	2		Mechanism of action of thyroid hormones and diseases caused by thyroid gland disorders		
9	2		Parathyroid gland		
10	2		Second exam		
11	2		Pancreas		
12	2		Gonads gland		
13	2		Pineal gland		
14	2		Thymus gland		

11. Course Evaluation Theoretical aspect **50**points
12 Learning resources
Required textbooks (methodology if any)
Prof. Dr. Ahmed Al-Majdoub Al-Qamati (2005). United New Book House. Beirut, Lebanon
Recommended supporting books and references (scientific journals - reports .....)
Electronic references - Internet sources http://www.amazon.com>williams

1. Course Name:

Genetics

2. Course Code:

3. Semester / Year:

First semester of the academic year 2024-2025

4. Description Preparation Date:

2/1/2025

5. Available Attendance Forms:

My presence

6. Number of Credit Hours (Total) / Number of Units (Total) (4)/ (3)

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

Name: Ameer Ibrahim Abdulzahra
Email:bsc.st.amer.ebadi@uobabylon.edu.iq

8. Course Objectives

Course Objectives	1- Knowledge of genetics and a brief historical overview 2- Distinguishing between some organisms used in genetics. 3- Identifying Mendel's experiments and discoveries. 4- Identifying probabilities in genetics. 5- Genetic material composition. 6- Identifying non-Mendelian traits. 7- Applications of genetics. 8- Studying genetics in humans.

9. Teaching and Learning Strategies

Strategy	1- Lecture and presentation 2- Discussion 3- Interrogation 4- Laboratory 5- Reports

10. Course Structure

Week	Hou	Required L Outcomes	Unit or su name	Learni metho	Evaluat metho
1	4		Definition of genetics and a brief historical overview.		
2	4		Some organisms used in genetics.		
3	4		Mendel and his experiments and discoveries.		
4	4		Probabilities in genetics		
5	4		Chemical basis of genetics		
6	4		Non-Mendelian traits (non-dominance, incomplete dominance)		
7	4		Non-Mendelian traits (lethal		

			genes, linkage and crossing over)		
8	4		Mutations		
9	4		Genetics and sex (genetic determination of sex, sex-influenced traits)		
10	4		Applications of genetics (genetics and improvement of animal and plant production)		
11	4		Genetics in humans (some physical traits-skin color, blood groups, Rh factor)		
12	4		Genetics in humans (height, genetics of some pathological and physiological		

			conditions-diabetes)		
13	4		Genetics in humans (genetics of some pathological conditions associated with the nervous system Mongolism, mental dullness, epilepsy)		
1. Course Name: **The serology and vaccines**	4		Tissue culture and genetic engineering		
2. Course Code:					
3. Semester / Year:2024 -2025 semester					
4. Description Preparation Date:25\2\2024					
5. Available Attendance Forms: Attendance					
6. Number of Credit Hours (Total) 2 / Number of Units (Total) 2					
7. Course administrator's name (mention all, if more than one name)					
Ausama Abed Alkadhum Mahdi basic.ausama.abed@uobabylon.edu.iq					
8. Course Objectives					
Course Objectives	1-identtify preventive and therapeutic serology 2-learn about preparation methods of amino globulin 3-learn about the mechanisms of action the				

	vaccines 4-identify the types of vaccines 5-identify the problems and symptoms of vaccines 6-learn about the serological tests 7-identify the most important vaccines used 8- learn about vaccines administration

9. Teaching and Learning Strategies	
Strategy	The lecture disscutions Interrogation

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Historical overview and the most important discoveries in this field		The lecturer	
2	2	Preventive and therapeutical serums		The lecturer	
3	2	Methods for preparing of human amino globulin		The lecturer	
4	2	Mechanisms of action the vaccines		The lecturer	
5	2	The vaccines types		The lecturer	

6	2	Vaccines problems and disease symptoms				The lecturer				
7	2	The first test				The lecturer				
8	2	Serological tests				The lecturer				
9	2	The most important vaccines				The lecturer				
10	2	The viral vaccines				The lecturer				
11	2	The bacterial vaccines				The lecturer				
12	2	Vaccine administration				The lecturer				
13	2	Vaccine cold chain				The lecturer				
14	2	The substances added to vaccines				The lecturer				
15	2	Efficiency of vaccines				The lecturer				
14										

11. Course Evaluation
12. Learning and teaching Resources
Required textbooks (curricular books,if any) :nothing
Main references (sources): IMMUNOLOGY Lippincott(2018) Thao D. et. al
Recommended supporting books and references (scientific journals - reports .....): Basic of immunology(2009) Dr.Mohammed Abd Alaziz Immunology (2015) Dr.Abo Baker Maarof
Electronic references,Websites

