Academic Program Description Form

University name: UniversityTikrit

College/Institute: CollegeEducation for pure sciences

Scientific Department: DepartmentLife Sciences

Name of academic or professional program: Bachelor

Final Certificate Name: Bachelor's inLife Sciences

Academic system:annual

Description preparation date:Beginning of the academic year 2024-2025

Date of filling the file:1/24/2025

the signature :

Name of the Departmen

:Mr. Dr. Maysar Abdullah Ahmed

the date: 24/1/2025

the signature :

Scientific Assistant Name

:Mr. Dr. Muhammad Ahmed Jassim

the date : 1/24/2025

File checked by:

Quality Assurance and University Performance Division

Name of the Director of the Quality Assurance and University Performance Division:A.M.D. Moamer Abdel Aziz Ismail

the date 27/1/2025

the signatu

Professor Doctor
ALi Abdul Majeed Shihab
College of Education
for Pure Sciences

Dean's approval

1. Program Vision

Raising the level of performance in the various fields of life sciences, such as zoology, botany, microbiology and the environment, while taking into consideration the development witnessed by the higher education renaissance by providing the best services and equipment for academic cadres of faculty members, 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 the skills of research, development, innovation, initiative and entrepreneurship, and involving students in everything that would develop their skills and help them to be creative and innovative, not just concerned with presentation, and transforming knowledge into wealth through research, development and innovation.

2. Program message

Graduating qualified students who possess scientific logical thinking and scientific research skills in science. The department provides the best modern scientific techniques for educational services for students in the university and higher education stage, and works to develop skills that enable them to integrate into all fields accurately and effectively. It supports the scientific research movement and cognitive interaction in order to continuously communicate with scientific and cultural development in the world, and meets the renewed needs of society in a way that achieves comprehensive and sustainable human development and enables national, regional and global competition and transforms knowledge into wealth through research, development and innovation and increases the role of partnerships between research, development and innovation in universities on the one hand and production and service institutions on the other hand. Meeting the country's need for efficient and qualified scientific cadres to be leaders of the future in the field of education, by preparing the appropriate scientific environment for scientific and skill growth and offering high-quality academic programs that keep pace with the developments of the era.

3. Program objectives

1. Preparing specialized cadres to support educational institutions.
2. That the student can employ the knowledge he has received.

3. The student should be able to benefit from knowledge and how to employ it.
4. The student acquires the skill of teaching and learning.
5. The student should be able to embody the knowledge he has acquired and develop it in the profession he is pursuing.
6. Graduating qualified students to complete their postgraduate studies (Masters - PhD) in various specializations of sciences.life.

4. Program accreditation

Ministry of Higher Education and Scientific Research

5. Other external influences

6. Program Structure

comments	percentage	Study unit	Number of courses	Program Structure
essential	**10%**	**18**	**9**	Institutional Requirements
essential	**21%**	**38**	**11**	College Requirements
essential	**69%**	**126**	**23**	Department Requirements
				Summer training
				Other

*****Notes may include whether the course is basic or optional.

7. Program Description				
Credit hours		**Course name**	**Course code**	**Year/Level**
practical	**theoretical**			
2	2	biology	101BGB	the first
2	2	cell life	102BCB	the first
2	2	plant anatomy	103BPA	the first
2	1	General Chemistry	104BGC	the first
-	1	Arabic	105AL	the first
-	2	Educational Psychology	106EP	the first
-	1	Human rights and democracy	107DHR	the first
2	-	Calculators	108CO	the first
-	1	Earth science	109BGE	the first
-	2	Foundations of education	110FL	the first
-	1	English language	111EL	the first
-	1	Biosafety	112BS	the first
2	2	Plant classification	215BPC	the second
2	2	Embryos	216BEM	the second
2	2	Invertebrates	217BIN	the second
2	2	Tissues	218BHI	the second
2	2	Biochemistry	219BBI	the second
2	2	My life statistics	220BBS	the second
2	-	Computer science	221CO	the second
-	2	developmental psychology	222DP	the second
-	2	Educational Administration and Secondary Education	223EASE	the second
-	1	English language	224EL	the second
-	1	Baath regime crimes	225BPC	the second

-	1	Arabic	226AL	the second
2	2	comparative anatomy	326BCA	the third
2	2	mushrooms	327BMY	the third
2	2	heredity	328BG	the third
2	2	Algae and archaea	329BAL	the third
2	2	Insects	330BEN	the third
2	2	Environment and pollution	331BEPE	the third
-	2	Foundations of scientific research	332FSR	the third
-	2	CurriculaandTeaching methods	333CMT	the third
-	2	Educational guidance	334ECPH	the third
2	2	Animal physiology	436BAP	Fourth
2	2	Plant physiology	437BPP	Fourth
2	2	Immunity	438BIM	Fourth
2	2	Microbiology	439BPA	Fourth
2	2	Parasites	440BPA	Fourth
-	2	optional	441BOP	Fourth
-	2	Measurement and Evaluation	442ME	Fourth
-	2	View and apply	443PE	Fourth
-	2	Graduation research	444PE	Fourth

8. Expected learning outcomes of the program

Knowledge

1- Enabling students to know the importance of studying life sciences. **2- Enabling students to know the historical role of Arab scholars in the field of life sciences.** **3-Enabling students to overcome the difficulties that hinder their studies.** **4- Enabling students to formulate cognitive and behavioral goals that can be observed and measured.** **5- Enabling students to know the importance of classroom activity and how to activate it in**	Cognitive objectives

school life. **6- Enabling students to know the impact of scientific knowledge of life sciences in developing intellectual aspects.**	

