

Academic Program Description Template

University Name: Tikrit University

College/Institute: College of Education for Pure Sciences

Department: Department of Biology

Academic or Professional Program Name: Bachelor's

Certificate Name: Bachelor of Science in Biology

Academic System: Annual

Date of Preparation of Description: Beginning of the 2025-2026 Academic Year

Date of Completion of File: December 23, 2025

Signature:

Department Head: Prof. Dr. Maysar Abdullah Ahmed

الدكتور
ميسر عبد الله أحمد
رئيس قسم علوم الحياة

Date: 23/12/2025

Signature:

Prof. Dr. Mohammed Ahmed Jassim

Date: 23/12/2025

أ.د. محمد أحمد جاسم
معاون العميد للشؤون العلمية
كلية التربية للعلوم الصرفة
جامعة تكريت

File reviewed by:

Quality Assurance and University Performance Division

Name of Director:

Asst. Prof. Dr. Safa Khalil Ibrahim

Date: 23/12/2025

Signature:

د.م
صفا خليل ابراهيم

Dean's Approval
23-2-2025
Professor Doctor
ALi Abdul Majeed Shihab
College of Education
for Pure Sciences

1. Program Vision

Raising the level of performance in the various fields of life sciences, including zoology, botany, microbiology, and the environment, while taking into account the need to keep pace with the development witnessed by the higher education renaissance by providing the best services and equipment for the academic staff of the teaching staff, providing training and development opportunities for technicians and administrators, and graduating job creators instead of job seekers by qualifying them in the pre-graduation and basic education stages on research, development, innovation, initiative, and entrepreneurship skills, and involving students in everything that would develop their skills and help them to be creative and innovative, not just interested in presentation, and transforming knowledge into wealth through research, development, and innovation.

2. Program mission

The department aims to graduate qualified students with logical scientific thinking and scientific research skills in various fields. It provides state-of-the-art scientific technologies for educational services to undergraduate and graduate students, working to develop the skills that enable them to integrate effectively and efficiently into all disciplines. The department supports scientific research and knowledge exchange to ensure continuous engagement with global scientific and cultural advancements, meeting the evolving needs of society and achieving comprehensive and sustainable human development. This fosters national, regional, and global competitiveness, transforming knowledge into wealth through research, development, and innovation. It also strengthens partnerships between research, development, and innovation within universities and between universities and production and service institutions. The department addresses the country's need for competent and qualified scientific personnel to become future leaders in education by creating a suitable scientific environment for academic and professional growth and offering high-quality academic programs that keep pace with modern developments.

3. Program objective

1. To prepare specialized personnel to support educational institutions.
2. To enable students to apply the knowledge they have acquired.
3. To enable students to utilize knowledge and learn how to apply it effectively.
4. To equip students with teaching and instructional skills.
5. To enable students to apply and develop their acquired knowledge in their chosen profession.
6. To graduate students qualified to pursue postgraduate studies (Master's and PhD) in various life science disciplines.

4. Program Accreditation

Ministry of Higher Education and Scientific Research

5. Other External Factors

6. Program Structure

Program Structure	Number of Courses	Credit Units	Percentage	Notes
Institutional Requirements	8	16	8.8%	Basic
College Requirements	10	36	20%	Basic
Department Requirements	24	128	71.2%	Core
Summer Training				
Other				

7. Program description

Year / grade	Course code	Course name	Credit Hours	
			Theoretical	Practical
1 st grade	101BGB	General Biology	2	2
1 st grade	102BCB	Cell Biology	2	2
1 st grade	103BPA	Plant Anatomy	2	2
1 st grade	104BGC	General Chemistry	1	2
1 st grade	105AL	Arabic Language	1	-
1 st grade	106EP	Developmental Psychology	2	-
1 st grade	107DHR	Human Rights and Democracy	1	-
1 st grade	108CO	Computer Science	-	2
1 st grade	109BGE	Geology	1	-
1 st grade	110FL	Principles of Education	2	-
1 st grade	111EL	English Language	1	-
1 st grade	112BS	Biosafety and Security	1	-
2 nd grade	215BPC	Plant taxonomy	2	2
2 nd grade	216BEM	Embryology	2	2
2 nd grade	217BIN	Invertebrates	2	2
2 nd grade	218BHI	Histology	2	2
2 nd grade	219BBI	Biochemistry	1	2
2 nd grade	220BBS	Critical Thinking Skills	1	
2 nd grade	221CO	Computer Science	-	2
2 nd grade	222DP	Curricula and Textbooks	2	-
2 nd grade	223EASE	Educational Leadership and Management	2	-
2 nd grade	224EL	English Language	1	-
2 nd grade	225BPC	Crimes of the Ba'ath Regime	1	-
2 nd grade	226AL	Arabic Language	1	-
3 rd grade	326BCA	Comparative Anatomy of Chordates	2	2
3 rd grade	327BMY	Fungi	2	2

3 rd grade	328BG	Genetics	2	2
3 rd grade	329BAL	Algae and Archaea	2	2
3 rd grade	330BEN	Insects	2	2
3 rd grade	331BEPE	Environment and Pollution	2	2
3 rd grade	332FSR	Fundamentals of Scientific Research	2	-
3 rd grade	333CMT	Teaching Methods and Approaches	2	-
3 rd grade	334ECPH	Educational Guidance	2	-
4 th grade	436BAP	Animal Physiology	2	2
4 th grade	437BPP	Plant Physiology	2	2
4 th grade	438BIM	Immunology	2	2
4 th grade	439BPA	Microbiology	2	2
4 th grade	440BPA	Parasitology	2	2
4 th grade	441BOP	Optional	2	-
4 th grade	442ME	Measurement and Evaluation	2	-
4 th grade	443PE	Practical Training	2	-
4 th grade	444PE	Graduation Project	2	-

8. Expected learning outcomes of the program

Knowledge

Cognitive objectives

- 1- To enable students to understand the importance of studying life sciences.
- 2- To enable students to understand the historical role of Arab scientists in the field of life sciences.
- 3- To enable students to overcome the difficulties they encounter in their studies.
- 4- To enable students to formulate observable and measurable cognitive and behavioral objectives.
- 5- To enable students to understand the importance of classroom activities and how to implement them in school life.
- 6- To enable students to understand the impact of scientific knowledge in life sciences on developing intellectual skills.

Skills

General and rehabilitative skill objectives

- 1- Learning about modern teaching methods and techniques.
- 2- Staying informed about the latest developments in the field of life sciences to keep pace with the rapid advancements in this discipline.
- 3- Organizing scientific exhibitions, seminars, and workshops.

Program-specific skill objectives	<ol style="list-style-type: none"> 1- .Teaching skills in biology 2- .The student's ability to apply practical laboratory skills 3- .The student's ability to connect causes and effects 				
Values					
Educational values	<p>Innovation and continuous improvement.</p> <p>Competing in the education industry and adhering to standards of excellence</p>				
9. Teaching and learning strategies					
<ol style="list-style-type: none"> 1- The lecture method 2- The lecture method 3- Practical application in laboratories 4- Discussion and dialogue 5- Flipped learning 					
10. Assessment Methods					
<ol style="list-style-type: none"> 1- Weekly reports 2- Practical tests 3- Weekly, monthly, and annual tests 4- Graduation research projects 5- Field visits 					
11. Faculty members					
Academic rank	Name	Specialization		staff	
		General	specific		
Prof.	Najla Mustafa Muhammad	Biology	Plant	✓	
Prof.	Anas Yassin Mahmoud	Biology	Genetics	✓	
Prof.	Abdulkhaliq Alwan Muhaymid	Biology	Parasites	✓	
Prof.	Milad Adnan Mazhar	Biology	Fungi	✓	
Prof.	Measer Abdullah Ahmed	Biology	Animal Physiology	✓	
Prof.	Mahmoud Khalaf Saleh	Biology	Microbiology	✓	
Prof.	Muwaffaq Inhab Saleh	Biology	Environment	✓	
Prof.	Qasim Aziz Razouqi	Biology	Animal Physiology	✓	
assistant prof.	Zubaida Adnan Khudair	Biology	Genetics	✓	
assistant prof.	Ahmed Hamed Mahdi	Biology	Fungi	✓	
assistant prof.	Rashid Khamis Shaaban	Biology	Tissues	✓	
assistant prof.	Wajdan Saadi Aziz	Biology	Plant	✓	
assistant prof.	Muhammad Adnan Hashim	Biology	Plant	✓	
assistant prof.	Omar Tariq Jawad	Biology	Plant	✓	
assistant prof.	Maysoun Mustafa Jassim	Biology	Parasites	✓	
assistant prof.	Nour Ibrahim Hassan	Biology	Animal Physiology	✓	
assistant prof.	Buthaina Jassim Yousef	Biology	Genetics	✓	
assistant prof.	Israa Salman Dalas	Biology	Environment	✓	
assistant prof.	Mustafa Qahtan Mustafa	Biology	Plant	✓	
assistant prof.	Raghad Miqdad Mahmoud	Biology	Environment	✓	
assistant prof.	Maryam Adnan Ibrahim	Biology	Environment	✓	

assistant prof.	Ali Hussein Al-Taif	Biology	Insects		✓	
assistant prof.	Muzain Fadli Namiq	Biology	Animal Physiology		✓	
assistant prof.	Haifa Rajab Alwan	Biology	Microbiology		✓	
assistant prof.	Shatha Hazem Shaker	Biology	Animal Physiology		✓	
assistant prof.	Aseel Younis Khalaf	Biology	Tissues		✓	
assistant prof.	Rasha Shamel Hussein	Biology	Parasites		✓	
assistant prof.	Muhammad Khalil Ibrahim	Biology	Tissues		✓	
Lecturer	Ayat Ali Hussein	Biology	Animal Physiology		✓	
Lecturer	Bashar Fadel Ta'ma	Agriculture	Animal Wealth		✓	
Lecturer	Muhammad Mutlaq Saleh	Biology	Genetics		✓	
Lecturer	Shaimaa Jumaa Aboud	Biology	Genetics		✓	
Lecturer	Samer Bahaa Numan	Biology	Animal Wealth		✓	
Lecturer	Al-Yaqdhan Ali Hussein	Biology	Animal Physiology		✓	
Lecturer	Hala Mahmoud Ismail	Biology	Environment		✓	
Lecturer	Raghad Tayes Saeed	Biology	Parasites		✓	
Lecturer	Safa Laith Mahdi	Biology	Microbiology		✓	
Lecturer	Rehab Salman Kurdi	Biology	Microbiology		✓	
Lecturer	Alhan Jasim Hamash	Biology	Parasites		✓	
Lecturer	Ziad Khalaf Hamdan	Biology	Parasites		✓	
Lecturer	Israa Abd Dhiab	Biology	Tissues		✓	
Lecturer	Luay Burhan Mustafa	Biology	Microbiology		✓	
Assistant Lecturer	Omar Ahmed Abdul Qader	Biology	Microbiology		✓	
Assistant Lecturer	Zainab Karim Mohammed	Biology	Parasites		✓	
Assistant Lecturer	Adnan Hashem Abd	Biology	Educational		✓	
Assistant Lecturer	Asmaa Khaled Mutni	Biology	Animal Physiology		✓	
Assistant Lecturer	Olfat Raouf Mahmoud	Biology	Plant		✓	
Assistant Lecturer	Duaa Hassan Abdul Wahab	Biology	Animal Physiology		✓	
Assistant Lecturer	Reham Hussein Ahmed	Biology	Plant		✓	
Assistant Lecturer	Ahmed Jassem Mohammed	Biology	Environment		✓	
Assistant Lecturer	Shahd Bahaa Hassan	Agriculture	Animal Wealth		✓	
Assistant Lecturer	Shahd Nouri Khabbaz	Biology	Animal Physiology		✓	
Assistant Lecturer	Dunia Hisham Taha	Biology	Genetics		✓	
Assistant Lecturer	Ayat Sufian Abbas	Biology	Animal Physiology		✓	
Assistant Lecturer	Rawaa Mohammed Obeid	Biology	Animal Physiology		✓	

Assistant Lecturer	Rania Nazem Sobhi	Biology	Immunity		✓	
Assistant Lecturer	Omar Essam Mamdouh	Biology	Insects		✓	
Assistant Lecturer	Azal Hassan Alwan	Biology	Insects		✓	
Assistant Lecturer	Mustafa Nazhan Mahdi	Biology	Animal Wealth		✓	
Assistant Lecturer	Omar Muzahim Tabour	Agriculture	Fungi		✓	
Assistant Lecturer	Nour Adnan Mahmoud	Biology	Microbiology		✓	
Assistant Lecturer	Loma Safi Abdul	Biology	Microbiology		✓	
Assistant Lecturer	Aswad Hamad Nada	Biology	Environment		✓	
Assistant Lecturer	Elaf Mohammed Hariz	Biology	Genetics		✓	
Assistant Lecturer	Noha Hossam Abdul Wahab	Biology	Environment		✓	
Assistant Lecturer	Shahd Tariq Khalaf	Biology	Wealth Animal		✓	
Assistant Lecturer	Raghad Hassan Mahmoud	Agriculture	Parasites		✓	
Assistant Lecturer	Nahed Ayad Fares	Biology	Teaching Methods		✓	
Assistant Lecturer	Zainab Shakour Ghaeb	Educational	English Language		✓	
Assistant Lecturer	Rifqa Sami	English	Teaching Methods		✓	
Assistant Lecturer	Ahmed Ghaleb Turki	Physical	Plants		✓	
Assistant Lecturer	Golan Zaben Habib	Agriculture	Plant		✓	

Professional Development

Guidance for New Faculty Members

New, visiting, and full-time faculty members, among others, are guided through integration with experienced faculty to acquire the necessary skills in the teaching strategies adopted within the educational program. This includes continuous monitoring of their cognitive development and their acquisition of the required skills for the subject matter, as well as centralized courses held at the institutional and college levels to enhance their skills.

Professional Development for Faculty Members

The academic and professional development plan for faculty members includes an annual professional development plan, such as preparing an annual research plan for each faculty member, as well as seminars, workshops, scientific courses, and community service activities. It also includes developing teaching and learning strategies through modern teaching methods such as brainstorming, group work, discussion strategies, discovery learning, and inductive teaching strategies. This aims to achieve learning outcomes that can be assessed and measured through tests approved within the program. Learning and professional development outcomes are evaluated through faculty member evaluations by the department head, as well as through a questionnaire distributed to students in coordination with the college's Quality Assurance Unit and under the supervision of the university's Quality Assurance Department.

12 Admission Criteria

(Central Admission)

13 13. Main Sources of Information about the Program

Ministry of Higher Education and Scientific Research

14 14. Program Development Plan

- 1- Forming committees within the academic department to monitor the program and conduct a comprehensive review of any updates.**
- 2- Surveying student feedback at the end of each semester regarding the academic program.**
- 3- Surveying faculty feedback at the end of each semester regarding the best methods for developing courses and teaching methods.**
- 4- Coordinating with the university's Quality Assurance Unit to monitor the implementation of the academic program within the department.**
- 5- Conducting a comprehensive review of the program. Program**

Skills Outline															
Program Learning Outcomes															
Values				Skills				Knowledge				Core or Elective	Course Name	Course Code	Year / Level
C4	C3	C2	C1	B4	B3	B2	B1	4A	A3	A2	A1				
*	*	*	*		*	*	*	*	*	*	*	core	General Biology	101BGB	1 st Year
*	*	*	*	*	*	*	*	*	*	*	*	core	Cell Biology	102BCB	
*	*	*	*		*	*	*	*	*	*	*	core	Plant Anatomy	103BPA	
*	*	*	*	*	*	*	*	*	*	*	*	core	General Chemistry	104BGC	
*		*	*	*	*	*	*	*	*	*	*	Basic	Arabic Language	105AL	
*	*	*		*	*	*	*	*	*	*	*	Basic	Developmental Psychology	106EP	
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Human Rights and Democracy	107DHR	
*		*	*		*	*	*	*	*	*	*	Basic	Computer Science	108CO	
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Geology	109BGE	
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Principles of Education	110FL	
	*	*	*		*	*	*	*	*	*	*	Basic	English Language	111EL	
*	*	*	*	*	*	*	*	*	*	*	*	core	Biosafety and Security	112BS	

Skills Outline															
Program Learning Outcomes															
Values				Skills				Knowledge				Core or Elective	Course Name	Course Code	Year/Level
C4	C3	C2	C1	B4	B3	B2	B1	4A	A3	A2	A1				
*	*	*	*		*	*	*	*	*	*	*	core	Plant taxonomy	215BPC	2 nd year
*	*	*	*		*	*	*	*	*	*	*	core	Embryology	216BEM	
*	*	*	*		*	*	*	*	*	*	*	core	Invertebrates	217BIN	
*	*	*	*	*	*	*	*	*	*	*	*	core	Histology	218BHI	
*		*	*		*	*	*	*	*	*	*	core	Biochemistry	219BBI	
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Critical Thinking Skills	220BBS	
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Computer Science	221CO	
*	*		*	*	*	*	*	*	*	*	*	Basic	Curricula and Textbooks	222DP	
*	*		*	*	*	*	*	*	*	*	*	Basic	Educational Leadership and Management	223EASE	
*	*	*	*	*	*	*	*	*	*	*	*	Basic	English Language	224EL	
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Crimes of the Ba'ath Regime	225BPC	
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Arabic Language	226AL	

Skills Outline															
Program Learning Outcomes															
Values				Skills				Knowledge				Core or Elective	Course Name	Course Code	Year/Level
C4	C3	C2	C1	B4	B3	B2	B1	4A	A3	A2	A1				
*	*	*	*		*	*	*	*	*	*	*	core	Comparative Anatomy of Chordates	326BCA	3 rd year
*	*	*	*		*	*	*	*	*	*	*	core	Fungi	327BMY	
*	*	*	*		*	*	*	*	*	*	*	core	Genetics	328BG	
*	*	*	*	*	*	*	*	*	*	*	*	core	Algae and Archaea	329BAL	
*		*	*		*	*	*	*	*	*	*	core	Insects	330BEN	
*	*	*	*	*	*	*	*	*	*	*	*	core	Environment and Pollution	331BEPE	
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Fundamentals of Scientific Research	332FSR	
*	*		*	*	*	*	*	*	*	*	*	Basic	Teaching Methods and Approaches	333CMT	
*	*		*	*	*	*	*	*	*	*	*	Basic	Educational Guidance	334ECPH	
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Comparative Anatomy of Chordates	335EL	

Skills Outline															
Program Learning Outcomes															
Values				Skills				Knowledge				Core or Elective	Course Name	Course Code	Year/Level
C4	C3	C2	C1	B4	B3	B2	B1	4A	A3	A2	A1				
	*	*	*		*	*	*	*	*	*	*	core	Animal Physiology	436BAP	4 th year
*	*	*	*		*	*	*	*	*	*	*	core	Plant Physiology	437BPP	
*	*	*	*		*	*	*	*	*	*	*	core	Immunology	438BIM	
*	*	*	*		*	*	*	*	*	*	*	core	Microbiology	440BPA	
		*	*	*	*	*	*	*	*	*	*	core	Parasitology	441BOP	
*	*	*	*		*	*	*	*	*	*	*	core	Optional	442ME	
*	*	*	*		*	*	*	*	*	*	*	Basic	Measurement and Evaluation	443PE	
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Practical Training	444BRP	
	*		*	*	*		*	*	*	*	*	Basic	Graduation Project	445EL	

Course Description Form

1. Course name	
Practical cell biology	
2. Course code	
BGB101	
3. Semester/Year	
2025-2026	
4. Date this description was prepared	
1/17/2026	
5. Available forms of attendance	
Mandatory attendance/electronic	
6. Number of study hours (total) / Number of units (total)	
56 hours Practical and theoretical/ 6 units Practical and theoretical	
7. Name of the course supervisor (if more than one name is mentioned)	
Name: Duaa Hassan Abdel Wahab	'Yaqzan Ali Hussein
Email: Doaahassan@tu.edu.iq	Alyakthan.a.salih@tu.edu.iq
8. Course objectives	
<ul style="list-style-type: none"> •help students understand the functions of the different cells and tissues in the body. • ...Preparing scientific and qualitative cadres specialized in the field of life sciences for the purpose of improving the educational reality in the country. • Teaching students writing and speaking skills at analytical levels by referring to the latest findings of modern science in the field of cell science and methods of diagnosing it... • Delivering a general idea about the cell – its components – cell organelles – proteins – genetic code – programmed cell death – diseases that affect cells • Preparing a qualified cadre of teaching assistants in the cell's specialization 	Subject objectives

- Providing the Ministry of Education and the Ministry of Higher Education and Scientific Research with specialized and qualified personnel in the field of life sciences.

9. Teaching and learning strategies

<p>1- Use of electronic visual aids</p> <p>2- Using the discussion method in the lecture between the professor and the students</p> <p>3- Assigning students to do research and reports</p> <p>4- Assigning students homework related to the scientific subject</p>	Strategy
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10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
Classroom performance and exams	presence	Discovery of the cell and microscopes	Understand the topic of the lecture	2 Theoretical 2 Practical	1-
Classroom performance and exams	presence	And time the practical part	Understand the topic of the lecture	2 Theoretical 2 Practical	2-
Classroom performance and exams	presence	General structure and chemistry of the cell	Understand the topic of the lecture	2 Theoretical 2 Practical	3-
Classroom performance and exams	presence	Eukaryotic and prokaryotic organisms	Understand the topic of the lecture	2 Theoretical 2 Practical	4-
Classroom performance and exams	presence	Proteins, lipids and carbohydrates	Understand the topic of the lecture	2 Theoretical 2 Practical	5-
Classroom performance and exams	presence	Structure and function of plant and animal cell wall	Understand the topic of the lecture	2 Theoretical 2 Practical	6-
Classroom performance and exams	presence	The difference between the structure and function of the plant and animal cell wall, prokaryotic and eukaryotic cells, and viewing them under the microscope	Understand the topic of the lecture	2 Theoretical 2 Practical	7-
Classroom performance and exams	presence	Conducting the practical part and the method of detecting the components of the cell wall practically	Understand the topic of the lecture	2 Theoretical 2 Practical	8-
Classroom performance and exams	presence	Study of cell typesVegetarianism	Understand the topic of the lecture	2 Theoretical 2 Practical	9-

		parenchymal cell parenchyma cell collenchyma cell sclerenchyma cell scleren cyst cell			
Classroom performance and exams	Presence	Conducting the experiment The process To study plant cell types	Understand the topic of the lecture	2 Theoretical 2 Practical	10-
Classroom performance and exams	Presence	Study of cell shapes and types	Understand the topic of the lecture	2 Theoretical 2 Practical	11-
	Presence	Definition of plastids and study of plastid types	Understand the topic of the lecture	2 Theoretical 2 Practical	12-
Classroom performance and exams	Presence	to time Plastid aT Under the microscope and diagnosis of its types	Understand the topic of the lecture	2 Theoretical 2 Practical	13-
Classroom performance and exams	Presence	Study of the non-living contents of the plant cell, including the chloroplast. Rat	Understand the topic of the lecture	2 Theoretical 2 Practical	14-
Classroom performance and exams	Presence	Studying the types of crystals and observing their types under the microscope	Understand the topic of the lecture	2 Theoretical 2 Practical	15-
Classroom performance and exams	Presence	Definition of plasma membrane and identification its functions and structure Plasma membrane chemist	Understand the topic of the lecture	2 Theoretical 2 Practical	16-
Classroom performance and exams	Presence	Ways of transporting water and materials across the membrane Plasmic. Diffusion Free and easy to spread And transportation Effective and ionic pumping And transfer by road Yq vesicle formation	Understand the topic of the lecture		17-
Classroom performance and exams	Presence	Definition Osmosis and metabolism FO On the methods of entry and exit of materials through endocytosis, exocytosis, partial secretion, apical secretion and dual secretion.	Understand the topic of the lecture	2 Theoretical 2 Practical	18-
Classroom performance and exams	Presence	study impact Solutions with concentrations Different On red blood cells	Understand the topic of the lecture	2 Theoretical 2 Practical	19-

Classroom performance and exams	Presence	Studying the method of preparing a live plant slice in the laboratory	Understand the topic of the lecture	2 Theoretical 2 Practical	20-
Classroom performance and exams	Presence	Study of cell fixation methods through the sectioning method and steps Necessary For cutting	Understand the topic of the lecture	2 Theoretical 2 Practical	21-
Classroom performance and exams	Presence	Study of cell life cycle, study of indirect mitosis and meiosis	Understand the topic of the lecture	2 Theoretical 2 Practical	22-
Classroom performance and exams	Presence	Study the divisions that Includes Meiosis and the stages it goes through With her and her studies And Practical side and timing the stages of division under the microscope	Understand the topic of the lecture	2 Theoretical 2 Practical	23-

11. Course Evaluation

Distribution of the grade out of 100 according to the tasks assigned to the student
Such as daily preparation, questions and oral 10%
Daily quizzes and a surprise quiz 10%
Monthly and reporting..80%

12. Learning and teaching resources

Theoretical cell book for the first stage	Required textbooks (methodology if any)
Theoretical cell book for the first stage	Main References (Sources)
Reputable scientific journals issued by publishing houses (Al-Safir and Reports)	Recommended supporting books and references (scientific journals, reports...)
Verma, P.S., (2005) Cell BIOLOGY, genetics, Molecular Biology, Evolution and ecology Virtual Electronic Library, solid references, electronic references, Internet sites	Electronic references, websites

Course Description Form

1. Course name	
English language	
2. Course code	
EL111 /EL224	
3. Semester/Year	
Academic year 2025-2026	
4. Date this description was prepared	
1/12/2025	
5. Available forms of attendance	
My attendance is mandatory	
6. Number of study hours (total) / Number of units (total)	
Number of hours = 36, number of units 2	
7. Name of the course supervisor (if more than one name is mentioned)	
Name: Refkaa samey	
8. Course objectives	
<ul style="list-style-type: none"> • The course aims to provide students with basic information about the English language. • Introducing and teaching students the rules and basics of the English language, such as how to write the correct English sentence and arrange it according to its appropriate tense (simple present, continuous, perfect, or simple past, continuous, or perfect in addition to the future tense), and how to use question tools. Wh-question words Auxiliary verbs to create a complete interrogative sentence in terms of form and meaning, as well as prepositions and how to apply them in sentences. (in, on, at, and, between etc..)). • Introducing students to adjectives, nouns, and adverbs and how to differentiate between them by linking them to the Arabic language for the purpose of understanding them more smoothly. 	Subject objectives

<ul style="list-style-type: none"> • Motivating students to acquire a new language through the educational methods, activities and means used. • Providing the Ministry of Education and the Ministry of Higher Education and Scientific Research with specialized and qualified personnel in the field of life sciences. 	
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9. Teaching and learning strategies

<ol style="list-style-type: none"> 1. The prescribed textbooks. 2. Using the discussion method and presenting points of view between the teacher and the students inside the classroom. 3. Assign students to prepare weekly reports. 4. Use of the deviceMb3For the purpose of listening to conversations and dialogues and how to pronounce them correctly. 5. Assigning students homework related to the subject. 	Strategy
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10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	time	week
Classroom performance and oral questions	Attendance: Using the board, textbook and deviceMb3	Unit one: Introductions, how to present yourself, the way to answer the question of 'how are you', greetings, and how to pronounce 'S' in different ways /S/, /Z/, and /Z/. Educational texts	Understand the topic of the lecture	3	1 – 2
Classroom performance and exams	Attendance: Using the board, textbook and deviceMb3	Unit Two: Your world, countries, where's he/she from, numbers from 1-30 Examples: Educational texts	Understand the topic of the lecture	3	3
Classroom performance and oral questions	Attendance: Using the board, textbook and deviceMb3	Unit Three: all about you, jobs, negatives and questions, personal information, Metro 5- the audition and social expressions. Examples: Educational texts	Understand the topic of the lecture	3	4
Classroom performance	Attendance: Using the board, textbook	Unit Four: Family and friends, possessive's, has/have, Annie Taylor and My friend Antonia (passages), the alphabet, some sounds.	Understand the topic of the lecture	3	5

nce and exams	and deviceMb3	Examples: Educational texts			
Classroom performance and oral questions	Attendance: Using the board, textbook and deviceMb3	Unit Five: The way I live, sports/food/drinks, Present Simple, a/an, languages and nationalities, numbers and prices.	Understand the topic of the lecture	3	6 - 7
Classroom performance and exams	Attendance: Using the board, textbook and deviceMb3	Unit Six: Every day, the time, present simple/short answers, adverbs of frequency, words that go together, days of the week. Examples: Educational texts	Understand the topic of the lecture	3	8
Classroom performance and oral questions	Attendance: Using the board, textbook and deviceMb3	Elliot and Lois Maddox (passages/reading and questions), rules of adjectives, and nouns, the addition of 's' and 'es', as well as preposition of in / on / at. Examples: Educational texts	Understand the topic of the lecture	3	9
Classroom performance and exams	Attendance: Using the board, textbook and deviceMb3	Unit Seven: My Favorites, Question words (what, where, when, who, why, how many), pronouns whether subject, object or possessive. This and that, adjectives (vocabulary), reading and writing 'A postcard from San Francisco.' Examples: Educational texts	Understand the topic of the lecture	3	10 – 11
Classroom performance and oral questions	Attendance: Using the board, textbook and deviceMb3	Unit Eight: Where I live, rooms and furniture, how to use 'There is – There are', prepositions like 'under, next to, behind, around and beside'. Examples: Educational texts	Understand the topic of the lecture	3	12
Classroom performance and exams	Attendance: Using the board, textbook and deviceMb3	Reading and vocabulary: “Vancouver Canada – the best city in the world” and “My home town”. Directions, how to find places by using directional phrases such as, turn right, go straight on, turn left. Examples: Educational texts	Understand the topic of the lecture	3	13
Classroom performance and oral questions	Attendance: Using the board, textbook and deviceMb3	Unit Nine: Times past, saying years, how to differentiate between 'was/were', reading and speaking 'Jackson Pollock', explanation of Past Simple tense (affirmative, question and negative along with short answer). Examples: Educational texts	Understand the topic of the lecture	3	14 – 15

Classroom performance and exams	Attendance: Using the board, textbook and deviceMb3	Unit Ten: We had a great time, regular and irregular verbs, the words of 'have, do, go', months of the year, numbers like 'first= 1st, second= 2nd etc..', the way to write dates . Examples: Educational texts	Understand the topic of the lecture	3	16
Classroom performance and oral questions	Attendance: Using the board, textbook and deviceMb3	Sport and leisure, how to use 'going and playing' with sports. How to pronounce 'd' as /t/, /d/ and /id/, listening and speaking 'Jack and Millie's holiday'. Examples: Educational texts	Understand the topic of the lecture	3	17
Classroom performance and exams	Attendance: Using the board, textbook and deviceMb3	Unit Eleven: I can do that, how to use 'can/ can't' as modal verbs, adverbs and how we differentiate between adverbs and adjectives by adding (ly), reading and listening 'You can do more and more on the Internet !, its history and millions of uses'. Examples: Educational texts	Understand the topic of the lecture	3	18
Classroom performance and oral questions	Attendance: Using the board, textbook and deviceMb3	Unit Twelve: Please and thank you, how to use 'would you like, I'd like' for offers and polite orders, the use of 'some and any' for positive/ question/ negative sentences. Reading and speaking 'What's on your plate?'. Examples: Educational texts	Understand the topic of the lecture	3	19
Classroom performance and exams	Attendance: Using the board, textbook and deviceMb3	Vocabulary and speaking: In a restaurant – Café Fresco, utilizing adjectives nouns, signs all around (Exit, Sale, Closed, Pull, No smoking), opposite verbs. Examples: Educational texts	Understand the topic of the lecture	3	20
Classroom performance and oral questions	Attendance: Using the board, textbook and deviceMb3	Unit Thirteen: Here and now, colors and clothes, explanation of Present Continuous (affirmative, question, negative), Reading and listening 'The Secret Millionaire– Colin Cameron, what's the matter? And for what it is used, in addition to the opposites. Examples: Educational texts	Understand the topic of the lecture	3	21-22
Classroom performance and exams	Attendance: Using the board, textbook and device	Unit Fourteen: It's time to go! , Future plans "Going to" and its use, reading and listening 'Seven countries in seven days', words that go together, social expression,	Understand the topic of the lecture	3	23

		grammar revision (present, past, future) and vocabulary revision.			
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11. Course Evaluation	
Distribution of the grade out of 100 according to the tasks assigned to the student Such as daily preparation and oral questions 10% Daily short tests (pop-up test) 10% Monthly exam and reporting 80%	
12. Learning and teaching resources	
New Headway Beginner Student's Book.	Required textbooks (methodology if any)
English Grammar in Use.	Main References (Sources)
English Grammar in Use for first stage. English Grammar in Use for third stage.	Recommended supporting books and references (scientific journals, reports...)
https://m.youtube.com/time%3Fv%3Di1J1vgbzPSc&sa=U&ved=2ahUKEwi https://learnenglish.britishcouncil.org/grammar/english-grammar-reference/present-simple https://www.newheadwaybeginnerstudent'sbook https://fadeibuoni.files.wordpress.com	Electronic references, websites

نموذج وصف المقرر

Course Description Form

1. Course name					
computers					
2. Course code					
Com111					
3. Semester/Year					
2025/2026					
4. Date this description was prepared					
3/9/2025					
5. Available forms of attendance					
daily					
6. Number of study hours (total) / Number of units (total)					
60 hours					
7. Name of the course administrator (if more than one name is mentioned)					
Al hakam aiad salah : abrar yaqtan					
8. Course objectives					
<ul style="list-style-type: none"> • Teaching the student to use the program Microsoft Word 2010. • Teaching the student to type and understand the most important program instructions. • Teaching the student to use the program Microsoft Power point 2010. • Teaching students how to create presentation slides. 					Subject objectives
9. Teaching and learning strategies					
Practical lecture method and students applying the program in the laboratory.					Strategy
10. Course Structure					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	ti me	week
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	Program definition Microsoft Word	2	the first
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	Program interface explanation Microsoft Word	2	the second

Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	File tab	2	the third
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	Home tab: Clipboard, Font	2	Four th
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	Home tab: Paragraph, Styles	2	Fifth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	Home tab: Edit	2	Sixth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	Page Layout Tab: Page layout and setup group	2	Seven th
Daily and monthly exams,	Theoretical Practical	Microsoft Word	Page Layout Tab: Page background, paragraph	2	The eighth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	Display tab: Document View, Show and Window	2	Ninth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	Insert tab: Pages and illustrations	2	tenth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	Insert tab: Table Table Tools	2	eleven th
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	Insert tab: Table and table design	2	twelft h
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	Insert tab: Table layout	2	thirtee nth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	Insert tab: Table layout	2	fourte enth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	Insert tab: Illustrations, drawings and footers	2	fifteen th
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	Insert tab: Text, symbol and equation	2	Sixtee nth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	References tab: Table of Contents and Footnotes	2	sevent eenth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	References tab: References, citations and index	2	eighte enth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	Review tab: Spell check and word count	2	ninete enth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Power Point	Run the program and explain the program interface	2	Twent y

Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Power Point	File tab components	2	twenty-first
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Power Point	Home tab	2	twenty-second
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Power Point	Slideshow tab	2	twenty-third
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Power Point	View tab	2	twenty-fourth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Power Point	Design tab	2	twenty-fifth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Power Point	Insert objects and add animations	2	twenty-sixth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Power Point	Drawing and editing group	2	twenty-seventh
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Power Point	Illustration and media collection	2	twenty-eighth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Power Point	Transitions and Preview tab	2	twenty-ninth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Power Point	Tab movements	2	thirty

11. Course Evaluation

Daily exam score:10, Homework and Reports Grade: 15, Monthly Exams Grade: 25

Final Exam Score:50

12. Learning and teaching resources

Computer Basics and Office Applications / Part Two Microsoft Office Word 2010 Microsoft Office Power Point 2010 Ministry of Higher Education and Scientific Research 2016	Required textbooks (methodology if any)
Explanation of PowerPoint 2010 The book is in Arabic. A complete explanation of the program with the English interface, with practical exercises on creating presentations.- Written by: Eng. Mohamed Abu Al-Ela	Recommended supporting books and references (scientific journals, reports...)
locationYouTubeOn the web	Electronic references, websites

Course Description Form

1. Course name:	
Contemporary Biology (Practical Part)	
2. Course code:	
101BGB	
3. Semester/Year :	
First and second semesters of the academic year 2025-2026	
4. Date of preparation of this description:	
17/9/2025	
5. Available forms of attendance:	
Mandatory attendance	
6. Number of study hours (total) / Number of units (total)	
Number of hours 60, number of units 6 (4 theoretical 2 practical)	
7. Name of the course supervisor (if more than one name is mentioned)	
Samer bahaa numan samir.nueman@tu.edu.iq Name: M.M. Shahd Nouri Khabbaz Email: shahad.nouri@tu.edu.iq	
8. Course objectives	
<ul style="list-style-type: none"> • This course aims to provide the student with comprehensive information about contemporary biology. • Learn about the light microscope and how to use it with practical experiments • Teaching the student laboratory methods for examining animal and plant cell models • Identify the modern types of classification used in classifying living organisms and methods of identifying them from the general shape and vital function performed by the living organism • Teaching the student modern methods of writing practical laboratory reports and using laboratory equipment, which gives the student the ability to use them after graduation. 	Subject objectives

- Paying attention to the outputs of the College of Education for Pure Sciences to graduate a generation that can occupy teaching positions in the Ministry of Higher Education and the Ministry of Education.