1. Course Name: **Endocrinology**

2. Course Code:

3. Semester / Year: First semester of the academic year 2024-2025

4. Description Preparation Date:

21/11/2025

5. Available Attendance Forms: My presence

6. Number of Credit Hours (Total) 4/ Number of Units (Total) 2

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

Name: Hind chassab karam
Email:bas404.hind.jsab@uobabylon.edu.iq

8. Course Objectives

Course Objectives	1. Explains the general concepts related to endocrine and hormones. 2-Clarifies the normal vital functions of the endocrine glands in different parts of the body. 3-Explains the mechanism by which each of the endocrine hormones works. 4- Distinguishes between the function of each endocrine gland and the diseases resulting from their disorders. 5- Promotes awareness about the importance of hormones and their role in maintaining body health and preventing diseases.

9. Teaching and Learning Strategies

Strategy	Interactive lecture dialogue and discussion brainstorming.

10. Course Structure

Week	Hours	Required Learning	Unit or subject	Learning	Evaluation

		Outcomes			method
1	2		Introduction of endocrinology		
2	2		Major endocrine glands in the human body		
3	2		Hypothalamus		
4	2		-the pituitary gland		
5	2		First exam		
6	2		-the adrenal gland		
7	2		Anatomical structure of the thyroid gland.		
8	2		Mechanism of action of thyroid hormones and diseases caused by thyroid gland disorders		
9	2		Parathyroid gland		
10	2		Second exam		
11	2		Pancreas		
12	2		Gonads gland		
13	2		Pineal gland		
14	2		Thymus gland		

11. Course Evaluation Theoretical aspect **50**points
12 Learning resources
Required textbooks (methodology if any)
Prof. Dr. Ahmed Al-Majdoub Al-Qamati (2005). United New Book House. Beirut, Lebanon
Recommended supporting books and references (scientific journals - reports .....)
Electronic references - Internet sources http://www.amazon.com>williams

1. Course Name:	
Genetics	
2. Course Code:	
3. Semester / Year:	
First semester of the academic year 2024-2025	
4. Description Preparation Date:	
2/1/2025	
5. Available Attendance Forms:	
My presence	
6. Number of Credit Hours (Total) / Number of Units (Total) (4)/ (3)	
7. Course administrator's name (mention all, if more than one name)	
Name: Ameer Ibrahim Abdulzahra Email:bsc.st.amer.ebadi@uobabylon.edu.iq	
8. Course Objectives	
Course Objectives	1- Knowledge of genetics and a brief historical overview 2- Distinguishing between some organisms used in

	genetics. 3- Identifying Mendel's experiments and discoveries. 4- Identifying probabilities in genetics. 5- Genetic material composition. 6- Identifying non-Mendelian traits. 7- Applications of genetics. 8- Studying genetics in humans.

9. Teaching and Learning Strategies

Strategy	1- Lecture and presentation 2- Discussion 3- Interrogation 4- Laboratory 5- Reports

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4		Definition of genetics and a brief historical overview.		
2	4		Some organisms used in genetics.		
3	4		Mendel and his experiments and discoveries.		
4	4		Probabilities in genetics		
5	4		Chemical basis of genetics		
6	4		Non-Mendelian traits (non-dominance, incomplete dominance)		
7	4		Non-Mendelian traits (lethal genes, linkage and crossing over)		

8	4		Mutations		
9	4		Genetics and sex (genetic determination of sex, sex-influenced traits)		
10	4		Applications of genetics (genetics and improvement of animal and plant production)		
11	4		Genetics in humans (some physical traits-skin color, blood groups, Rh factor)		
12	4		Genetics in humans (height, genetics of some pathological and physiological conditions-diabetes)		
13	4		Genetics in humans (genetics of some pathological conditions associated with the nervous system Mongolism, mental dullness, epilepsy)		
14	4		Tissue culture and genetic engineering		

11. Course Evaluation Theoretical aspect 20 points Practical aspect 10 points Extracurricular activities, reports and daily tests 20 points
12 Learning resources
Required textbooks (methodology if any)
General Genetics, Abdul Hussein Al-Faisal (1999), First Edition, Al-Ahliya for Publishing and Distribution, Amman Basics of Genetics, Maha Ali Fahmy Sidqi (2013), First Edition, Dar Al-Fikr Al-Arabi, Cairo. Genetic Engineering, Abdul Hussein Al-Faisal (1990), First Edition, Dar Al-Shorouk for Publishing and Distribution, Amman - Jordan.
Recommended supporting books and references (scientific journals - reports .....)
Electronic references - Internet sources