Skills

1- Identifying modern teaching methods and techniques. **2- Keeping up with everything new in the field of life sciences to keep pace with the rapid development in this specialty.** **3- Holding scientific exhibitions, seminars and workshops.**	The goalsGeneral and Qualification Skills
1- Teaching skill in biology **2- The student should be able to employ practical laboratory skills.** **3- The student should be able to link causes to effects.**	Skill objectivesProgram specific

Values

Innovation and continuous improvement. **Competing in the education industry and adhering to standards of excellence.**	Educational values

9. Teaching and learning strategies

1- **The recitation method**
2- **Lecture method**
3- **Practical application in laboratories**
4- **Discussion and dialogue**
5- **flipped learning**

10. Evaluation methods

1- **Weekly reports**
2- **Practical tests**
3- **Weekly, monthly and yearly tests**
4- **Graduation research**
5- **Field visits**

11. Faculty

Faculty members

numbersFaculty		Requirements/Skills (if any)	Specialization		the name	Academic Rank
lecturer	angel		private	general		
	✓		**plants**	**Life Sciences**	**Naglaa Mustafa**	**Mr.**

					Mohamed	
	✓		heredity	Life Sciences	Anas Yassin Mahmoud	Mr.
	✓		parasites	Life Sciences	Abdulkhaliq Alwan Muhaimid	Mr.
	✓		mushrooms	Life Sciences	Adnan Mazhar's birth	Mr.
	✓		Animal physiology	Life Sciences	Maysar Abdullah Ahmed	Mr.
	✓		Microscopic revival	Life Sciences	Mahmoud Khalaf Saleh	Mr.
	✓		environment	Life Sciences	Good luck, Anhab Saleh	Mr.
	✓		Animal physiology	Life Sciences	Qasim Aziz Razouki	assistant professor
	✓		heredity	Life Sciences	Zubaida Adnan Khader	assistant professor
	✓		mushrooms	Life Sciences	Ahmed Hamed Mahdi	assistant professor
	✓		Tissues	Life Sciences	Rashid Khamis Shaaban	assistant professor
	✓		plants	Life Sciences	Dear Saadi Wajdan	assistant professor
	✓		plants	Life Sciences	Mohammed Adnan Hashim	assistant professor
	✓		plants	Life Sciences	Omar Tariq Jawad	assistant professor
	✓		parasites	Life Sciences	Maysoun Mustafa Jassim	assistant professor
	✓		Animal physiology	Life Sciences	Nour Ibrahim Hassan	assistant professor
	✓		heredity	Life Sciences	Buthaina Jassim Yousef	assistant professor
	✓		environment	Life Sciences	Israa Salman Dales	assistant professor
	✓		plants	Life Sciences	Mustafa Qahtan Mustafa	assistant professor

	✓		environment	Life Sciences	Raghad Muqdad Mahmoud	assistant professor
	✓		environment	Life Sciences	Maryam Adnan Ibrahim	assistant professor
	✓		Insects	Life Sciences	Ali Hussein Al-Tayf	assistant professor
	✓		Animal physiology	Life Sciences	Decorated Fadli Namiq	assistant professor
	✓		Microscopic revival	Life Sciences	Haifa Rajab Alwan	assistant professor
	✓		Animal physiology	Life Sciences	Shaza Hazem Shaker	assistant professor
	✓		Tissues	Life Sciences	Aseel Younis Khalaf	Teacher
	✓		Animal physiology	Life Sciences	Ayat Ali Hussein	Teacher
	✓		parasites	Life Sciences	Rasha Shamel Hussein	Teacher
	✓		Tissues	Life Sciences	Mohammed Khalil Ibrahim	Teacher
	✓		Animal wealth	agriculture	Bashar Fadel Taama	Teacher
	✓		heredity	Life Sciences	Mohammed Mutlaq Saleh	Teacher
	✓		heredity	Life Sciences	Shaima Juma Aboud	Teacher
	✓		Animal wealth	Life Sciences	Samir Baha Noman	Teacher
	✓		Animal physiology	Life Sciences	Vigilant Ali Hussein	Teacher
	✓		educational	Life Sciences	Rawaa and Taban Maysar	Teacher
	✓		environment	Life Sciences	Hello Mahmoud Ismail	Teacher
	✓		parasites	Life Sciences	Raghad Tais Saeed	Teacher
	✓		Microscopic revival	Life Sciences	Safa Laith Mahdi	Teacher
	✓		Microscopic revival	Life Sciences	Rehab Salman Kurdi	Teacher
	✓		parasites	Life	Melodies by	Teacher

				Sciences	Jassim Hamash	
	✓		Animal physiology	Life Sciences	Euphrates is a nice cream	Teacher
	✓		parasites	Life Sciences	Ziad Khalaf Hamdan	Teacher
	✓		Tissues	Life Sciences	Israa Abdel Diab	Teacher
	✓		Microscopic revival	Life Sciences	Omar Ahmed Abdelkader	Assistant Professor
	✓		parasites	Life Sciences	Zainab Karim Mohammed	Assistant Professor
	✓		educational	Life Sciences	Adnan Hashim Abdul	Assistant Professor
	✓		Animal physiology	Life Sciences	Names of Khaled Matni	Assistant Professor
	✓		plants	Life Sciences	Fatt Raouf Mahmoud	Assistant Professor
	✓		Animal physiology	Life Sciences	Duaa Hassan Abdel Wahab	Assistant Professor
	✓		plants	Life Sciences	Reham Hussein Ahmed	Assistant Professor
	✓		environment	Life Sciences	Ahmed Jassim Mohammed	Assistant Professor
	✓		Animal wealth	agriculture	Shahid Bahaa Hassan	Assistant Professor
	✓		Animal physiology	Life Sciences	Nouri Khabbaz witnessed	Assistant Professor
	✓		Animal physiology	Life Sciences	Donia Hisham Taha	Assistant Professor
	✓		heredity	Life Sciences	Ayat Sufyan Abbas	Assistant Professor
	✓		Animal physiology	Life Sciences	Rawaa Mohammed Obaid	Assistant Professor
	✓		Animal physiology	Life Sciences	Rania Nazem Sobhi	Assistant Professor
	✓		Technologies	Life Sciences	Omar Essam Mamdouh	Assistant Professor
	✓		Insects	Life Sciences	Remove Hassan	Assistant Professor