9. Teaching and learning strategies

1. Lecture method Through modern educational methods. Using modern technology by displaying explanatory slides of scientific models in addition to scientific videos, via display screens.
2. Giving practical lectures based on laboratory equipment
3. Preparing scientific reports
4. Field visits to scientific laboratories
5. Opening the door for scientific discussions for students to increase comprehension and expand understanding using
 - The lecture Interactive Lectures
 - Dialogue and discussion discussion
 - Storm Mental Brainstorming

Strategy

10. Course structure:

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	time	The week
Classroom performance and exams	Presence	General instructions, laboratory supplies and tools, drawing method	Understand the topic of the lecture	2	the first
Classroom performance and exams	Presence	Compound microscope and its composition, microscope care and how to use it, cell	Understand the topic of the lecture	2	the second
Classroom performance and exams	Presence	Study of plant cell models, cell shapes, cell division, types of divisions and their roles	Understand the topic of the lecture	2	the third
Classroom performance and exams	Presence	Examine models of animal and plant cells that illustrate the stages.	Understand the topic of the lecture	2	Fourth
Classroom performance and exams	Presence	Different divisions of tissues.	Understand the topic of the lecture	2	Fifth
Classroom performance and exams	Presence	Monthly exam	Monthly exam	2	Sixth

Classroom performance and exams	Presence	Study of different types of animal tissues	Understand the topic of the lecture	2	Seventh
Classroom performance and exams	Presence	Sections, different animal tissues	Understand the topic of the lecture	2	The eighth
Classroom performance and exams	Presence	Classification of living things	Understand the topic of the lecture	2	Ninth
Classroom performance and exams	Presence	Study models of revival in different kingdoms	Understand the topic of the lecture	2	tenth
Classroom performance and exams	Presence	Monthly exam	Monthly exam	2	eleventh
	Presence	Learn about invertebrate anatomy	Understand the topic of the lecture	2	twelfth
Classroom performance and exams	Presence	Dissection of an insect model	Understand the topic of the lecture	2	thirteenth
Classroom performance and exams	Presence	And identify all the insect body systems	Understand the topic of the lecture	2	fourteenth
Classroom performance and exams	Presence	Identify the different groups of chordates.	Understand the topic of the lecture	2	fifteenth
Classroom performance and exams	Presence	Chordate characteristics	Understand the topic of the lecture	2	Sixteenth
Classroom performance and exams	Presence	Monthly exam	Monthly exam	2	seventeenth
Classroom performance and exams	Presence	Frog anatomy	Understand the topic of the lecture	2	eighteenth
Classroom performance and exams	Presence	Learn about the internal organs of the frog	Understand the topic of the lecture	2	nineteenth
Classroom performance and exams	Presence	Study of plant structure and organs	Understand the topic of the lecture	2	Twenty
Classroom performance and exams	Presence	Root section study	Understand the topic of the lecture	2	twenty-first
Classroom performance and exams	Presence	Sectional study of the leg	Understand the topic of the lecture	2	twenty-second

Classroom performance and exams	Presence	Study a section of the paper	Understand the topic of the lecture	2	twenty-third
Classroom performance and exams	Presence	Monthly exam	Monthly exam	2	twenty fourth

11. Course Evaluation

Distribution of the grade out of 100 according to the tasks assigned to the student

- 1- Daily preparation and oral questions 10%
- 2- Daily quizzes and a surprise quiz 10%
- 3- Monthly exams and reporting..80%

12. Learning and teaching resources

Contemporary Biology Book for the First Stage	Required textbooks (methodology if any)
Basics of Biology // Prof. Dr. Hussein Al-Saadi // Asst. Prof. Dr. Hussein Abdel Moneim Biology // Stephen Rose Life scienceThe year// Biology General Dr. Diao Saad Allah Basics of General Biology // Asst. Prof. Dr. Rahim An'ad Khadir	Main References (Sources)
Reputable scientific journals issued by publishing houses (Al-Safir and Reports)	Recommended supporting books and references (scientific journals, reports...)
Adoption of solid websites, virtual library	Electronic references, websites

Course Description Form

1. Course name:	
Arabic language	
2. Course code:	
112AL	
3. Semester/Year :	
First and second semesters of the academic year 2025-2025	
4. Date of preparation of this description:	
17/9\2025	
5. Available forms of attendance:	
Mandatory attendance	
6. Number of study hours (total) / Number of units (total)	
Number of hours 30, number of units 2	
7. Name of the course supervisor (if more than one name is mentioned)	
Name: omer salamh	
8. Course objectives	
<ul style="list-style-type: none">• This course aims to provide the student with comprehensive information about Arabic language• Teaching the student modern methods of writing practical• Paying attention to the outputs of the College of Education for Pure Sciences to graduate a generation that can occupy teaching positions in the Ministry of Higher Education and the Ministry of Education.	Subject objectives
9. Teaching and learning strategies	

<p>1- Lecture method Through modern educational methods.</p> <p>2- Preparing scientific reports</p> <p>3- Opening the door for scientific discussions for students to increase comprehension and expand understanding using</p> <p>The lecture Interactive Lectures</p> <p>Dialogue and discussion discussion</p> <p>Storm Mental Brainstorming</p>	Strategy
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10. Course structure:

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
Classroom performance and exams	Presence	Texts	Understand the topic of the lecture	2	the first
Classroom performance and exams	Presence	Interpretation of the Holy Quran: Selecting two stories from Surat Al-Fatihah and Surat Al-Fajr. Using interpretations of the Holy Quran when needed.	Understand the topic of the lecture	2	the second
Classroom performance and exams	Presence	Selections from ancient and modern Arabic poetry as follows:	Understand the topic of the lecture	2	the third
Classroom performance and exams	Presence	Poetry by Mohammed Mahdi Al-Jawahiri Oh Tigris of goodness	Understand the topic of the lecture	2	Fourth
Classroom performance and exams	Presence	Al-Mutanabbi's poetry about the people of Buwan	Understand the topic of the lecture	2	Fifth
Classroom performance and exams	Presence	Discuss the life of the poet Mikhail Naimy	Monthly exam	2	Sixth

Classroom performance and exams	Presence	Discussing the life and biography of the poet Abdel Rahman Shukry	Understand the topic of the lecture	2	Seventh
Classroom performance and exams	Presence	Grammar and morphology	Understand the topic of the lecture	2	The eighth
Classroom performance and exams	Presence	Spelling axis	Understand the topic of the lecture	2	Ninth
Classroom performance and exams	Presence	The nominal and verbal sentence system: subject and predicate, kana and its sisters, the verb and its temporal meaning, original and subsidiary signs.	Understand the topic of the lecture	2	tenth
Classroom performance and exams	Presence	The accusatives: objects, states, distinctions, exceptions and dependents.	Monthly exam	2	eleventh
	Presence	number	Understand the topic of the lecture	2	twelfth
Classroom performance and exams	Presence	Common mistakes	Understand the topic of the lecture	2	thirteenth
Classroom performance and exams	Presence	Morphology: simple and augmented, derivatives (active participle and passive participle)	Understand the topic of the lecture	2	fourteenth
Classroom performance and exams	Presence	pronunciation and drawing	Understand the topic of the lecture	2	fifteenth
Classroom performance and exams	Presence	Solar and lunar letters	Understand the topic of the lecture	2	Sixteenth
Classroom performance and exams	Presence	Writing the hamza / hamzat al-wasl and hamzat al-qata	Monthly exam	2	seventeenth
Classroom performance and exams	Presence	Middle Hamza - Extreme Hamza	Understand the topic of the lecture	2	eighteenth
Classroom performance and exams	Presence	Writing the letter taa / taa marbuta and taa mabsutah	Understand the topic of the lecture	2	nineteenth
Classroom performance and exams	Presence	punctuation marks	Understand the topic of the lecture	2	Twenty

Classroom performance and exams	Presence	punctuation marks	Understand the topic of the lecture	2	twenty-first
Classroom performance and exams	Presence		Understand the topic of the lecture	2	twenty-second
Classroom performance and exams	Presence		Understand the topic of the lecture	2	twenty-third
Classroom performance and exams	Presence		Monthly exam	2	twenty fourth

11. Course Evaluation	
Distribution of the grade out of 100 according to the tasks assigned to the student	
4- Daily preparation and oral questions 10%	
5- Daily quizzes and a surprise quiz 10%	
6- Monthly exams and reporting..80%	
12. Learning and teaching resources	
	Required textbooks (methodology if any)
	Main References (Sources)
Reputable scientific journals	Recommended supporting books and references (scientific journals, reports...)
Adoption of solid websites, virtual library	Electronic references, websites

Course Description Form

1. Course name

Educational and growth Psychology					
2. Course code					
106EP					
3. Semester/Year					
2025-2025					
4. Date this description was prepared					
1/24/2025					
5. Available forms of attendance					
Presence					
6. Number of study hours (total) / Number of units (total)					
2 weekly 4 units					
7. Name of the course supervisor (if more than one name is mentioned)					
Name osam amer nsaif					
8. Course objectives					
<p>The student should become familiar with the concept of educational psychology and its areas of interest and study.....</p> <p>The student should know the meaning of educational objectives, classify them, and transform them into learning goals.</p> <p>The student should understand the meaning of memory, its nature and its role in teaching.</p> <p>The student should learn about the importance of motivation in the field of educational psychology.</p> <p>The student should be familiar with the meaning of learning transfer and its educational applications.</p>				<ul style="list-style-type: none"> • Subject objectives 	
9. Teaching and learning strategies					
					Strategy
10. Course Structure					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
Evaluation method	Teaching method	Name of the unit or topic	Required learning outcomes	Time	The week
Asking and answering questions from the student	Dialogue and	science self Educational	Understand the meaning of educational psychology	2	the first

	discussion	And its development			
Asking and answering questions from the student	Dialogue and discussion	Goals Educational	The student should be able to formulate behavioral objectives and formulate a question that achieves the objective.	2	the second the third Fourth
Asking and answering questions from the student	Dialogue and discussion		Midterm exam		Fifth
Asking and answering questions from the student	Dialogue and discussion	Memory Her theories And its role In teaching	Learn about memory and its theories	2	Sixth
Asking and answering questions from the student	Dialogue and discussion	=	=	2	Seventh
Asking and answering questions from the student	Dialogue and discussion	forgetfulness	Learn about forgetting and its theories	2	The eighth
Asking and answering questions from the student	Dialogue and discussion	=	=	2	Ninth
Asking and answering questions from the student	Dialogue and discussion	Transfer of learning effect	Recognizing the transfer of learning	2	Tenth and eleventh
Asking and answering questions from the student	Dialogue and discussion		Second exam first semester	2	twelfth
Asking and answering questions from the student	Dialogue and discussion	Motivation	Identify the role of motivation in the learning process	2	thirteenth fourteenth fifteenth
Asking and answering questions from the student	Dialogue and discussion	Concepts and their relationship to scientific and creative thinking	Learn the meaning of concept and creative and scientific thinking	2	sixteenth seventeenth eighteenth
Asking and answering questions from the student	Dialogue and discussion	Feedback	Learn the meaning of feedback	2	nineteenth
Asking and answering questions from the student	Dialogue and discussion		First exam of the second semester	2	twenty one
Asking and answering questions from the student	Dialogue and discussion	Education Theories	Learn about educational theories	2	twenty-second, twenty-third, twenty-fourth
Asking and answering questions from the student	Dialogue and discussion	Factors affecting learning	Identifying factors affecting learning	2	twenty-fifth and twenty-sixth

Asking and answering questions from the student	Dialogue and discussion	Identifying individual differences and their impact on learning	Recognizing individual differences	2	twenty-seventh and twenty-eighth
Asking and answering questions from the student	Dialogue and discussion		Second exam for the second semester	2	twenty-ninth
Asking and answering questions from the student	Dialogue and discussion	Skills and Habits and How to Acquire Them	Identify skills and habits	2	Thirty and thirty-one
Asking and answering questions from the student	Dialogue and discussion	Types of learning	Understand the meaning of learning types	2	Thirty-second

11. Course Evaluation

- Tests (weekly and monthly) in addition to each student preparing research papers on the lecture topic.

12. Learning and teaching resources

Required textbooks (methodology if any)

Main References (Sources)

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

Electronic references, websites

Course Description Form

1. Course name

General Chemistry

2. Course code					
104BGC					
3. Semester/Year					
Annual/2025-2026					
4. Date this description was prepared					
26/1-2026					
5. Available forms of attendance					
Presence					
3. Number of study hours (total) / Number of units (total)					
2 theoretical					
7. Name of the course supervisor (if more than one name is mentioned)					
Hala oathik ; Rikzan mazen					
8. Course objectives					
<ul style="list-style-type: none"> Learn the basics of chemistry and its branches and identify each type A detailed study of each type of analytical chemistry and its detailed study Knowledge of learning the flow of interactions Knowledge of the mechanism of reactions 					Subject objectives
9. Teaching and learning strategies					
Theoretical explanation of the experiment, practical application, daily exams, monthly exams.					Strategy
10. Course Structure					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
Daily and monthly exams	The lecture	Introduction to analytical chemistry and its importance	Analyze, apply, understand	2 theoretical	First week and second week
Daily and monthly exams	The lecture	Chemical calculations	Analyze, apply, understand	3 practical	The third week Week 4

		in titration analysis			
Daily and monthly exams	The lecture	Titration Analysis Questions, Examples and Exercises	Analyze, apply, understand	3 practical	Week 5 Week 6
Daily and monthly exams	The lecture	Law of mass action	Analyze, apply, understand	3 practical	The seventh week Week 8
Daily and monthly exams	The lecture	Common ion effect	Analyze, apply, understand	3 practical	Week 9 The tenth week
Daily and monthly exams	The lecture	Quantitative gravimetric analysis	Analyze, apply, understand	3 practical	Week eleven twelfth week
Daily and monthly exams	The lecture	Alkanes-Its sources- Methods of preparation	Analyze, apply, understand	3 practical	thirteenth week Fourteenth week
Daily and monthly exams	The lecture	Machines-Its sources-Its types- Methods of preparation	Analyze, apply, understand	3 practical	Week 15 Week 16
Daily and monthly exams	The lecture	Alkynes - types- Methods of preparation- Its sources	Analyze, apply, understand	3 practical	Seventeenth week 18th week
Daily and monthly exams	The lecture	Properties of organic compounds and their reaction methods	Analyze, apply, understand	3 practical	19th week Week 20
Daily and monthly exams	The lecture	Alcohols and ethers	Analyze, apply, understand	3 practical	Week twenty-one Week twenty-two

11. Course Evaluation

The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

12. Learning and teaching resources

Chemistry Organic / Mechanism of Organic Reactions	Required textbooks (methodology if any)
Organic Chemistry (Morson) Translated A Guide to Mechanism in Organic Reaction Mechanisms (Bette Sykes) Translated Analytical Chemistry (Saeed Constant) Analytical Chemistry by Al- Haidari	Main References (Sources)
	Recommended supporting books and references (scientific journals, reports...)
	Electronic references, websites

Course Description Form

1. Course name					
Cell Biology					
2. Course code:					
102BCB					
3. Semester/Year					
2025/2026					
4. Date this description was prepared					
1/12/2025					
5. Available forms of attendance					
In-person online					
6. Number of study hours (total) / Number of units (total)					
60 hours / 6 units					
7. Name of the course supervisor (if more than one name is mentioned)					
Name: Dr. Shaza Hazem Shaker					
Email: shatha.h.shaker@tu.edu.iq					
8. Course objectives					
<ul style="list-style-type: none"> • receiptGeneral idea about the cell-Its components-Cell organelles-Proteins-genetic code-programmed cell death-Diseases affecting cells • Preparing a qualified cadre of teaching assistants in the cell's specialization. 					Subject objectives
9. Teaching and learning strategies					
<ul style="list-style-type: none"> • Lecture methodThrough modern educational means. • Preparing scientific reports • Field visits to scientific laboratories • Practical lectures. 					Strategy
10. Course Structure					
Evaluation method	Learn ing meth od	Name of the unit or topic	Required learning outcomes	Time	The week
Online or in-person written or oral exam	Prese nce	Discovery of the cell and microscopes	Understand the topic of the lecture	2	the first

Online or in-person written or oral exam	Prese nce	General structure and chemistry of the cell	Understand the topic of the lecture	2	the second
Online or in-person written or oral exam	Prese nce	Eukaryotic and prokaryotic organisms	Understand the topic of the lecture	2	the third
Online or in-person written or oral exam	Prese nce	Proteins, lipids and carbohydrates	Understand the topic of the lecture	2	Fourth
Online or in-person written or oral exam	Prese nce	Structure and function of plant and animal cell wall	Understand the topic of the lecture	2	Fifth
Online or in-person written or oral exam	Prese nce	plasma membrane	Understand the topic of the lecture	2	Sixth
Online or in-person written or oral exam	Prese nce	Methods of passage of materials through membranes	Understand the topic of the lecture	2	Seventh
Online or in-person written or oral exam	Prese nce	Monthly exam	Monthly exam	2	The eighth
Online or in-person written or oral exam	Meet pdf	endoplasmic reticulum	Understand the topic of the lecture	2	Ninth
Online or in-person written or oral exam	Meet pdf	bodies status	Understand the topic of the lecture	2	tenth
Online or in-person written or oral exam	Meet pdf	Colgi apparatus	Understand the topic of the lecture	2	eleventh
Online or in-person written or oral exam	Prese nce	Mitochondria	Understand the topic of the lecture	2	twelfth
Online or in-person written or oral exam	Prese nce	Plastids	Understand the topic of the lecture	2	thirteenth
Online or in-person written or oral exam	Prese nce	nucleus	Understand the topic of the lecture	2	fourteenth
Online or in-person written or oral exam	Prese nce	Monthly exam	Monthly exam	2	fifteenth
Online or in-person written or oral exam	Prese nce	Chromosomes	Understand the topic of the lecture	2	Sixteenth
Online or in-person written or oral exam	Prese nce	Special chromosomes	Understand the topic of the lecture	2	seventeenth

Online or in-person written or oral exam	Presence	Genetic system	Understand the topic of the lecture	2	eighteenth
Online or in-person written or oral exam	Presence	Gene expression	Understand the topic of the lecture	2	nineteenth
Online or in-person written or oral exam	Presence	Protein building	Understand the topic of the lecture	2	Twenty
Online or in-person written or oral exam	Presence	Monthly exam	Monthly exam	2	twenty one
Online or in-person written or oral exam	Presence	cell division	Understand the topic of the lecture	2	twenty-second
Online or in-person written or oral exam	Presence	cytoplasm division	Understand the topic of the lecture	2	twenty-third
Online or in-person written or oral exam	Presence	chromosomal alterations	Understand the topic of the lecture	2	twenty fourth
Online or in-person written or oral exam	Presence	Radiation effect on genetic material	Understand the topic of the lecture	2	twenty fifth
Online or in-person written or oral exam	Presence	Mutation causes	Understand the topic of the lecture	2	twenty-sixth
Online or in-person written or oral exam	Presence	programmed cell death	Understand the topic of the lecture	2	twenty-seventh
Online or in-person written or oral exam	Presence	Monthly exam	Monthly exam	2	twenty-eighth

11. Course Evaluation

The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

12. Learning and teaching resources

Theoretical cell book for the first stage	Required textbooks (methodology if any)
Theoretical cell book for the first stage	Main References (Sources)
Books and research published in reputable international journals issued by publishing houses (Al-Safir - Springer - Wiley)	Recommended supporting books and references (scientific journals, reports...)
Virtual Electronic Library, reliable references from the Internet	Electronic references, websites

Course Description Form

1. Course name	
Plant Anatomy (Practical)	
2. Course code	
103BPA	
3. Semester/Year	
Academic year 2025-2025	
4. Date this description was prepared	
12-11-2025	
5. Available forms of attendance	
My attendance is mandatory	
6. Number of study hours (total) / Number of units (total)	
Number of hours: 60 hours, number of units: 6 units (4 theoretical units 2 practical units)	
7. Name of the course supervisor (if more than one name is mentioned)	
Rafah abd al salam theab ; Cholan zebe habeb	
8. Course objectives	
<ul style="list-style-type: none"> • Introducing the student to plant anatomy by studying the internal structure of the plant body through dissecting its various organs and studying their locations. • Study of the plant cell and knowledge of its living components (nucleus, cytoplasm, and plastids) and non-living components (starch granules, aleurone granules, crystals) and the function of each. • Preparing scientific and qualitative cadres specialized in the field of life sciences for the purpose of improving the educational reality in the country. • Teaching students writing and speaking skills at the analytical levels by referring to the latest developments in modern science in the field of plant anatomy. • Providing the Ministry of Education and the Ministry of Higher Education and Scientific Research with specialized and competent personnel in the field of life sciences. 	Subject objectives

9. Teaching and learning strategies

- 1- Use of electronic visual aids, projector (Data show)) To attract students' attention and interact with the lecture.
- 2- Using the discussion method between the teacher and the students.
- 3- Assigning students homework related to the subject.
- 4- Assigning students to do research and reports.
- 5- Use of slides (Slides) To view samples under a microscope and learn about the internal structure of the plant.

Strategy

10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
Classroom performance and exams	Presence	The living contents of the plant cell: cytoplasm, nucleus, plastids of all types, cytoplasmic threads.	Understand the topic of the lecture	2 theoretical 2 practical	1
Classroom performance and exams	Presence	Non-living contents in the plant cell (vacuoles, starch granules of various types and shapes, aleurone granules)	Understand the topic of the lecture	2 theoretical 2 practical	2-3
Classroom performance and exams	Presence	Crystals of all types and shapes	Understand the topic of the lecture	2 theoretical 2 practical	4
Classroom performance and exams	Presence	Cell wall (cell plate, middle plate, primary wall, secondary wall, primary cell fields)	Understand the topic of the lecture	2 theoretical 2 practical	5
Classroom performance and exams	Presence	Clicking in its types (simple vascular, simple branched, braided) - Clicking coupling in its five types	Understand the topic of the lecture	2 theoretical 2 practical	6
Classroom performance and exams	Presence	Meristematic tissues - their characteristics and how to identify them, their types according to their location in the plant body, their types according to their origin. Theories of the apical	Understand the topic of the lecture	2 theoretical 2 practical	7-8

		meristem of the stem and root, the apical cell theory, the theory of tissue development, the theory of the sheath and the body, the theory of growth of regions.			
Classroom performance and exams	Presence	Permanent tissues - skin - its features Types of skin Types of surrounding skin cells (prederm)	Understand the topic of the lecture	2 theoretical 2 practical	9
Classroom performance and exams	Presence	Stomata types (normal, grassy, sedge, conifers) Stomata patterns (abnormal, heterogeneous, parallel, perpendicular, star-shaped)	Understand the topic of the lecture	2 theoretical 2 practical	10
Classroom performance and exams	Presence	Skin tags - Skin tags of various types and shapes	Understand the topic of the lecture	2 theoretical 2 practical	11
Classroom performance and exams	Presence	Parenchyma tissue - its characteristics, cell shapes, tissue types according to function	Understand the topic of the lecture	2 theoretical 2 practical	12
Classroom performance and exams	Presence	Collenchyma tissue - its characteristics and types according to the nature of bacterial deposition. Sclerenchyma tissue, its characteristics, sclereids, their types and shapes.	Understand the topic of the lecture	2 theoretical 2 practical	13-14
Classroom performance and exams	Presence	Fibers - their different types, shapes, and the nature of their distribution within the plant and its elements	Understand the topic of the lecture	2 theoretical 2 practical	15
Classroom performance and exams	Presence	Wood and its elements, bark and its elements, vascular bundles of various types and shapes	Understand the topic of the lecture	2 theoretical 2 practical	16-17-18
Classroom performance and exams	Presence	Secretory tissues with their various types and shapes, the spaces between them, and how they are formed, the resinous and oily ducts	Understand the topic of the lecture	2 theoretical 2 practical	19
Classroom performance and exams	Presence	Internal anatomy of the root - one cotyledon, two cotyledons Internal anatomy	Understand the topic of the lecture	2 theoretical 2 practical	20-21

		of the stem - one cotyledon, two cotyledons			
Classroom performance and exams	Presence	Normal secondary growth in cotyledons, annual growth rings, spring and autumn wood, annular and diffusely porous, botanical microscopic techniques	Understand the topic of the lecture	2 theoretical 2 practical	22-23

11. Course Evaluation

Monthly exam and reporting = 80%

Daily short tests (pop-up test) = 10%

Oral questions during the lecture and daily preparation = 10%

12. Learning and teaching resources

Practical book on plant anatomy and laboratory preparations Written by Dr. Falah Mohammed Aziz and Dr. Taleb Awad Al-Khazraji	Required textbooks (methodology if any)
	Main References (Sources)
	Recommended supporting books and references (scientific journals, reports...)
Reliability of reliable websites	Electronic references, websites

Course Description Form

1. Course name

Plant Anatomy (Theoretical)

2. Course code	
103BPA	
3. Semester/Year	
Academic year 2025-2025	
4. Date this description was prepared	
12-11-2025	
5. Available forms of attendance	
My attendance is mandatory	
6. Number of study hours (total) / Number of units (total)	
Number of hours: 60 hours, number of units: 6 units (4 theoretical units 2 practical units)	
7. Name of the course supervisor (if more than one name is mentioned)	
Name: Asst. Prof. Dr. Omar Tariq Jawad Email:omer_alqzzawy@tu.edu.iq	
8. Course objectives	
<p>Introducing the student to plant anatomy by studying the internal structure of the plant body through dissecting its various organs and studying their locations.</p> <p>Study of the plant cell and knowledge of its living components (nucleus, cytoplasm, and plastids) and non-living components (starch granules, aleurone granules, crystals) and the function of each.</p> <p>Preparing scientific and qualitative cadres specialized in the field of life sciences for the purpose of improving the educational reality in the country.</p> <p>Teaching students writing and speaking skills at the analytical levels by referring to the latest developments in modern science in the field of plant anatomy.</p> <p>Providing the Ministry of Education and the Ministry of Higher Education and Scientific Research with specialized and competent personnel in the field of life sciences.</p>	Subject objectives
9. Teaching and learning strategies	
<p>Use of electronic visual aids, projector(Data show)) To attract students' attention and interact with the lecture.</p> <p>Using the discussion method between the teacher and the students.</p> <p>Assigning students homework related to the subject.</p>	Strategy

Assigning students to do research and reports.
 Use of slidesH(Slides) To view samples under a microscope and learn about the internal structure of the plant.