1. Course Name: **The serology and vaccines**
2. Course Code:
3. Semester / Year:2024 -2025 semester
4. Description Preparation Date:25\2\2024
5. Available Attendance Forms: Attendance
6. Number of Credit Hours (Total) 2 / Number of Units (Total) 2
7. Course administrator's name (mention all, if more than one name)

Ausama Abed Alkadhum Mahdi
basic.ausama.abed@uobabylon.edu.iq

8. Course Objectives

Course Objectives	1-identtify preventive and therapeutic serology 2-learn about preparation methods of amino globulin 3-learn about the mechanisms of action the vaccines 4-identify the types of vaccines 5-identify the problems and symptoms of vaccines 6-learn about the serological tests 7-identify the most important vaccines used 8- learn about vaccines administration

9. Teaching and Learning Strategies

Strategy	The lecture disscutions Interrogation

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Historical overview and the most important discoveries in this field		The lecturer	
2	2	Preventive and therapeutical serums		The lecturer	

3	2	Methods for preparing of human amino globulin		The lecturer	
4	2	Mechanisms of action the vaccines		The lecturer	
5	2	The vaccines types		The lecturer	
6	2	Vaccines problems and disease symptoms		The lecturer	
7	2	The first test		The lecturer	
8	2	Serological tests		The lecturer	
9	2	The most important vaccines		The lecturer	
10	2	The viral vaccines		The lecturer	
11	2	The bacterial vaccines		The lecturer	
12	2	Vaccine administration		The lecturer	
13	2	Vaccine cold chain		The lecturer	
14	2	The substances added to vaccines		The lecturer	
15	2	Efficiency of vaccines		The lecturer	

11. Course Evaluation
12. Learning and teaching Resources
Required textbooks (curricular books,if any) :nothing
Main references (sources): IMMUNOLOGY Lippincott(2018) Thao D. et. al
Recommended supporting books and references (scientific journals - reports .....): Basic of immunology(2009) Dr.Mohammed Abd Alaziz Immunology (2015) Dr.Abo Baker Maarof
Electronic references,Websites

1. Educational institution	University of Babylon
2. University department/center	College of Basic Education/Department of Science/Physics Branch
3. Course name/code	Laser
4. The programs he participates in	Bachelor's degree/fourth stage
5. Available forms of attendance	weekly
6. Semester/year	quarterly
7. Number of study hours (total)	**4**
8. Date this description was prepared	**24/9/2024**
1. Course objectives First: the general goal	
The course explains the physical concept of lasers. The student is explained what the concept of laser is scientifically and theoretically, as well as methods for its manufacture, the relationship between matter and its types, types of active medium, methods of stimulation, its composition, the difference between laser and maser, reverse rehabilitation, the basis of laser operation, feedback, threshold condition, pumping plans, spectrum of laser radiation. Wavelengths, self-emission, stimulated emission, absorption, properties of laser rays, triple pumping plans, quadruple pumping plans, optical pumping, electrical pumping, chemical pumping, types of optical resonators, uses of lasers.	
Second: Behavioral objectives After completing the course, the student must 1- To know the difference between laser and laser. 2- To know the laser. 3- To distinguish between normal light and laser light. 4- To understand the relationship between the type of material and the power of the laser. 5- To analyze the movement of the laser beam before generation until it exits. 6- To know the types of active substances.	

7- To become familiar with Einstein's law regarding laser beams.
8- To use his imagination to visualize the path of generating laser beams.
9- To learn about the advantages of laser beams.
10- To learn about the applications of laser beams.
11- To study how radiation is transmitted between the resonators.
12- To recognize skepticism.
13- To study feedback.
14- To get to know the entire system.
15- To distinguish between spontaneous and stimulated emission.
16- To understand how to analyze circuits that contain types of pumping.
17- To draw a trend chart for all types.
18- To know the basics of the system.
19- To know how resonance and the shell effect occur.
20- To know the types of pumping.
21- To learn about the most important theories that explain the intensity of the laser.
22- To understand the effect of laser temperature.
23- To know the resonator.
24- To study the types of resonators.
25- To recognize the effect of current on the system.
26- To learn about the applications of some bridges in alternating current.
27- To know Maxwell's equations in their general and specific form.
28- To recognize electromagnetic waves in vacuum and material environments.
29- To know how to calculate the energy of electromagnetic waves.
30- To understand the physical meaning of experiments in the laboratory.