					Alwan	
	✓		Insects	Life Sciences	Mustafa Nazhan Mahdi	Assistant Professor
	✓		Animal wealth	agriculture	Omar Muzahim Tabour	Assistant Professor
	✓		mushrooms	Life Sciences	Nour Adnan Mahmoud	Assistant Professor
	✓		Microscopic revival	Life Sciences	Lama Safi Abdel	Assistant Professor
	✓		Microscopic revival	Life Sciences	Black Hamad Neda	Assistant Professor
	✓		environment	Life Sciences	Ilaf Mohammed Harez	Assistant Professor
	✓		heredity	Life Sciences	Noha Hossam Abdel Wahab	Assistant Professor
	✓		environment	Life Sciences	Tariq Khalaf witnessed	Assistant Professor
	✓		Animal wealth	agriculture	Raghad Hassan Mahmoud	Assistant Professor
	✓		parasites	Life Sciences	Nahed Ayad Fares	Assistant Professor
	✓		Microscopic revival	Life Sciences	Louay Burhan Mustafa	Assistant Professor
	✓		Teaching methods	Educational sciences	Zainab Shukor	Assistant Professor
	✓		English language	English language	With Sami	Assistant Professor

Professional development
Orientation of new faculty members
New, visiting, full-time and other faculty members are guided by integrating them with experienced faculty members to provide them with the skills required in the teaching strategies adopted within the educational program and continuous monitoring of the development of their cognitive level and the extent to which they have acquired the skills required for the scientific material, in addition to central courses held at the institution and college levels to develop their skills.
Professional development for faculty members
The plan and arrangements for academic and professional development of faculty members include setting an annual plan for professional development, such as preparing an annual research plan for each faculty member, as well as seminars, workshops, scientific courses, and activities that serve the community. It also includes developing a teaching and learning strategy through modern teaching methods such as brainstorming, group work, discussion strategy, discovery learning, and inductive teaching strategy, to obtain learning outcomes whose efficiency can be evaluated and measured through approved tests within the approved program. The learning and professional development outcomes are evaluated through the evaluation of the faculty member by the department head, as well as a

questionnaire distributed to students in coordination with the Quality Division in the college and under the supervision of the Quality Department at the university.

12. Acceptance Criteria

(Central Acceptance)

13. The most important sources of information about the program

Ministry of Higher Education and Scientific Research

14. Program Development Plan

1- **Forming committees in the scientific department to follow up on the program and conduct a comprehensive review and any new developments.**
2- Student opinion survey at the end of each semester about the study program.
3- Survey of faculty members' opinions at the end of each semester on the best ways to develop courses and their teaching methods. 4.
4- Coordination with the University Quality Department to follow up on the implementation of the academic program in the department
5- Conduct a comprehensive review of the program.

Program Skills Chart

Required learning outcomes of the program

Values				Skills				Knowledge				Essential or optional?	Course name	Course code	Year/ Level
A4	A3	A2	A1	B4	B3	B2	B1	A4	A3	A2	A1				
*	*	*	*		*	*	*	*	*	*	*	essential	**biology**	101BGB	Year The first
*	*	*	*	*	*	*	*	*	*	*	*	essential	**cell life**	102BCB	
*	*	*	*		*	*	*	*	*	*	*	essential	**plant anatomy**	103BPA	
*	*	*	*	*	*	*	*	*	*	*	*	essential	**General Chemistry**	104BGC	

*		*	*	*	*	*	*	*	*	*	*	essential	**Arabic**	105AL	
*	*	*		*	*	*	*	*	*	*	*	essential	**psychology Educational growth**	106EP	
*	*	*	*	*	*	*	*	*	*	*	*	essential	**Human rights and democracy**	107DHR	
*		*	*		*	*	*	*	*	*	*	essential	**Calculators**	108CO	
*	*	*	*	*	*	*	*	*	*	*	*	essential	**Earth science**	109BGE	
*	*	*	*	*	*	*	*	*	*	*	*	essential	**Foundations of education**	110FL	
	*	*	*		*	*	*	*	*	*	*	essential	**English language**	111EL	
*	*	*	*	*	*	*	*	*	*	*	*	essential	**biological safety**	112BS	

*Please tick the boxes corresponding to the individual learning outcomes of the programme being assessed.

Program Skills Chart															
Required learning outcomes of the program															
Values				Skills				Knowledge				**Essential or optional?**	**Course name**	**Course code**	**Year /Level**
A4	**A3**	**A2**	**A1**	**B4**	**B3**	**B2**	**B1**	**A4**	**A3**	**A2**	**A1**				
*	*	*	*		*	*	*	*	*	*	*	**essential**	**Plant classification**	**215BPC**	Year Second
*	*	*	*		*	*	*	*	*	*	*	**essential**	**Embryos**	**216BEM**	
*	*	*	*		*	*	*	*	*	*	*	**essential**	**Invertebrates**	**217BIN**	
*	*	*	*	*	*	*	*	*	*	*	*	**essential**	**Tissues**	**218BHI**	
*		*	*		*	*	*	*	*	*	*	**essential**	**Biochemistry**	**219BBI**	
*	*	*	*	*	*	*	*	*	*	*	*	**essential**	**My life statistics**	**220BBS**	
*	*	*	*	*	*	*	*	*	*	*	*	**essential**	**Computer science**	**221CO**	
*	*		*	*	*	*	*	*	*	*	*	**essent**	**developmen**	**222DP**	

												ial	**tal psychology**		
*	*		*	*	*	*	*	*	*	*	*	**essential**	**Educational Administration and Secondary Education**	**223EASE**	
*	*	*	*	*	*	*	*	*	*	*	*	**essential**	**English language**	**224EL**	
*	*	*	*	*	*	*	*	*	*	*	*	**essential**	**Baath regime crimes**	**225BPC**	
*	*	*	*	*	*	*	*	*	*	*	*	**essential**	**Arabic**	**226AL**	