10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
Classroom performance and exams	Presence	Introduction to the topic of plant anatomy and definition of the plant body and plant body organs	Understand the topic of the lecture	2 theoretical 2 practical	1
Classroom performance and exams	Presence	The concept of the plant cell and what is related to the content of the plant cell, the cell wall and the prostrate	Understand the topic of the lecture	2 theoretical 2 practical	2-3
Classroom performance and exams	Presence	Cell wall: A detailed study of the cell wall in terms of composition, the layers that make up the wall, and a study of their chemical composition and physical properties, in addition to a study of the holes that permeate the cell wall and a study of the fine structure of the cell wall.	Understand the topic of the lecture	2 theoretical 2 practical	4
Classroom performance and exams	Presence	Prostate: Study of the living and non-living contents of a plant cell	Understand the topic of the lecture	2 theoretical 2 practical	5
Classroom performance and exams	Presence	Plant tissues: classification of plant tissues: A- Meristematic tissues: A detailed study of meristematic tissues in	Understand the topic of the lecture	2 theoretical 2 practical	6

		terms of their division, general characteristics, and cellular structure, in addition to studying the theories related to meristems in the stem and root.			
Classroom performance and exams	Presence	B – Permanent tissues: A comprehensive and detailed study of the permanent tissues that make up the plant body in terms of their division, characteristics and functions, as follows: connective tissues, epidermis and periphery, collenchyma tissue, sclerenchyma.	Understand the topic of the lecture	2 theoretical 2 practical	7-8
Classroom performance and exams	Presence	Xylem tissue, phloem tissue, tissues and secretory structures	Understand the topic of the lecture	2 theoretical 2 practical	9
Classroom performance and exams	Presence	The internal structure of the plant body organs is as follows: Study of the internal anatomy of the primary and secondary root.	Understand the topic of the lecture	2 theoretical 2 practical	10
Classroom performance and exams	Presence	Study of the internal anatomy of the primary and secondary leaf	Understand the topic of the lecture	2 theoretical 2 practical	11
Classroom performance and exams	Presence	Study of the internal anatomy of the leaf	Understand the topic of the lecture	2 theoretical 2 practical	12

Classroom performance and exams	Presence	Study of the internal anatomy of the flower and seed	Understand the topic of the lecture	2 theoretical 2 practical	13-14
Classroom performance and exams	Presence	The internal structure of the plant and its relationship to the environment	Understand the topic of the lecture	2 theoretical 2 practical	15
Classroom performance and exams	Presence	Study the effect of the environment on the internal structure of different plants (desert and aquatic plants)	Understand the topic of the lecture	2 theoretical 2 practical	16-22

11. Course Evaluation

Monthly exam and reporting = 80%
Daily short tests (pop-up test) = 10%
Oral questions during the lecture and daily preparation = 10%

12. Learning and teaching resources

Theoretical book on plant anatomy Written by Dr. Falah Mohammed Aziz and Dr. Taleb Awad Al-Khazraji	Required textbooks (methodology if any)
Dr. Falah Mohammed Aziz and Dr. Taleb Awad Al-Khazraji	Main References (Sources)
Adoption of reliable scientific journals in the electronic library	Recommended supporting books and references (scientific journals, reports...)
Reliability of reliable websites	Electronic references, websites

Course Description Form

1. Course name//
General Biology Theoretical
2. Course code//
101BGB
3. Semester/Year
2025/2025

4. Date this description was prepared					
1/21/2025					
5. Available forms of attendance					
/ Presence					
6. Number of study hours (total) / Number of units (total)					
Number of hours: 60 hours / Number of units: 6 units					
7. Name of the course administrator (if more than one name is mentioned)					
Name: Asst. Prof. Dr. Raghad Muqdad Mahmoud				Email:	
raghad.ecology@tu.edu.iq					
8. Course objectives					
<ul style="list-style-type: none"> • identification The student Most important Terminology Scientific And understand Specializations in Neighborhoods • Recognition to classification Creatures The snake • Identify some systems in plants and animals • YKnow the studentforOn FandOhDAll typeMWe are the beingsTThe neighborhoodAndAnd its role in lifeAnd • It isMBe the studentfor MNMcustomAndReproduction in the neighborhoodAnd we areAndplants • recognizeThe studentOn coordinationthrowNifor beings The snake 					Subject objectives
9. Teaching and learning strategies					
<ul style="list-style-type: none"> • Use device an offer data show To attract attention Students And interaction with The lecture. • -Use Models And models For samples studied • visit Laboratories Scientific from before Staff Academic • Assign students to prepare monthly reports. • The lecture InteractiveLectures • Dialogue and discussiondiscussion • Storm MentalBrainstorming 					Strategy
10. Course Structure					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
Questions and discussion	Use of projectorsDat a showAnd the blackboard	Historical overview - Definition of biology - Importance of studying it-The scientific method - the relationship between biology and basic sciences - branches of biology - aspects of life and characteristics of living organisms.	Understand the topic of the lecture	2	1

Daily and monthly tests	Use of projectorsData show and board	Taxonomy: Definition, Historical Stages, Fields and Systems	Understand the topic of the lecture	2	2
Daily and monthly tests	Use of projectorsData show and board	Classification of living organisms: Systems of classification of living organisms and the modern system of classification of living organisms	Understand the topic of the lecture	2	3
Daily and monthly tests	Use of projectorsData show and board	Characteristics of Life - The main method of construction of living matter	Understand the topic of the lecture	2	4
Daily and monthly tests	Use of projectorsData show and board	Scientific nomenclatureTAXONOMYHistorical overview, scientific binomial nomenclature, its rules, taxonomic ranks, and examples of scientific names for living organisms.	Understand the topic of the lecture	2	5
Questions and discussion	Use of projectorsData show and board	Hormonal coordination in biology Hormonal coordination	Understand the topic of the lecture	2	6
Questions and discussion	Use of projectorsData show and board	Animal Hormones - Definition, Types and Effects	Understand the topic of the lecture	2	7
Daily and monthly tests	Use of projectorsData show and board	Hormones Vegetarianism- Definition	Understand the topic of the lecture	2	8
Daily and monthly tests	Use of projectorsData show and board	Reproduction and growth in living thingsReproduction & Growth	Understand the topic of the lecture	2	9
Daily and monthly tests	Use of projectorsData show and board	Evolution Evolution Theories Evolution pedigreed life Origin of Life	Understand the topic of the lecture	2	10
Daily and monthly tests	Use of projectorsData show and board	behavior Neighborhoods Living Organism Behavior behavior Plant Plant Behavior	Understand the topic of the lecture	2	11
Questions and discussion	Use of projectorsData show and board	Immunology: Definition, History, Immune Organs in the Body, and Types of Immunity	Understand the topic of the lecture	2	12

Questions and discussion	Use of projectorsData show and board	Viruses: Definition, History, Nomenclature, and Hypotheses of Their Origin	Understand the topic of the lecture	2	13
Daily and monthly tests	Use of projectorsData show and board	Photosynthesis	Understand the topic of the lecture	2	14
Daily and monthly tests	Use of projectorsData show and board	Cellular respiration cell cycle and mitosismeiosis	Understand the topic of the lecture	2	15

11. Course Evaluation

Oral questions within the lecture and daily preparation =%10
Daily short tests (pop-up tests)=%10
Monthly exam and reporting=80%

12. Learning and teaching resources

Biology book Prof. Dr. Hussein Ali Al-Saadi // Prof. Dr. Taleb Awad Al-Khazarji Prof. Dr. Hussein Abdel Moneim Daoud // Prof. Dr. Najm Shlemon Korkis	Required textbooks (methodology if any)
Basics of Biology // Prof. Dr. Hussein Al-Saadi // Asst. Prof. Dr. Hussein Abdel Moneim Biology // Stephen Rose Life scienceThe year// Biology General Dr. Diaa Saad Allah Basics of General Biology // Asst. Prof. Dr. Rahim An'ad Khadir	Main References (Sources)
Books And research Published in Magazines Global	Recommended supporting books and references (scientific journals, reports...)
Library Virtual.References Sober from The Internet	Electronic references, websites

Course Description Form

1. Course name
General Chemistry

2. Course code	
3. Semester/Year	
annual	
4. Date this description was prepared	
26/1-2026	
5. Available forms of attendance	
Presence	
3. Number of study hours (total) / Number of units (total)	
2 theoretical	
7. Name of the course supervisor (if more than one name is mentioned)	
Name: M. Dr. Qaisar Mishaan Abdul-Aymal: Kaiser.m.abd@tu.edu.iq	
8. Course objectives	
<ul style="list-style-type: none"> • Learn the basics of chemistry and its branches and identify each type • A detailed study of each type of analytical chemistry and its detailed study • Knowledge of learning the flow of interactions • Knowledge of the mechanism of reactions 	Subject objectives
9. Teaching and learning strategies	
Theoretical explanation of the experiment, practical application, daily exams, monthly exams.	Strategy
10. Course Structure	

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
Daily and monthly exams	The lecture	Introduction to analytical chemistry and its importance	Analyze, apply, understand	2 theoretical	First week and second week
Daily and monthly exams	The lecture	Chemical calculations in titration analysis	Analyze, apply, understand	3 practical	The third week Week 4
Daily and monthly exams	The lecture	Titration Analysis Questions, Examples and Exercises	Analyze, apply, understand	3 practical	Week 5 Week 6
Daily and monthly exams	The lecture	Law of mass action	Analyze, apply, understand	3 practical	The seventh week Week 8
Daily and monthly exams	The lecture	Common ion effect	Analyze, apply, understand	3 practical	Week 9 The tenth week
Daily and monthly exams	The lecture	Quantitative gravimetric analysis	Analyze, apply, understand	3 practical	Week eleven twelfth week
Daily and monthly exams	The lecture	Alkanes-Its sources- Methods of preparation	Analyze, apply, understand	3 practical	thirteenth week Fourteenth week
Daily and monthly exams	The lecture	Machines-Its sources-Its types- Methods of preparation	Analyze, apply, understand	3 practical	Week 15 Week 16
Daily and monthly exams	The lecture	Alkynes - types- Methods of preparation- Its sources	Analyze, apply, understand	3 practical	Seventeenth week 18th week
Daily and monthly exams	The lecture	Properties of organic compounds and their	Analyze, apply, understand	3 practical	19th week Week 20

		reaction methods			
Daily and monthly exams	The lecture	Alcohols and ethers	Analyze, apply, understand	3 practical	Week twenty-one Week twenty-two

11. Course Evaluation

The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

12. Learning and teaching resources

Chemistry Organic / Mechanism of Organic Reactions	Required textbooks (methodology if any)
Organic Chemistry (Morson) Translated A Guide to Mechanism in Organic Reaction Mechanisms (Bette Sykes) Translated Analytical Chemistry (Saeed Constant) Analytical Chemistry by Al-Haidari	Main References (Sources)
	Recommended supporting books and references (scientific journals, reports...)
	Electronic references, websites

Course Description Form

1. Course name//	
Biosafety and Security	
2. Course code//	
3. Semester/Year	
2025-2026	
4. Date this description was prepared	
9/21/2025	
5. Available forms of attendance	
/ My presence	
6. Number of study hours (total) / Number of units (total)	
Number of hours 24 hours / Number of units 2 units	
7. Name of the course administrator (if more than one name is mentioned)	
Name: Dr.maroh esam	
8. Course objectives	
<p>identification The student Most important Terminology • Scientific And understand Specializations in Biosecurity</p> <p>The importance of individual safety when working inside laboratories •</p> <p>Maintaining the safety and security of laboratories from any harm that may occur during work in them •</p> <p>Educating students about the dangers of materials in laboratories and the importance of caution when handling them Maintaining buildings and laboratory equipment •</p>	Subject objectives
9. Teaching and learning strategies	

<ul style="list-style-type: none"> 1- Use device an offer data show To attract attention Students And interaction with The lecture. 2- -Use Models And models For samples studied 3- visit Laboratories Scientific from before Staff Academic 4- Assign students to prepare monthly reports. 5- The lecture InteractiveLectures 6- Dialogue and discussiondiscussion 7- Storm MentalBrainstorming 	Strategy
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10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
Questions and discussion	Use of projectorsData showAnd the blackboard	Safety Vitality	Understand the topic of the lecture	1	1
Daily and monthly tests	Use of projectorsData show and board	Safety Biology	Understand the topic of the lecture	1	2
Daily and monthly tests	Use of projectorsData show and board	About Historical on emergence Safety Vitality	Understand the topic of the lecture	1	3
Daily and monthly tests	Use of projectorsData show and board	What is it? Dangers Biology	Understand the topic of the lecture	1	4
Daily and monthly tests	Use of projectorsData show and board	Diseases Common that Caused by Factors Biology	Understand the topic of the lecture	1	5
Questions and discussion	Use of projectorsData show and board	Ways control on Risks Biology	Understand the topic of the lecture	1	6
Questions and discussion	Use of projectorsData show and board	Choice Suitable For workers in Laboratories	Understand the topic of the lecture	1	7
Daily and monthly tests	Use of projectorsData show and board	Statement the job	Understand the topic of the lecture	1	8
Daily and monthly tests	Use of projectorsData show and board	Relationships Humanity	Understand the topic of the lecture	1	9
Daily and monthly tests	Use of projectorsData show and board	the condition Psychology And safety Mentality	Understand the topic of the lecture	1	10

Daily and monthly tests	Use of projectorsData show and board	system Division the job	Understand the topic of the lecture	1	11
Questions and discussion	Use of projectorsData show and board	Follow up And inspection Continuous	Understand the topic of the lecture	1	12
Questions and discussion	Use of projectorsData show and board	Waste Dangerous	Understand the topic of the lecture	1	13
Daily and monthly tests	Use of projectorsData show and board	procedures And methods Trading And dealing with Waste Laboratory	Understand the topic of the lecture	1	14
Daily and monthly tests	Use of projectorsData show and board	Goal Security Biology	Understand the topic of the lecture	1	15
Daily and monthly tests	Use of projectorsData show and board	The concerned Safely Biology	Understand the topic of the lecture	1	16
Daily and monthly tests	Use of projectorsData show and board	principles laboratory Safety Biology	Understand the topic of the lecture	1	17
Daily and monthly tests	Use of projectorsData show and board	Methodology administration Risks	Understand the topic of the lecture	1	18
Daily and monthly tests	Use of projectorsData show and board	Elements program Safety Biology	Understand the topic of the lecture	1	19
Daily and monthly tests	Use of projectorsData show and board	Security Information Technology	Understand the topic of the lecture	1	20
Daily and monthly tests	Use of projectorsData show and board	Anti Risks Biology	Understand the topic of the lecture	1	21

11. Course Evaluation

Oral questions within the lecture and daily preparation =%10
Daily short tests (pop-up tests)=%10
Monthly exam and reporting=80%

12. Learning and teaching resources

The Committee University Central For safety And security Chemist And radiation CBRN And the nuclear And prevent Spread	Required textbooks (methodology if any)

Course Description Form

1. Course name	
Vital statistics	
2. Course code	
BBS220	
3. Semester/Year	
2025-2025	
4. Date this description was prepared	
9/17/2025	
5. Available forms of attendance	
Attendance is mandatory	
6. Number of study hours (total) / Number of units (total)	
56 hours / six units	
7. Name of the course supervisor (if more than one name is mentioned)	
Name: M.D. Bashar Fadel Taama Email: bashar.f.tuma@st.tu.edu.iq	
8. Course objectives	
<p>1-Helping students understand statistics.</p> <p>2-Preparing scientific and qualitative cadres specialized in the field of life sciences to improve the educational reality in the country.</p> <p>3-Teach students writing and speaking skills at analytical levels by referring to the latest developments in modern science in statistics.</p> <p>4-The program serves the university by providing students with a high-quality education through exposure to the latest developments in scientific research, both theoretically and practically.</p>	<p>Subject objectives</p>

9. Teaching and learning strategies

- 1-The student should be able to prepare practical and theoretical research in statistics.
- 2 - He is for knowing special scientific facts with statistics.
- 3 -The student should be able to discover information on his own.
- 4-To learn how to use modern programs and data diagnostic methods.

Strategy

10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
Classroom performance and exams	Presence	the introduction of vital statistics, their importance	Understand the topic of the lecture	2 theoretical 2 practical	1
Classroom performance and exams	Presence	Statistical concepts: Variable and its types, data and its transformations, sample - its properties and the basis for its selection	Understand the topic of the lecture	2 theoretical 2 practical	2
Classroom performance and exams	Presence	Society: Measures of central tendency, mean, median, mode	Understand the topic of the lecture	2 theoretical 2 practical	3- 4-5
Classroom performance and exams	Presence	Measures of dispersion and variation, absolute dispersion measures: range, mean deviation, variance, and standard deviation, relative dispersion measures: coefficient of variation	Understand the topic of the lecture	2 theoretical 2 practical	6-7
Classroom performance and exams	Presence	Confidence limits and levels	Understand the topic of the lecture	2 theoretical 2 practical	8
Classroom performance and exams	Presence	Descriptive statistics: displaying and summarizing data, frequency distributions	Understand the topic of the lecture	2 theoretical 2 practical	9-10

Classroom performance and exams	Presence	Data tabulation: number of classes, class length, class boundary	Understand the topic of the lecture	2 theoretical 2 practical	11-12
Classroom performance and exams	Presence	Data display: graphic display, bar chart, histogram, frequency curves- Tabular view, simple tables, compound tables, complex tables	Understand the topic of the lecture	2 theoretical 2 practical	13-14
Classroom performance and exams	Presence	Probability: definition, types, simple probability, compound probability, conditional probability	Understand the topic of the lecture	2 theoretical 2 practical	15-16
Classroom performance and exams	Presence	Probability Calculation: Adding probabilities, Multiplying probabilities	Understand the topic of the lecture	2 theoretical 2 practical	17-18
Classroom performance and exams	Presence	Normal Distribution Curve and Probability / Significance Tests: Chi-Square Test- Cases and methods of use, student test (T)-Terms of use, smallest moral difference	Understand the topic of the lecture	2 theoretical 2 practical	19 - 20 -21
Classroom performance and exams	Presence	Experimental statistics: concept and importance, control of experimental factors, control of the experiment, control of variables, experimental design	Understand the topic of the lecture	2 theoretical 2 practical	22-23
Classroom performance and exams	Presence	Random block design, full random design, other designs square because you- Fission cluster, (general concepts)	Understand the topic of the lecture	2 theoretical 2 practical	24-25

Classroom performance and exams	Presence	Relationships, definition types: slope-regression coefficient, significance test, correlation-coefficient / General Applications and Examples.	Understand the topic of the lecture	2 theoretical 2 practical	26- 27-28

11. Course Evaluation	
The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.	
12. Learning and teaching resources	
Introduction to Statistics / Dr. Khasha Mahmoud Al-Rawi	Required textbooks (methodology, if any)
Biostatistics	Main References (Sources)
statistics	Recommended supporting books and references (scientific journals, reports...)
https://www.alfreed.ph.com	Electronic references, websites

Course Description Form

1. Course name	
Educational Administration	
2. Course code	
223EASE	
3. Semester/Year	
2026-2025	
4. Date this description was prepared	
1/12/2025	
5. Available forms of attendance	
Presence	
6. Number of study hours (total) / Number of units (total)	
60 hours Number of units 4	
7. Name of the course supervisor (if more than one name is mentioned)	
Name: Mohammed Ahmed Alawi Email: mohamed.ah.alawei@tu.edu.iq	
8. Course objectives	
<ul style="list-style-type: none"> • To provide the student with basic information and principles about management. • The student understands the meaning of management. • The student should become familiar with the concept of classroom management. And employ it in learning • The student should be familiar with modern trends in management and supervision. • The student understands the concept of educational supervision objectives. And its types • The student should learn about the relationship between the school and the community and the means of communication. • The student should understand the characteristics and features of the educational supervisor and their selection. • The student should become familiar with the basic concepts and principles related to types Educational supervision • To familiarize the student with management theories 	Subject objectives
9. Teaching and learning strategies	
active thinking	Strategy

brainstorming					
Cognitive development ladder					
10. Course Structure					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
Achievement tests	Lecture and discussion	Management historical development	Educational and psychological sciences	2	the first
=	=	Its concept and definition	=	2	the second
=	=	Its properties and elements	=	2	the third
=	=	Its levels and factors	=	2	Fourth
=	=	prevailing trends in management	=	2	Fifth
=	=	Centralization Decentralization Democratic	=	2	Sixth
=	=	Management styles	=	2	Seventh
=	=	Correspondent or diplomatic democracy	=	2	The eighth
First-semester exam 1	=	School administration	=	2	Ninth
=	=	Its goals and patterns	=	2	tenth
=	=	Her relationships and tasks	=	2	eleventh
=	=	Its characteristics	=	2	twelfth
=	=	School and classroom management	=	2	thirteenth
=	=	Its role in the educational process	=	2	fourteenth
=	=	School and Society	=	2	fifteenth

First-semester exam /2	=	Communication	=	2	Sixteenth
=	=	School-community relationship	=	2	seventeenth
=	=	Parents' Councils	=	2	eighteenth
=	=	Educational supervision	=	2	nineteenth
=	=	Meaning of evolution	=	2	Twenty
=	=	The importance of its philosophy	=	2	twenty one
=	=	Its goals, tasks, and types	=	2	Twenty-second
=	=	Modern trends in educational supervision	=	2	twenty-third
=	=	Founded	=	2	Twenty-fourth
=	=	His methods	=	2	Twenty-fifth
=	=	Selection of educational supervisors	=	2	Twenty-sixth
=	=	Supervisor training	=	2	twenty-seventh
=	=	The reality of educational supervision in Iraq	=	2	Twenty-eighth
=	=	Educational supervision calendar	=	2	twenty-ninth
=	=		=	2	thirty

11. Course Evaluation

The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

12. Learning and teaching resources

Educational administration and supervision	Required textbooks (methodology, if any)
Management and Supervision / Management Theories	Primary References (Sources)

Journal of the College of Education for Humanities	Recommended supporting books and references (scientific journals, reports...)
Various contact sites related to the specialty	Electronic references, websites

Course Description Form

1. Course name	
English language	
2. Course code	
EL111 /EL224	
3. Semester/Year	
Academic year 2025-2025	
4. Date this description was prepared	
1/21/2025	
5. Available forms of attendance	
My attendance is mandatory	
6. Number of study hours (total) / Number of units (total)	
Number of hours = 36, number of units 2	
7. Name of the course supervisor (if more than one name is mentioned)	
Name: M.M. Mofak Hameed	
8. Course objectives	
<ul style="list-style-type: none"> • The course aims to provide students with basic information about the English language. • Introducing and teaching students the rules and basics of the English language, such as how to write the correct English sentence and arrange it according to its appropriate tense (simple present, continuous, perfect, or simple past, continuous, or perfect in addition to the future tense), and how to use question tools. Wh-question words Auxiliary verbs to create a complete interrogative sentence in terms of form and meaning, as well as prepositions and how to apply them in sentences.in, on, at, and, between etc..)). • Introducing students to adjectives, nouns, and adverbs and how to differentiate between them by linking them to the Arabic language for the purpose of understanding them more smoothly. • Motivating students to acquire a new language through the educational methods, activities and means used. 	Subject objectives

- Providing the Ministry of Education and the Ministry of Higher Education and Scientific Research with specialized and qualified personnel in the field of life sciences.

9. Teaching and learning strategies

<p>1. The prescribed textbooks.</p> <p>2. Using the discussion method and presenting points of view between the teacher and the students inside the classroom.</p> <p>3. Assign students to prepare weekly reports.</p> <p>4. Use of the deviceMb3For the purpose of listening to conversations and dialogues and how to pronounce them correctly.</p> <p>5. Assigning students homework related to the subject.</p>	Strategy
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10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
Classroom performance and oral questions	Attendance: Using the board, textbook and deviceMb3	Unit one: Introductions, how to present yourself, the way to answer the question of 'how are you', greetings, and how to pronounce 'S' in different ways /S/, /Z/, and /IZ/. Educational texts	Understand the topic of the lecture	3	1 – 2
Classroom performance and exams	Attendance: Using the board, textbook and deviceMb3	Unit Two: Your world, countries, where's he/she from, numbers from 1-30 Examples: Educational texts	Understand the topic of the lecture	3	3
Classroom performance and oral questions	Attendance: Using the board, textbook and deviceMb3	Unit Three: all about you, jobs, negatives and questions, personal information, Metro 5- the audition and social expressions. Examples: Educational texts	Understand the topic of the lecture	3	4
	Attendance: Using the board,	Unit Four: Family and friends, possessive's, has/have, Annie Taylor and My friend	Understand the	3	5

Classroom performance and exams	textbook and deviceMb3	Antonia (passages), the alphabet, some sounds. Examples: Educational texts	topic of the lecture		
Classroom performance and oral questions	Attendance: Using the board, textbook and deviceMb3	Unit Five: The way I live, sports/food/drinks, Present Simple, a/an, languages and nationalities, numbers and prices.	Understand the topic of the lecture	3	6 - 7
Classroom performance and exams	Attendance: Using the board, textbook and deviceMb3	Unit Six: Every day, the time, present simple/short answers, adverbs of frequency, words that go together, days of the week. Examples: Educational texts	Understand the topic of the lecture	3	8
Classroom performance and oral questions	Attendance: Using the board, textbook and deviceMb3	Elliot and Lois Maddox (passages/reading and questions), rules of adjectives, and nouns, the addition of 's' and 'es', as well as preposition of in / on / at. Examples: Educational texts	Understand the topic of the lecture	3	9
Classroom performance and exams	Attendance: Using the board, textbook and deviceMb3	Unit Seven: My Favorites, Question words (what, where, when, who, why, how many), pronouns whether subject, object or possessive. This and that, adjectives (vocabulary), reading and writing 'A postcard from San Francisco.' Examples: Educational texts	Understand the topic of the lecture	3	10 – 11
Classroom performance and oral questions	Attendance: Using the board, textbook and deviceMb3	Unit Eight: Where I live, rooms and furniture, how to use 'There is – There are', prepositions like 'under, next to, behind, around and beside'. Examples: Educational texts	Understand the topic of the lecture	3	12
Classroom performance and exams	Attendance: Using the board, textbook and deviceMb3	Reading and vocabulary: “Vancouver Canada – the best city in the world” and “My home town”. Directions, how to find places by using directional phrases such as, turn right, go straight on, turn left. Examples: Educational texts	Understand the topic of the lecture	3	13
Classroom performance	Attendance: Using the board,	Unit Nine: Times past, saying years, how to differentiate between 'was/were', reading	Understand the topic of	3	14 – 15

nce and oral questions	textbook and deviceMb3	and speaking 'Jackson Pollock', explanation of Past Simple tense (affirmative, question and negative along with short answer). Examples: Educational texts	the lecture		
Classroom performance and exams	Attendance: Using the board, textbook and deviceMb3	Unit Ten: We had a great time, regular and irregular verbs, the words of 'have, do, go', months of the year, numbers like 'first= 1st, second= 2nd etc..', the way to write dates . Examples: Educational texts	Understand the topic of the lecture	3	16
Classroom performance and oral questions	Attendance: Using the board, textbook and deviceMb3	Sport and leisure, how to use 'going and playing' with sports. How to pronounce 'd' as /t/, /d/ and /id/, listening and speaking 'Jack and Millie's holiday'. Examples: Educational texts	Understand the topic of the lecture	3	17
Classroom performance and exams	Attendance: Using the board, textbook and deviceMb3	Unit Eleven: I can do that, how to use 'can/ can't' as modal verbs, adverbs and how we differentiate between adverbs and adjectives by adding (ly), reading and listening 'You can do more and more on the Internet !, its history and millions of uses'. Examples: Educational texts	Understand the topic of the lecture	3	18
Classroom performance and oral questions	Attendance: Using the board, textbook and deviceMb3	Unit Twelve: Please and thank you, how to use 'would you like, I'd like' for offers and polite orders, the use of 'some and any' for positive/ question/ negative sentences. Reading and speaking 'What's on your plate?'. Examples: Educational texts	Understand the topic of the lecture	3	19
Classroom performance and exams	Attendance: Using the board, textbook and deviceMb3	Vocabulary and speaking: In a restaurant – Café Fresco, utilizing adjectives nouns, signs all around (Exit, Sale, Closed, Pull, No smoking), opposite verbs. Examples: Educational texts	Understand the topic of the lecture	3	20
Classroom performance and	Attendance: Using the board, textbook	Unit Thirteen: Here and now, colors and clothes, explanation of Present Continuous (affirmative, question, negative), Reading	Understand the topic of	3	21-22

oral questions	and deviceMb3	and listening 'The Secret Millionaire–Colin Cameron, what's the matter? And for what it is used, in addition to the opposites. Examples: Educational texts	the lecture		
Classroom performance and exams	Attendance: Using the board, textbook and device	Unit Fourteen: It's time to go! , Future plans "Going to" and its use, reading and listening 'Seven countries in seven days', words that go together, social expression, grammar revision (present, past, future) and vocabulary revision.	Understand the topic of the lecture	3	23

11. Course Evaluation

Distribution of the grade out of 100 according to the tasks assigned to the student

Such as daily preparation and oral questions 10%

Daily short tests (pop-up test) 10%

Monthly exam and reporting 80%

12. Learning and teaching resources

New Headway Beginner Student's Book.	Required textbooks (methodology if any)
English Grammar in Use.	Main References (Sources)
English Grammar in Use for first stage. English Grammar in Use for third stage.	Recommended supporting books and references (scientific journals, reports...)
https://m.youtube.com/time%3Fv%3Di1J1vgbzPSc&sa=U&ved=2ahUKEwi https://learnenglish.britishcouncil.org/grammar/english-grammar-reference/present-simple https://www.newheadwaybeginnerstudent'sbook https://fadeibuoni.files.wordpress.com	Electronic references, websites

Course Description Form

1. Course name					
Plant classification Seed					
2. Course code:					
215 BPC					
3. Semester/Year:					
2025-2025					
4. Date of preparation of this description:					
11/1/2025					
5. Available forms of attendance:					
In-person					
6. Number of study hours (total) / Number of units (total):					
602 hours theory/number of units 6					
7. Name of the course supervisor (if more than one name is mentioned)					
Name: Prof. Dr. Naglaa Mustafa Mohamed Email: naglaa.mustafa@tu.edu.iq					
8. Course objectives					
<p>-1 Students' ability to know the general characteristics of plant classification.</p> <p>2-Advance planning to activate the role of students in the field of student development.</p> <p>3 Students' ability to distinguish and cognitively perceive the phenotypic characteristics of seed plants.</p> <p>4-Introducing students to modern techniques and devices in diagnosing and classifying plants and the mechanism of their preservation.</p> <p>5-The student should be able to identify the foundations of classification and its relationship to other sciences and the ability to distinguish plant families.</p> <p>6-The student should be able to use laboratory equipment.</p>					Subject objectives
9. Teaching and learning strategies					
<p>1- Use electronic means of clarification.</p> <p>2- Using the discussion method in the lecture between the professor and the students.</p> <p>3- Assigning students to do research and reports.</p> <p>4- Assigning students homework related to the scientific subject.</p>					Strategy
10. Course Structure					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week

Classroom performance and exams	Presence	Introduction, the definition of taxonomy, its interests and types	Understand the topic of the lecture	2 theoretical 2 practical	1
Classroom performance and exams	Presence	History of taxonomy, its principles, and foundations	Understand the topic of the lecture	2 theoretical 2 practical	2
Classroom performance and exams	Presence	Classification bases	Understand the topic of the lecture	2 theoretical 2 practical	3
Classroom performance and exams	Presence	Classification systems	Understand the topic of the lecture	2 theoretical 2 practical	4
Classroom performance and exams	Presence	Scientific nomenclature and its laws	Understand the topic of the lecture	2 theoretical 2 practical	5
Classroom performance and exams	Presence	Vegetative organs, root types, classification	Understand the topic of the lecture	2 theoretical 2 practical	6
Classroom performance and exams	Presence	Leg types, classification, and mutations	Understand the topic of the lecture	2 theoretical 2 practical	7
Classroom performance and exams	Presence	Leaves – Types of leaves – Their shapes	Understand the topic of the lecture	2 theoretical 2 practical	8
Classroom performance and exams	Presence	Leaves – Leaf mutations	Understand the topic of the lecture	2 theoretical 2 practical	9–10
Classroom performance and exams	Presence	Reproductive characteristics (flower)	Understand the topic of the lecture	2 theoretical 2 practical	11
Classroom performance and exams	Presence	Symmetry – Square – Cup	Understand the topic of the lecture	2 theoretical 2 practical	12
Classroom performance and exams	Presence	crown	Understand the topic of the lecture	2 theoretical 2 practical	13
Classroom performance and exams	Presence	Stamens	Understand the topic of the lecture	2 theoretical 2 practical	14– 15
Classroom performance and exams	Presence	Feminizing devices (pestles)	Understand the topic of the lecture	2 theoretical 2 practical	16

Classroom performance and exams	Presence	The floral equation	Understand the topic of the lecture	2 theoretical 2 practical	17
Classroom performance and exams	Presence	The fruits	Understand the topic of the lecture	2 theoretical 2 practical	18
Classroom performance and exams	Presence	Seeds	Understand the topic of the lecture	2 theoretical 2 practical	19
Classroom performance and exams	Presence	Pollen	Understand the topic of the lecture	2 theoretical 2 practical	20
Classroom performance and exams	Presence	Vaccination types and methods	Understand the topic of the lecture	2 theoretical 2 practical	21
Classroom performance and exams	Presence	Grasses – Plant Migration	Understand the topic of the lecture	2 theoretical 2 practical	22
Classroom performance and exams	Presence	Characteristics of some plant families	Understand the topic of the lecture	2 theoretical 2 practical	23
Classroom performance and exams	Presence	taxonomic key	Understand the topic of the lecture	2 theoretical 2 practical	24

11. Course Evaluation

The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

12. Learning and teaching resources

Classification of seed plants-Youssef the writer	Required textbooks (methodology, if any)
Classification of flowering plants-Ali Al-Moussawi	Primary References (Sources)
Plant classification and geographical distribution of wild plants-Iraqi flora	Recommended supporting books and references (scientific journals, reports...)
/	Electronic references, websites