33. Learning outcomes, teaching, learning and assessment methods
Subject-specific skills 1 - Analyzing and interpreting the information necessary to calculate the basic transactions in the system. 2 - Apply all equations for each part and perform critical calculations.
Teaching and learning methods: Evaluation methods
Lecture/discussion/educational application/experiential learning.
Conducting daily, monthly, practical and theoretical tests. thinking skills
1- Inference
2-Solve the problem

3-Learn the concepts

Week Hours	Required	learning outcomes	Name of unit/course or subject	Teaching method	Evaluation method
The first	3 hours	to learn about the laser	. A general idea about the origin of optical phenomena.	Lecture, discussion, and testing	Conducting tests
The second is	3 hours	to learn about lasers and masers and the differences and similarities between them.	Names of concepts and their parts.	Lecture and discussion	Conducting tests
The third	3 hours	is to analyze the movement of the laser beam before delivery until it exits.	Analysis of a charged particle under influence.	Lecture and discussion	Conducting tests
The fourth	3 hours	is to learn about the physical laws of lasers and how to calculate	generation for various purposes.	Lecture and discussion	Conducting tests
Fifth:	3 hours	to learn about the laser structure.	Draw the load curve and calculate the constants related to the subject.	Lecture and discussion	Conducting tests
Sixth:	3 hours:	To identify the types of active materials:	solid, gaseous, and semiconducting materials.	Lecture and discussion	Conducting tests
Seventh	3 hours	to learn about the most important theories that explain the phenomenon of magnetic radiation.	Cause of occurrence.	Lecture and discussion	Conducting tests
Eighth:	3 hours	understand how to	calculate resistance	Lecture and	Conducting

	to	analyze circuits that contain types of pumping, and inductance in suspended transmission .		discussion	tests lines
The ninth	3 hours	is to know how to calculate the energy of laser waves.	Calculate the energy of laser waves	Lecture and discussion	Conducting tests
Tenth	3 hours:	To understand the physical meaning of experiments in the laboratory.	Types of physical experiments in the topic:	lecture and discussion	Conducting tests
Eleventh	3 hours	The student learns about generating circuits, calculating efficiency and the voltage	regulation factor	Lecture and discussion	Conducting tests
Twelfth To	3 hours	learn how to calculate the effective values of voltage, current, and phase difference angle, how to calculate the best and greatest	transfer of electrical power.	Lecture and discussion	Conducting tests
The thirteenth	3 hours	is to learn about medium transmission lines in three basic ways efficiency and voltage	, how to calculate regulation factor in each method, and make a comparison between them.	Lecture and discussion	Conducting tests
Fourteenth	3 hours	To know how to find the impedance associated with these circuits How to calculate efficiency and voltage	regulation factor in the precise way for waves	Lecture and discussion	Conducting tests

11 . Infrastructure

▪ Required readings: ▪ Basic texts ▪ Course books ▪ Other	1. الكتاب المنهجي المعتمد: " فيزياء الليزر وبعض التطبيقات العملية"، سهام عفيف قندلا. 2. مباديء الليزر- سعود اللحياني- صفحة التحميل http://www.kutub.info/library/book/12469 3. Basics of Laser Physics، من باحث الكتب في موقع قوقل .Google Books. رابط الكتاب. https://books.google.iq/books?id=dpVDTLPySTQC&printsec=frontcover&dq=LASER+books&hl=ar&sa=X&ved=0ahUKEwjx3MKa6IPLAhWzbZoKHV6wAxAQ6AEIJzAB 4. بالاضافة الى مقالات مختلفة من الانترنيت سيتم الاشارة اليها عند المرور بها. **-2** **Raymond Serway, and John Jewett, "Physics for Scientists and Engineers with Modern Physics", Brooks/Cole, 9th ed, 2010. ISBN: 9781439048443. Chapters (29-34), Pages 829-1008.** **-3** **Paul Tipler, and Gene Mosca, "Physics for Scientists and Engineers", W. H. Freeman and . 8th ed, 2006Company, New York, ISBN:9780716789642, Chapters (26-30). Pages 887-1054.** **-4** **David Halliday, Robert Resnick, Jearl Walker," Fundamentals of physics", John Wiley & Sons, 9th ed, 2011. ISBN: 9780470564738. (Chapters 28-32) , Pages 735-888.** **-5** **Douglas Giancoli, "Physics for Scientists and Engineers with Modern Physics", Upper Saddle River, New Jersey, 4th ed, 2009. ISBN:9780131495081, (Chapters 27-31). Pages 707-836.** **-6** **Hugh Young, Roger Freedman,and Lewis Ford,"University Physics with modern Physics", Addison-Wesley , 13th ed, 2012. ISBN: 9780321696861.(Chapters 27-32). Pages 883-1079.**
Special requirements (including, for example, workshops, periodicals, (software, and websites	**Holding a presentation workshop for the works completed by students.**
Social services (including, for example, guest lectures, vocational training, and (field studies	Do a practice