Program Skills Chart															
Required learning outcomes of the program															
Values				Skills				Knowledge				**Essential or optional?**	**Course name**	**Course code**	**Year /Level**
A4	**A3**	**A2**	**A1**	**B4**	**B3**	**B2**	**B1**	**A 4**	**A 3**	**A 2**	**A 1**				
*	*	*	*		*	*	*	*	*	*	*	**essential**	**comparative anatomy**	**326BCA**	Year Third
*	*	*	*		*	*	*	*	*	*	*	**essential**	**mushrooms**	**327BMY**	
*	*	*	*		*	*	*	*	*	*	*	**essential**	**heredity**	**328BG**	
*	*	*	*	*	*	*	*	*	*	*	*	**essential**	**Algae and archaea**	**329BAL**	
*		*	*		*	*	*	*	*	*	*	**essential**	**Insects**	**330BEN**	
*	*	*	*	*	*	*	*	*	*	*	*	**essential**	**Environment and pollution**	**331BEPE**	
*	*	*	*	*	*	*	*	*	*	*	*	**essential**	**Foundations of scientific research**	**332FSR**	
*	*		*	*	*	*	*	*	*	*	*	**essential**	**Curricula and teaching methods**	**333CMT**	
*	*		*	*	*	*	*	*	*	*	*	**essential**	**Educational guidance**	**334ECPH**	
*	*	*	*	*	*	*	*	*	*	*	*	**essential**	**English language**	**335EL**	

Program Skills Chart															
Required learning outcomes of the program															
Values				Skills				Knowledge				Essential or optional?	Course name	Course code	Year/Level
A4	A3	A2	A1	B4	B3	B2	B1	A 4	A 3	A 2	A 1				Year Fourth
	*	*	*		*	*	*	*	*	*	*	essential	Animal physiology	436BAP	
*	*	*	*		*	*	*	*	*	*	*	essential	Plant physiology	437BPP	
*	*	*	*		*	*	*	*	*	*	*	essential	Immunity	438BIM	
*	*	*	*		*	*	*	*	*	*	*	essential	Microbiology	440BPA	
		*	*	*	*	*	*	*	*	*	*	essential	Parasites	441BOP	
*	*	*	*		*	*	*	*	*	*	*	essential	optional	442ME	
*	*	*	*		*	*	*	*	*	*	*	essential	Measurement and Evaluation	443PE	
*	*	*	*	*	*	*	*	*	*	*	*	essential	View and apply	444BRP	
	*		*	*	*		*	*	*	*	*	essential	English language	445EL	

Course Description Form

1. Course name
Practical cell science
2. Course code
BGB101

3. Semester/Year
2024-2024
4. Date this description was prepared
1/17/2024
5. Available forms of attendance
Mandatory attendance/electronic
6. Number of study hours (total) / Number of units (total)
56 hoursPractical and theoretical/ 6 unitsPractical 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
8. Course objectives

• ....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 • Providing the Ministry of Education and the Ministry of Higher Education and Scientific Research with	Subject objectives

specialized and qualified personnel in the field of life sciences.	

9. Teaching and learning strategies

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 scientific subject**	Strategy

10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	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 watch 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 parenchymal cellsparenchyma cellcollenchyma cell sclerenchyma cellsscleren cyst cell	Understand the topic of the lecture	2 Theoretical + 2 Practical	9-
Classroom performance and exams	Presence	Conducting the experimentThe processTo 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 watchPlastidaTUnder 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 identificationIts functions and structurePlasma	Understand the topic of the lecture	2 Theoretical + 2 Practical	16-

		membrane chemist			
Classroom performance and exams	Presence	Ways of transporting water and materials across the membranePlasmic. DiffusionFree and easy to spreadAnd transportationEffective and ionic pumping And transfer by roadYq vesicle formation	Understand the topic of the lecture		17-
Classroom performance and exams	Presence	DefinitionOsmosis and metabolismFOn 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	studyimpactSolutions with concentrationsDifferentOn 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 stepsNecessaryFor 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 thatIncludesMeiosis and the stages it goes throughWith her and her studiesAndPractical side and watching 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 2024-2024	
4. Date this description was prepared	
1/21/2024	
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: Mwafak Hameed Elewi	
8. Course objectives	
• 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 wordsAuxiliary 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. • Providing the Ministry of Education and the Ministry of	Subject objectives

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

9. Teaching and learning strategies

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

10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	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	Attendance: Using the	**Unit Three: all about you, jobs, negatives and questions, personal information, Metro**	Understa	3	4

performance and oral questions	board, textbook and deviceMb3	**5- the audition and social expressions. Examples:Educational texts**	nd the topic of the lecture		
Classroom performance and exams	Attendance: Using the board, textbook and deviceMb3	**Unit Four: Family and friends, possessive's, has/have, Annie Taylor and My friend Antonia (passages), the alphabet, some sounds. Examples:Educational texts**	Understand the topic of the lecture	3	5
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	Attendance: Using the board, textbook	**Reading and vocabulary: "Vancouver Canada – the best city in the world" and "My home town". Directions,**	Understand the topic of	3	13

exams	and deviceMb3	**how to find places by using directional phrases such as, turn right, go straight on, turn left. Examples:Educational texts**	the lecture		
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 'go+ing 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 Elven: 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	Attendance: Using the	**Vocabulary and speaking: In a restaurant – Café Fresco,**	Understa	3	20

performance and exams	board, textbook and deviceMb3	**utilizing adjectives + nouns, signs all around (Exit, Sale, Closed, Pull, No smoking), opposite verbs. Examples:Educational texts**	nd the topic of the lecture		
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, 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.come/watch%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
Calculators / Second Stage
2. Course code
Bachelor
3. Semester/Year
2024/2024
4. Date this description was prepared
3/9/2024
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