Course Description Form

1. Course name

Practical histology / second stage	
2. Course code	
218BHI	
3. Semester/Year	
Academic year 2025-2025	
4. Date this description was prepared	
2025/9/17	
5. Available forms of attendance	
Mandatory attendance	
6. Number of study hours (total) / Number of units (total)	
Number of hours =60, number of units (4 theoretical 2 practical)	
7. Name of the course supervisor (if more than one name is mentioned)	
Name: M.M. Donia Hesham Taha Email: Donia.Hisham@tu.edu.iq . Rawaa Mohamed obid rawamuhammad@ru.edu.iq	
8. Course objectives	
<ul style="list-style-type: none"> • Help students understand science jobs And the function of cells and tissues in the body. • Numbers Angels Scientific And the quality Specialized in area sciences life For the purpose Ascend In reality Educational in Country. • education Students skills Written and spoken on Analytical levels By reference to Latest what Get in touch To him Science Hadith in area science Tissues Animal And methods Diagnose it. • Support ministry Education And the ministry education High And research scientific cadre Specialists from Those with Efficiency in the area of Life Sciences. 	Subject objectives
9. Teaching and learning strategies	
1 Performing scientific experiments Using the blackboard, electronic board, and slides. 2-Use a projector data show to attract students' attention and interact with the lecture.	Strategy

<p>3-Using models and models of the studied samples and preparing slides of those models.</p> <p>4-Visit of scientific laboratories by academic staff</p> <p>5- Applying the topics studied theoretically on a practical level.</p> <p>6-How to employ e-learning</p> <p>7-Use of electronic means of clarification</p> <p>8- Using the discussion method in the lecture between the professor and the students.</p> <p>9Assigning students to do research and reports.</p> <p>10-Assigning students homework related to the scientific subject.</p>	
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10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
Classroom performance and exams	Presence	Primary weaving	Understand the topic of the lecture	2 theoretical 2 practical	1
Performance Classroom and exams	Presence	Simple and stratified epithelium	to understand the topic The lecture	2theoretical2practical	2
Performance The class And exams	Presence	glandular epithelium	to understand the topic The lecture	2theoretical2practical	3
Performance Classroom and exams	Presence	Weaving Adhesive and its classification	to understand the topic The lecture	2theoretical2 practical	4-5
Performance Classroom and exams	Presence	Original and specialized connective tissues (cartilage, bone, lymph, blood-forming tissue)	to understand the topic. The lecture	2theoretical2practical	6-7
Performance Classroom and exams	Presence	Muscle tissue: smooth muscle - skeletal muscle - cardiac muscle	to understand the topic. The lecture	2theoretical2practical	8
Performance Classroom and exams	Presence	Nervous tissue: nerve cells and nerve fibers - cerebellum	to understand the topic The lecture	2theoretical2practical	9-10

Performance Classroom and exams	Presence	Organ tissues - circulatory system - capillaries - arteries - veins - heart	to understand the topic The lecture	2theoretical2practical	11-12
Performance Classroom and exams	Presence	Integumentary system: thick and thin skin - hair - nails	to understand the topic The lecture	2theoretical2practical	13
Performance Classroom and exams	Presence	Digestive system: mouth - lip - tongue - teeth	to understand the topic The lecture	2theoretical2practical	14
Performance Classroom and exams	Presence	Digestive tract: esophagus, stomach, fundus and pylorus, appendix, liver, pancreas	to understand the topic The lecture	Two theoretical and 2 practical	15-16
Performance The class And exams	Presence	Respiratory system: trachea - lung	to understand the topic The lecture	2theoretical2practical	17-18
Performance Classroom and exams	Presence	Urinary system: kidney - ureter	to understand the topic The lecture	2theoretical2practical	20-19
Performance Classroom and exams	Presence	Lymphatic organs: lymph nodes - spleen	to understand the topic The lecture	2 theoretical 2 practical	21-22

11. Course Evaluation

The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.
 Questions Oral inside The lecture And preparation Daily=%10
 Exams Daily Short(exam sudden)=%10
 exam monthly And present Reports=%80

12. Learning and teaching resources

science Weaving G1and G2/D.planets enslaved person The able The chosen one	Required textbooks (methodology, if any)
Basic histology (Junqueira, L.C. and Cameira. J, (2016).	Main References (Sources)
Assiut Veterinary Medicine Journal	Recommended supporting books and references (scientific journals, reports...)
Embryology and Histology arabicwww.jarir.com	Electronic references, websites

The week	the topic	T
1	Texts	Firstly
2	Interpretation of the Holy Quran: Selecting two stories from Surat Al-Fatihah and Surat Al-Fajr. Using interpretations of the Holy Quran when needed.	.1
1	Selections from ancient and modern Arabic poetry as follows:	.2
1	Poetry by Mohammed Mahdi Al-Jawahiri Oh Tigris of goodness	.3
1	Al-Mutanabbi's poetry about the people of Buwan The people's songs are good in meaning Like spring in time From home1 – 18	.4
1	Discuss the life of the poet Mikhail Naimy	.5
1	Discussing the life and biography of the poet Abdel Rahman Shukry	.6
2	Grammar and morphology	secondly
2	Spelling axis	1
2	The nominal and verbal sentence system: subject and predicate, kana and its sisters, the verb and its temporal meaning, original and subsidiary signs.	2
2	The accusatives: objects, states, distinctions, exceptions and dependents.	3

2	number	4
2	Common mistakes	5
2	Morphology: simple and augmented, derivatives (active participle and passive participle)	6
2	pronunciation and drawing	Thirdly
2	Solar and lunar letters	1
2	Writing the hamza / hamzat al-wasl and hamzat al-qata	2
2	Middle Hamza - Extreme Hamza	3
2	Writing the letter taa / taa marbuta and taa mabsutah	4
2	punctuation marks	Fourth
2	punctuation marks	Fifth
2	Light and Shadow	Sixth

Course Description Form

1. Course name:

Invertebrate practical/Second Stage	
2. Course code:	
217BIN	
3. Semester/Year	
annual2025-2026	
4. Date this description was prepared	
1/21/2025	
5. Available forms of attendance	
Mandatory attendance	
6. Number of study hours (total) / Number of units (total)	
Number of hours =60Number of units4Theoretical2practical)	
7. Name of the course supervisor (if more than one name is mentioned)	
Name: Ms.Ziad kalaf hemdan Ms. Zainab Karim Mohammed Zainab.Ka.mohammed@tu.edu.iq	
8. Course objectives	
<p>1- EmpowermentStudentsFrom understanding diseases common to humans and animals.</p> <p>2-To enable students to gain knowledge, understand, and diagnose invertebrates practically.</p> <p>3- To allow students to gain knowledge and understanding of invertebrate science.</p> <p>4- Introduce students to modern technologies and devices specializing in Invertebrates by parts.</p> <p>5-The student should be able to use laboratory equipment.</p>	Subject objectives
9. Teaching and learning strategies	
<p>-Perform scientific experiments using the blackboard, electronic board, and slides.</p> <p>- Use a projector data show to attract students' attention and engage with the lecture.</p> <p>-Using models and models of the studied samples and preparing slides of those models.</p> <p>-Visit of scientific laboratories by academic staff</p> <p>- Applying the topics studied theoretically on a practical level.</p>	Strategy

-How to employ e-learning					
10. Course Structure					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
General questions and discussion	Practical explanation of the microscope	How to use a microscope, examine a sample of pond water	Understand the ideas of the topic and be able to apply them with examples	2	1
Daily exam	Demo, lecture on the board, and viewing slides	kingdomProtistaSecondary KingdomProtozoaGeneral features and classification	Understand the ideas of the topic and be able to apply them with examples	4	2_3
Classroom performance and exams	Practical explanation	Prepare temporary slides of a drop of water observe live primitives, and write notes on them.	Understand the ideas of the topic and be able to apply them with examples		4-5
Classroom performance and exams	Demo, Lecture on the board	Animal Kingdom-Sponge Division-General features and classification	Understand the ideas of the topic and be able to apply them with examples	4	6-7
Daily exam	Demo	Cnidaria Division General Characteristics and Classification	Understand the ideas of the topic and be able to apply them with examples	2	8
General questions and discussion	Lecture on the electronic board	Platyhelminthes: General Characteristics and Classification	Understand the topic of the lecture	2	9
General questions and discussion	Lecture on the board, presentation	DivisionRotiferaGeneral features and classification, one of the species speciesEpiphanus	Understand the topic of the lecture	4	10_11
Daily discussion and exam	Display the slides on the electronic board and explain them under the microscope.	Division of Nematoda, characteristics, general characteristics, and classification. Ascuoi Lumbricoides (WM) CS in males	Understand the topic of the lecture	4	12_13

General questions and discussion	Demo	Division of annelids, general characteristics, and classification Nereis (external feature, CS Parapodium, anterior end)	Understand the topic with examples	4	14_15
Daily exam	Demo	Chelicerae Division Peripatus	Understand the topic of the lecture	2	16
General questions and discussion	Blackboard lecture and live specimen diagnosis	Arthropoda Division, General Characteristics and Classification	Understand the topic of the lecture	4	17_18
Classroom performance and exams	Demo and view slides	Soft Section, General Features and Classification Dentalium Octopus, Nautilus	Understand the topic of the lecture	4	19_20
Classroom performance and exams	Demo	Echinodermata, general characteristics and classification Asterias, Ophiura, Cucumaria, Antedon Echinus	Understand the topic of the lecture	6	21_22_23

11. Course Evaluation

Oral questions within the lecture and daily preparation =%10
Daily short tests (surprise test) =%10
Monthly exam and reporting =80%

12. Learning and teaching resources

Theoretical Invertebrates Book for the Second Stage_1	Required textbooks (methodology, if any)
Invertebrates Book/Dr. Abdel Aziz Mahmoud, Dr. Mahmoud Abdel Rahman Barai/Dr. Samir Mohamed Hassan El-Beltagy/Dr. Mohamed Nazim Shehata	Main References (Sources)
vertebrate Zoology No poverty/lat subsequent IF Murad Baba Murad .Barnes 2006, - Zoology 2007. Dorn, Robert, L; Walker jr , Warren F.; Barnes, Robert -Invertebrate Zoology 2007. Ruppert Edward E.; Barnes; Robert.	Recommended supporting books and references (scientific journals, reports...)
https://www.ammonnews.net/article/786968-https://sabq.org/saudia/663jk3sdjq-https://www.twinkl.com/teaching-wiki/anwa-alhywanat	Electronic references, websites

https://www.almrsal.com/post/874122	
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Course Description Form

1. Course name

Invertebrates					
2. Course code					
217BIN					
3. Semester/Year					
2025-2026					
4. Date this description was prepared					
1/12/2025					
5. Available forms of attendance					
Presence					
6. Number of study hours (total) / Number of units (total)					
Four theoretical 2 practical Number of units 6					
7. Name of the course supervisor (if more than one name is mentioned)					
Name: M.D. Rasha shamel rasha.sh.huseen@tu.ed					
8. Course objectives					
<ol style="list-style-type: none"> 1. This course aims to provide the student with basic information about the science of invertebrates 2. To enable students to gain knowledge and understanding of diseases common to humans and animals. 3. Enabling students to gain knowledge, understand invertebrates, and diagnose them practically. 4. Enabling students to gain knowledge and understanding of invertebrate science. 5. Introducing students to modern techniques and devices related to invertebrate organisms. 6. The student must be able to use laboratory equipment. 7. Providing the Ministry of Education and the Ministry of Higher Education and Scientific Research with specialized and qualified personnel in the field of life sciences. 					Subject objectives
9. Teaching and learning strategies					
<ol style="list-style-type: none"> 1- Use electronic means of clarification. 2- Using the discussion method in the lecture between the professor and the students. 3- Assigning students to do research and reports. 1. Assigning students homework related to the scientific subject. 					Strategy
10. Course Structure					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	week
Daily questions monthly exam daily homework	The lecture PowerPoint	the introduction, Invertebrates concept, The economic, scientific, and nutritional importance of invertebrates	Understand the topic	2	1

	Educational films		of the lecture		
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Invertebrate damage, The development of taxonomy (the influence of some scientists on its development)	Understand the topic of the lecture	2	2
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Kingdoms Vital - Objective reasons for loss of system The two kingdoms are important	Understand the topic of the lecture	2	3
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	About the kingdoms of life, their characteristics, and the position of invertebrates in these kingdoms, Evolutionary relationship between invertebrate groups and theories of their origin, multicellular animals metazoan, Cellular fusion theory syncytial theory, whip colonies colonial flagellate, Multiple origins theory origin	Understand the topic of the lecture	2	4
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	kingdom Protista Kingdom Secondary Elementary, About its discoverer and the terms used for cellular, unicellular Characteristics of prokaryotes – About Elementary Classification, Body and Volume for Elementary - Components Nucleus and cytoplasm of protozoa, membranes, and shells, Motility rods A- Structure of cilia and flagella and the difference in the beating of water	Understand the topic of the lecture	2	5
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Phantom feet - types movements, Osmoregulation and regulation and the role of contractile vacuoles in simple contractile vacuoles in the sarcolemma and complex contractile vacuoles in some ciliates, Nutrition in primary schools - (autotrophic and dependent nutrition (phagocytic and omnivorous)) Classification of starters based on feeding method, Food vacuole - its composition - digestion within the vacuole - its excretion	Understand the topic of the lecture	2	6
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Representative models for primary schools Phytoflagellates Euglella: The organism's environment / general form and structure/feeding method and its ability to change / behavioral reaction of the avoidant towards Light, Volvox Colony Living Model, Colony composition / Colony shape / Cells Somatic and germ cells, Sexual and asexual reproduction in its life cycle	Understand the topic of the lecture	2	7

Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	About Parasitic Somites Zoo flagellates: Leishmania / Trypanosoma / Giardia, General appearance of diseases caused by humans And its types Trichonympha general form/effect of its complementary living In the digestive tract of termites and cockroaches, in the digestion of cellulose	Understand the topic of the lecture	2	8
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Proteus and Pelomyxa General structure of each as a model of bare beards Aicella, Difflugia, and Elphidium General structure of each type of crust and how it is formed as models of enclosed plates With crust	Understand the topic of the lecture	2	9
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	General shape of Monocystis and its life cycle Plasmodium species that infect the human and intensity Malaria caused by Life cycle, Paramecium General form and structure / Cross-fertilization	Understand the topic of the lecture	2	10
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Animal Kingdom: Allergy Division (Sponges) Porifera	Understand the topic of the lecture	2	11- 12
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Cnidaria Division Cnidaria A brief about the origin and ecology of cnidarians, General characteristics - General classification - Polymorphism, Polymorphism in Cnidaria – Nematocysts and Cnidocytes (their structure and theories of their release mechanisms)) Classify Hydrozoa characteristics, model hydra	Understand the topic of the lecture	2	13- 14
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Classify Cubozoa Cuboid Animals / About Appearance External to sex Carybdea General characteristics, Flowerpots category Anthozoa / General Characteristics An example of a sea anemone species	Understand the topic of the lecture	2	15
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Corals form coral islands, Evolution of cnidarians and radial adaptation, Cavities Physical In animals, bilateral symmetry is the way Formation of true coeloms - coelenterates	Understand the topic of the lecture	2	16
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Pseudocoelomate animals - Animals True coelomate	Understand the topic of the lecture	2	17
Daily questions monthly exam daily homework	The lecture PowerPoint	Platyhelminthes Platyhelminthes General Characteristics / Characteristics of Species	Understand the topic	2	18

	Educational films	Pasta type Turbellaria, model Planaria	of the lecture		
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Cyst worms Ascheiminthes General Characteristics, Division Rhexifera rotifers General characteristics/appearance External and body structure / Sexual reproduction and reproduction The virgin, Virgin egg production strategy Overview of characteristics Ciliary branch of the abdomen Gastrotricha Overview of the characteristics of the phylum Khartoum moving Kinorhyncha	Understand the topic of the lecture	2	19
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Nematode phylum nematode general characteristics Exterior appearance of the model Ascuris Body Wall Layers / Digestive System – Nervous System – Excretory System – Reproductive System, Reproduction and Life Cycle, About the characteristics of the species Trichinella Nematomorpha, About the characteristics of the phylum Echinodermata Acanthocephala, About the attributes of the internal directorate Entoprocta	Understand the topic of the lecture	2	20
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Division of annelids Annelid: Etymology - Somatic reasoning - Ecology of annelids, General characteristics, Multicelled type Polychaeta, Distinctive features, and environment, modelers	Understand the topic of the lecture	2	21
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Low milk yield category: Distinctive characteristics and environment of its model Lumbricus Terrestris	Understand the topic of the lecture	2	22
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Leech class Characteristics and environment of individuals model Hirudo	Understand the topic of the lecture	2	23
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Chelicerae Division Onychophora: Common characteristics with arthropods - Common characteristics with annelids - Distinctive characteristics - Digestive system - Circulatory system - Excretory system - Respiration - System Nervous system - reproductive system	Understand the topic of the lecture	2	24
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Arthropoda Division Arthropoda: General Characteristics - Arthropod Ecology, Crustacean class - its distinguishing characteristics, Detailed explanation of the structure and organs	Understand the topic of the lecture	2	25

		of small crustacean daphnia, Types of crustacean larvae			
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Arachnids - Their Distinctive Characteristics and Habitats Detailed explanation of the external appearance and body areas And its appendages and body systems of the sex Buthus and the genus Argiope	Understand the topic of the lecture	2	26
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Soft Section Mollusca: model Anodonta Animal Environment – Appearance, The outer shell of the shell - Shell layers - Respiration - Excretory system - Digestive and nutritional system - Circulatory system - Nervous system - Reproductive and nutritional system - Circulatory system - Nervous system - Reproductive and reproductive system, gender model Helix – Body composition – Digestive system – Circulatory system – Excretory system – Nervous system – Respiratory system Reproduction and reproduction	Understand the topic of the lecture	2	27-28

11. Course Evaluation	
The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc. Oral questions during the lecture and daily preparation = 10% Daily short tests (pop-up tests) = 10% Monthly testing and reporting.= 80%	
12. Learning and teaching resources	
Theoretical Invertebrates Book for the Second Stage_1	Required textbooks (methodology, if any)
Invertebrates Book/Dr. Abdel Aziz Mahmoud, Dr. Mahmoud Abdel Rahman Barai/Dr. Samir Mohamed Hassan El-Beltagy/Dr. Mohamed Nazim Shehata	Main References (Sources)
vertebrate Zoology No poverty/lat subsequent I F Murad Baba Murad .Barnes 2006, - Zoology 2007. Dorn, Robert, L; Walker jr , Warren F.; Barnes, Robert -Invertebrate Zoology 2007. Ruppert Edward E.; Barnes; Robert.	Recommended supporting books and references (scientific journals, reports...)
https://www.ammonnews.net/article/786968-	Electronic references, websites

Course Description Form

1. Course name					
Calculators / Second Stage					
2. Course code					
Bachelor					
3. Semester/Year					
2026-2025					
4. Date this description was prepared					
3/9/2025					
5. Available forms of attendance					
daily					
6. Number of study hours (total) / Number of units (total)					
60 hours					
7. Name of the course administrator (if more than one name is mentioned)					
the name:M. Yasser Khalaf Hussein Email: yasseralhusain@tu.edu.iq					
8. Course objectives					
<ul style="list-style-type: none"> Teaching the student to use the program Microsoft Word 2010. Teaching the student to type and understand the most important program instructions. Teaching the student to use the program Microsoft Power point 2010. Teaching students how to create presentation slides. 			Subject objectives		
9. Teaching and learning strategies					
Practical lecture method and students applying the program in the laboratory.			Strategy		
10. Course Structure					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week

Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	Program definition Microsoft Word	2	the first
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	Program interface explanation Microsoft Word	2	the second
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	File tab	2	the third
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	Home tab: Clipboard, Font	2	Fourth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	Home tab: Paragraph, Styles	2	Fifth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	Home tab: Edit	2	Sixth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	Page Layout Tab: Page layout and setup group	2	Seventh
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	Page Layout Tab: Page background, paragraph and arrangement	2	The eighth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	Display tab: Document View, Show and Window	2	Ninth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	Insert tab: Pages and illustrations	2	tenth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	Insert tab: Table Table Tools	2	eleventh
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	Insert tab: Table and table design	2	twelfth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	Insert tab: Table layout	2	thirteenth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	Insert tab: Table layout	2	fourteenth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	Insert tab: Illustrations, drawings and footers	2	fifteenth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	Insert tab: Text, symbol and equation	2	Sixteenth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	References tab: Table of Contents and Footnotes	2	seventeenth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	References tab:	2	eighteenth

			References, citations and index		
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Word	Review tab: Spell check and word count	2	nineteenth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Power Point	Run the program and explain the program interface	2	Twenty
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Power Point	File tab components	2	twenty-first
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Power Point	Home tab	2	twenty-second
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Power Point	Slideshow tab	2	twenty-third
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Power Point	View tab	2	twenty fourth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Power Point	Design tab	2	twenty fifth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Power Point	Insert objects and add animations	2	twenty-sixth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Power Point	Drawing and editing group	2	twenty-seventh
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Power Point	Illustration and media collection	2	twenty-eighth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Power Point	Transitions and Preview tab	2	twenty-ninth
Daily and monthly exams, and reporting	Theoretical Practical	Microsoft Power Point	Tab movements	2	thirty

11. Course Evaluation

Daily exam score:10, Homework and Reports Grade: 15, Monthly Exams Grade: 25
Final Exam Score:50

12. Learning and teaching resources

Computer Basics and Office Applications / Part Two Microsoft Office Word 2010 Microsoft Office Power Point 2010 Ministry of Higher Education and Scientific Research 2016	Required textbooks (methodology if any)
nothing	Main References (Sources)
Explanation of PowerPoint 2010 The book is in Arabic. A complete explanation of the program with the English interface, with practical exercises on creating presentations.- Written by: Eng. Mohamed Abu Al-Ela	Recommended supporting books and references (scientific journals, reports...)
locationYouTubeOn the web	Electronic references, websites

Course Description Form

.1.Course name	
Practical embryology	
.2.Course code	
BEM216	
.3.Semester/Year	
Annual / 2025-2026	
.4.Date this description was prepared	
17/9/2025	
.5.Available forms of attendance	
Inside the lecture, face-to-face and online for classroom	
.6.Number of study hours (total) / Number of units (total)	
Number of hours = 60, number of units 6/ (4 theoretical 2 practical)	
.7.Name of the course supervisor (if more than one name is mentioned)	
:Name L .Noer jasam mohamed	
:Name A.L. :Nahedh Ayad Faris Email .nahedh.a.faris@tu.edu.iq	
.8.Course objectives	
<ul style="list-style-type: none"> • This course aims to provide the student with basic information about embryology • Introducing the student to the stages the embryo goes through ,during its development, such as gamete formation fertilization, cleavage, formation of the three embryonic layers, and the organization stage • Study the embryonic formation of the spear as an example of ,the primary chordates and compare it with other embryos such as frog embryos as an example of amphibians and .chicken embryos as an example of birds • Providing the Ministry of Education and the Ministry of Higher Education and Scientific Research with specialized and qualified personnel in the field of life sciences 	Subject objectives

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.9.Teaching and learning strategies

<ol style="list-style-type: none"> 1- Required books 2- Scientific articles websites related to the course vocabulary 3- Using modern technology in presentations using PowerPoint 4- Show educational videos selected illustrations on the board 5- Use of models and models animal specimens Slides of the stages of embryonic development in vertebrate groups 6- ,Methods of discussion, dialogue, inference, research ,comparison and links between science, religion and the , environment enrich the scientific material 7- .Cooperative learning 	Strategy
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.10.Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	time	The week
Daily exam and oral questions	Using the whiteboard and the display screen	Some anatomical expressions in embryology and body levels in vertebrates	Understand the topic of the lecture	4	1
Daily exam and oral questions	Using the whiteboard and the display screen And the microscope	Gamete formation, sperm formation, egg formation	Understand the topic of the lecture	4	3-2
Daily exam and oral questions	Using the whiteboard and the display screen	,Types of eggs in (spearfish ,fish, frogs, reptiles, birds ,(mammals Plaster models, slides, or) (pictures are placed	Understand the topic of the lecture	4	4
Daily exam and oral questions	Using a ,blackboard a projector ,screen and a microscope) Cleavage inspears, fish, frogs, reptiles, birds, and.(mammals Plaster models, slides, or) (pictures are placed	Understand the topic of the lecture	4	5
Daily exam and oral questions	Using the whiteboard and the display screen	Genetic formation of the ,spore/gametes, cleavage ,morula, ectoderm gastrulation, cross sections in the spore embryo showing ,formation of the neural tube mesoderm supply, formation	Understand the topic of the lecture	4	6

		of the notochord, formation of the intestine			
Daily exam and oral questions	Using the whiteboard and the display screen	Genetic composition of the spear / early embryo, early larva, old larva	Understand the topic of the lecture	4	7
Daily exam and oral questions	Using a ,blackboard a projector ,screen and a microscope embryo samples Saved previously	Genetic development of ,amphibians (frog) / gametes cleavage, blastula, early gastrulation, advanced ,gastrulation (yolk plug) stages of neural tube formation (nervation process ,(tailbud stage (3 mm brick embryo), external appearance, 4 mm embryo	Understand the topic of the lecture	4	9-8
Daily exam and oral questions	Using the whiteboard and the display screen And the microscope embryo samples Saved previously	,External appearance complete preparation, sagittal midsection, serialcross-sections :cross-section passing ,through the solar discscross-section passing through the ,optic vesiclescross-section passing through the auditory ,vesiclescross-section passing ,through the heartcross-section passing through the midgut and hepatic ,diverticulumcross-section ,passing through the hindgut cross-section passing through the caudate bud	Understand the topic of the lecture	4	11-10
Daily exam and oral questions	Using the whiteboard and the display screen	:Metamorphosis in frogs Based on larvae of lengths of mm, 9 mm, etc., in slides or 7 pictures that illustrate this .process	Understand the topic of the lecture	4	13-12
Daily exam and oral questions	Using the whiteboard and the display screen	Genetic composition of birds ,(chicken) / gametes unincubated egg, definition of ,incubator and how to use it hour-old chicken embryo-13 incubation, 16-hour-old .chicken embryo incubation	Understand the topic of the lecture	4	15-14
Daily exam and oral questions	Using the whiteboard and the display screen	hour-old chicken embryo-18) incubated) Complete preparation, mid-sagittal ,sectionand serial-wide sections. Transverse section passing through the neural	Understand the topic of the lecture	4	17-16

		,plate and notochord Transverse section passing through the primitive ganglion, Transverse section passing through the primitive groove			
Daily exam and oral questions	Using the whiteboard and the display screen	Chicken embryo, 24 hours) old, incubated): Complete preparation, mid-sagittal section, serial cross-sections , cross-section passing through ,the vertical fold cross-section passing through the anterior ,pylorus cross-section passing ,through the somite cross-section passing through the primitive vertebra	Understand the topic of the lecture	4	19-18
Daily exam and oral questions	Using the whiteboard and the display screen	Chicken embryo, 33 hours of) incubation) Complete preparation, mid-sagittal :section, serial cross sections Cross section passing ,through the optic vesicles Cross section passing through the pharyngeal membrane, Cross section ,passing through the heart Cross section passing through the retro pyloric region of the foregut, Cross section passing through the somite region, Cross section passing through the vascular region	Understand the topic of the lecture	4	21-20
Daily exam and oral questions	Using the whiteboard and the display screen And the microscope embryo samples Saved previously	Chicken embryo, 33 h) incubation): Complete preparation, serial cross sections. Cross section through the cerebrum, Cross section through the optic cups and the first pair of aortic arches, Cross section through Rathke's sinus and optic crura, Cross section through the oral canal and pharyngeal membrane, Cross section through the auditory ,sacs bulbous arteriosus and the second pair of aortic arches, Cross section through the second pair of pharyngeal sinuses, thyroid	Understand the topic of the lecture	4	23-22

		gland and ventricle, Cross ,section through the atrium pink crura and genicular cavity, Cross section through the umbilical and mesenteric veins and liver, Cross section through the open intestine and amniotic folds, Cross section through the ,seventeenth pair of somites Cross section through the zona pellucida Cross section through the .caudal bud			
Daily exam and oral questions	Using the whiteboard and the display screen And the microscope embryo samples Saved previously	Chicken embryo, 72 hours) old, incubated): Complete preparation: Extraction of the chicken embryo and examination in the dissection microscope, making glass ,slides of chicken embryos complete preparation of the embryoWhole mount making , glass slides of chicken ,embryos (paraffin method)	Understand the topic of the lecture	4	25-24

.11.Course Evaluation	
Oral questions during the lecture and daily preparation = 10% Daily short tests (pop-up test) = 10% Monthly exam and reporting = 80%	
.12.Learning and teaching resources	
Practical Embryology Dr. Written by Dr. Kawakib Abdul Qader, Dr. Abdul Hakim Al-Rawi, Dr. Amal Khashab	Required textbooks (methodology, if any)
–Medical Embryology Sadler, T. W. (2006)	Primary References (Sources)
–Introduction to Embryology Balinsky	Recommended supporting books and references (scientific (...journals, reports
www.devbio.com http://www.indiana.edu/~anat550/embryo_main/ http://www.embryology.ch/genericpages/moduleembryoen.html http://www.google.com http://sbalubaid.kau.edu.sa/ http://www.You tube www.as7apcool.com/vb/showthread.php?t=63744	,Electronic references websites

Course Description Form

1. Course name	
Plant taxonomy	
2. Course code	
215BPC	
3. Semester/Year	
Academic year 2025-2026	
4. Date this description was prepared	
17/9/2025	
5. Available forms of attendance	
Mandatory attendance	
6. Number of study hours (total) / Number of units (total)	
Number of hours = 60 hours, number of units = 6 units (4 theoretical units 2 practical units)	
7. Name of the course supervisor (if more than one name is mentioned)	
Moug Mohamed jaber	
8. Course objectives	
<ul style="list-style-type: none"> • Students' ability to know the general characteristics of plant classification. • planning to activate the role of students in the field of student development. • Students' ability to distinguish and cognitively perceive the phenotypic characteristics of seed plants. • Introduce students to modern techniques and devices for diagnosing and classifying plants and the mechanisms of their preservation. • The student should be able to identify the foundations of classification and its relationship to other sciences and the ability to distinguish plant families. • The student should be able to use laboratory equipment. 	Subject objectives
9. Teaching and learning strategies	
<ol style="list-style-type: none"> 1- Use of electronic means of clarification. 2- Using the discussion method in the lecture between the professor and the students. 3- Assigning students to do research and reports. 4- Assigning students homework related to the scientific subject. 	Strategy

10. Course Structure					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
Classroom performance and exams	Presence	Roots: their forms and modifications	Understand the topic of the lecture	2 theoretical 2 practical	1
Classroom performance and exams	Presence	Legs: shapes and modifications	Understand the topic of the lecture	2 theoretical 2 practical	2
Classroom performance and exams	Presence	Leaves: parts of the leaf, their arrangement on the stem, simple leaf, compound leaf, blade shapes, blade tip, blade base, blade edge, leaf veining, surface covering	Understand the topic of the lecture	2 theoretical 2 practical	3-4
Classroom performance and exams	Presence	Flowering: Parts of the flower, calyx and its modifications, corolla and its modifications, floral quadrature, symmetry, central organ (its shapes and modifications), female organ (its shapes and modifications), gametophyte	Understand the topic of the lecture	2 theoretical 2 practical	5-6-7
Classroom performance and exams	Presence	Floral systems (inflorescences)	Understand the topic of the lecture	2 theoretical 2 practical	8-9
Classroom performance and exams	Presence	fruits and seeds	Understand the topic of the lecture	2 theoretical 2 practical	10-11
Classroom performance and exams	Presence	Study of six flower families (students identify them using botanical keys)	Understand the topic of the lecture	2 theoretical 2 practical	12-13-14
Classroom performance and exams	Presence	Floral law and floral projection	Understand the topic of the lecture	2 theoretical 2	15-16

				practical	
Classroom performance and exams	Presence	Study (35-40) families of monocotyledons, dicotyledons, and gymnosperms, with (3-4) families in one laboratory, according to their availability in the region and their flowering season, with the students diagnosing them based on the keys. Plant (In the last week, students practiced constructing a key for ten of the families they studied during the school year.) Families Suggested: Cruciferae/ Verbenaceae / Amaryllidaceae Euphorbiaceae / Oxolidaceae / Malvaceae Myrtaceae / Scropholariaceae / Leguminasae Geraniaceae / Urticoceade / Ranunculaceae Papaveraceae / Violoceae / Chenopodiaceae	Understand the topic of the lecture	2 theoretical 2 practical	17-25

11. Course Evaluation	
Oral questions during the lecture and daily preparation = 10%	
Daily short tests (pop-up test) = 10%	
Monthly exam and reporting = 80%	
12. Learning and teaching resources	
Classification of seed plants-Youssef the writer	Required textbooks (methodology, if any)
Classification of flowering plants-Ali Al-Moussawi	Primary References (Sources)
Plant classification and geographical distribution of wild plants-Iraqi flora	Recommended supporting books and references (scientific journals, reports...)
	Electronic references, websites