Course Description Form

1. Course Name:
Modern Physics
2. Course Code:
3. Semester / Year:
First semester of the academic year 2024-2025
4. Description Preparation Date:
2/1/2025
5. Available Attendance Forms:
My presence
6. Number of Credit Hours (Total) / Number of Units (Total) (4)/ (3)
7. Course administrator's name (mention all, if more than one name)
Name: Qasim Shakir Kadhim Email:basic.qasim.shakir@uobabylon.edu.iq
8. Course Objectives

Course Objectives	- Knowing what modern physics is 2- Distinguishing between Newton's laws and quantum laws 3- Identifying Einstein's hypotheses 4- Identifying the dilation of time 5- Distinguishing between length contraction and time dilation 6- Identifying Galileo's transformations 7- Distinguishing between relative mass and mass with energy 8- Studying electromagnetic waves 9- Identifying the wavelength of electromagnetic waves. 10- Identifying X-rays 11- Distinguishing between Compton's phenomenon and X-rays

	12- Studying the collision and rebound of the photon falling on the target 12- Studying the collision and rebound of the photon falling on the target

9. Teaching and Learning Strategies

Strategy	1- Lecture and presentation 2- Discussion 3- Interrogation 4- Laboratory 5- Reports

10. Course Structure

	Hours	Required Learning Outcomes			Evaluation method
1	4		Definition of Modern Physics		
2	4		Einstein's Hypotheses		
3	4		Galileo's Transformations		
4	4		Time Dilation		
5	4		Length Contraction		
6	4		Relativistic Mass		
7	4		Mass-Energy Relationship		
8	4		Twin Problem		
9	4		Muons		
10	4		Electromagnetic Waves		
11	4		Wavelength of Electromagnetic Waves		

12	4		Planck's Law		
13	4		Blood and tissue parasitic protozoa		
14	4		Parasitic worms		

11. Course Evaluation Theoretical aspect 20 points Practical aspect 10 points Extracurricular activities, reports and daily tests 20 points
12 Learning resources
Required textbooks (methodology if any)
Introduction to Modern Physics, Mohamed Osman, Omar Ibrahim Eid (2007) Sudan Open University. Introduction to Modern Physics, Mohamed Basil Al-Taie (2019), University of Leeds - United Kingdom. Fundamentals of Modern Physics, Ghazi Yassin (2015) Academic Library, Dar Al-Masirah for Publishing and Printing, Jordan.
Recommended supporting books and references (scientific journals - reports .....)
Electronic references - Internet sources

Course Description Form

1. Course Name:
Properties of materials
2. Course Code:
3. Semester / Year:2024 -2023
2023 /2024
4. Description Preparation Date:
11 -9 -2023
5. Available Attendance Forms:
Attendance in the classroom
6. Number of Credit Hours (Total) / Number of Units (Total)
Total Hours 30 hr / 2 units
7. Course administratr's name (mention all, if more than one name)
Name: Prof.Dr.Hani Mahmood Hussien: Email:basic.hani.mahmood@uobabylon.edu.iq
8 .course objective

course objective	1. 1- The student learns to explain many phenomena, change in density with temperature and applications of fluid pressure. 2. The student learns about the mechanism of buoyancy of objects, applications on the Bernoulli equation (Torricelli factor), 3. The student is able to understand turbulent or regular flow and some applications. 4. The student realizes the importance of physical, engineering, thermal and other properties and their relationship to our general life. 5. The student is able to know the types of mechanical stress and the stress-strain curve and its importance in determining the appropriate material for practical applications. 6. The student learns the types of materials in terms of their ability to conduct electricity, conductors, insulators and semiconductors. 7. The student realizes the importance of some phenomena such as electric polarization and magnetic polarization.

	8. The student learns to interpret the piezoelectric property and understand its most important applications. 9. The student studies the concept of Magnetism and the mechanism of classifying materials according to their response to the magnetic field. 10. The student should be able to understand the most important applications of plasma, its existence, generation, types, and knowledge of plasma parameters.

9. Teaching and Learning Strategies

Strategy	- Lecture - Electronic board - Discussion - Brainstorming strategy - Questioning

10. Course Structure

	Hours	Required Learning Outcomes			Evaluation method
1	3	To explain the concept of liquid properties and laws.	Density, specific gravity, bulk pressure	Lecture, discussion and interrogation	Unspecified essay test
2	3	To explain what is meant by continuity equation and its applications	Archimedes' principle, continuity equation, Torricelli	Lecture, discussion and questioning	True or false test
3	3	To clarify the condition for the occurrence of the combined or non-coordinated flow of fluids	Coordinated and non-coordinated flow	Lecture, discussion and questioning	Examples
4	3	Knowing the distinctive properties of materials	Mechanical properties, stress, types of ductility, stress-ductility curve	Lecture, discussion and questioning	Undefined essay test with questions
5	3	Explaining the mechanism for applying the calculation of mechanical properties	Examples of calculating the Young's coefficient	Lecture, discussion and questioning	True or false test