• **Teaching the student to use the programMicrosoft Word 2010.** • **Teaching the student to type and understand the most important program instructions.** • **Teaching the student to use the programMicrosoft 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	Watches	The week
Daily and monthly exams, assignments and reporting	Theoretical + Practical	Microsoft Word	Program definition Microsoft Word	2	the first
Daily and monthly exams, assignments and reporting	Theoretical + Practical	Microsoft Word	Program interface explanation Microsoft Word	2	the second
Daily and monthly exams, assignments and reporting	Theoretical + Practical	Microsoft Word	File tab	2	the third
Daily and	Theoretical	Microsoft	Home tab:	2	Fourth

monthly exams, assignments and reporting	**+ Practical**	**Word**	**Clipboard, Font**		
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Word**	**Home tab: Paragraph, Styles**	**2**	**Fifth**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Word**	**Home tab: Edit**	**2**	**Sixth**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Word**	**Page Layout Tab: Page layout and setup group**	**2**	**Seventh**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Word**	**Page Layout Tab: Page background, paragraph and arrangement**	**2**	**The eighth**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Word**	**Display tab: Document View, Show and Window**	**2**	**Ninth**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Word**	**Insert tab: Pages and illustrations**	**2**	**tenth**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Word**	**Insert tab: Table Table Tools**	**2**	**eleventh**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Word**	**Insert tab: Table and table design**	**2**	**twelfth**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Word**	**Insert tab: Table layout**	**2**	**thirteenth**
Daily and monthly exams, assignments	**Theoretical + Practical**	**Microsoft Word**	**Insert tab: Table layout**	**2**	**fourteenth**

and reporting					
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Word**	**Insert tab: Illustrations, drawings and footers**	**2**	**fifteenth**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Word**	**Insert tab: Text, symbol and equation**	**2**	**Sixteenth**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Word**	**References tab: Table of Contents and Footnotes**	**2**	**seventeenth**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Word**	**References tab: References, citations and index**	**2**	**eighteenth**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Word**	**Review tab: Spell check and word count**	**2**	**nineteenth**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Power Point**	**Run the program and explain the program interface**	**2**	**Twenty**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Power Point**	**File tab components**	**2**	**twenty-first**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Power Point**	**Home tab**	**2**	**twenty-second**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Power Point**	**Slideshow tab**	**2**	**twenty-third**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Power Point**	**View tab**	**2**	**twenty fourth**
Daily and monthly exams,	**Theoretical + Practical**	**Microsoft Power Point**	**Design tab**	**2**	**twenty fifth**

assignments and reporting					
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Power Point**	**Insert objects and add animations**	**2**	**twenty-sixth**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Power Point**	**Drawing and editing group**	**2**	**twenty-seventh**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Power Point**	**Illustration and media collection**	**2**	**twenty-eighth**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Power Point**	**Transitions and Preview tab**	**2**	**twenty-ninth**
Daily and monthly exams, assignments 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:
Contemporary Biology (Practical Part)
2. Course code:
101BGB
3. Semester/Year :
First and second semesters of the academic year 2024-2024
4. Date of preparation of this description:
17\9\2024
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)	
Name: M.M. Shahd Nouri Khabbaz Email: shahad.nouri@tu.edu.iq M.M. Nour Qutaiba Saleh Email:noor.q.saleh@tu.edu.iq	
8. Course objectives	
• 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. • 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	

1- Lecture methodThrough 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 InteractiveLectures Dialogue and discussiondiscussion Storm MentalBrainstorming	Strategy

10. Course structure:

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	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	Understand the topic of the lecture	2	the third

		divisions and their roles			
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. Diaa Saad Allah	Main References (Sources)

Basics of General Biology // Asst. Prof. Dr. Rahim An'ad Khadir	
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 2024-2024	
4. Date of preparation of this description:	
17\9\2024	
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: A.L. Adnan .H. Abd	
8. Course objectives	
• This course aims to provide the student with comprehensive information about Arabic language • Teaching the student modern methods of writing practical	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 methodThrough modern educational methods. 2- Preparing scientific reports 3- Opening the door for scientific discussions for students to increase comprehension and expand understanding using 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	Watches	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	Understand the topic of the lecture	2	the second

		the Holy Quran when needed.			
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	
-20242024	
4. Date this description was prepared	
1/24/2024	
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: Ahmed Ghaleb Email:	
8. Course objectives	
Subject objectives	• **The student should become familiar with the concept of educational psychology and its areas of interest and study…..** • **The student should know the meaning of educational objectives, classify them, and transform them into learning goals.** • **The student should understand the meaning of memory, its nature and its role**

in teaching. • **The student should learn about the importance of motivation in the field of educational psychology.** • **The student should be familiar with the meaning of learning transfer and its educational applications.**	
9. Teaching and learning strategies	
	Strategy

10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	The week
Evaluation method	Teaching method	Name of the unit or topic	Required learning outcomes	Watches	The week
Asking and answering questions from the student	Dialogue and discussion	science self Educational And its development	Understand the meaning of educational psychology	2	the first
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	Dialogue and	=	=	2	Ninth

questions from the student	discussion				
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
3. Semester/Year
annual
4. Date this description was prepared
26/1-2025
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