Course Description Form

1. Course name					
Biochemistry					
2. Course code					
BGC104					
3. Semester/Year					
annual					
4. Date this description was prepared					
21-1-2026					
5. Available forms of attendance					
Presence					
6. Number of study hours (total) / Number of units (total)					
2 hours of theory 6 hours of practical, number of units: 4					
7. Name of the course supervisor (if more than one name is mentioned)					
Name: Asst. Prof. Dr. Hossam Daoud Abdullah Email:hussam83@tu.edu.iq					
8. Course objectives					
<ul style="list-style-type: none"> • Learn about buffer solutions and their role in biological reactions - the role of the cell. • Understand the role, structure and function of the main sources of energy in the body of an organism (carbohydrates, fats and proteins). • Understand the role and function of enzymes, hormones, nucleic acids, and vitamins within the body. • Understanding the relationship between energy sources 					Subject objectives
9. Teaching and learning strategies					
Theoretical lectures, practical application, electronic lectures, daily exams, monthly exams.					Strategy
10. Course Structure					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week

Daily and monthly exams	The lecture	Important biomolecules and buffer solutions	Analyze, apply, understand	2 theoretical 6 practical	First week Second week
Daily and monthly exams	The lecture	Carbohydrates: Definition, Functions, and Composition	Analyze, apply, understand	2 theoretical 6 practical	The third week Week 4
Daily and monthly exams	The lecture	All types of carbohydrates	Analyze, apply, understand	2 theoretical 6 practical	Week 5 Week 6
Daily and monthly exams	The lecture	Amino acids - definition, properties, and types	Analyze, apply, understand	2 theoretical 6 practical	The seventh week Week 8
Daily and monthly exams	The lecture	Peptides and proteins	Analyze, apply, understand	2 theoretical 6 practical	Week 9 The tenth week
Daily and monthly exams	The lecture	Fats: definition, types and functions	Analyze, apply, understand	2 theoretical 6 practical	Week eleven twelfth week
Daily and monthly exams	The lecture	Enzymes, definition, types, influencing factors, and theories	Analyze, apply, understand	2 theoretical 6 practical	thirteenth week Fourteenth week
Daily and monthly exams	The lecture	Nucleic acids definition-Its composition- Its function and vital role	Analyze, apply, understand	2 theoretical 6 practical	Week 15 Week 16
Daily and monthly exams	The lecture	Hormones definition- Methods of measuring it - its function - and its discovery	Analyze, apply, understand	2 theoretical 6 practical	Seventeenth week 18th week
Daily and monthly exams	The lecture	Hormones types and their regulatory role	Analyze, apply, understand	2 theoretical 6 practical	19th week Week 20

Daily and monthly exams	The lecture	Vitamins-Its definition, function, types, and diseases resulting from its deficiency	Analyze, apply, understand	2 theoretical 6 practical	Week twenty-one Week twenty-two
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11. Course Evaluation	
The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.	
12. Learning and teaching resources	
Introduction to Biochemistry Dr. Khawla Al-Falih	Required textbooks (methodology if any)
Principles of Biochemistry by Lenger	Main References (Sources)
Biochemistry journals and books	Recommended supporting books and references (scientific journals, reports...)
Google scholar, NCBI, MCQ in Biochemistry , Lehninger principles of biochemistry Harpers illustrated Biochemistry	Electronic references, websites

Course Description Form

1. Course name					
Baath regime crimes / second stage					
2. Course code					
225BPC					
3. Semester/Year					
2025/2026					
4. Date this description was prepared					
3/9/2025					
5. Available forms of attendance					
daily					
6. Number of study hours (total) / Number of units (total)					
30 hours 2					
7. Name of the course administrator (if more than one name is mentioned)					
name:M.M. kaled waleed kaled					
8. Course objectives					
<ul style="list-style-type: none"> • Introducing students to the history of the defunct Baath Party in Iraq. • Knowing the violations that occurred during the rule of the defunct Baath Party. • The student should know the extent of the impact of the wars that took place during the rule of the defunct Baath Party on Iraq, economically and politically. 					Subject objectives
9. Teaching and learning strategies					
Lecture style, discussing with students, and asking and exchanging questions with students					Strategy
10. Course Structure					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
nothing	Lectures	A descriptive overview of the political	Chapter One Violations	1	the first

		systems in Iraq	Rights and Freedoms		
discussion	Lectures	Monarchy		1	the second
discussion	Lectures	Republican era		1	the third
Daily exam	Lectures and discussions	Baathist Republican Era		1	Fourth
discussion	Lectures	Violation of intellectual rights and public freedoms	Violations of public rights and freedoms by the Baath regime	1	Fifth
surprise exam	Lectures	Intellectual property violations		1	Sixth
discussion	Lectures and discussions	Violation of public freedoms		1	Seventh
discussion	Lectures and discussions	Violation of the right to multi-partyism		1	The eighth
Written exam	Written exam			1	Ninth
discussion	Lectures and discussion	Violation of freedom of expression	Violations of social, political, and cultural rights	1	tenth
discussion	Lectures and discussions	revocation of nationality		1	eleventh
discussion	Lectures and discussions	Other social rights		1	twelfth
discussion	Workshop	Violation of cultural rights and freedoms		1	thirteenth
discussion	Lectures discussion	First and Second Gulf War	Violation of international law	1	fourteenth
Written exam	Written exam	International blockade on Iraq due to the invasion of Kuwait		1	fifteenth
discussion	Lectures	The impact of the Baath regime's		1	Sixteenth

		behavior on society			
Daily exam discussion	Lectures	Arbitrary arrests, torture of prisoners and executions		1	seventeenth
discussion	Lectures discussion	arbitrary detention of suspects		1	eighteenth
	Lectures	Execution of military and civilian personnel		1	nineteenth
discussion	Lectures discussion	separation of powers	Limiting the three powers to the Baath regime	1	Twenty
discussions	Lectures brainstorming	Governing powers under the regime		1	twenty-first
discussion	Lectures discussion	Psychological field	Chapter Two	1	twenty-second
	Discussions Lecture	Social field		1	twenty-third
Daily exam discussion	Lectures	Religion and State		1	twenty fourth
discussion	Lectures	Culture, media, and the militarization of society		1	twenty fifth
discussion	Lectures discussion	The impact of oppression and wars on the environment and population	Chapter Three	1	twenty-sixth
discussion	Lectures discussion	Use of internationally prohibited weapons and environmental pollution		1	twenty-seventh
discussion	Lectures discussion	scorched earth policy		1	twenty-eighth
discussion	brainstorming	Drying of the marshes and forced migration		1	twenty-ninth

discussion	Lectures discussion	Destruction of agricultural and animal environment and radioactive contamination		1	thirty
discussion	Lectures discussion	Mass graves and bombing of places of worship		1	Thirty-one
Monthly exam	Monthly exam			1	Thirty-second

11. Course Evaluation	
Daily exam score:10, Homework and Reports Grade: 15, Monthly Exams Grade: 25	
Final Exam Score:50	
12. Learning and teaching resources	
Binder (Crimes of the Baath Regime in Iraq)	Required textbooks (methodology, if any)
The curriculum of the crimes of the defunct Baath Party 2025, Ministry of Higher Education and Scientific Research	Primary References (Sources)
Official Arab and foreign websites that talk about the crimes of the Baath Party in Iraq	Electronic references, websites

Course Description Form

1. Course name	
theoretical embryology	
2. Course code	
216BEM	
3. Semester/Year	
Annual System 2025-2025	
4. Date this description was prepared	
2/29/2025	
5. Available forms of attendance	
Attendance is mandatory	
6. Number of study hours (total) / Number of units (total)	
Number of hours 60 / Number of units 6	
7. Name of the course supervisor (if more than one name is mentioned)	
Name: Assistant Professor Dr. Rashid Khamis Shaaban Email:rashid.khamees@tu.edu.iq	
8. Course objectives	
<ul style="list-style-type: none"> • Help students understand embryology and embryonic development in living organisms. • Preparing scientific and qualitative staff Specializing in the field of life sciences to improve the educational reality in the country • Teach students writing and speaking skills at analytical levels by referring to the latest developments in modern science in the fields of embryology and diagnostic methods. • The program served the university by providing students with a high-quality education through exposure to the latest scientific research developments on the theoretical and practical levels. • Support the Ministry of Higher Education and Scientific Research With a specialized staff of experts in the field of life sciences 	Subject objectives
9. Teaching and learning strategies	
Lecture or discussion with students by stimulating discussion and exchanging opinions through discussion between the professor and the students and between the students themselves, as well as using modern means of delivery such as Data show and other appropriate educational tools.	Strategy
10. Course Structure	

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
Classroom performance and exams	Presence	the introduction: Embryology and theories of genetic formation, fields and the importance of embryology, Gamete formation	Understand the topic of the lecture	2 theoretical 2 practical	1-2
Classroom performance and exams	Presence	primordial germ cells, Sexual differentiation, Sperm formation, Sperm transformation, mature sperm, egg formation, Ovulation, Egg casings, Classification of eggs, Sexual cycle mammals	Understand the topic of the lecture	2 theoretical 2 practical	3-4
Classroom performance and exams	Presence	Fertilization: The phenomenon of discrimination, Fertilizer and anti-fertilizer, Role of the acrosome Egg reaction and the role of cortical granules, Formation of the fertilization membrane	Understand the topic of the lecture	2 theoretical 2 practical	5-6
Classroom performance and exams	Presence	Cleft palate: His qualities levels Its types, Tweet Formation, Aroma formation, Formation of the rehab/destiny maps	Understand the topic of the lecture	2 theoretical 2 practical	7
Classroom performance and exams	Presence	Movements that make up the shape)	Understand the topic of the lecture	2 theoretical 2 practical	8
Classroom performance and exams	Presence	Growth, Sigmoid growth curve	Understand the topic of the lecture	2 theoretical 2 practical	9
Classroom performance and exams	Presence	Differentiation - Genetic control of growth and differentiation / Role of hormones In controlling growth and volatility.	Understand the topic of the lecture	2 theoretical 2 practical	10
Classroom performance and exams	Presence	Genetic composition of the spear: gametes, fertilization cleft, epidermis, gastrula, map The fateful Formation of the beginnings of the organs: Nervous system,	Understand the topic of the lecture	2 theoretical 2 practical	11-12

		mesoderm, notochord, The intestine, Hatching			
Classroom performance and exams	Presence	Genetic composition of amphibians (frog) gametes, fertilization cleft, epidermis, gastrula, map Destiny, (caudal bud stage (embryo 3 mm long))	Understand the topic of the lecture	2 theoretical 2 practical	13-14
Classroom performance and exams	Presence	Appearance/Internal structure: Ectoderm and its derivatives, Formation of the nervous system, Formation of sense organs (smell, eye, ear), notochord, Mesoderm and its derivatives, Formation of the circulatory system / Formation of the heart Endoderm and its derivatives	Understand the topic of the lecture	2 theoretical 2 practical	15-16
Classroom performance and exams	Presence	Formation of the digestive tract / Formation of gill slits (Embryo length 4 mm to hatch Appearance/Internal structure: Nervous system supply, Formation of sense organs, Urinary system composition, vascular system composition, notochord digestive system composition	Understand the topic of the lecture	2 theoretical 2 practical	17-18
Classroom performance and exams	Presence	Gene transfer and induction	Understand the topic of the lecture	2 theoretical 2 practical	19
Classroom performance and exams	Presence	Genetic composition in birds (chicken) gametes, fertilization cleft, epidermis, AFor the return, the map, Fate, stages of primitive line formation (16-hour-old chicken embryo incubator)	Understand the topic of the lecture	2 theoretical 2 practical	20-21
Classroom performance and exams	Presence	(Genetic changes in chicken embryos up to 18 hours of incubation) Primitive streak, ectoderm, mesoderm, endoderm (genetic changes between 18-24 hours of incubation)	Understand the topic of the lecture	2 theoretical 2 practical	22

Classroom performance and exams	Presence	neural folds And the groove Nervous system, notochord, blood formation And the vessels Blood, pericardial region, intestine, (genetic changes In the chicken embryo (between 24 and 33 hours of incubation) external appearance, nervous system, sense organs, vascular system (heart formation - blood vessel formation), somites, foregut.	Understand the topic of the lecture	2 theoretical 2 practical	23
Classroom performance and exams	Presence	(Genetic changes in the chicken embryo between 33-48 hours of incubation) Appearance, nervous system, sense organs, apparatus Rotation (External appearance of a 72-hour-old incubated chicken embryo)	Understand the topic of the lecture	2 theoretical 2 practical	24

11. Course Evaluation	
Oral questions within the lecture 20% Daily short tests (pop-up test) 10% Monthly testing and reporting. 70%	
12. Learning and teaching resources	
science Embryos/ Dr. Kawakib Abdul Qader Al-Mukhtar Dr. Amal Ali Al-Khatib	Required textbooks (methodology, if any)
Medical Embryology	Main References (Sources)
comparative embryology	Recommended supporting books and references (scientific journals, reports...)
Embryologia and Histological arabic www.jarir.com	Electronic references, websites

Course Description Form

1. Course name:	
theoretical histology	
2. Course code:	
218BHI	
3. Semester/Year:	
Academic year 2025-2025	
4. Date of preparation of this description:	
9/17/2025	
5. Available forms of attendance:	
My attendance is mandatory.	
6. Number of study hours (total) / Number of units (total):	
Number of hours = 60 hours, number of units = 6 units (4 theoretical units 2 practical units).	
7. Name of the course supervisor (if more than one name is mentioned)	
Name: Asst. Prof. Dr. Mohamed kalel : Asel yones	
8. Course objectives	
<ol style="list-style-type: none"> 1. Help students understand science jobs, members, cell cells, and tissues existing in the body. 2. numbers Angels Scientific And the quality Specialized in area sciences life For the purpose Ascend In reality Educational in Country 3. education Students skills Written And the conversation on Levels Analytical By reference to Latest what Get in touch To him Science Hadith in area science Tissues Animal And methods Diagnose it. 4. Support ministry Education And the ministry education High And research Scientific With the staff Specialist from Those with Efficiency in area sciences life. 	Subject objectives
5. 9. Teaching and learning strategies	
<ol style="list-style-type: none"> 1- Use electronic means of clarification. 2- Using the discussion method in the lecture between the professor and the students. 	Strategy

3- Assigning students to do research and reports.
 6. 4- Assigning students homework related to the scientific subject.

10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
Classroom performance and exams	Presence	Introduction: Part One: Primary Textures	Understand the topic of the lecture	2 theoretical 2 practical	1
Classroom performance and exams	Presence	Epithelial tissues (covering and lining): their characteristics and classification	Understand the topic of the lecture	2 theoretical 2 practical	2
Classroom performance and exams	Presence	Glandular epithelial tissues: definition and classification	Understand the topic of the lecture	2 theoretical 2 practical	3
Classroom performance and exams	Presence	Connective tissue: characteristics, elements, classification	Understand the topic of the lecture	2 theoretical 2 practical	4-5
Classroom performance and exams	Presence	Original connective tissues and specialized connective tissues (cartilage, bone, blood, lymph, hematopoietic tissue)	Understand the topic of the lecture	2 theoretical 2 practical	6-7
Classroom performance and exams	Presence	Muscle tissue: smooth muscle, skeletal muscle, cardiac muscle	Understand the topic of the lecture	2 theoretical 2 practical	8
Classroom performance and exams	Presence	Nervous tissue: nerve cells, types of nerve cells, nervous mechanisms, glial cells, nerve cord, cerebellum	Understand the topic of the lecture	2 theoretical 2 practical	9-10
Classroom performance and exams	Presence	Section Two: Organ tissues / Circulatory system: capillaries, arteries, veins, heart	Understand the topic of the lecture	2 theoretical 2 practical	11-12
Classroom performance and exams	Presence	Integumentary system: skin, hair, nail	Understand the topic of the lecture	2 theoretical 2 practical	13
Classroom performance and exams	Presence	Digestive system: mouth (lip, tongue, teeth), digestive tract (esophagus, stomach, small and large intestine, digestive glands (liver, pancreas))	Understand the topic of the lecture	2 theoretical 2 practical	14-15-16

Classroom performance and exams	Presence	Respiratory system: trachea, bronchi, lungs	Understand the topic of the lecture	2 theoretical 2 practical	17-18
Classroom performance and exams	Presence	Urinary system: kidney, ureter	Understand the topic of the lecture	2 theoretical 2 practical	19-20
Classroom performance and exams	Presence	Lymphatic system: (lymph nodes, thymus, spleen)	Understand the topic of the lecture	2 theoretical 2 practical	21-22

11. Course Evaluation	
The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc. Oral questions during the lecture and daily preparation = 10% Daily short tests (pop-up tests) = 10% Monthly testing and reporting.= 80%	
12. Learning and teaching resources	
Histology, Part 1 and Part 2 / Dr. Kawakib Abdul Qader Al-Mukhtar	Required textbooks (methodology, if any)
Basic histology (Junqueira, L. C. and Carneira. J, (2016).	Primary References (Sources)
Assiut Veterinary Medicine Journal	Recommended supporting books and references (scientific journals, reports...)
Embryologia and Histological arabicwww.jarir.com	Electronic references, websites

Course Description Form

1. Course name	
comparative anatomy	
2. Course code	
326BCA	
3. Semester/Year	
Annual 2025-2025	
4. Date this description was prepared	
17/1/2025	
5. Available forms of attendance	
Mandatory attendance	
6. Number of study hours (total) / Number of units (total)	
60hour/Number of units = 6 (4 theoretical 2 practical)	
7. Name of the course supervisor (if more than one name is mentioned)	
Name: Prof. Dr. Mozan fadly namek	
8. Course objectives	
<ul style="list-style-type: none"> • Help students understand the practical applications of comparative anatomy. • Preparing scientific and qualitative cadres specialized in the field of life sciences for the purpose of improving the educational reality in the country • Teaching students writing and speaking skills at analytical levels by referring to the latest findings of modern science in the field of comparative anatomy and its practical applications. • The program serves the university by providing students with high-quality education through exposure to the latest developments in scientific research, both theoretically and practically. • Providing the Ministry of Education and the Ministry of Higher Education and Scientific Research with specialized and competent personnel in the field of life sciences. 	Subject objectives
9. Teaching and learning strategies	
Lecture or discussion with students by stimulating discussion and exchanging opinions through discussion between the professor and the students and	Strategy

between the students themselves, as well as using modern means of delivery such as: Data show and other appropriate educational means.

10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Require learning outcome	Time	The week
Classroom performance and exams	In-person and online	the introduction: Chordate evolution theories, Law of Biogenesis	Understand the topic of the lecture	2 theoretical	1-2-3
Classroom performance and exams	Presence And electronic	Classification of the Chordata phylum and characteristics of its main groups	Understand the topic of the lecture	2 theoretical	4-5
Classroom performance and exams	Presence And electronic	Protochordates (examples of them) Focus on the spear, Comparative study of body systems in chordates Different, Integumentary system (skin and its derivatives), Skin structure and components in different chordates	Understand the topic of the lecture	2 theoretical	6-7
Classroom performance and exams	Presence And electronic	Covering device: Skin derivatives (glands, scales, claws, beaks (feathers, hooves, nails, horns)	Understand the topic of the lecture	2 theoretical	8-9
Classroom performance and exams	Presence And electronic	musculature: Muscle origin, muscle types, Comparison of skeletal muscles in different vertebrae	Understand the topic of the lecture	2 theoretical	10
Classroom performance and exams	Presence And electronic	Digestive system in different vertebrates: The digestive tract (mouth, oral cavity and structures) (Attached to them, the pharynx, esophagus, stomach, intestines), digestive glands	Understand the topic of the lecture	2 theoretical	11-12
Classroom performance and exams	Presence And electronic	the Respiratory system: Formation of gill pockets and slits, gills, bladders, Swimming, nasal passages, larynx, trachea bronchioles, resonance, breathing mechanics/Comparative	Understand the topic of the lecture	2 theoretical	13-14-15

		anatomy of the respiratory system in different vertebrates			
Classroom performance and exams	Presence And electronic	excretory system:Origin of the excretory system,Types of kidneys and their structures,Comparative anatomy of the excretory system in different vertebrates	Understand the topic of the lecture	2 theoretical	16-17
Classroom performance and exams	Presence And electronic	Reproductive system:Origin of the reproductive system and its relationship to the reproductive system,And its relationship to the excretory system,Primary and secondary sex organs or structures,Male reproductive systemAnd femininity, Comparative anatomy of the male reproductive system in vertebrates/Comparative anatomy of the female reproductive system in different vertebrates /The malicious phenomenon	Understand the topic of the lecture	2 theoretical	18-19
Classroom performance and exams	Presence And electronic	Circulatory system:Components of the circulatory system, growth, heart, comparative anatomy of the heart in different vertebrates	Understand the topic of the lecture	2 theoretical	21-21
Classroom performance and exams	Presence And electronic	Arterial system in different vertebrates/aFor venous system Comparative anatomy of the venous system of vertebrates/Lymphatic system	Understand the topic of the lecture	2 theoretical	22-23
Classroom performance and exams	Presence And electronic	Skeletal system:Internal skeleton sections,Axial skeleton: A - Skull, comparison of the skull in different vertebrates/Axial skeleton: B- Vertebral column C- The sternum D- The ribs	Understand the topic of the lecture	2 theoretical	24

Classroom performance and exams	Presence And electronic	Skeletal system:Peripheral structure: A- Shoulder girdle,B- Pelvic girdle Appendicular skeleton: forelimbs,B- Hind limbs		2 theor etical	25
Classroom performance and exams	Presence And electronic	Nervous system:Sections of the nervous system,Central nervous system - brain - spinal cord/Comparison of the brain in different vertebrates,Comparison of the spinal cord in different vertebrates		2 theor etical	26
Classroom performance and exams	Presence And electronic	peripheral nervous system:Spinal nerves,Cranial nerves		2 theor etical	27
Classroom performance and exams	Presence And electronic	sense organs:Nose,Eye,Ear/taste buds		2 theor etical	28
Classroom performance and exams	Presence And electronic	skin receptors/side line		2 theor etical	29

11. Course Evaluation	
The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc. Personal Calendar (Short Daily Quizzes)=10% Oral questions during the lecture=10% Monthly testing and reporting=80%	
12. Learning and teaching resources	
sciencecomparative anatomy	Required textbooks (methodology if any)
Basics of Science comparative anatomy	Main References (Sources)
principlescomparative anatomy Electronic references, websites	Recommended supporting books and references (scientific journals, reports...)

Course Description Form

Evaluation method	Learning method	Name of the unit or topic	Time	T h e w e e k
Daily and monthly exams	Use of projectors Data show and required materials	Introduction to Entomology (General characteristics, Importance and harms)	2	1
Daily and monthly exams	Use of projectors Data show and required materials	Insect body regions (Head and appendages, Types of mouth parts)	2	2
Daily and monthly exams	Use of projectors Data show and required materials	Chest and its appendages	2	3
Daily and monthly exams	Use of projectors Data show and required materials	Abdomen and its appendages	2	4
Daily and monthly exams	Use of projectors Data show and required materials	Transformation and its types, Larvae and its types	2	5
Daily and monthly exams	Use of projectors Data show and required materials	Digestive system (Its components and parts)	2	6 - 7
Daily and monthly exams	Use of projectors Data show and required materials	Digestion and excretion	2	8

Daily and monthly exams	Use of projectorsData show and required materials	Respiratory system-Structure and function	2	8 - 9
Daily and monthly exams	Use of projectorsData show and required materials	Circulatory system-Structure and function	2	10 - 11
	Use of nets, insect fishing gear, insect collection bottles and collection boxes	Organizing a scientific trip	2	12
Daily and monthly exams	Use of projectorsData show and required materials	Nervous system-Structure and function	2	13 - 14
Daily and monthly exams	Use of projectorsData show and required materials	excretory system-Organs of expression and their functions	2	15 - 16
Daily and monthly exams	Use of projectorsData show and required materials	Male and female reproductive system	2	17 - 18
Daily and monthly exams	Use of projectorsData show and required materials	Morphological transformation	2	19 - 20
Daily and monthly exams	Use of projectorsData show and required materials	Classification of insect groups	2	21 - 22
Daily and monthly exams	Use of projectorsData show and	review	2	

	required materials			
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11. Course Evaluation	
The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.	
12. Learning and teaching resources	
General Entomology (Ibrahim Qaddouri Qaddo, et al.)	Required textbooks (methodology if any)
Basics of insect classification (Radwan Muhammad Tawfiq 2010)	Main References (Sources)
Emirates Journal of Food and Agriculture, EJFAof Plant Protection, TJPP:	Recommended supporting books and references (scientific journals, reports...)
Electronic library of insects (1-General Entomology Yasser Afifi Al-Sayed) 2- Disease-carrying insects Jalil Karim Abu Al-Habb 1982 3-Radiostopes and radiation in entomology	Electronic references, websites

1. Course name	
Environment and practical pollution	
2. Course code	
BEPE331	
3. Semester/Year	
2025-2026	
4. Date this description was prepared	
9/17/2025	
5. Available forms of attendance	
Mandatory attendance	
6. Number of study hours (total) / Number of units (total)	
Number of hours = 60 hours, number of units (2 practical units).	
7. Name of the course supervisor (if more than one name is mentioned)	
Name: Asst. Prof. Dr.Hala mahmod ismail hala.m.ismail@tu.edu.iq	
Name: M.M. Elaf Mohammed Harez Email:elaf.m.harz@tu.edu.iq	
8. Course objectives	
<ul style="list-style-type: none"> • Introducing the student to environmental science and pollution, and Ecosystem components and ecological divisions Methods of measuring and examining the physical, chemical and biological factors of water and soil . • Preparing scientific and qualitative cadres specialized in the field of life sciences for the purpose of improving the educational reality in the country. • Providing the Ministry of Education and the Ministry of Education and Scientific Research with specialized and competent cadres in the field of life sciences. 	Subject objectives
9. Teaching and learning strategies	
<p>Use of electronic means of clarification.</p> <p>Conducting practical experiments in the laboratory.</p> <p>Assigning students to prepare reports.</p>	Strategy
10. Course Structure	

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
Daily Exam and oral questions	Presence	Introduction to Ecology	Understand the topic of the lecture	2	1
Daily Exam Oral questions	Presence	Methods of preparing chemical solutions and performing chemical calculations	Understand the topic of the lecture	2	2
Daily Exam	Presence	Measure degreesheat Turbidity inWater	Understand the topic of the lecture	2	3
and oral questions	Presence	Measurement of acidity and alkalinity in water	Understand the topic of the lecture	2	4
Daily Exam	Presence	Measurement of dissolved oxygen concentration in water	Understand the topic of the lecture	2	5
and oral questions	Presence	Water salinity measurement	Understand the topic of the lecture	2	6-7
Daily Exam	Presence	Measurement of chlorides in water	Understand the topic of the lecture	2	8
and oral questions	Presence	Measuring the amount of sulfates in water samples	Understand the topic of the lecture	2	9-10
Daily Exam	Presence	Measurement of phosphate concentration in water and chemical detergents	Understand the topic of the lecture	2	11
and oral questions	Presence	Scientific trip	Understand the topic of the lecture	2	12
Daily Exam	Presence	Biological contamination testing in water	Understand the topic of the lecture	2	13-14
and oral questions	Presence	Study of algae as an indicator of organic pollution in water	Understand the topic of the lecture	2	15-16
Daily Exam	Presence	Soil and methods of measuring the moisture content of soil samples	Understand the topic of the lecture	2	17

and oral questions	Presence	Measurement of physical properties of soil	Understand the topic of the lecture	2	18
Daily Exam	Presence	The effect of soil contamination with chemical pesticides on seed germination	Understand the topic of the lecture	2	19-20
and oral questions	Presence	Measurement of concentration of some air pollutants	Understand the topic of the lecture	2	21
Daily Exam	Presence	Examination and estimation of dust content in air in terms of plant pollution	Understand the topic of the lecture	2	22

11. Course Evaluation	
The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.	
12. Learning and teaching resources	
	Required textbooks (methodology if any)
1- Aquatic Environment Hussein Ali Al-Saadi 2008 2- Practical Environmental Engineering, written by Suad Abdul Hassan Abawi and Hassan Mohammed Suleiman. 3- Bahram Khader Moloud, and Hussein Ali Al-Saadi (Environment and Practical Pollution)	Main References (Sources)
The Science of Environmental Pollution, Third Edition Frank R. Spellman	Recommended supporting books and references (scientific journals, reports...)
Nothing	Electronic references, websites

Course Description Form

1. Course name	
Theoretical fungi	
2. Course code	
BMT 327	
3. Semester/Year	
2025-2026	
4. Date this description was prepared	
3/9/2025	
5. Available forms of attendance	
Presence	
6. Number of study hours (total) / Number of units (total)	
2 theoretical 2 practical Number of units 6	
7. Name of the course supervisor (if more than one name is mentioned)	
Name: Prof. Dr. Ahmad haled mahdy	
8. Course objectives	
<ul style="list-style-type: none"> • Introducing the student to fungi in terms of general characteristics, morphological and anatomical structure. • Knowing the methods of nutrition and reproduction in fungi • The student learns about the most important components and basic elements that make up the nutritional media in which it grows and the method of preparing these media. • Explains to the student the methods of isolating, culturing and diagnosing fungi. • The student is shown the most important features and characteristics of the different fungal groups. • Methods of classifying fungi and studying the characteristics and properties of each species and genus • Diagnosis of pathogenic fungal species under the microscope and observation of the shape, spores, etc. 	Subject objectives
9. Teaching and learning strategies	
<ol style="list-style-type: none"> 1- Use electronic means of clarification. 2- Using the discussion method in the lecture between the professor and the students. 3- Assigning students to do research and reports. 4- Assigning students homework related to the scientific subject. 	Strategy
10. Course Structure	

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Introduction to fungi, general characteristics, body structure / methods of nutrition and growth in fungi, presence, methods of reproduction / environmental relationships of fungi, importance of fungi / classification of fungi and the principles followed in classification, then study,	Understand the topic of the lecture	2	1-2
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Department of Jelly Fungi Division Myxomycota General features, study of its classes, ranks and families, section of gelatinous fungi Myxomycota Give examples of these fungi and study their characteristics	Understand the topic of the lecture	2	3-4
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	True Fungi Department Division: Eumycota Study the features of this section, then classify it into important sections, including: Sub-division: Mastigomycotina And the important classes that follow it, including the class of chytridiomycota. Class: chytridiomycetes The most important ranks and families of this class, their economic and environmental importance, and an example of the important mushrooms of this class. eg Synchytrium endobioticum Study of its life cycle, true fungi Division Eumycota Sub-division: Mastigomycotina Oomycetes row Class: Oomycetes Study its features and classify it into important ranks and families. Saproclinal ranks Order: Saprolegnia	Understand the topic of the lecture	2	5-6
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Oomycetes row Class: Oomycetes Order: Peronosporales Study its features and give an example. Family: Pythiaceae On it with studying its life cycle eg Pythium Phytophthora	Understand the topic of the lecture	2	7-8
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Oomycetes row Class: Oomycetes Order: Peronosporales Study its features and give an example of it, along with studying its life cycle. Family: Peronosporaceae eg Plasmopara viticola Study its features and give an example Family: Peronosporaceae On it with studying its life cycle eg Albugo candida	Understand the topic of the lecture	2	9-10

Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	True Fungi Division Division Eumycota Under section zygotic fungus subdivision: Zygomycotina Describe the zygotic fungi. Class: Zygomycotina Study its features and classify it into important ranks and families. Study its features and give an example Order: Mucorales On it with studying its life cycle eg Rhizopus, Mucor Study its features and give Order: Entomophthorales An example of it with a study of its life cycle eg Entomophthora muscae	Understand the topic of the lecture	2	11-12
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	True Fungi Division Division Eumycota Cyst Mycology Department Sub- division: Ascomycotina , Study its features and classify it into classes, ranks, and important families, giving an example of it and studying it.	Understand the topic of the lecture	2	13-14
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Study its features Class: Discomycetes Study its features Order: Pezizales , eg Peziza Study its features Order: Helotiales Study its features eg Sclerotinia Fructigena	Understand the topic of the lecture	2	15-16
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Class: Discomycetes Study its features Order: Tuberales Study its life cycle eg Tuber melanosporum Study its features order: Phacidiales Study its life cycle eg Rhytisma acerinum Study its features Class: Loculoascomycetes Study its features order: Pleosporales eg Venturia inaequalis	Understand the topic of the lecture	2	17-18
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	True Fungi Division Division: Eumycota , under the section of bezier fungi Sub-division: Basidiomycotina Study its features and classify it into important classes, ranks and families. Study its features Class: Teliomycetes Study its features order: Uredinales (rust fungi) Study its life cycle eg Puccinia graminis	Understand the topic of the lecture	2	19-20
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Class: Teliomycetes Study its features order: Uredinales (rust fungi) Study its life cycle eg Puccinia graminis Class: Teliomycetes Study its features Order: Ustilaginales (sust fungi)	Understand the topic of the lecture	2	21-22
Daily questions monthly exam	The lecture PowerPoint Educational films	Under the section of bezier fungi Sub-division: Basidiomycotina Study its features Class: Hymenomycetes Study its features Class: Hymenomycetes	Understand the topic of the lecture	2	23-24

daily homework		Study its features and importance Order: Agaricales			
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	True Fungi Division Division: Eumycota Under the section of imperfect fungi sub-division: Deuteromycotina Study its features, importance and classification into important classes and ranks	Understand the topic of the lecture	2	25-26
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Under the section of imperfect fungi Sub-division: Deuteromycotina Study its features class: Hyphomycetes Order: Moniliales eg Alternaria Fusarium	Understand the topic of the lecture	2	27
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Habitat relationships of stomatid fungi: study of their characteristics and importance eg Lichens root-fungi Mycorrhiza Study its features and importance	Understand the topic of the lecture	2	28
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Introduction to fungi, general characteristics, body structure / methods of nutrition and growth in fungi, presence, methods of reproduction / environmental relationships of fungi, importance of fungi / classification of fungi and the principles followed in classification, then study, divisions of fungi in terms of general characteristics and study, important classes and important ranks	Understand the topic of the lecture	2	1-2
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Department of Jelly Fungi Division Myxomycota General features, study of its classes, ranks and families, section of gelatinous fungi Myxomycota Give examples of these fungi and study their characteristics, life cycles and importance.	Understand the topic of the lecture	2	3-4
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	True Fungi Department Division: Eumycota Study the features of this section, then classify it into important sections, including: Sub-division: Mastigomycotina And the important classes that follow it, including the class of chytridiomycota. Class: chytridiomycetes The most important ranks and families of this class, their economic and environmental importance, and an example of the important mushrooms of this class. eg Synchytrium endobioticum Study of its life cycle, true fungi Division Eumycota Sub-division: Mastigomycotina Oomycetes Class: Oomycetes Study its features and classify it into important ranks and families. Saproclinal ranks Order: Saprolegnia Study its life cycle and its importance	Understand the topic of the lecture	2	5-6

		eg Achlya, Aphanomyces, Dictyuchus			
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Oomycetes row Class: Oomycetes Order: Peronosporales Study its features and give an example.Family: Pythiaceae On it with studying its life cycleeg Pythium Phytophthora	Understand the topic of the lecture	2	7-8
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Oomycetes row Class: Oomycetes Order: Peronosporales Study its features and give an example of it, along with studying its life cycle. Family:Peronosporaceae eg Plasmopara viticola Study its features and give an exampleFamily: Peronosporaceae On it with studying its life cycleeg Albugo candida	Understand the topic of the lecture	2	9-10
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	True Fungi DivisionDivision EumycotaUnder section zygotic fungusubdivision: Zygomycotina Describe the zygotic fungi. Class: Zygomycotina Study its features and classify it into important ranks and families. Study its features and give an exampleOrder: Mucorales On it with studying its life cycle eg Rhizopus,Mucor Study its features and give Order: Entomophthorales An example of it with a study of its life cycle eg Entomophthora muscae	Understand the topic of the lecture	2	11-12
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	True Fungi Division Division Eumycota Cyst Mycology Department Sub-division: Ascomycotina , Study its features and classify it into classes, ranks, and important families, giving an example of it and studying it.	Understand the topic of the lecture	2	13-14
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Study its features Class: Discomycetes Study its features Order: Pezizales , eg Peziza Study its features Order: Helotiales Study its features eg Sclerotinia Fructigena	Understand the topic of the lecture	2	15-16
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Class: Discomycetes Study its features Order: Tuberales Study its life cycleeg Tuber melanosporum Study its features order: Phacidiales Study its life cycleeg Rhytisma acerinum Study its features Class: Loculoascomycetes Study its features order: Pleosporales eg Venturia inaequalis	Understand the topic of the lecture	2	17-18

Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	True Fungi Division Division: Eumycota , under the section of bezier fungi Sub-division: Basidiomycotina Study its features and classify it into important classes, ranks and families. Study its features Class: Teliomycetes	Understand the topic of the lecture	2	19-20
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Class: Teliomycetes Study its features order: Uredinales (rust fungi) Study its life cycle eg Puccinia graminis Class: Teliomycetes Study its features Order: Ustilaginales (sust fungi)	Understand the topic of the lecture	2	21-22
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Under the section of bezier fungi Sub-division: Basidiomycotina Study its features Class: Hymenomycetes Study its features Class: Hymenomycetes Study its features and importance Order: Agaricales	Understand the topic of the lecture	2	23-24
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	True Fungi Division Division: Eumycota Under the section of imperfect fungi sub-division: Deuteromycotina Study its features, importance and classification into important classes and ranks	Understand the topic of the lecture	2	25-26
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Under the section of imperfect fungi Sub-division: Deuteromycotina Study its features class: Hyphomycetes Order: Moniliales eg Alternaria Fusarium	Understand the topic of the lecture	2	27
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Habitat relationships of stomatid fungi: study of their characteristics and importance eg Lichens root-fungi Mycorrhiza Study its features and importance	Understand the topic of the lecture	2	28

11. Course Evaluation

The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

- Oral questions during the lecture and daily preparation = 10%
- Daily short tests (exam Surprise) = 10%
- Monthly exam and submission Reports . = 80%

12. Learning and teaching resources

mycology Written by: Prof. Dr. Abdul Redha Taha Sarhan, First Edition. Baghdad 2012 mycology Written by: Prof. Dr. Hadi Alwan Mohammed Al-Saedi	Required textbooks (methodology if any)
Fundamentals of Mycology Written by: Abdullah bin Nasser Mohammed, 1998	Main References (Sources)

Mycal principles Written by: Abdul Aziz Majeed Nakhilan, 2009	Recommended supporting books and references (scientific journals, reports...)
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4418965/	Electronic references, websites

Course Description Form

1. Course name					
Practical plant groups					
2. Course code					
329BAL					
3. Semester/Year					
2025-2026					
4. Date this description was prepared:					
9/17/2025					
5. Available forms of attendance					
My attendance is mandatory					
6. Number of study hours (total) / Number of units (total)					
60 hours / 6 units					
7. Name of the course supervisor (if more than one name is mentioned)					
Name: M.Raghad hasan : M.M Shahd Tariq Khalaf : M.M Nour qutaba shahadtareq@tu.edu.iq					
8. Course objectives					
<ul style="list-style-type: none"> Learn about the most important types of algae, archaea, and gymnosperms. Study the basis of classifying algae into different groups Introducing the student to the life cycles of different algae as well as their environments. 					Subject objectives
9. Teaching and learning strategies					
1- Use electronic means of clarification 2- Using the discussion method in the lecture between the professor and the students. 3- Assigning students to do research and reports. 4- Students' costs of related to the scientific subject					Strategy
10. Course Structure					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
Classroom performance and exams	Presence	Definition of algae and its forms with examples	Understand the topic of the lecture	2	1

Classroom performance and exams	Presence	Definition of algae and its forms with examples	Understand the topic of the lecture	2	2
Classroom performance and exams	Presence	Definition of algae and its forms with examples	Understand the topic of the lecture	2	3
Classroom performance and exams	Presence	Plastid shapes	Understand the topic of the lecture	2	4
Classroom performance and exams	Presence	General lab, examining live specimens brought in by students to review algae shapes...	Understand the topic of the lecture	2	5
Classroom performance and exams	Presence	Blue-green algae division	Understand the topic of the lecture	2	6
Classroom performance and exams	Presence	Blue-green algae division	Understand the topic of the lecture	2	7
Classroom performance and exams	Presence	Green algae division	Understand the topic of the lecture	2	8
Classroom performance and exams	Presence	Green algae division	Understand the topic of the lecture	2	9
Classroom performance and exams	Presence	Green algae division	Understand the topic of the lecture	2	10
Classroom performance and exams	Presence	Karite algae	Understand the topic of the lecture	2	11
Classroom performance and exams	Presence	Yellow green algae, golden yellow algae	Understand the topic of the lecture	2	12
Classroom performance and exams	Presence	Yellow green algae, golden yellow algae	Understand the topic of the lecture	2	13
Classroom performance and exams	Presence	brown algae	Understand the topic of the lecture	2	14
Classroom performance and exams	Presence	brown algae	Understand the topic of the lecture	2	15
Classroom performance and exams	Presence	Euglena algae	Understand the topic of the lecture	2	16
Classroom performance and exams	Presence	Red algae	Understand the topic of the lecture	2	17
Classroom performance and exams	Presence	Live specimen examination	Understand the topic of the lecture	2	18
Classroom performance and exams	Presence	Mosses	Understand the topic of the lecture	2	19
Classroom performance and exams	Presence	Examples of thallus structure	Understand the topic of the lecture	2	20
Classroom performance and exams	Presence	horny lichens	Understand the topic of the lecture	2	21

Classroom performance and exams	Presence	horny lichens	Understand the topic of the lecture	2	22
Classroom performance and exams	Presence	Ferns	Understand the topic of the lecture	2	23
Classroom performance and exams	Presence	Ferns	Understand the topic of the lecture	2	24
Classroom performance and exams	Presence	The dung beetles	Understand the topic of the lecture	2	25
Classroom performance and exams	Presence	The dung beetles	Understand the topic of the lecture	2	26

11. Course Evaluation

The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

12. Learning and teaching resources

Algae and Archaeonids. Hussein Ali Al-Saadi and Nidal Idris Suleiman	Required textbooks (methodology if any)
	Main References (Sources)
	Recommended supporting books and references (scientific journals, reports...)
Book of Archaiconia by Dr. Ahmed Al-Atabi	Electronic references, websites

Course Description Form

1. Course name	
fungi	
2. Course code	
327BMY	
3. Semester/Year	
Academic year 2025/2025	
4. Date this description was prepared	
2025/9/17	
5. Available forms of attendance	
Attendance is mandatory	
6. Number of study hours (total) / Number of units (total)	
Number of hours=60Hour / Number of units =6(4My theory 2practical)	
7. Name of the course supervisor (if more than one name is mentioned)	
<p>Dr. ABD AL MOHiMEN Mohamed Name: M.M. Lama Safi Abdul Ghanem Email: luma.s.abd@tu.edu.iq M.M Nour Adnan Mahmoud nour.a.mahmoud@tu.edu.iq Mr. Black Hamad Neda aswad.h.nada@tu.edu.iq</p>	
8. Course objectives:	
<ul style="list-style-type: none"> • Introducing the student to fungi in terms of general characteristics, morphological and anatomical structure. • Knowing the methods of nutrition and reproduction in fungi • The student learns about the most important components and basic elements that make up the nutritional media in which it grows and the method of preparing these media. • Explains to the student the methods of isolating, culturing and diagnosing fungi. • The student is shown the most important features and characteristics of the different fungal groups. • Methods of classifying fungi and studying the characteristics and properties of each species and genus • Diagnosis of pathogenic fungal species under the microscope and observation of the shape, spores, etc. 	Subject objectives

<ul style="list-style-type: none"> • 9. Teaching and learning strategies 	
<ul style="list-style-type: none"> • Curriculum approved by the Ministry of Higher Education and Scientific Research • Modern scientific theses and dissertations and scientific research • Various teaching methods including discussion, questions and answers, inference, presentation, etc. • The scientific part in preparing culture media and methods of isolating fungi from their locations • Display information by PPT The screen and the blackboard, as well as the models and objects infected with fungi (such as bread, fruits, tree leaves, etc.) • Scientific trips to places where fungi are found, such as rivers, public parks, and mushroom fields. 	Strategy

10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
Classroom performance and daily practical exam on how to prepare and sterilize media manually	Presence	1- Devices and tools used in the fungi laboratory (identification and how to use them) 2- Nutritional media 3- Preparation of potato dextrose agar medium (PDA) 4- Sterilization methods (chemical and physical)	Understand the topic of the lecture	2 theoretical 2 practical	1
Classroom performance and practical exam for the method of taking a sample from the source	In-person field	-Isolation of fungi from their various sources: air, soil, or infected plant tissue. Soil insulation - The method of dilution Dilution method - Direct method Direct method	Understand the topic of the lecture	2 theoretical 2 practical	2
Classroom performance and practical test of examination method	Presence	- Study and examination of types of spores, hyphae and physical structures in fungi - Study and examination of fungal species in fungal farms that were isolated in the previous laboratory	Understand the topic of the lecture	2 theoretical 2 practical	3

Classroom performance and exams	Presence	- Classification of fungi - Department of Jelly Fungi Division: Myxomycota -Ex: Arcyria -Ex: Stemontis Ex: Physarum <i>Ex: Hemitrichia</i>	Underst and the topic of the lecture	2 theoretical 2 practical	4
Classroom performance and exams	Presence	Division: Myxomycota Order: Plasmodiopgorales Ex: Plasmodiophora brassicae Ex: Spongospora subterranea	Underst and the topic of the lecture	2 theoretical 2 practical	5
Classroom performance and exams	Presence	True fungi Division: Eumycota Sub-Division: Mastigomycotina Class: Chytridiomycetes Ex: Synchronium endobioticum Sub-Division: Mastigomycotina Class: Oomycetes O: Peronosporales F: Albuginaceae Ex: Albugo candida	Underst and the topic of the lecture	2 theoretical 2 practical	6
Classroom performance and exams	Presence	Sub-Division: Mastigomycotina Class: Oomycetes Order: Saprolegniales Family: Pythiaceae Ex: Pytgium Ex: Phytophthora Sub-Division: Mastigomycotina Class: Oomycetes Or: Peronosporales F: Peronosporaceae Ex1: Plasmopara 2: Peronospora 3: Bremia 4: Sclerospora	Underst and the topic of the lecture	2 theoretical 2 practical	7
Classroom performance and exams	Presence	Sub-Division: Zygomycotina Cl: Zygomycetes O1: Mucorales Ex: Rhizoppus , Ex: Mucor O2: Entomophthorales Ex:Entomophthora mucae	Underst and the topic of the lecture	2 theoretical 2 practical	8
Classroom performance and exams	Presence	Sub-D: Ascomycotina CL: Hemiascomycetes Or: Endomycetales Ex1: Saccharomyces cerevisiae Ex2: Schizosaccharomyces octosporus Or: Taphrina deformans Ex: Taphrina Pruni	Underst and the topic of the lecture	2 theoretical 2 practical	9

Classroom performance and exams	Presence	Sub-D: Basidiomycota Cl: Hymenomycetes Or: Agaricus Ex: Agaricus Ex: Amanita	Understand the topic of the lecture	2 theoretical 2 practical	10 11
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11. Course Evaluation

- 1- Daily preparation, in-class activity and quick quiz (QUES)10%
- 2- Conducting research, reports, explanatory posters and models10%
- 3- Monthly exam80%

12. Learning and teaching resources

<p>Practical mycology Written by: Prof. Dr. Abdul Redha Taha Sarhan, First Edition. Baghdad 2012</p> <p>Practical mycology Written by: Prof. Dr. Hadi Alwan Mohammed Al-Saedi</p>	<p>Required textbooks (methodology if any)</p>
<p>Fundamentals of Mycology Written by: Abdullah bin Nasser Mohammed, 1998</p>	<p>Main References (Sources)</p>
<p>Mycal principles Written by: Abdul Aziz Majeed Nakhilan, 2009</p>	<p>Recommended supporting books and references (scientific journals, reports...)</p>
<p>https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4418965/</p>	<p>Electronic references, websites</p>

Course Description Form

Course name:	
Practical Entomology	
Course code:	
0BEN	
Semester/Year:	
for the academic year 2025/2025	
Date this description was prepared	
17/2025	
Available forms of attendance	
Daily attendance is mandatory	
Number of study hours (total) / Number of units (total)	
Number of hours: 60 hours, Number of units: 2 practical units	
Name of the course supervisor (if more than one name is mentioned)	
Name: Dr. Ali Hassan Al-Tayef Email: Name: M.M. Mustafa Nazhan Mahdi Email: mostafa.na.mahadi@tu.edu.iq Name: M.M. Azal Hassan Alwan Email: parisstar1996@tu.edu.iq Name: M.M. slaem jasem Mohamed	
Course objectives	
Explain the importance of insects in lifeman. Basic description of the structure and functions of insect body parts. Benefits of insects. Insect damage. Fitness Insects By human being. Reasons for the success of insects In the spread. Explain the importance of insect body accessories and what are the most important types of these accessories.	Objectives
Teaching and learning strategies	
<ul style="list-style-type: none"> The lecture And use Blackboard And casting without the help of Data show 	Strategy

<ul style="list-style-type: none"> • Offers Illustrative Help With plans And pictures And movies Educational • Discussion Interactive • Education Self • E-learning, scientific seminars. • numbers Reports • Tests Operation • Duties Home • Contributions And activities Other • Encourage the student to read modern scientific sources. 	
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1. Course Structure

evaluation method	learning method	name of the unit topic	required learning outcomes	time	week
Daily and monthly exams	Use of projectorsData show and required materials	Introduction to Entomology(General characteristics,Importance and harms)	Introduction to Entomology(General characteristics,Importance and harms)	2 hours practical	1
Daily and monthly exams	Use of projectorsData show and required materials	Insect body regions(Head and appendages,Types of mouth parts)	Insect body regions(Head and appendages,Types of mouth parts)	2 hours practical	2
Daily and monthly exams	Use of projectorsData show and required materials	Chest and its appendages	Chest and its appendages	2 hours practical	3
Daily and monthly exams	Use of projectorsData show and required materials	Abdomen and its appendages	Abdomen and its appendages	2 hours practical	4
Daily and monthly exams	Use of projectorsData show and required materials	TransformationAnd its types,Larvae and its types	TransformationAnd its types,Larvae and its types	2 hours practical	5
Daily and monthly exams	Use of projectorsData show and required materials	Digestive system(Its components and parts)	Digestive system(Its components and parts)	2 hours practical	6-7
Daily and monthly exams	Use of projectorsData show and required materials	Digestion and excretion	Digestion and excretion	2 hours practical	8
Daily and monthly exams	Use of projectorsData show and required materials	Respiratory system-Structure and function	Respiratory system-Structure and function	2 hours practical	8-9
Daily and monthly exams	Use of projectorsData show and required materials	Circulatory system-Structure and function	Circulatory system-Structure and function	2 hours practical	10-11
	Use of nets, insect fishing gear, insect	Organizing a scientific trip	Informing students about methods of catching and collecting		12

	collection bottles and collection boxes		insects, how to preserve them and transport them to the laboratory.		
Daily and monthly exams	Use of projectorsData show and required materials	Nervous system-Structure and function	Nervous system-Structure and function	2 hours practical	13-14
Daily and monthly exams	Use of projectorsData show and required materials	excretory system- Organs of expression and their functions	excretory system- Organs of expression and their functions	2 hours practical	15-16
Daily and monthly exams	Use of projectorsData show and required materials	Male and female reproductive system	Male and female reproductive system	2 hours practical	17-18
Daily and monthly exams	Use of projectorsData show and required materials	Morphological transformation	Morphological transformation	2 hours practical	19-20
Daily and monthly exams	Use of projectorsData show and required materials	Classification of insect groups	Classification of insect groups	2 hours practical	21-22
Daily and monthly exams	Use of projectorsData show and required materials	review	review	2 hours practical	

11. Course Evaluation	
The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.	
12. Learning and teaching resources	
General Entomology (Ibrahim Qaddouri Qaddo, et al.)	Required textbooks (methodology if any)
Basics of insect classification (Radwan Muhammad Tawfiq 2010)	Main References (Sources)
Emirates Journal of Food and Agriculture, EJFAof Plant Protection, TJPP:	Recommended supporting books and references (scientific journals, reports...)
Electronic library of insects (1-General Entomology Yasser Afifi Al-Sayed) 2- Disease-carrying insects Jalil Karim Abu Al-Habb 1982 3-Radiostopes and radiation in entomology	Electronic references, websites

Course Description Form

1. Course name	
Genetic	
2. Course code	
328BG	
3. Semester/Year	
2025-2026	
4. Date this description was prepared	
9/17/2025	
5. Available forms of attendance	
Attendance is mandatory	
6. Number of study hours (total) / Number of units (total)	
Number of hours=60Hour, number of units=6Units,,4Theoretical unit 2My work unit	
7. Course Administrator Name	
<p>Name: Dr. Mohammed Mutlaq Saleh Mohammed.alkafaji78@tu.ed.iq</p> <p>M.M. Ayat Sufyan Abbas Ayatsufyan@tu.ed.iq</p> <p>M.M. Noha Hossam Abdulwahab Noha.h.abdelwahhab@tu.edu.iq</p> <p>Dr. Bashar fadel</p> <p>Dr/ shamah jomaa</p>	
8. Course objectives	
<ul style="list-style-type: none"> Help students understand the practical applications of genetics. Preparing scientific and qualitative cadres specialized in the field of life sciences for the purpose of educational advancement in the country The program serves the university by providing students with high-quality 	Subject objectives

<p>education through exposure to the latest developments in scientific research, both theoretically and practically.</p> <ul style="list-style-type: none"> • Providing the Ministry of Education, Higher Education and Scientific Research with qualified personnel in the field of life sciences 	
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9. Teaching and learning strategies

<ol style="list-style-type: none"> 1. The scientific curriculum approved by the Ministry of Higher Education and Scientific Research 2. Teaching methods that include asking students questions, dialogue, and discussing scientific information. 3. Assigning students to do research and reports 4. Display information via screen and board 5. Using daily and monthly exams to evaluate students 	Strategy
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10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
Classroom performance and exams	Presence	Mendel's first law, relationship between alleles, backcrossing and test mating, lethal genes.	Understand the topic of the lecture	2 theoretical 2 practical	1
Classroom performance and exams	Presence	Mendel's second law, mating between parents that differ in two or three traits, using the square method and the fork method to determine the	to understand topic The lecture	2theoretical2practical	2

		proportions of genotypes and phenotypic classes			
Classroom performance and exams	Presence	Multiple mechanisms	to understand topic The lecture	2theoretical2practical	3
Classroom performance and exams	Presence	Genetic interference and modification of Mendelian ratios of phenotypic classes.	to understand topic The lecture	2theoretical2practical	4-5
Classroom performance and exams	Presence	Sexual attachment	to understand topic The lecture	2theoretical2practical	6
Classroom performance and exams	Presence	Genealogy records.	to understand topic The lecture	2theoretical2practical	7-8
Classroom performance and exams	Presence	Drosophila insect, distinguishing between male and female, its life cycle, mutations in this insect.	to understand topic The lecture	2theoretical2practical	9
Classroom performance and exams	Presence	Probability and chi-square.	to understand topic The lecture	2theoretical2practical	10
Classroom performance and exams	Presence	Examination and analysis of the results of mating between different insects in a pair of non-sex-linked traits.	to understand topic The lecture	2theoretical2practical	11
Classroom performance and exams	Presence	Examination and analysis of the results of mating between different insects on a pair of sex-linked traits.	to understand topic The lecture	2theoretical2practical	12-13
Classroom performance and exams	Presence	Connection and crossing	to understand topic The lecture	2theoretical2practical	14

Classroom performance and exams	Presence	Determine the proportions of gametes, genotypes and phenotypes resulting from test fertilization between two parents that differ at two genetic loci, and assume the occurrence of single crossing and double crossing.	to understand topic The lecture	2theoretical2practical	15
Classroom performance and exams	Presence	Cases of transit suppression and the resulting proportions.	to understand topic The lecture	2theoretical2practical	16
Classroom performance and exams	Presence	Determine the proportions of gametes, genotypes and phenotypic classes resulting from test crosses between two parents differing at three genetic loci, assuming the occurrence of single crossing and co-crossing.	to understand topic The lecture	2theoretical2practical	17
Classroom performance and exams	Presence	Estimation of distances, concordance coefficient, overlap and chromosomal mapping.	to understand topic The lecture	2theoretical2practical	18
Classroom performance and exams	Presence	Using chromosome maps to predict	to understand topic The lecture	2theoretical2practical	19

		the results of dihybridization.			
Classroom performance and exams	Presence	Using chromosome maps to predict the results of triple hybridization	to understand topic The lecture	2theoretical2practical	20
Classroom performance and exams	Presence	Genetics of Clans: Hardy's Equilibrium-Weinberg, equilibrium conditions, calculation of the frequency of dominant and recessive mechanisms.	to understand topic The lecture	2theoretical2practical	21-22
Classroom performance and exams	Presence	Calculating the frequency of mechanisms in the absence of sovereignty and the case of multiple mechanisms.	to understand topic The lecture	2theoretical2practical	23
Classroom performance and exams	Presence	Calculating the frequency of sex-ordered mechanisms, testing equilibrium expectations, practical application of calculating the frequency of some genes in a group of students, the trait of attached and detached earlobes, taste	to understand topic The lecture	2theoretical2practical	24-25

		test, blood groups.			
Classroom performance and exams	Presence	Quantitative inheritance, variance calculation, forms of gene action, degree of heritability.	to understand topic The lecture	2theoretical2practical	26

11. Course Evaluation

The grade is distributed out of 100 according to the tasks assigned to the student.

1- Daily preparation and oral questions 10%

2- Short and surprise daily exams 10%

3-Monthly exam and reporting 80%

12. Learning and teaching resources

scienceGenetics	Required textbooks (methodology if any)
Basics of Genetics	Main References (Sources)
Principles of molecular genetics	Recommended supporting books and references (scientific journals, reports...)
	Electronic references, websites

Course Description Form

1. Course name: Genetics	
2. Course code 32GB	
3. Semester/Year 2025-2025	
4. Date of preparation of this description 11/21/2025	
5. Available forms of attendance The lecture	
6. Number of study hours (total) / Number of units (total)	
2 theoretical 6 practical	
7. Name of the course supervisor (if more than one name is mentioned)	
Name: Assistant Professor Dr. Buthana jasem	
8. Course objectives	
<ul style="list-style-type: none"> • ..Providing students with knowledge of the origin and development of genetics. •Introducing the student to the basics of genetics, chromosomes and genetic activities. • ...introducing students to genetic diseases. 	Subject objectives
9. Teaching and learning strategies	
<p>Students move from a focus on skills in primary grades to a focus on content in all secondary grades. Where you find that students face many demands in order to read information through textbooks, and they also take notes during lectures, and they work independently, in addition to expressing...</p>	Strategy
10. Course Structure	

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
Daily questions monthly exam daily homework	Lecture PowerPoint Educational films	Mendelian inheritance: Introduction, law of segregation, law of assortment and their cytological interpretation.	Make the student aware of the origin and development of genetics.	2	the first
Daily questions monthly exam daily homework	Lecture PowerPoint Educational films	شارك الجينات المميتة ، تداخل فعل الجين ،	Introducing the student to the basics of genetics and Mendel's experiments	2	2-3
Daily questions monthly exam daily homework	Lecture PowerPoint Educational films	Quantitative genetics: importance of multiple genes, genetic equivalent, twins	Introducing the student to the importance of embryonic genetics	4	4-5
Daily questions monthly exam daily homework	Lecture PowerPoint Educational films	Genetic linkage and crossing over: incomplete linkage, mechanism of crossing over, crossing over affecting crossing over, how to draw a genetic map of eukaryotic organisms, comparison between crossing over and exchange between sister chromatids.	Study of genetic variations and their causes	6	6-7-8
Daily questions monthly exam daily homework	Lecture PowerPoint Educational films	Methods of emergence of new genetic structures in bacteria.	Providing the student with an overview of genetics in microorganisms.	2	9
Daily questions monthly exam daily homework	Lecture PowerPoint Educational films	Sex chromosomes and sex determination in different organisms.	Providing the student with information about the role of genetics in determining the sex of an organism.	2	10
Daily questions monthly exam daily homework	Lecture PowerPoint Educational films	Chromosomal mutations, chromosomal abnormalities in humans	Introducing the student to the types of chromosomes and forms of genetic variations	2	11

Daily questions monthly exam daily homework	Lecture PowerPoint Educational films	Cytoplasmic inheritance and maternal influence, traumatic wrapping in the enamel shell Limnaea, Kappa in Paramecium, mutations in mitochondrial DNA in humans and some diseases.	Introduce the student to the meaning of cytoplasmic inheritance.	2	12
Daily questions monthly exam daily homework	Lecture PowerPoint Educational films	Molecular structure and analysis of genetic material (DNA)DNAExperiments to prove that DNA is the genetic material and that (DNA)RNAIt is the genetic material in some filters.	Highlighting the structure of DNA and genetic material	2	13
Daily questions monthly exam daily homework	Lecture PowerPoint Educational films	DNA replication: Proof that replication is semi-conservative, replication enzymes, the role of DNA in replication, reverse transcription in DNA genomes, cutting and modification processes in its three types.	Introducing the student to the most important cellular steps for protein building	4	14-15
Daily questions monthly exam daily homework	Lecture PowerPoint Educational films	Translation (protein synthesis): genetic code and its properties, auxiliary factors, construction of the polypeptide chain.	Introducing the student to the most important cellular steps for protein building	2	16
Daily questions monthly exam daily homework	Lecture PowerPoint Educational films	Development of the one-gene-one-peptide theory, genetic control of metabolism	Introducing the student to the most important cellular steps for protein building	2	17
Daily questions monthly exam daily homework	Lecture PowerPoint Educational films	Regulation of gene expression in prokaryotes.	Introducing the student to the most important cellular steps for protein building	2	18
Daily questions monthly exam daily homework	Lecture PowerPoint Educational films	Regulation of gene expression in eukaryotes.	Introducing the student to the most important cellular steps for protein building	2	19
Daily questions monthly exam daily homework	Lecture PowerPoint Educational films	Genetic mutation: its types according to molecular changes, spontaneous mutation, the creation of mutations by radiation and some chemicals, DNA damage	Introducing the student to the most important cellular steps for protein building	2	20

		repair systems. Jumping genes. Transposable elements.			
Daily questions monthly exam daily homework	Lecture PowerPoint Educational films	Genomes Genomics Chromosome structure and DNA sequence regulation, DNA extraction and analysis of clones Clones Applying some genetic technology literature, such as genetic engineering, in diagnosing some genetic diseases, sorting DNA fingerprints, and completing the human genome project.	Introducing the student to the most important cellular steps for protein building	4	21-22
Daily questions monthly exam daily homework	Lecture PowerPoint Educational films	Developmental Genetics: Programmed Cell Death. How specialized states emerge from an organism's genome.	Introducing the student to the most important cellular steps for protein building	2	23
Daily questions monthly exam daily homework	Lecture PowerPoint Educational films	Population genetics: gene pools, Hardy's law, Weinberg's law, gene frequency and factors affecting it.	Providing the student with information about population genetics	2	24
Daily questions monthly exam daily homework	Lecture PowerPoint Educational films	Genetics and evolution: chromosomal changes and their relationship to the emergence of species, doubling of the chromosome number.	Student definition On the concept of evolution	2	25

11. Course Evaluation

The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

12. Learning and teaching resources

Principles of Genetics	Required textbooks (methodology if any)
	Main References (Sources)
	Recommended supporting books and references (scientific journals, reports...)
Yes	Electronic references, websites

Course Description Form

1. Course name	
Plant groups	
2. Course code	
329BAL	
3. Semester/Year	
Annual 2025-2025	
4. Date this description was prepared	
17\1\2025	
5. Available forms of attendance	
Mandatory attendance	
6. Number of study hours (total) / Number of units (total)	
60hour/Number of units = 6 (4 theoretical 2 practical)	
7. Name of the course supervisor (if more than one name is mentioned)	
Asst. Prof. Dr. Wajdan Saadi Aziz	
8. Course objectives	
<p>Help students understand the practical applications of comparative anatomy.</p> <p>Preparing scientific and qualitative cadres specialized in the field of life sciences for the purpose of improving the educational reality in the country</p> <p>Teaching students writing and speaking skills at analytical levels by referring to the latest findings of modern science in the field of comparative anatomy and its practical applications.</p> <p>The program serves the university by providing students with high-quality education through exposure to the latest developments in scientific research, both theoretically and practically.</p> <p>Providing the Ministry of Education and the Ministry of Higher Education and Scientific Research with specialized and competent personnel in the field of life sciences.</p>	<p>Subject objectives</p>

9. Teaching and learning strategies

<p>Lecture or discussion with students by stimulating discussion and exchanging opinions through discussion between the professor and the students and between the students themselves, as well as using modern means of delivery such as: Data show and other appropriate educational means.</p>	<p>Strategy</p>
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Outputs of the Scheduled Teaching, learning and assessment methods

A- The Cognitive objectives

- A1- Students' ability to identify the general characteristics of algae science.
- A2- Advance planning to activate the role of students in the field of student development.
- A3- Students' ability to distinguish and cognitively perceive the slides of different algal genera.
- A4- Introducing students to modern techniques and devices related to the development of algae science.
- A5- The student should be able to identify the classification and diagnosis of algal species and identify their life cycle.
- A6- The student should be able to use laboratory equipment. Preparing slides for microscopic examination

B - Objectives Skills Yes Special for Scheduled.