6	3	Understand the importance of electrical properties	Classify materials according to electrical conductivity	Lecture, discussion and questioning	True or false test
7	3	Understanding the importance of Ohm's law and sources of current generation such as the battery and its composition	Resistance and current, battery, Ohm's law and resistance, direct current	Lecture, discussion and questioning	Undefined essay test with questions
8	3	Identify specific resistance and the effect of temperature	Conductivity of metals, Hall effect	Lecture, discussion and questioning	Undefined essay test with questions
9	3	Explaining the meaning of piezoelectricity and ferroelectricity	Piezoelectricity, ferroelectricity and electrical breakdown	Lecture, discussion and questioning	Undefined essay test with questions
10	3	Understanding the term magnetism, a brief history and classification of magnetic materials	Magnetism, magnetic moment, electron momentum	Lecture, discussion and questioning	Undefined essay test with questions
11	3	Explaining the role of magnetism in our lives and the most important applications	Classification of magnetic materials: para, ferro and dia	Lecture, discussion and questioning	True or false test
12	3	Knowing the importance of magnetization for ferrous materials	Magnetism, magnetization methods and their advantages	Lecture, discussion and questioning	True or false test
13	3	Explanation of plasma formation	Plasma, its generation, the Earth's magnetization	Lecture, discussion and questioning	True or false test
14	3	Identify the types of hot and cold plasma	Applications of plasma types, industrial uses, cosmic plasma, plasma transactions	Lecture, discussion and questioning	Undefined essay test with questions

11 –course evaluation
- Lecture, - Electronic board, - Discussion, - Brainstorming strategy, - Questioning
12- Learning and Teaching Resources

Required text books	
Main references	-Donald R. Askeland, The science and engineering of materials, , Sixth Edition, University of Missouri—Rolla, Emeritus,2006. -عيسى مسعود بغني، اساسيات هندسة المواد، الهيئة الليبية للبحث والعلوم، بنغازي .2014 -محمد احمد البشير، المواد الهندسية، الطبعة الاولى، 2020
Recommended books and references (scientific journals, reports, ….)	
Electronic references, Websites	https://www.alfreed-ph.com/2017/01/Physics-properties-of-the-material-pdf.html https://www.scribd.com/document/428964606

1. Course Name:	
Modern Physics	
2. Course Code:	
3. Semester / Year:	
First semester of the academic year 2024-2025	
4. Description Preparation Date:	
2/1/2025	
5. Available Attendance Forms:	
My presence	
6. Number of Credit Hours (Total) / Number of Units (Total) (4)/ (3)	
7. Course administrator's name (mention all, if more than one name)	
Name: Qasim Shakir Kadhim Email:basic.qasim.shakir@uobabylon.edu.iq	
8. Course Objectives	
Course Objectives	- Knowing what modern physics is 2- Distinguishing between Newton's laws and quantum laws 3- Identifying Einstein's hypotheses 4- Identifying the dilation of time 5- Distinguishing between length contraction and time dilation 6- Identifying Galileo's transformations 7- Distinguishing between relative mass and mass with energy 8- Studying electromagnetic waves 9- Identifying the wavelength of electromagnetic waves. 10- Identifying X-rays 11- Distinguishing between Compton's phenomenon and X-rays 12- Studying the collision and rebound of the

	photon falling on the target 12- Studying the collision and rebound of the photon falling on the target

9. Teaching and Learning Strategies

Strategy	1- Lecture and presentation 2- Discussion 3- Interrogation 4- Laboratory 5- Reports

10. Course Structure

	Hours	Required Learning Outcomes			Evaluation method
1	4		Definition of Modern Physics		
2	4		Einstein's Hypotheses		
3	4		Galileo's Transformations		
4	4		Time Dilation		
5	4		Length Contraction		
6	4		Relativistic Mass		
7	4		Mass-Energy Relationship		
8	4		Twin Problem		
9	4		Muons		
10	4		Electromagnetic Waves		
11	4		Wavelength of Electromagnetic Waves		
12	4		Planck's Law		

13	4		Blood and tissue parasitic protozoa		
14	4		Parasitic worms		

11. Course Evaluation Theoretical aspect 20 points Practical aspect 10 points Extracurricular activities, reports and daily tests 20 points
12 Learning resources
Required textbooks (methodology if any)
Introduction to Modern Physics, Mohamed Osman, Omar Ibrahim Eid (2007) Sudan Open University. Introduction to Modern Physics, Mohamed Basil Al-Taie (2019), University of Leeds - United Kingdom. Fundamentals of Modern Physics, Ghazi Yassin (2015) Academic Library, Dar Al-Masirah for Publishing and Printing, Jordan.
Recommended supporting books and references (scientific journals - reports .....)
Electronic references - Internet sources