• 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	Watches	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,	Analyze, apply, understand	3 practical	Week 5 Week 6

		Examples and Exercises			
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

ChemistryOrganic / 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 vitality	
2. Course code:	
102BCB	
3. Semester/Year	
2024/2024	
4. Date this description was prepared	
1/21/2024	
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	
• 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	

1- Lecture methodThrough modern educational means. 2- Preparing scientific reports 3- Field visits to scientific laboratories **4-** Practical lectures.	Strategy

10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	The week
Online or in-person written or oral exam	**Presence**	**Discovery of the cell and microscopes**	**Understand the topic of the lecture**	**2**	**the first**
Online or in-person written or oral exam	**Presence**	**General structure and chemistry of the cell**	**Understand the topic of the lecture**	**2**	**the second**
Online or in-person written or oral exam	**Presence**	**Eukaryotic and prokaryotic organisms**	**Understand the topic of the lecture**	**2**	**the third**
Online or in-person written or oral exam	**Presence**	**Proteins, lipids and carbohydrates**	**Understand the topic of the lecture**	**2**	**Fourth**
Online or in-person written or oral exam	**Presence**	**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	**Presence**	**plasma membrane**	**Understand the topic of the lecture**	**2**	**Sixth**
Online or in-person written or oral exam	**Presence**	**Methods of passage of materials through membranes**	**Understand the topic of the lecture**	**2**	**Seventh**
Online or in-person written or oral exam	**Presence**	**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	**Presence**	**Mitochondria**	**Understand the topic of the lecture**	**2**	**twelfth**
Online or in-person written or oral exam	**Presence**	**Plastids**	**Understand the topic of the lecture**	**2**	**thirteenth**
Online or in-person written or oral exam	**Presence**	**nucleus**	**Understand the topic of the lecture**	**2**	**fourteenth**
Online or in-person written or oral exam	**Presence**	**Monthly exam**	**Monthly exam**	**2**	**fifteenth**
Online or in-person written or oral exam	**Presence**	**Chromosomes**	**Understand the topic of the lecture**	**2**	**Sixteenth**
Online or in-person written or oral exam	**Presence**	**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-	**Presence**	**Radiation**	**Understand**	**2**	**twenty fifth**

person written or oral exam		**effect on genetic material**	**the topic of the lecture**		
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 2024-2024	
4. Date this description was prepared	
12-11-2024	
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: M.M. Shahd Bahaa Hassan Email:shahad.b.hassan@tu.edu.iq	
8. Course objectives	
• 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	Subject objectives

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.

9. Teaching and learning strategies

1- Use of electronic visual aids, projectorData 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 slidesH(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	Watches	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 click fields)	Understand the topic of the lecture	2 theoretical + 2	5

				practical	
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 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.	Understand the topic of the lecture	2 theoretical + 2 practical	7-8
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	Presence	Fibers - their different types, shapes, and the nature of	Understand the topic of	2 theoretical	15

and exams		their distribution within the plant and its elements	the lecture	+ 2 practical	
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 of the stem - one cotyledon, two cotyledons	Understand the topic of the lecture	2 theoretical + 2 practical	20-21
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 2024-2024	
4. Date this description was prepared	
12-11-2024	
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	
• 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	Subject objectives

(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.	

9. Teaching and learning strategies

6- Use of electronic visual aids, projectorData show)) To attract students' attention and interact with the lecture. 7- Using the discussion method between the teacher and the students. 8- Assigning students homework related to the subject. 9- Assigning students to do research and reports. 10- Use of slidesH(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	Watches	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 prostate**	Understand the topic of the lecture	2 theoretical + 2 practical	2-3
Classroom	Presence	**Cell wall: A detailed study**	Understand	2	4

performance and exams		**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.**	the topic of the lecture	theoretical + 2 practical	
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 terms of their division, general characteristics, and cellular structure, in addition to studying the theories related to meristems in the stem and root.**	Understand the topic of the lecture	2 theoretical + 2 practical	6
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:**	Understand the topic of the lecture	2 theoretical + 2 practical	7-8

		connective tissues, epidermis and periphery, collenchyma tissue, sclerenchyma.			
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 leg**	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-Khazarji	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
2024/2024
4. Date this description was prepared
1/21/2024
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	
• 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	
• 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	Strategy

reports. • The lecture InteractiveLectures • Dialogue and discussiondiscussion • Storm MentalBrainstorming	

10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	The week
Questions and discussion	**Use of projectorsData 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 nomenclatureTAXONOMY**Historical 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	**Use of**	**Animal Hormones - Definition,**	**Understan**	2	7

and discussion	**projectorsData show and board**	**Types and Effects**	**d the topic of the lecture**		
Daily and monthly tests	**Use of projectorsData show and board**	**Hormones Vegetarianism-Definition**	**Understan d the topic of the lecture**	2	8
Daily and monthly tests	**Use of projectorsData show and board**	**Reproduction and growth in living thingsReproduction & Growth**	**Understan d 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**	**Understan d 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**	**Understan d 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**	**Understan d 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**	**Understan d the topic of the lecture**	2	13
Daily and monthly tests	**Use of projectorsData show and board**	**Photosynthesis**	**Understan d the topic of the lecture**	2	14
Daily and monthly tests	**Use of projectorsData show and board**	**Cellular respiration cell cycle and mitosis**meiosis	**Understan d 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:
Contemporary Biology (Practical Part)
2. Course code:
101BGB
3. Semester/Year :
First and second semesters of the academic year 2024-2024