- B1 - The student should be able to prepare practical and theoretical research in algae science.
- B2 - He is to For student Ability to know Special scientific facts With algae science.
- B3 - The student should be able to discover information on his own.
- B4- Learn to make temporary slides and examine them under a microscope..
- B5- Learn how to collect samples and how to deal with them through scientific trips.
- B 6- Learn the initial diagnosis of algae.

Teaching and learning methods

Lecture or discussion with students by stimulating discussion and exchanging opinions through discussion between the professor and the students and between the students themselves, as well as using modern means of delivery such as: Data show and other appropriate educational means .

Evaluation methods

- Oral questions within the lecture
- Daily short tests (pop-up tests)
- Monthly testing and reporting.

C-Emotional and value goals

A1-Working to encourage students to express their opinions on modern scientific trends.

A2-Work to create a spirit of interaction between students in the classroom.

A3-The student is directed by the teacher to acquire scientific information.

A4- Developing the student's ability to dialogue and scientific discussion.

Teaching and learning methods

1- Use electronic means of clarification.

2- Using the discussion method in the lecture between the professor and the students.

3- Assigning students to do research and reports.

4- Assigning students homework related to the scientific subject.

Evaluation methods

Personal Calendar (Short Daily Quizzes)

Oral questions during the lecture.

Monthly testing and reporting.

D - General skills andQualificationTransferable (other skills related to employability and personal development).

D1- Gaining student self-confidence through conducting experiments.

D2- Enhancing emotional skills by creating a competitive spiritAmong students.

D3-Students should have a spirit of cooperation and teamwork.

D4-Students should have a deep understanding of algae science.

Course structure .10					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Time	The week
Classroom performance and exams	Presence	the introductionIn algae science, learning about the most important general characteristics of algae and their position within the plant kingdoms.	Understand the topic of the lecture	2 theoretical 2 practical	1-2
Classroom performance and exams	Presence	Blue-green algae division and its genera	Understand the topic of the lecture	2 theoretical 2 practical	3-4
Classroom performance and exams	Presence	Division of green algae and its genera	Understand the topic of the lecture	2 theoretical 2 practical	5-6
Classroom performance and exams	Presence	Euglena phylum and its genera	Understand the topic of the lecture	2 theoretical 2 practical	7
Classroom performance and exams	Presence	Division Algae Rehearsals or Algae The rotary	Understand the topic of the lecture	2 theoretical 2 practical	8

Classroom performance and exams	Presence	Division golden algae	Understand the topic of the lecture	2 theoretical 2 practical	9
Classroom performance and exams	Presence	Division Algae Structure	Understand the topic of the lecture	2 theoretical 2 practical	10
Classroom performance and exams	Presence	Division Algae The red ones	Understand the topic of the lecture	2 theoretical 2 practical	11-12
Classroom performance and exams	Presence	Importance Ecology and economics of algae	Understand the topic of the lecture	2 theoretical 2 practical	13-14
Classroom performance and exams	Presence	Archaeopods (mosses and ferns)	Understand the topic of the lecture	2 theoretical 2 practical	15-16

Infrastructure .11	
Algae and Archaeon	1- Required textbooks
Introduction to freshwater algae Liverworts and mosses	2- Main references (sources)
Aquatic plants in Iraq	A- Recommended books and references (Scientific journals, reports,

Course Description Form

1. Course name:	
Environment and Pollution/Third Stage	
2. Course code:	
BEPE331	
3. Semester/Year	
2025-2026 Annual	
4. Date this description was prepared	
17-9-2025	
5. Available forms of attendance	
Mandatory attendance	
6. Number of study hours (total) / Number of units (total)	
Number of hours =60 Number of units 4 Theoretical 2 practical	
7. Name of the course supervisor (if more than one name is mentioned)	
Name: Asst. Prof. Dr Israa salman	
8. Course objectives	
<p>1. Empowerment Students From getting on the knowledge Understanding diseases common to humans and the environment around them.</p> <p>2-Enabling students to gain knowledge and understanding of pollutants.</p> <p>3- Enabling students to gain knowledge and understanding of environmental science.</p> <p>4- Introducing students to modern technologies and devices that specialize in Environmental science and pollution.</p> <p>5-The student should be able to use laboratory equipment. .</p>	Subject objectives
9. Teaching and learning strategies	

<ul style="list-style-type: none"> -Using the blackboard, electronic board, slides, performing scientific experiments. - Use a projector data show To attract students' attention and engage with the lecture. -Using models and models of the studied samples and preparing slides of those models. -Visit of scientific laboratories by academic staff - Applying the topics studied theoretically on a practical level. 	Strategy
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10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
General questions and discussion	Lecture on the board	Introduction: Historical introduction, definition of ecology, relationship of ecology to other sciences, branches of ecology, first: aquatic ecology, second: terrestrial ecology	Understand the ideas of the topic and be able to apply them with examples	2 theoretical, 2 practical	1
Daily exam	Demo, lecture on the board, and viewing slides	Ecosystem: Introduction, Structure of the ecosystem, First: Abiotic components, Second: Biotic components / Ecosystem: Incomplete ecosystems, Concepts related to species and individuals, Ecological balance.	Understand the ideas of the topic and be able to apply them with examples	2 Theoretical, 2 Practical	2_3
Classroom performance and exams	Practical explanation	Chemical and Earth Life Cycles, Introduction: Cycles, Water Cycle, Gas Cycles-Nitrogen cycle, sedimentary cycles- Phosphorus cycle, sources of natural revolution.	Understand the ideas of the topic and be able to apply them with examples		4-5
Classroom performance and exams	Demo, Lecture on the board	Limiting factors: Introduction, tolerance laws, Liebig's laws of minimum, Shelford's law of minimum, concept of combining the laws of maximum and minimum for limiting factors.	Understand the ideas of the topic and be able to apply them with examples	2 Theoretical, 2 Practical	6-7
Daily exam	Demo	Abiotic factors of importance as limiting factors: temperature, humidity, light, wind, soil,	Understand the ideas of the topic and be able to	2 Theoretical, 2 Practical	8_9

		fire, salinity, pH, gases, nutrients, currents and pressures.	apply them with examples		
General questions and discussion	Lecture on the electronic board		Understand the topic of the lecture	2 Theoretical, 2 Practical	9
General questions and discussion	Lecture on the board, presentation	Productivity: Introduction / Steps and stages of biological productivity, limiting factors of productivity, energy flow and related laws, methods of measuring primary productivity, food chains, food webs, nutritional composition, ecological pyramids.	Understand the topic of the lecture	2 Theoretical, 2 Practical	10_11
Daily discussion and exam	Display on the electronic board and explain the slides under the microscope.	Population: Introduction / Characteristics of the population, population organization, regionalism, dominance ranks, social behavior in population organization.	Understand the topic of the lecture	2 Theoretical, 2 Practical	12_13
General questions and discussion	Demo	Society: Introduction / Relationships between living organisms and interaction between species, negative relationships, positive relationships, species diversity.	Understand the topic with examples	2 Theoretical, 2 Practical	14_15
Daily exam	Demo	Ecological succession: Introduction / Political types of succession, succession in basic environments, First: Water succession, Second: Marginal succession	Understand the topic of the lecture	2 Theoretical, 2 Practical	16_17

General questions and discussion	Blackboard lecture and live specimen diagnosis	Ecosystem development: Introduction / Functions and evolution of ecosystems, Ecosystem development, Modern trends in ecology	Understand the topic of the lecture	2 Theoretical, 2 Practical	17_18
Classroom performance and exams	Demo and view slides	Ecoregions: Introduction / Aquatic environment, Terrestrial environment	Understand the topic of the lecture	2 Theoretical, 2 Practical	19
Classroom performance and exams	Demo	Environmental Pollution: Introduction / Definition of Environmental Pollution, Risks of Population Growth, Pollution Natural.	Understand the topic of the lecture	2 Theoretical, 2 Practical	21_22
Classroom performance and exams	Demo	Air pollution: Introduction / Nature of the atmosphere, Main sources of pollution, Types of pollutants in the air, Particulate matter, Gaseous pollutants, Disasters and environmental phenomena causing air pollution, Global air pollutants, Global warming Ozone layer in the atmosphere, radioactive pollution, smoking, methods of treating and reducing air pollution.	Understand the topic of the lecture	2 theoretical, 2 practical	23–24
	Demo	Water Pollution: Introduction / Water Pollutants, Oxygen Demanding Wastes BOD , pathogens, synthetic organic compounds, plant nutrients, inorganic chemicals and minerals, sediments, radioactive materials, thermal pollution, water pollution treatment and mitigation, water pollution by oil			25_26

Classroom performance and exams	Demo	Soil Pollution: Introduction / Sources of Soil Pollution, Agricultural Chemicals, Industrial Waste, Acid Rain, Heavy Metals	Understand the topic of the lecture	2Theoretical, 2Practical	27_28
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11. Course Evaluation	
Oral questions within the lecture and daily preparation =%10	
Daily short tests (surprise test) =%10	
Monthly exam and reporting =80%	
12. Learning and teaching resources	
Odum book part one and two	Required textbooks (methodology if any)
Environment Book by Prof. Dr. Hussein Ali Al-Saadi	Main References (Sources)
	Recommended supporting books and references (scientific journals, reports...)
	Electronic references, websites

Course Description Template

Course name .1: Theoretical Microbiology	
:Course code .2440BPA	
The chapter /The year .3: Annual	
Date of preparation of this The description: 21/1/2025 .4	
Available forms of presence Student attendance registration in theoretical .5 and practical lectures	
Total number of study hours / Total number of units: 40/6 .6	
.Name of the course officer if More than one name is mentioned .7	
Name Rana galal	
Course objectives .8	
<ul style="list-style-type: none"> • The student should have a wide knowledge of the types and .structure of microorganisms • ,Understanding physiological principles, anatomical structures biochemical processes, and genetic characteristics. For .microorganisms • Understanding how to use loudness and the process of preparing microscope slides. to conduct Laboratory tests In addition To .diagnostic tests the different • Understanding the principles and methods of sterilization and .disinfection of microorganisms • Identifying the different types of microorganisms and methods to distinguish between them, as well as the diseases and infections they cause. For man And how to diagnose it and methods of .treatment 	Objectives of the subject

Teaching and learning strategies .9					
<ul style="list-style-type: none"> • .Method of delivering the lecture • The continuous discussion by asking questions and answers within .the classroom and encouraging the student to think independently • .Using various educational tools 					The strategy
Course Structure .10					
Assessment method	Learning method	Name of the unit or topic	Required learning outcomes	The hours	The week
The discussion	Theoretical Lecture	A historical overview and the development of microbiology	Introduction to Microbiology	2	1
The discussion	Theoretical lecture	Classification of microorganisms	Understanding the principles of classification of microorganisms	2	2
The discussion	Theoretical Lecture	Shapes of bacteria	Knowing the shapes of bacteria	2	3
The discussion	Theoretical lecture	Structure of the bacterial cell	Identifying the parts of bacterial cells	2	4
The discussion	Theoretical lecture	Methods of sterilization and disinfection to control microorganisms	Knowing the methods of controlling microorganisms	2	5
The discussion	Theoretical Lecture	Karama dye and methodsDyeing	Understanding the principles of dyeing microorganisms	2	6
The discussion	Theoretical lecture	Gram-positive bacteria and Gram-negative bacteria	Differentiation between Gram-positive and Gram-negative bacteria	2	7
The discussion	Theoretical lecture	Bacterial cell wall	Recognizing the structure of the cell wall in bacteria	2	8
The discussion	Theoretical lecture	The plasma membrane in bacteria	Identifying the structure of the plasma membrane in bacteria	2	9
The discussion	Theoretical lecture	CytoplasmIn bacteria	Recognizing the structureCytoplasmthe bacteria	2	10
The discussion	Theoretical lecture	Nuclear material in bacteria	Understanding the precise structure of nuclear material in bacteria	2	11
The discussion	Theoretical lecture	Endospores in bacteria	Identifying internal boards and their formation in bacteria	2	12

The discussion	Theory lecture	Nutrition in living organisms The translator	Recognizing methods of nutrition and development of organisms Microbiology	2	13
The discussion	Theoretical Lecture	Classification of microorganisms according to the mode of nutrition	Knowing the types and classifications of microorganisms according to their feeding methods	2	14
The discussion	Theoretical Lecture	The circles Agricultural	Identifying the mediums Agricultural Used in the cultivation of microorganisms	2	15
The discussion	Theoretical lecture	The growth in bacteria	Identifying the growth factors in bacteria and the bacterial growth stages	2	1
Discussion	Theoretical lecture	Microscopic فسلجة organisms	Recognition of In the الفسلجية operations microscopic neighborhoods	2	2
The discussion	Theoretical lecture	Viruses	Recognizing viruses, their types, the diseases they cause, and their treatment methods	2	3
The discussion	Theoretical lecture	Fungi	,Identifying fungi, their types the diseases they cause, and methods of treatment	2	4
The discussion	Theoretical Lecture	Algae	Recognizing algae, their types, the diseases they cause, and their treatment methods	2	5
The discussion	Theoretical lecture	Parasites	Recognizing parasites and their types, the diseases they cause, and methods of treatment	2	6

Course evaluation .11

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

Learning and teaching resources .12

.Theoretical Microbiology / Dr Hamid Majid Al-Zaydi	Required prescribed textbooks (syllabus if available)
	Main references (sources)
	The recommended books and supporting references (the magazines Scientific, The reports...)
	References Electronic, Internet sites

Course Description Form

1. Course name is optional.	
Optional (contamination treatment)	
2. Course code	
442ME	
3. Semester/Year	
2025	
4. Date of preparation of this description 2025	
1/16/2025	
5. Available forms of attendance /	
compulsory	
6. Number of study hours (total) / Number of units (total)	
2 hours	4 units
7. Name of the course supervisor (if more than one name is mentioned)	
Name: Asst. Prof. Dr. Maryam Adnan Ibrahim Email: mariamadnan@tu.edu.iq	
8. Course objectives	
<ul style="list-style-type: none"> • Environmental Treatment Process Basics • Pollution treatment (air, water, soil) • Advanced treatment methods (physical, chemical, biological) 	Subject objectives
9. Teaching and learning strategies	
<p>Lecture</p> <p>Brainstorming</p> <ul style="list-style-type: none"> · Cooperative learning · Present examples and problems during the lecture. · Using the Internet to enhance the content of the material. 	Strategy
10. Course Structure	

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
,Board Datashow,Paper luctures,	Presence	Some terms used in the treatment of environmental pollutants	Introduction to introduce students to pollutants and their nature	2	the first
,Board Datashow,Paper luctures,	Presence	Definition of treatment and its types	Introducing the student to the nature of treatment and its types	2	the second
,Board Datashow,Paper luctures,	Presence	Processing plants and units	The most important treatment processes followed	2	the third
,Board Datashow,Paper luctures,	Presence	Air pollutant cycle	Pollutants and their nature in the air	2	Fourth
,Board Datashow,Paper luctures,	Presence	Forms of life and causes of pollution in water	Pollutants and their nature in water	2	Fifth
,Board Datashow,Paper luctures,	Presence	Definition of soil, its components, relationships between living organisms, and causes of its pollution	Pollutants and their nature in soil	2	Sixth
,Board Datashow,Paper luctures,	Presence	sewage treatment plants	sewage treatment plants	2	Seventh
,Board Datashow,Paper luctures,	Presence	Types of physical treatments for polluted water and wastewater	Physical therapy	2	Eighth and ninth
,Board Datashow,Paper luctures,	Presence	The latest methods of physical therapy	Advanced Physical Therapy	2	tenth
,Board Datashow,Paper luctures,	Presence	Dealing with each contaminated material by adding a treatment material, provided that the result is not toxic.	Chemical treatment	2	eleventh and twelfth
,Board Datashow,Paper luctures,	Presence	Use of microorganisms in	Biological treatment	2	Hittite XIII

		the treatment of pollutants			
,Board Datashow,Paper luctures,	Presence	Types of plants that can be used in bioremediation	Bioremediation	2	Fourteenth and fifteenth
,Board Datashow,Paper luctures,	Presence	Possibility of useMicro fuel cell	Electrochemical treatment	2	Sixteenth
Board Datashow,Paper luctures,	Presentation and discussion	The concept of sustainable development	Cognitive objectives	2	seventeenth
Board Datashow,Paper luctures,	Presentation and discussion	Sustainable Development Goals	Cognitive objectives	2	eighteenth
Board Datashow,Paper luctures,	Presentation and discussion	The role of universities in achieving sustainable development	Cognitive objectives	2	nineteenth
Board Datashow,Paper luctures,	Presentation and discussion	Dimensions of sustainable development	Cognitive objectives	2	Twenty
		exam			twenty one

11. Course Evaluation

The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

12. Learning and teaching resources

Environment-Treatment Al-Baridi, Abdullah bin Abdul Rahman, (2015), Sustainable Development: An Integrative Approach to Sustainability Concepts And its applications with a focus on the Arab world, Riyadh, Saudi Arabia, Al-Obeikan Publishing.	Main References (Sources)
Wastewatertreatment research	Recommended supporting books and references (scientific journals, reports...)

Course Description Form

1. Course name: Immunity	
2. Course code: _ 438BIM	
3. Semester/Year	
Annual /2025-2026	
4. Date this description was prepared 29\1\2025	
29/11/2025	
5. Available forms of attendance	
Presence	
6. Number of study hours (total) / Number of units (total)	
60 h/ 4 units	
7. Name of the course supervisor (if more than one name is mentioned)	
Name: Ms. Haifa Rajab Alwan Email:hyfaass@tu.edu.iq	
8. Course objectives	
<p>1- Delivering a general idea about immunity and its types, understanding the work of the immune system and identifying some immune diseases.</p> <p>2-Preparing a qualified cadre of teaching assistants in the field of immunology.</p>	
<ul style="list-style-type: none"> • Learn about immunology. • Identifying types of immunity • Identifying immunoproteins 	Subject objectives
9. Teaching and learning strategies	
1- Use electronic visual aids	Strategy

- 2- Using the discussion method in the lecture between the professor and the student
- 3- Assigning students to do research and reports.
- 4- Assigning students homework related to the scientific subject.

10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
exam	Presence	Immunity and its history of discovery	Understand the topic of the lecture	2	the first
exam	Presence	Natural immunity	Understand the topic of the lecture	2	the second
exam	Presence	Factors affecting natural immunity	Understand the topic of the lecture	2	the third
exam	Presence	Inflammation	Understand the topic of the lecture	2	Fourth
exam	Presence	Antigens	Understand the topic of the lecture	2	Fifth
exam	Presence	Antibodies	Understand the topic of the lecture	2	Sixth
exam	Presence	phagocytosis	Understand the topic of the lecture	2	Seventh
exam	Presence	Monthly exam	Understand the topic of the lecture	2	The eighth
exam	Presence	immune system cells	Understand the topic of the lecture	2	Ninth
exam	Presence	Innate immunity-associated cells	Understand the topic of the lecture	2	tenth
exam	Presence	acquired immunity	Understand the topic of the lecture	2	eleventh
exam	Presence	Vaccines and serums	Understand the topic of the lecture	2	twelfth
exam	Presence	Cells associated with acquired immunity	Understand the topic of the lecture	2	thirteenth
exam	Presence	Cytokines	Understand the topic of the lecture	2	fourteenth
exam	Presence	Monthly exam	Understand the topic of the lecture	2	fifteenth
exam	Presence	Supplement system	Understand the topic of the lecture	2	Sixteenth

exam	Presence	Lymphatic system organs	Understand the topic of the lecture	2	seventeenth
exam	Presence	Autoimmune diseases	Understand the topic of the lecture	2	eighteenth
exam	Presence	Lupus	Understand the topic of the lecture	2	nineteenth
exam	Presence	Vitiligo	Understand the topic of the lecture	2	Twenty
exam	Presence	Blood types	Understand the topic of the lecture	2	Twenty one
exam	Presence	Hypersensitivity	Understand the topic of the lecture	2	Twenty-second
exam	Presence	Monthly exam	Understand the topic of the lecture	2	twenty-third
exam	Presence	Immunity and the elderly	Understand the topic of the lecture	2	twenty-fourth
exam	Presence	Immunity and cancer	Understand the topic of the lecture	2	Twenty-fifth
exam	Presence	Immunity and probiotics	Understand the topic of the lecture	2	Twenty-sixth
exam	Presence	Immunology developments	Understand the topic of the lecture	2	twenty-seventh
exam	Presence	Monthly exam	Understand the topic of the lecture	2	Twenty-eighth

11. Course Evaluation

The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

Oral questions within the lecture and daily preparation 10%

Daily surprise test 10%

Monthly exam and reporting 80%

12. Learning and teaching resources

Systematic immunology books for the fourth stage	Required textbooks (methodology if any)
Books and research published in reputable scientific journals issued by publishing houses	Main References (Sources)
Reliable references from the Internet	Recommended supporting books and references (scientific journals, reports...)
Virtual Electronic Library	Electronic references, websites

نموذج وصف المقرر

Course Description Form

1. Course name
parasitology
2. Course code
441BOP
3. Semester/Year
Annual 2025-2025
4. Date this description was prepared
1/29/2025
5. Available forms of attendance
My attendance is mandatory
6. Number of study hours (total) / Number of units (total)
Number of study hours = 60 hours / Number of units = 4 theoretical 2 practical
7. Name of the course supervisor (if more than one name is mentioned)
Name: Asst. Prof. Dr. Maysoun Mustafa Jassim Email:mays.mus@tu.idu.iq
8. Course objectives
Introduction to Parasitology Department Helping students understand the role of parasites (benefits and harms) in life and knowing their types and life cycles in detail.

Preparing scientific cadres specialized in the field of life sciences.

Teaching students scientific skills in diagnosing living organisms, drawing their shapes, organs, and stages of organism development.

Guiding and urging students on how to prepare scientific reports and research that help them in scientific research and review the latest scientific reports in their fields.

Preparing a specialized scientific cadre with scientific competence in the field of life sciences for the purpose of improving the educational reality of the country.

- 1- Students' ability to know the features of parasitology.
- 2- Enabling students to cognitively understand the divisions and branches of invertebrates.
- 3- Activating the role of students in participation and scientific activities that develop their scientific ability.
- 4- The student should be able to diagnose and compare between parasitic phyla.
- 5- The student should be able to classify parasitic organisms.
- 6- The student must be able to use and maintain laboratory equipment.

Subject objectives

9. Teaching and learning strategies

- 1- directingThe student learns how to gain scientific experience and information.
- 2- -Activating the spirit of cooperation and interaction among students.
- 3- -Encouraging students to express their opinions on scientific topics.
- 4- Finding solutions to scientific problems through research objectives.

Strategy

10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
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Oral questions or exam	In-person PowerPoint Scientific video presentation	General introduction, history of parasites and general relationship between animals	Understand the topic of the lecture	2	the first
Questions Oral or exam	Presence PowerPoint offer video scientific	Advantages of parasitism A– The benefits that parasites gain from their hosts B– The harms that parasites gain from their hosts, types of parasitism and hosts Parasitism in the animal kingdom, infectious stages, sources of infection	to understand topic The lecture	2	the second
Questions Oral or exam	Presence PowerPoint offer video scientific	Entrances and exits of infection, factors affecting the spread and intensity of parasitic infections, stages of parasitism	to understand topic The lecture	2	the third
Questions Oral or exam	Presence PowerPoint offer video scientific	Elementary School, features and aspects of the school (features of the school, body composition, aspects of life of the school)	to understand topic The lecture	2	Fourth
Questions Oral or exam	Presence PowerPoint offer video scientific	Meat class Class: Sarcodina (Class characteristics, types of protozoa and their relationship to humans) 1– Dysentery amoeba Entamoeba histolytic 2– Colon amoeba E.coli	to understand topic The lecture	2	Fifth
Written exam	In-person exam	in Lectures Previous	exam monthly	2	Sixth
Questions Oral or exam	Presence PowerPoint offer video scientific	–Dwarf internal spit amoeba Endolimax nana 4–Amoeba iodinelodomoeba butschlii 5– Dientamoeba fragilis 6– Oral amoeba Entamoeba gingivalis 7– Free–living pathogenic amoebas	to understand topic The lecture	2	Seventh

Questions Oral or exam	Presence PowerPoint and offer video scientific	whip-bearing class Class: Mastigophora (class characteristics), A- Intestinal flagellates and halls, including: 1- Giardia intestinalis 2- Labial flagellates 3- Trichomonas vaginalis 4- Trichomonas gingivalis 5- Trichomonas intestinalis 6- Trichomonas bovis	to understand topic The lecture	2	The eighth
Questions Oral or exam	Presence PowerPoint and offer video scientific	B- Blood and tissue flagellates: It includes: 1- Leishmania tropica 2- Leishmania viscera	to understand topic The lecture	2	Ninth
Questions Oral or exam	Presence PowerPoint and offer video scientific	The genus Leptosoma includes: 1- Trypanosoma gambiense 2- Trypanosoma americana Animalia class Class: Sporozoa and includes the genera: (Plasmodium vivax, P. ovale, P. malarae, P. falciparum)	to understand topic The lecture	2	tenth
Questions Oral or exam	Presence PowerPoint and offer video scientific	Study of the asexual cycle (cleavage) in the human body, the sexual cycle (gametophyte or spore) in the mosquito body, Toxoplasma gondii Toxoplasma gondii	to understand topic The lecture	2	eleventh
Questions Oral or exam	Presence PowerPoint and offer video scientific	Class of cilia carriers Class: Ciliophora (Class Characteristics) Blantidium coli	to understand topic The lecture	2	twelfth
Written exam	In-person exam	exam In lectures Previous	exam monthly	2	thirteenth
Questions Oral or exam	Presence PowerPoint and offer video scientific	Platyhelminthes Phylum: Platyhelminthes, Phylum Features, Body Structure Study	to understand topic The lecture	2	Fourth ten
Questions Oral or exam	Presence PowerPoint and offer video scientific	Perforated type Class: Trematoda (Class characteristics, Monogenetic	to understand topic The lecture	2	Fifth ten

		order, Digenetic order) Liver borers, 1–Sheep liver snail cycle 2–Chinese liver borer			
Questions Oral or exam	Presence PowerPoint and offer video scientific	Intestinal perforations Intestinal flukes 1– Fasciolopsis buski 2– Heterophyes heterophyes	to understand topic The lecture	2	Sixth ten
Questions Oral or exam	Presence PowerPoint and offer video scientific	Blood holes Blood flukes Characteristics of the Schistosomatidae family 1– Urinary tract schistosomiasis 2– Intestinal schistosomiasis 3– Japanese schistosomiasis	to understand topic The lecture	2	Seventh ten
Questions Oral or exam	Presence PowerPoint and offer video scientific	Lung perforations Lung flukes, eastern pulmonary effusion Class of tapeworms Class: Cestoda, Class Features, Body Wall Structure, Body Systems, Life Cycle	to understand topic The lecture	2	The eighth ten

11. Course Evaluation

The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

12. Learning and teaching resources

Parasitology / Dr. Ismail Abdel Wahab	Required textbooks (methodology if any)
Parasitology / Dr. Ibrahim Shaaban	Main References (Sources)
Books and research published in international journals	Recommended supporting books and references (scientific journals, reports...)
Virtual electronic library, scholar website, reliable references from the Internet	Electronic references, websites

Course Description Form

1. Course name	
Practical animal physiology	
2. Course code	
436BAP	
3. Semester/Year	
2025- 2026	
4. Date this description was prepared	
2 /10/2025	
5. Available forms of attendance	
Attendance is mandatory.	
6. Number of study hours (total) / Number of units (total)	
60 hours / 6 units (4 theoretical 2 practical)	
7. Name of the course supervisor (if more than one name is mentioned)	
Name: M.M. Asmaa Khaled Matni Email: asmaa.khaled@tu.edu.iq	
Name: Rania Nazem Sobhi Email: Ranya.n.subhi@tu.edu.iq	
Dr Raghed tais raghad.tays@tu.edu.iq	
8. Course objectives	
<ul style="list-style-type: none"> • Help students understand the science and functions of the different organs in the body. • Preparing scientific and qualitative cadres specialized in the field of life sciences for the purpose of improving the educational reality in the country • Teaching students writing and speaking skills at analytical levels by referring to the latest findings of modern science in the field of animal physiology. • The program serves the university by providing students with high-quality education through exposure to the latest 	Subject objectives

developments in scientific research, both theoretically and practically.. <ul style="list-style-type: none"> • Providing the Ministry of Education and the Ministry of Higher Education and Scientific Research with specialized and competent personnel in the field of life sciences. 					
9. Teaching and learning strategies					
1- Use electronic means of clarification. 2- Using the discussion method in the lecture between the student and the professor.. 3- Assigning students to do research and reports.. 4- Assigning students to do homework related to the scientific subject..					Strategy
10. Course Structure					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
Classroom performance and exams	Presence	Neurophysiology (Reflexes of the Common Frog, the Spiny Frog, and the Barefoot Frog)	Understand the topic of the lecture	2 theoretical 2 practical	1-2-3
Classroom performance and exams	Presence	Skeletal muscle physiology: (muscle contraction, temporal summation - spatial summation - tetany - fatigue))	Understand the topic of the lecture	2 theoretical 2 practical	4-5-6-7
Classroom performance and exams	Presence	Physiology of the frog heart: (Study of the pulse rate and the effect of temperature and some drugs on the pulse, with a study of the ability of the heart parts to beat on their own and determining the location of the pacemaker).	Understand the topic of the lecture	2 theoretical 2 practical	8-9-10-11
Classroom performance and exams	Presence	Blood physiology: (determining the amount of hemoglobin)	Understand the topic of the lecture	2 theoretical 2 practical	12
Classroom performance and exams	Presence	Hepatocrypt determination	Understand the topic of the lecture	2 theoretical 2 practical	13

Classroom performance and exams	Presence	Determine valueHp	Understand the topic of the lecture	2 theoretical 2 practical	14
Classroom performance and exams	Presence	Blood type determination	Understand the topic of the lecture	2 theoretical 2 practical	15
Classroom performance and exams	Presence	red blood cell count	Understand the topic of the lecture	2 theoretical 2 practical	16
Classroom performance and exams	Presence	Total white blood cell count	Understand the topic of the lecture	2 theoretical 2 practical	17
Classroom performance and exams	Presence	Differential white blood cell count	Understand the topic of the lecture	2 theoretical 2 practical	18
Classroom performance and exams	Presence	Study of red blood cell constants	Understand the topic of the lecture	2 theoretical 2 practical	19
Classroom performance and exams	Presence	Physiology of digestion: (Study of the effect of salivary amylase enzyme))	Understand the topic of the lecture	2 theoretical 2 practical	20
Classroom performance and exams	Presence	Pancreatic amylase, pepsin, tricin, sucrase) i.e. study of the effect of some enzymes of saliva, stomach, pancreas, intestines.	Understand the topic of the lecture	2 theoretical 2 practical	21-22-23

11. Course Evaluation

The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

Oral questions during the lecture and daily preparation = 10%

Daily short tests (pop-up test) = 10%

Monthly exam and reporting = 80%

12. Learning and teaching resources

Ganong's review of medical physiology. Kim E. Barrett et al. McGraw Hill Lange	Required textbooks (methodology if any)
1- Textbook of medical physiology. ACGuyton@JEHall. Saunders Elsevier 2-Journals of physiology	Main References (Sources)

Course Description Form

1. Course name	
theoretical animal physiology	
2. Course code	
436BAP	
3. Semester/Year	
Annual /2025-2026	
4. Date this description was prepared	
2 /10/2025	
5. Available forms of attendance	
Attendance is mandatory.	
6. Number of study hours (total) / Number of units (total)	
2_15 for each chapter 30 / 6 units (4 theoretical 2 practical)	
7. Name of the course supervisor (if more than one name is mentioned)	
Name: Prof. Dr. Qasim Aziz Razoqi Email:muncef.s962@tu.edu.iq	
8. Course objectives	
<ul style="list-style-type: none"> Help students understand the science and functions of the different organs in the body. Preparing scientific and qualitative cadres specialized in the field of life sciences for the purpose of improving the educational reality in the country Teaching students writing and speaking skills at analytical levels by referring to the latest findings of modern science in the field of animal physiology. The program serves the university by providing students with high-quality education through exposure to the latest developments in scientific research, both theoretically and practically.. Providing the Ministry of Education and the Ministry of Higher Education and Scientific Research with specialized and competent personnel in the field of life sciences. 	Subject objectives
9. Teaching and learning strategies	