1. Course Name: Organic chemistry
2. Course Code:
3. Semester / Year: First
4. Description Preparation Date:22/9/2024
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total) /Number of Units (Total) Theoretical 2 + Practical 2 / Number of units 3
7. Course administrator's name (mention all, if more than one name)

Name: Fadhel Omran Essa
Email:
basic.fadhel.u@uobabylon.edu.iq

8. Course Objectives

Course Objectives	1. Make the student appreciate the greatness of the Creator Almighty 2. Develop the students' scientific tendencies 3. Introduce the student to the importance of organic chemistry 4. Introduce the student to the mechanics of organic compounds 5. Introduce the student to the difference in the mechanics of organic compounds depending on the active groups and the type of added materials 6. Train the student to prepare some organic compounds 7. Identify the spatial state of organic compounds 8. Make the student distinguish between acidic and basic organic compounds 9- Make the student conclude whether the reaction proceeds in any mechanism

9. Teaching and Learning Strategies

Strategy	Lecture, discussion and questioning

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
first	4	Developing the learner to learn the cognitive, skillful and emotional aspects as a result of the learning process	Introduction to hydrocarbons	Problem solving and discussion + laboratory + brainstorming	Identify the types of organic materials
second			fission and reactions in organic		Recrystallization of organic compounds

			compounds		
third			Alkanes name - properties - their interactions and preparation		detection of alkanes
fourth			Alkenes name - properties - their interactions and preparation		Double bond detection
fifth			Alkynes name - properties - their interactions and preparation		detection of the triple bond
sixth			Aromatic compounds name - properties - their interactions and preparation		Characterization of aromatic compound
seventh			Aromatic compounds name - properties - their interactions and preparation		Detection of elements included in the aromatic compound
eighth			Aromatic compounds name - properties - their		Difference between aromatic and aliphatic compounds

			interactions and preparation		
ninth			Alcohols name - properties - their interactions and preparation		Use a Lucas detector Distinguish ethers from alcohols
tenth			Ethers name - properties - their interactions and preparation		Distinguish ethers from alcohols
eleventh			Aldehydes and ketones name - properties - their interactions and preparation		Reagent 2,4-Dinitrophenylhydrazine, Tollen and Fehlin
twelfth			Aldehydes and ketones name - properties - their interactions and preparation		Reagent, Tollen and Fehling
thirteenth			Carboxylic acid name - properties - their interactions and preparation		Acids are distinguished from other compounds
fourteenth			Esters name - properties - their interactions and		characterize esters

			preparation		
fifteenth			Amines and amides name - properties - their interactions and preparation		Detection of amines

Course Description Form

1. Course Name: biochemsitery
2. Course Code:
3. Semester / Year: 2024-2025
4. Description Preparation Date: 1-2-2025
5. Available Attendance Forms: yes
6. Number of Credit Hours (Total) / Number of Units (Total) 2
7. Course administrator's name (mention all, if more than one name)
Name: antesar rheem obead Email: basic.enteasr rheem obead ....
8. Course Objectives

Course Objectives	• 1. Στυδεντ κνοωλεδγε οφ λιφε χομπονεντσ 2. Στυδψ τηε χονχεπτσ οφ χαρβοηψδρατεσ α νδ συγαρ χομπουνδσ 3. Υνδερστανδινγ προτειν χομπουνδσ 4. Στυδψ ενζψμεσ 5. Στυδεντ κνοωλεδγε οφ τηε ιμπορτανχε οφ λ ιφε χομπονεντσ • •

9. Teaching and Learning Strategies

Strategy	

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
	2	Carbohydrates Carbohydrate metabolism Amino acids Proteins Fat Fat metabolism Hormones Nucleic acids Enzymes Endocrine glands Minerals Vitamins Genetic mutations	biochemsitery	a lecture	a lecture

11. Course Evaluation
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

40. Course Name:
Natural Product
41. Course Code:
42. Semester / Year:
First semester / 2024−2025
43. Description Preparation Date:
01/09/2024
44. Available Attendance Forms:
01/09/2024
45. Number of Credit Hours (Total) / Number of Units (Total)
30 hours / 2 credits
46. Course administrator's name (mention all, if more than one name)
Name: Dr. Rafid A. Taj-Aldeen Email: bas423.rafid.abad@uobabylon.edu.iq

47. Course Objectives

Course Objectives	• The course in Natural Products Chemistry aims to clarify the nature of natural products (secondary metabolites). • It covers the most important natural sources (animal, plant, marine organisms, and microorganisms) and their classification. • The study includes the most important families of chemical organic compounds representing secondary natural products, their chemical structure, biological properties, medical effects of each group, and how to distinguish each group. • It provides knowledge of methods for separating, extracting, and diagnosing them. • Information technology, communication skills, and the skills acquired from studying this course are used to gather data, prepare scientific reports, and share them with colleagues. • The course covers the study of terpeno alkaloids, flavonoids, and bioflavonoids.