4. Date of preparation of this description:
21\1\2024
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)
Name: Dr. Samer Baha Noman Email: Samir.b.nueman@tu.edu.iq M.M. Rawaa Mohammed Obaid Email: rawamuhammad@ru.edu.iq
8. Course objectives

• 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. • 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

5- Lecture methodThrough modern educational methods. Using modern technology by displaying explanatory slides of scientific models in addition to scientific videos, via display screens. 6- Giving practical lectures based on laboratory equipment 7- Preparing scientific reports 8- Field visits to scientific laboratories 9- Opening the door for scientific discussions for students to increase comprehension and expand understanding using 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	Watches	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	Understand the topic of the lecture	2	the third

		divisions and their roles			
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	cross section study of 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

7- Daily preparation and oral questions 10%

8- Daily quizzes and a surprise quiz 10%

9- 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. Diaa Saad Allah	Main References (Sources)

Basics of General Biology // Asst. Prof. Dr. Rahim An'ad Khadir	
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//
Biosafety and Security
2. Course code//
3. Semester/Year
2024-2025
4. Date this description was prepared
9/21/2024
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. Samer Baha Noman
8. Course objectives

Subject objectives	• identification The student Most important Terminology Scientific And understand Specializations in Biosecurity • The importance of individual safety when working inside laboratories • Maintaining the safety and security of laboratories from any harm that may occur during work in them • Educating students about the dangers of materials in laboratories and the importance of caution when handling them Maintaining buildings and laboratory equipment
9. Teaching and learning strategies	
Strategy	• 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

10. Course Structure					
Evaluation method	**Learning method**	**Name of the unit or topic**	**Required learning outcomes**	**Watches**	**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	**Use of projectorsData**	Waste Dangerous	**Understand the topic of**	1	13

discussion	show and board		the lecture		
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 CBRNAnd the nuclear And prevent Spread	Required textbooks (methodology if any)

Course Description Form

1. Course name
General Chemistry
2. Course code
3. Semester/Year
annual
4. Date this description was prepared
26/1-2025
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

Subject objectives	• 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 •	

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	Watches	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	The lecture	Machines-Its sources-Its	Analyze, apply, understand	3 practical	Week 15 Week 16

exams		types- Methods of preparation			
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	
ChemistryOrganic / 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	
Vital statistics	
2. Course code	
BBS220	
3. Semester/Year	
2024-2024	
4. Date this description was prepared	
9/17/2024	
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	
1-Helping students understand statistics. **2-Preparing scientific and qualitative cadres specialized in the field of life sciences to improve**	Subject objectives

the educational reality in the country. **3-Teach students writing and speaking skills at analytical levels by referring to the latest developments in modern science in statistics.** **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.**	

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**	**Watches**	**The week**

			outcomes		
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	Presence	**Relationships, definition types:**	Understand the topic of	2 theoretical + 2 practical	**26- 27-**

and exams		**slope–regression coefficient, significance test, correlation–correlation Coefficient / General Applications and Examples.**	the lecture		**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
2024-2024
4. Date this description was prepared
1/21/2024
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

• ....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	Subject objectives

the characteristics and features of the educational supervisor and their selection. • The student should become familiar with the basic concepts and principles related to typesEducational supervision • To familiarize the student with management theories	

9. Teaching and learning strategies	
active thinking **brainstorming** **Cognitive development ladder**	Strategy

10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	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	=	2	twenty-

		in educational supervision			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 2024-2024	
4. Date this description was prepared	
1/21/2024	
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	
• 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 wordsAuxiliary 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,	Subject objectives

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. • 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

6. The prescribed textbooks. 7. Using the discussion method and presenting points of view between the teacher and the students inside the classroom. 8. Assign students to prepare weekly reports. 9. Use of the deviceMb3For the purpose of listening to conversations and dialogues and how to pronounce them correctly. 10. Assigning students homework related to the subject.	Strategy

10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	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/.**	Understand the topic of the lecture	3	1 – 2

		Educational texts			
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 and exams	Attendance: Using the board, textbook and deviceMb3	**Unit Four: Family and friends, possessive's, has/have, Annie Taylor and My friend Antonia (passages), the alphabet, some sounds. Examples:Educational texts**	Understand the topic of the lecture	3	5
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
	Attendance:	**Unit Eight: Where I live,**		3	12

Classroom performance and oral questions	Using the board, textbook and deviceMb3	**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		
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 'go+ing 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 Elven: 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
	Attendance:	**Unit Twelve: Please and**		3	19

Classroom performance and oral questions	Using the board, textbook and deviceMb3	**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		
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, 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.come/watch%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:	
2024-2024	
4. Date of preparation of this description:	
11/1/2024	
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	
-1 Students' ability to know the general characteristics of plant classification. 2-Advance planning to activate the role of students in the field of student development. 3 Students' ability to distinguish and cognitively perceive the phenotypic characteristics of seed plants. 4-Introducing students to modern techniques and devices in diagnosing and classifying plants and the mechanism of their preservation. 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. 6-The student should be able to use laboratory equipment.	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- 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	Watches	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	Presence	The fruits	Understand the topic of	2 theoretical	**18**

and exams			the lecture	+ 2 practical	
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	Recommended supporting books and references (scientific journals, reports...)

plants-Iraqi flora	
/	Electronic references, websites

Course Description Form

1. Course name
Practical histology / second stage
2. Course code
218BHI
3. Semester/Year
Academic year 2024-2024
4. Date this description was prepared
2024/9/17
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 Dr. Aseel Younis Khalaf aseel.y@tu.edu.iq
8. Course objectives

• 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	Subject objectives

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.	
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. 3-Using models and models of the studied samples and preparing slides of those models. 4-Visit of scientific laboratories by academic staff 5- Applying the topics studied theoretically on a practical level. 6-How to employ e-learning 7-Use of electronic means of clarification 8- Using the discussion method in the	Strategy

lecture between the professor and the students. 9Assigning students to do research and reports. 10-Assigning students homework related to the scientific subject.	