<p>1- Use electronic means of clarification.</p> <p>2- Using the discussion method in the lecture between the student and the professor..</p> <p>3- Assigning students to do research and reports..</p> <p>4- Assigning students to do homework related to the scientific subject..</p>	Strategy
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10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
Classroom performance and exams	Presence	Introduction: Physiology and its general principles, experimental methods, basic principles, metabolism	Understand the topic of the lecture	2 theoretical 2 practical	1
Classroom performance and exams	Presence	Internal coordination External coordination	Understand the topic of the lecture	2 theoretical 2 practical	2
Classroom performance and exams	Presence	Physiology of the nervous system, nerve cell - excitability, experimental characteristics	Understand the topic of the lecture	2 theoretical 2 practical	3
Classroom performance and exams	Presence	Electrical activity - methods of recording electrical activity, the relationship between the permeability of ions and the establishment of the action potential, characteristics of living nerves, receptors	Understand the topic of the lecture	2 theoretical 2 practical	4
Classroom performance and exams	Presence	Autonomic nervous system	Understand the topic of the lecture	2 theoretical 2 practical	5
Classroom performance and exams	Presence	Physiology of the muscular system, types of muscles - fine structures of muscle cells, chemical properties of muscle	Understand the topic of the lecture	2 theoretical 2 practical	6
Classroom performance and exams	Presence	Theory of sliding filament - excitatory-contractile coupling, sources of energy in muscle - relationship between stimulus and response, heat production in muscle - oxygen deficit - fatigue	Understand the topic of the lecture	2 theoretical 2 practical	7
Classroom performance and exams	Presence	Physiology of the circulatory system, the heart in vertebrates, the	Understand the topic of the lecture	2 theoretical 2 practical	8

		pacemaker, accidents, the electricity in the heart			
Classroom performance and exams	Presence	Nervous control, blood groups, Rh factor, lymphatic system, lymph nodes, lymph node functions	Understand the topic of the lecture	2 theoretical 2 practical	9
Classroom performance and exams	Presence	Physiology of the respiratory system, respiration, chemistry of respiration, gas transport and its laws, oxygen transport, states of carbon dioxide, gas exchange, cellular respiration	Understand the topic of the lecture	2 theoretical 2 practical	10
Classroom performance and exams	Presence	Neural control of respiratory movements, chemical regulation, accessory neural reflexes that control breathing	Understand the topic of the lecture	2 theoretical 2 practical	11
Classroom performance and exams	Presence	Physiology of the digestive system, digestive system, accessory glands, digestion in the stomach	Understand the topic of the lecture	2 theoretical 2 practical	12
Classroom performance and exams	Presence	Intestinal digestion, pancreas and its secretions, bile, absorption, excretion	Understand the topic of the lecture	2 theoretical 2 practical	13
Classroom performance and exams	Presence	Physiological effect of heat and energy metabolism, temperature regulation in animals, thermoregulation center, hormonal control, thermoregulation disorders	Understand the topic of the lecture	2 theoretical 2 practical	14
Classroom performance and exams	Presence	Energy metabolism, methods of measuring factors affecting metabolic rate, thermal coefficient, respiratory coefficient, thermal pressure, energy transfer	Understand the topic of the lecture	2 theoretical 2 practical	15
Classroom performance and exams	Presence	The kidney and the regulation of body fluids, the kidney, kidney functions, regulation of urine volume, regulation of body fluids, basics of fluid balance, regulation of water and ion movement	Understand the topic of the lecture	2 theoretical 2 practical	16
Classroom performance and exams	Presence	Acid-base balance, metabolic disorders, respiratory disorders	Understand the topic of the lecture	2 theoretical 2 practical	17

Classroom performance and exams	Presence	Endocrine glands, hormones, regulation of formation and secretion, hormones, methods of studying hormones	Understand the topic of the lecture	2 theoretical 2 practical	18
Classroom performance and exams	Presence	Chemical classes of hormones, pituitary gland and its hormones, thyroid gland and its hormones	Understand the topic of the lecture	2 theoretical 2 practical	19
Classroom performance and exams	Presence	Parathyroid glands, pancreas and its hormones, adrenal glands and their hormones, sex hormones, prostate glands	Understand the topic of the lecture	2 theoretical 2 practical	20
Classroom performance and exams	Presence	Physiology of the reproductive system, female reproductive system, puberty, menstrual cycle, ovulation types in animals, process of egg formation, menstrual cycle	Understand the topic of the lecture	2 theoretical 2 practical	21

11. Course Evaluation

The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

Oral questions during the lecture and daily preparation = 10%

Daily short tests (pop-up test) = 10%

Monthly exam and reporting = 80%

12. Learning and teaching resources

Ganong's review of medical physiology. Kim E. Barrett et al. McGraw Hill Lange	Required textbooks (methodology if any)
1- Textbook of medical physiology. ACGuyton@JEHall. Saunders Elsevier 2-Journals of physiology	Main References (Sources)

Course Description Form

1. Course name	
Practical plant physiology	
2. Course code	
437Bpp	
3. Semester/Year	
Academic year 2025/2025	
4. Date this description was prepared	
9/17/2025	
5. Available forms of attendance	
Mandatory attendance	
6. Number of study hours (total) / Number of units (total)	
60 hours, 6 units (4 theoretical 2 practical units)	
7. Name of the course supervisor (if more than one name is mentioned)	
Name: Fattah Raouf Mahmoud Al-Qaisi Email:OlfatRaouf@tu.edu.iq	
8. Course objectives	
<ul style="list-style-type: none"> • Help students understand plant physiology, cell types, their functions, and the physiological processes that occur within the plant body. • Preparing scientific and qualitative cadres specialized in the field of life sciences for the purpose of improving the educational reality in the country. • Teaching students writing and speaking skills at the analytical levels by referring to the latest developments in modern science in the field of plant physiology. • Providing the Ministry of Education and the Ministry of Higher Education and Scientific Research with specialized and competent cadres in the field of life sciences. 	Subject objectives
9. Teaching and learning strategies	
<ol style="list-style-type: none"> 1- Using electronic means of clarification. 2- Using the discussion method in the lecture between the professor and the 3- Assigning students homework related to the scientific subject. 4- Using models and models of the studied plant samples, in addition to preparing slides of those models. 5- Applying the topics studied theoretically on the practical level. 6- Using a projectordata showTo attract students' attention and interact with the 	Strategy

10. Course Structure					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
Classroom performance and exams	Presence	Introduction (Solutions and Methods of Preparation)	Understand the topic of the lecture	2 Theoretical 2 Practical	1
Classroom performance and exams	Presence	Gas and liquid solutions	Understand the topic of the lecture	2 Theoretical 2 Practical	2
Classroom performance and exams, general questions and discussion	Presence	Solids (Methods of Expressing Soil Concentration)	Understand the topic of the lecture	2 Theoretical 2 Practical	3
Classroom performance and exams	Presence	Solutions and their related laws: molarity, molarity, standard, percentage concentrations	Understand the topic of the lecture	2 Theoretical 2 Practical	4
Classroom performance and exams	Presence	Acids, bases and salts	Understand the topic of the lecture	2 Theoretical 2 Practical	5
Classroom performance and exams	Presence	Buffer solutions, preparation of samples, colloidal systems, their properties and their role	Understand the topic of the lecture	2 Theoretical 2 Practical	6
Classroom performance and exams General questions and discussion daily exam	Presence	Diffusion, its types, and the effect of ions on the rate of diffusion.	Understand the topic of the lecture	2 Theoretical 2 Practical	7
Classroom performance and exams	Presence	Cell membranes, permeability and osmosis (bending of the castor bean stalk at different salt and sugar concentrations).	Understand the topic of the lecture	2 Theoretical 2 Practical	8
Classroom performance and exams General questions and discussion daily exam	Presence	Osmotic potential measurement by gravimetric method or falling drop method.	Understand the topic of the lecture	2 Theoretical 2 Practical	9
Classroom performance and exams	Presence	Measurement of water potential by the above	Understand the topic of the lecture	2 Theoretical 2 Practical	10

		method for osmotic potential			
Classroom performance and exams General questions and discussion daily exam	Presence	Plasmolysis is observed under a microscope using epidermal cells of the leaf, such as onion or any other plant.	Understand the topic of the lecture	2 Theoretical 2 Practical	11
Classroom performance and exams	Presence	Transpiration and methods of measuring it (structure of the stomatal apparatus, study of the distribution of stomata on the two surfaces of the leaf)	Understand the topic of the lecture	2 Theoretical 2 Practical	12
Classroom performance and exams	Presence	Methods of estimating water loss from plants under different conditions (light, moisture, temperature, wind)	Understand the topic of the lecture	2 Theoretical 2 Practical	13
Classroom performance and exams General questions and discussion daily exam	Presence	Mineral nutrition and estimation of some essential elements for plant growth in plant tissues.	Understand the topic of the lecture	2 Theoretical 2 Practical	14
Classroom performance and exams	Presence	Measurement of the amount of photosynthesis by chromatography, estimation of chlorophyll a-b, xanthophyll, carotene, and measurement of chlorophyll plate.	Understand the topic of the lecture	2 Theoretical 2 Practical	15
Classroom performance and exams	Presence	How to count bubbles using aquatic plants	Understand the topic of the lecture	2 Theoretical 2 Practical	16
Classroom performance and exams	Presence	Detection of starch as a marker for photosynthesis by iodine method in plant leaves.	Understand the topic of the lecture	2 Theoretical 2 Practical	17
Classroom performance and exams	Presence	Respiration, evidence of the occurrence of respiration in plant seeds.	Understand the topic of the lecture	2 Theoretical 2 Practical	18
Classroom performance and exams	Presence	Measurement of respiration rate by the	Understand the topic of the lecture	2 Theoretical 2 Practical	19

		titration method of T-seeds.			
Classroom performance and exams	Presence	Enzymes: Study of the extraction of amylase enzyme from barley seeds and the effect of the enzyme in starch analysis.	Understand the topic of the lecture	2 Theoretical 2 Practical	20
Classroom performance and exams	Presence	Total soluble carbohydrates in cauliflower tissue (or similar tissue)	Understand the topic of the lecture	2 Theoretical 2 Practical	21
Classroom performance and exams	Presence	An experiment to demonstrate phototropism in plants.	Understand the topic of the lecture	2 Theoretical 2 Practical	22
Classroom performance and exams	Presence	An experiment to demonstrate geotropism in plants.	Understand the topic of the lecture	2 Theoretical 2 Practical	23
Classroom performance and exams	Presence	Study of gibberellin hormone in germination rate.	Understand the topic of the lecture	2 Theoretical 2 Practical	24
Classroom performance and exams	Presence	Study of chitin in chlorophyll retention in separated wheat leaves.	Understand the topic of the lecture	2 Theoretical 2 Practical	25

11. Course Evaluation

The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

Oral questions during the lecture and daily preparation = 10%

Daily short tests (pop-up test) = 10%

Monthly exam and reporting = 80%

12. Learning and teaching resources

1-Plant physiology Dr. Abdul Azim Kazim	Required textbooks (methodology if any)
Plant physiology by solisbury and ross. Introduction to plant physiology by Meyer et al.	Main References (Sources)
Practical plant physiology Dr. Muwaffaq Mizban Musalat Dr. Hamoud Gharbi Khalifa Al Marsoumi Practical Plant Physiology Part 1 Author: Mohamed Mahjoub Azouz Release date: January 1, 2014	Recommended supporting

Course Description Form

1. Course name: Plant Physiology	
2. Course code 438BPP	
3. Semester/Year	
2026-2025 annual	
4. Date of preparation of this description	
1/12/2025	
5. Available forms of attendance The lecture	
Attendance	
6. Number of study hours (total) / Number of units (total)	
60 h / 6 units	
7. Name of the course supervisor (if more than one name is mentioned)	
Asst. Prof. Dr. Mostafa kahtaan mostafa.km84@tu.edu.iq	
8. Course objectives Providing students with knowledge of plant physiology, its importance and its relationship to other sciences.	
<ul style="list-style-type: none"> • Introducing students to the basics of plant physiology, including photosynthesis, cellular respiration, transport, absorption, and hormones. • Introducing students to plant metabolism, metabolic compounds, tropism and migration. • To provide them with the skill of interpreting physiological phenomena based on understanding rather than memorization. 	Subject objectives
9. Teaching and learning strategies	
Providing students with knowledge, information and skills about the importance of physiological processes in plants, how they occur and what their importance is.	Strategy
10. Course Structure	

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
Daily questions monthly exam daily homework	The lecture PowerPoint Educational films	Introduction to plant physiology, its importance and its relationship to other sciences	Make the student aware of the origin and development of genetics.	2	the first
Daily questions monthly exam daily homework	The lecture PowerPoint	Plant cell and its physiology	Introducing the student to the plant cell and its physiology	2	the second
Daily questions monthly exam daily homework	Educational films	Water relations : solutions and their types	Definition of water relations and solutions as a basis	2	the third
Daily questions monthly exam daily homework	The lecture PowerPoint	Diffusion, osmosis and factors affecting them	To provide the student with an understanding of the process of diffusion and osmosis and the effect of factors on them.	2	Fourth
Daily questions monthly exam daily homework	Educational films	Plant stresses: osmotic, turgid and root stresses	Student understanding of stress and its role in regulating swelling and water absorption	2	Fifth
Daily questions monthly exam daily homework	The lecture PowerPoint	Water and osmotic potential	Student definition of the role of water potential in plant cells	2	Sixth
Daily questions monthly exam daily homework	Educational films	Transpiration, its types and factors	Learn about transpiration, its importance, types, and how each type occurs.	2	Seventh
Daily questions monthly exam daily homework	The lecture PowerPoint	Water absorption and transport	Identify the absorption of water from the roots to the rest of the plant parts	2	The eighth
Daily questions monthly exam daily homework	Educational films	Absorption and transport of mineral salts	Understanding the absorption verses of mineral salts and their role in plant nutrition	2	Ninth
Daily questions monthly exam daily homework	The lecture PowerPoint	Photosynthesis: Pigments, their composition and importance	Definition of photosynthesis and pigments and their importance in absorbing light	2	tenth

Daily questions monthly exam daily homework	Educational films	Mechanism of photosynthesis Light reactions	The student learns the role of light and light reactions in the production of high energy compounds.	2	eleventh
Daily questions monthly exam daily homework	The lecture PowerPoint	Dark reactions and sugar formation	The student learns about the Calvin cycle and carbon dioxide fixation and gains an understanding of learning pathways.	2	twelfth
Daily questions monthly exam daily homework	Educational films	Three- and four- carbon plants, their importance and physiology	Introducing the student to plants, their importance, the differences between them, and their physiological role.	2	thirteenth
Daily questions monthly exam daily homework	The lecture PowerPoint	Plant hormones, their importance, types and physiological functions	Providing the student with information about hormones, their types and their functions for plants.	2	fourteenth
Daily questions monthly exam daily homework	Educational films	Auxins and gibberellins and their physiological role	The student learns about auxins, their synthesis, transport, and importance, as well as gibberellins.	2	fifteenth
Daily questions monthly exam daily homework	The lecture PowerPoint	Ethylene, abscisic acid and its physiological role	The student learns about ethylene, abscisic acid and their physiological role.	2	Sixteenth
Daily questions monthly exam daily homework	Educational films	Mineral nutrition, its importance and physiological role	The student learns about mineral nutrition, its importance and its physiological role.	2	seventeenth
Daily questions monthly exam daily homework	The lecture PowerPoint	Symptoms of element deficiency, methods of diagnosis and treatment	Introducing the student to the symptoms of element deficiency and methods of diagnosing and treating them	2	eighteenth
Daily questions monthly exam daily homework	Educational films	Cellular respiration, Krebs cycle, electron transport chain and energy production	Student definition of cellular respiration, Krebs cycle, electron transport chain and energy production	2	nineteenth

Daily questions monthly exam daily homework	The lecture PowerPoint	Anthropism and its types	Student understanding of tropism, how it occurs, and its physiological role.	2	Twenty
Daily questions monthly exam daily homework	Educational films	Subordination and its importance	The student understands the importance of equilibrium, how it occurs, and its physiological role.	2	Twenty one
Daily questions monthly exam daily homework	The lecture PowerPoint	Photochronology and Long, Medium and Short Day Plants	The student understands photosynthetic activity, how it occurs, and its physiological role.	2	Twenty-second
Daily questions monthly exam daily homework	Educational films	Secondary metabolism: phenols and alkaloids	Student Understanding Secondary Metabolism: Phenols and Alkaloids	2	twenty-third
Daily questions monthly exam daily homework	The lecture PowerPoint	Glycosides, terpenes and tannins	Student understanding of glycosides, terpenes and tannins	2	twenty-fourth
Daily questions monthly exam daily homework	Educational films	Environmental stress and its relationship to physiological processes	The student understands environmental stress and its relationship to physiological processes.	2	Twenty-fifth

11. Course Evaluation

The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

12. Learning and teaching resources

Fundamentals of Plant Physiology Dr. Abdel Azim year 2000 book plant physiology taiz and zaigeh For a year 2020	Required textbooks (methodology if any)
Plant physiology books	Main References (Sources)
Websites and scientific reports	Recommended supporting books and references (scientific journals, reports...)
	Electronic references, websites

Course Description Form

1. Course name	
optional	
2. Course code	
442ME	
3. Semester/Year	
annual	
4. Date this description was prepared	
1/21/2025	
5. Available forms of attendance	
Presence	
6. Number of study hours (total) / Number of units (total)	
60 hours	
4 units	
7. Name of the course supervisor (if more than one name is mentioned):	
Asst. Prof. Dr. Mustafa Qahtan Mustafa	
Name: Mohamed adnan	
mohammadblesh@tu.edu.iq	
8. Course objectives	
<ul style="list-style-type: none"> ● Learn about the history of medicinal and aromatic plants, ● Methods of trading medicinal and aromatic plants ● Classification of medicinal and aromatic plants and methods of cultivation and production ● Basic components for the production of medicinal and aromatic plants ● Active ingredients in medicinal and aromatic plants (glycosides, alkaloids, volatile oils, tannins, resins). ● Estimation of active compounds in medicinal plants (gas chromatography and high-performance liquid chromatography) ● Extraction methods 	Subject objectives

<ul style="list-style-type: none"> • Methods of extraction and isolation of active compounds 	
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9. Teaching and learning strategies

<ul style="list-style-type: none"> - Follow the lecture method with the use of modern presentation methods. - Conducting laboratory experiments. - Direct dialogue with students by asking them questions. - Homework (writing scientific reports). - Learning through applied field practices. 	Strategy
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10. Course Structure

Evaluation method	Learning method		Time	The week
<ul style="list-style-type: none"> - Quick tests (quizzes). - Evaluation through classroom activity. 	Presence	Introduction to medicinal plants	2	the first
<ul style="list-style-type: none"> - Quick tests (quizzes). 	Presence	Classification of medicinal and aromatic plants	2	the second
Evaluation through classroom activity.	Presence	Preparation of medicinal plants	2	the third
<ul style="list-style-type: none"> - Quick tests (quizzes). 	Presence	Active ingredients in medicinal plants essential oils	2	Fourth
Evaluation through classroom activity.	Presence	Alkaloids	2	Fifth
<ul style="list-style-type: none"> - Quick tests (quizzes). 	Presence	Glycosides	2	Sixth
Evaluation through classroom activity.	Presence	Resins	2	Seventh
<ul style="list-style-type: none"> - Quick tests (quizzes). 	Presence	Tannins	2	The eighth
Evaluation through classroom activity.	Presence	Phenols	2	Ninth
<ul style="list-style-type: none"> - Quick tests (quizzes). 	Presence	Soaps	2	tenth
Evaluation through classroom activity.	Presence	Resins	2	eleventh
<ul style="list-style-type: none"> - Quick tests (quizzes). 	Presence	Turbines	2	twelfth
Evaluation through classroom activity.	Presence	Methods of estimation of active compounds	2	thirteenth
<ul style="list-style-type: none"> - Quick tests (quizzes). 	Presence	deviceGC-MS	2	fourteenth

Evaluation through classroom activity.	Presence	deviceHPLC		2	fifteenth
- Quick tests (quizzes).	Presence	Preparing the plants for extraction		2	Sixteenth
Evaluation through classroom activity.	Presence	Methods of preparing aqueous extracts		2	seventeenth
- Quick tests (quizzes).	Presence	Methods of preparing alcoholic extracts		2	eighteenth
Evaluation through classroom activity.	Presence	Preparation of methanolic extract		2	nineteenth
- Quick tests (quizzes).	Presence	Preparation of the ethereal extract		2	Twenty
Evaluation through classroom activity.	Presence	Isolation of alkaloids		2	twenty one
- Quick tests (quizzes).	Presence	Phenol isolation		2	Twenty-second
Evaluation through classroom activity.	Presence	Glycoside isolation		2	twenty-third
- Quick tests (quizzes).	Presence	tannin isolation		2	twenty-fourth
Evaluation through classroom activity.	Presence	Isolation of flavonoids		2	Twenty-fifth
- Quick tests (quizzes).	Presence	Resin insulation		2	Twenty-sixth
Evaluation through classroom activity.	Presence	essential oil isolation		2	twenty-seventh
- Quick tests (quizzes).	Presence	Soap isolation		2	Twenty-eighth

11. Course Evaluation

The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

12. Learning and teaching resources

1-Medicinal plants, their cultivation and components / Dr. Fawzy Taha Qutb Hussein	Required textbooks (methodology if any)
	Main References (Sources)
-Alternative medicine/treatment unless Herbs and Medicinal Plants / Andrew Chevalier - Translated by Omar A. NoAnd me A For aromatic plants and their agricultural and pharmaceutical products / Al-Shahat Nasr Abu Zaid Basics of Medicinal Plants and Their Active Compounds / Dr. Maher Hamid Salman AlAMy dam	Recommended supporting books and references (scientific journals, reports...)

Medicinal Plant PPJoy and Sumitha Mathew	
Internet	Electronic references, websites

Course Description Form

1. Course name
Practical microbiology
2. Course code
440BPA
3. Semester/Year
Academic year 2025-2025
4. Date this description was prepared
10/1/2025
5. Available forms of attendance
Mandatory attendance
6. Number of study hours (total) / Number of units (total)
Number of hours: 60 hours / Number of units: 6 units (4 theoretical 2 practical)
7. Name of the course supervisor (if more than one name is mentioned)
Name: M.M. Omar Ahmed Abdelkader Mohamed Email: Omar.a.abdulqader@tu.edu.iq Dr. Safa Laith Saleh Email: Safa.laith@tu.edu.iq Dr luai Burhan luayburhan25@tu.edu.iq
8. Course objectives

<ul style="list-style-type: none"> • Help students gain comprehensive knowledge of the types and composition of microorganisms. • Preparing scientific and qualitative cadres specialized in the field of life sciences for the purpose of improving the educational reality in the country. • Teaching students writing and speaking skills at analytical levels by referring to the latest developments in modern science in the field of microbiology and methods of diagnosis. • The program serves the university by providing students with high-quality education through exposure to the latest developments in scientific research, both theoretically and practically. • Providing the Ministry of Education and the Ministry of Higher Education and Scientific Research with specialized and qualified personnel in the field of life sciences. 	Subject objectives
9. Teaching and learning strategies	
<ol style="list-style-type: none"> 1. Use of electronic visual aids. 2. Using the discussion method in the lecture between the professor and the students. 3. Assigning students to do research and reports. 4. Assigning students homework related to the subject. 5. Conducting laboratory experiments within the scientific material inside the laboratory. 	Strategy
10. Course Structure	

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
Classroom performance and exams	Presence	Learn about laboratory equipment	Understand the topic of the lecture	2	1
Classroom performance and exams	Presence	Sterilization methods used	Understand the topic of the lecture	2	2
Classroom performance and exams	Presence	Types of culture media and methods of preparing them	Understand the topic of the lecture	2	3-4
Classroom performance and exams	Presence	Bacterial staining methods (simple staining)	Understand the topic of the lecture	2	5
Classroom performance and exams	Presence	Cream dye	Understand the topic of the lecture	2	6

Classroom performance and exams	Presence	Wallet and board dye	Understand the topic of the lecture	2	7
Classroom performance and exams	Presence	bacterial motility test	Understand the topic of the lecture	2	8
Classroom performance and exams	Presence	Methods of culture and isolation of bacteria	Understand the topic of the lecture	2	9
Classroom performance and exams	Presence	Antibiotic sensitivity testing	Understand the topic of the lecture	2	10
Classroom performance and exams	Presence	Microbiological contamination of water	Understand the topic of the lecture	2	11
Classroom performance and exams	Presence	Methods of examining the microbial content of soil	Understand the topic of the lecture	2	12

11. Course Evaluation

Oral questions within the lecture ...10%
Daily short tests (pop-up tests)...10%
Monthly testing and reporting... 80%

12. Learning and teaching resources

Microbiology / Dr. Hamid Majeed Al-Zaidi Fundamentals of the practical curriculum of microbiology / Prof. Dr. Osama Nazim Nanjris	Required Textbooks
<i>Bailey</i> and Scott Diagnostic Microbiology (2007) by Betty A. 4 Forbes	Main References (Sources)
MEDICAL MICROBIOLOGY A guide to microbial Infection.	Recommended books and references (scientific journals, reports,)
www.prenhall.com http://www.ncbi.nlm.nih.gov/books/bv.fcgl http://www.accessexcellence.org/RC/microbiology.php http://student.ccbcmd.edull~gkaiser/goshp.html	Electronic references, websites....

Course Description Form

1. Course name	
Practical immunity	
2. Course code	
438BIM	
3. Semester/Year	
Academic year 2025/2026	
4. Date this description was prepared	
9/17/2025	
5. Available forms of attendance	
Mandatory attendance	
6. Number of study hours (total) / Number of units (total)	
Number of hours = 60 hours, number of units = 6 units (4 theoretical 2 practical units)	
7. Name of the course supervisor (if more than one name is mentioned)	
<p>Name: Rehab Salman Kurdi Email:rehab.s.kurdy@tu.edu.iq</p> <p>Name: Omar Essam Mamdouh Email:Omar.e.mamdoouh@tu.edu.iq</p> <p style="text-align: center;">Ayat ali</p> <p>ayat.a.salih@tu.edu.iq</p>	
8. Course objectives	
<p>.1 The nature of the immune system, its cells and factors. .2 Pathological conditions related to the work of the immune system. 3 General techniques used in the work of the immune system and diagnosis. Specific objective: At the end of the academic year, the student will be able to understand and realize: .1 Definition of immunology and its relationship to other sciences and its importance for students of pathological analysis. .2 Components of the immune system, which include cells and organs related to the formation of the immune system. .3 The concept of natural and acquired immunity, humoral factors and cellular factors. .4 The relationship between humoral components and cellular</p>	Subject objectives

factors and the physiology of the immune response. .5 Immunity and its types (beneficial and harmful) tumor immunity, immunity to allergic diseases, immunity to autoimmune diseases, immunodeficiency diseases. .6 Mechanisms of laboratory diagnosis and identification of some diseases that depend on laboratory immunological diagnosis.

9. Teaching and learning strategies

1- Lectures 2- Using DATASHOW 3- Using visual aids inside the lab 4- Interactive lecture 5- Discussion after the end of the lecture 6- Using the brainstorming method through quick questions

Strategy

10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
Classroom performance and exams	Presence	Immunity and its divisions	Understand the topic of the lecture	2 Theoretical 2 Practical	1
Classroom performance and exams	Presence	Handling laboratory animals	Understand the topic of the lecture	2 Theoretical 2 Practical	2
Classroom performance and exams, general questions and discussion	Presence	ADiscrimination swabs	Understand the topic of the lecture	2 Theoretical 2 Practical	3
Classroom performance and exams	Presence	Serum and plasma collection	Understand the topic of the lecture	2 Theoretical 2 Practical	4
Classroom performance and exams	Presence	Immune system members	Understand the topic of the lecture	2 Theoretical 2 Practical	5
Classroom performance and exams	Presence	Phagocytosis using Chinese ink	Understand the topic of the lecture	2 Theoretical 2 Practical	6
Classroom performance and exams General questions and discussion daily exam	Presence	Intraperitoneal injection phagocytosis	Understand the topic of the lecture	2 Theoretical 2 Practical	7

Classroom performance and exams	Presence	Antibody–antigen interactions (immune reactions)	Understand the topic of the lecture	2 Theoretical 2 Practical	8
Classroom performance and exams General questions and discussion daily exam	Presence	Killing microorganisms with natural serum	Understand the topic of the lecture	2 Theoretical 2 Practical	9
Classroom performance and exams	Presence	ELISA testEliza	Understand the topic of the lecture	2 Theoretical 2 Practical	10
Classroom performance and exams General questions and discussion daily exam	Presence	ELISA testEliza	Understand the topic of the lecture	2 Theoretical 2 Practical	11
Classroom performance and exams	Presence	Investigating opposites	Understand the topic of the lecture	2 Theoretical 2 Practical	12
Classroom performance and exams	Presence	Investigating opposites	Understand the topic of the lecture	2 Theoretical 2 Practical	13
Classroom performance and exams General questions and discussion daily exam	Presence	Investigating opposites	Understand the topic of the lecture	2 Theoretical 2 Practical	14
Classroom performance and exams	Presence	Investigating opposites	Understand the topic of the lecture	2 Theoretical 2 Practical	15
Classroom performance and exams	Presence	fluorescent immunoassay	Understand the topic of the lecture	2 Theoretical 2 Practical	16

11. Course Evaluation

The grade is distributed out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

Oral questions during the lecture and daily preparation = 10%

Daily short tests (pop-up test) = 10%

Monthly exam and reporting = 80%

12. Learning and teaching resources

Course Description Form

1. Course name:	
Practical parasites/Fourth stage	
2. Course code:	
44IBOP	
3. Semester/Year	
annual2025-2026	
4. Date this description was prepared	
2025/9/17	
5. Available forms of attendance	
Mandatory attendance	
6. Number of study hours (total) / Number of units (total)	
Number of hours: 60 hours, Number of units: (4 theoretical 2 practical)	
7. Name of the course supervisor (if more than one name is mentioned)	
<p>dr. Shahd Saad Daham Email:shahd.saad@tu.edu.iq</p> <p>dr .alhan jasem</p>	
8. Course objectives	
<p>1- Enabling students to gain knowledge and understand parasites, study their types and diagnose them practically..</p> <p>2- Helping students understand andknowledgeDiseases common to humans and animals, their causes and how they are transmitted.</p> <p>3-Introducing students to modern technologies and devicesAnd be able to use laboratory equipment.</p> <p>4-Providing the Ministry of Education and the Ministry of Higher Education and Scientific Research with specialized and qualified personnel in the field of life sciences.</p>	Subject objectives
9. Teaching and learning strategies	

<p>1- Use of whiteboard, projector data show To attract students' attention and interact with the lecture and slides, perform scientific experiments.</p> <p>2- Using models and models of the studied samples and preparing slides of those models.</p> <p>3- Visiting the scientific laboratories by the academic staff.</p> <p>4- Applying the topics studied theoretically on a practical level.</p>	Strategy
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10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Time	The week
General questions and discussion	Presence	Knowing the parasite, its types and varieties	Understand the ideas of the topic and be able to apply them with examples	2 theoretical 2 practical	1
Daily exam	Presence	What are amoebas and their types?	Understand the ideas of the topic and be able to apply them with examples	2 theoretical 2 practical	2
Classroom performance and exams	Presence	Laboratory diagnosis of parasites by direct method	Understand the ideas of the topic and be able to apply them with examples	2 theoretical 2 practical	3
Classroom performance and exams	Presence	Indirect laboratory diagnosis of parasites	Understand the ideas of the topic and be able to apply them with examples	2 theoretical 2 practical	4
Daily exam	Presence	Classification of flagellates and what are their most important genera?	Understand the ideas of the topic and be able to apply them with examples	2 theoretical 2 practical	5
General questions and discussion	Presence	What is the Giardia parasite, its life cycle and its pathological effects?	Understand the topic of the lecture	2 theoretical 2 practical	6

General questions and discussion	Presence	What is the genus of Leishmania, what are its most important types, its life cycle, and its pathological effects?	Understand the topic of the lecture	2 theoretical 2 practical	7
Daily discussion and exam	Presence	What is the genus of trypanosomes and what are their types and pathological effects?	Understand the topic of the lecture	2 theoretical 2 practical	8
General questions and discussion	Presence	Ciliated phylum, its most important genera, life cycle and pathological effects	Understand the topic with examples	2 theoretical 2 practical	9
Daily exam	Presence	Blood spores and what is the malaria parasite	Understand the topic of the lecture	2 theoretical 2 practical	10
General questions and discussion	Presence	Worms and their most important types	Understand the topic of the lecture	2 theoretical 2 practical	11

11. Course Evaluation

Distribution of grades out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.

12. Learning and teaching resources

The Fourth Stage Book by Ismail Al-Hadith	Required textbooks (methodology if any)
Practical Parasitology Book by Dr. Hussein Fadel Hassan	Main References (Sources)
http://dx.doi.org/10.13140/RG.2.2.18472.14081	Recommended supporting books and references (scientific journals, reports...)
https://www.twinkl.com/teaching-wiki/anwalhywanat https://sabq.org/saudia/663jk3sdjq-	Electronic references, websites