48. Teaching and Learning Strategies

Strategy	**Incorporating Learning and Teaching Strategies in the Description of the Natural Products Course for Colleges of Education** It requires the integration of a set of modern methods that support the development of students' skills and their deep understanding of the topics they are learning. Here are some strategies that can be effective: 1. **Active Learning** ○ **Interaction and Participation**: Encouraging students to engage in classroom activities such as discussions, group work, and using open-ended questions. ○ **Experimental Activities**: Activities like simulating natural experiments or conducting practical activities that allow students to apply

concepts in real-life contexts.
    - **Problem-Based Learning (PBL)**: Presenting problems that require students to think critically and research to find solutions based on scientific knowledge.
2. **Collaborative Learning**
    - **Study Groups**: Dividing students into small groups to work on group projects or solve specific problems.
    - **Participatory Learning**: Promoting the exchange of knowledge and experiences among students within the groups, enhancing collective understanding.
3. **Technology-Enhanced Learning**
    - **Multimedia Use**: Such as videos, interactive illustrations, and educational software that support both theoretical and practical explanations of natural concepts.
    - **E-Learning Platforms**: Using Learning Management Systems (LMS) to distribute content, post questions, and hold tests.
    - **Remote Learning**: Providing study materials online to facilitate self-directed learning.
4. **Continuous Assessment and Feedback**
    - **Periodic Assessments**: Such as quizzes, homework assignments, and interactive activities that measure students' understanding of natural products continuously.
    - **Immediate Feedback**: Providing immediate feedback after educational activities or tests to enhance student learning.
5. **Student-Centered Learning**
    - **Student-Oriented Activities**: Motivating students to set their own learning goals and choose projects or topics they wish to explore in more depth.
    - **Guidance and Counseling**: Offering personal guidance to help students understand their strengths and weaknesses and progress in learning natural products.
    - **Enhancing Critical Thinking**: Encouraging students to discuss ideas and analyze natural phenomena critically, developing strategies to solve problems.
6. **Self-Assessment and Peer Assessment**
    - **Self-Assessment**: Encouraging students to periodically evaluate their performance to review their learning and achieve their educational goals.
    - **Peer Assessment**: Involving students in evaluating the work of their peers to enhance collective understanding and knowledge sharing among students.

49. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
one	2	It explains the nature Of natural products, Their types, and the most important sourc along with a historical overview of their uses and their significance medical applications	Introduction in natural products	**Interactive Lecture:** • Written and oral presentation • Presentation using a data show (projector) • Discussion and summary of the key points of the lecture through student participation	• Monthly written exams • Final written exam at the end of the semester • Oral questions and daily quizzes •Assignments that promoteself-assessment
Two	2	To understand the classification of natura products	Classification natural products	Same as above	Same as above
Three	2	Identifying the main sources of natural products and learning how to obtain them through biological min	Methods to obtain natural products	=	=
Four	2	Studying the different types of methods for	Separation and purification of	=	=

		purifying and separatir natural products, followed by training or selecting the appropria method for each type secondary metabolite, and how to analyze thi information to determ the compound type an understand its chemica and molecular structur	natural products		
Five	2	identifies terpenoids, compares their different types, and understands their biological activity and sources	Terpenoids and Steroids	=	=
Six	2	learns how to extract terpenoids and the most prominent methods for purifying them, and concludes t best methods by presenting different types of chromatographic separation techniques	Terpenoids extraction methods	=	=
Seven	2	explains methods for determining the structural composition terpenoids, discusses the best of them, distinguishes between their different techniques, and	Determining the structural composition of terpenoids	=	=

		illustrates and summarizes the metho for extracting both fatt and non-fatty terpeno			
Eight	2	to know alkaloids in general, understands their basic structural core, and reviews thei different types	Alkaloids	=	=
Fifteen	2	explains the chemical structure of flavonoids and their biological effects, and discusses the difference betwee them and bioflavonoid	Flavonoids and Bioflavonoids	=	=

50. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

51. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	
Recommended books and references (scientific journals, reports...)	1- General, organic, and natural product chemistry. Authors: Satyajit D. Sarker,Lutfun Nahar 2- Natural Products Chemistry, Sources, Separations, and Structures Authors: Raymon Cooper George Nicola
Electronic References, Websites	