10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	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	2theoretical+2practical	2
Performance The class And exams	Presence	glandular epithelium	to understand the topic The lecture	2theoretical+2practical	3
Performance Classroom and exams	Presence	Weaving Adhesive and its classification	to understand the topic The lecture	2theoretical+2 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	2theoretical+2practical	6-7
Performance Classroom and exams	Presence	Muscle tissue: smooth muscle - skeletal muscle - cardiac muscle	to understand the topic. The lecture	2theoretical+2practical	8
Performance Classroom and exams	Presence	Nervous tissue: nerve cells and nerve fibers - cerebellum	to understand the topic The lecture	2theoretical+2practical	9-10
Performance Classroom and exams	Presence	Organ tissues - circulatory system - capillaries -	to understand the topic The lecture	2theoretical+2practical	11-12

		arteries - veins - heart			
Performance Classroom and exams	Presence	Integumentary system: thick and thin skin - hair - nails	to understand the topic The lecture	2theoretical+2practical	13
Performance Classroom and exams	Presence	Digestive system: mouth - lip - tongue - teeth	to understand the topic The lecture	2theoretical+2practical	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	2theoretical+2practical	17-18
Performance Classroom and exams	Presence	Urinary system: kidney - ureter	to understand the topic The lecture	2theoretical+2practical	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

Course Description Form

1. Course name
developmental psychology
2. Course code
222DP
3. Semester/Year
2024-2024
4. Date this description was prepared
9/17/2024
5. Available forms of attendance
Mandatory attendance
6. Number of study hours (total) / Number of units (total)
Number of hours=60Hour, number of units 4
7. Name of the course supervisor (if more than one name is mentioned)
the name :M. M. Rawaa Watban Masir rawaa.w.msear@tu.edu.iq
8. Course objectives

_The student should become familiar with developmental psychology and its fields and interests. _The student should learn about the meaning of growth through various developmental, physical, and emotional changes. _ Reaching growth standards at each stage and the ability to develop curricula for each stage. _ Detecting the factors affecting the growth process _ Increased predictability in the field of growth and development _ Evaluation of the growth process	Subject objectives

9. Teaching and learning strategies	
Use of electronic means of clarification. **Using the discussion method in the lecture between the professor and the student** **Assigning students to do research and reports.**	Strategy

10. Course Structure

Evaluatio	**Learning**	**Name of the**	**Required learning**	**Watc**	**The week**

n method	method	unit or topic	outcomes	hes	
Daily Exam and oral questions	Presence	Introduction to Sciencesame growth	Understand the topic of the lecture	2	1
Daily Exam Oral questions	Presence	**How growth occurs and develops**	Understand the topic of the lecture	2	2
Daily Exam	Presence	**Research Methods in Developmental Psychology**	Understand the topic of the lecture	2	3
and oral questions	Presence	**Experimental approach**	Understand the topic of the lecture	2	4
Daily Exam	Presence	**Longitudinal and transverse method**	Understand the topic of the lecture	2	5
and oral questions	Presence	**Genetics and environment and their effect on growth**	Understand the topic of the lecture	2	6-7
Daily Exam	Presence	Glands and their effect on growth	Understand the topic of the lecture	2	8
and oral questions	Presence	**The most important terms in developmental psychology**	Understand the topic of the lecture	2	9-10
Daily Exam	Presence	**Childhood**	Understand the topic of the lecture	2	11

and oral questions	Presence	Childhood growth requirements	Understand the topic of the lecture	2	12
Daily Exam	Presence	Adolescence	Understand the topic of the lecture	2	13-14
and oral questions	Presence	**Erikson's theory**	Understand the topic of the lecture	2	15-16
Daily Exam	Presence	sensory development	Understand the topic of the lecture	2	17
and oral questions	Presence	mental development	Understand the topic of the lecture	2	18
Daily Exam	Presence	**Memory, intelligence, and perception in childhood**	Understand the topic of the lecture	2	19-20
and oral questions	Presence	**juvenile delinquency**	Understand the topic of the lecture	2	21
Daily Exam	Presence	**Academic delay**	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.

Oral questions and participation 10%

Reports and research 10% Monthly exams 80%
12. Learning and teaching resources

	Required textbooks (methodology, if any)
1- Childhood and Adolescence, Muhammad Salih Abu Jado 2-Developmental Psychology, Fouad Abu Hatab	Primary References (Sources)
Nothing	Electronic references, websites

Course Description Form

1. Course name:	
No poverty practical/Second Stage	
2. Course code:	
217BIN	
3. Semester/Year	
annual2024-2024	
4. Date this description was prepared	
1/21/2024	
5. Available forms of attendance	
Mandatory attendance	
6. Number of study hours (total) / Number of units (total)	
Number of hours =60Number of units4Theoretical+2practical)	
7. Name of the course supervisor (if more than one name is mentioned)	
Name: Ms. Raghad Tais Saeed Email:raghad.tays@tu.edu.iq Ms. Zainab Karim Mohammed Zainab.Ka.mohammed(	
8. Course objectives	
1- EmpowermentStudentsFrom understanding diseases common to humans and animals. 2-To enable students to gain knowledge, understand, and diagnose invertebrates practically. 3- To allow students to gain knowledge and understanding of invertebrate science. 4- Introduce students to modern technologies and devices specializing in Invertebrates by parts. 5-The student should be able to use laboratory	Subject objectives

equipment.	

9. Teaching and learning strategies	
-Perform scientific experiments using the blackboard, electronic board, and slides. - 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. -How to employ e-learning	Strategy

10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	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	Demo, Lecture on	**Animal Kingdom-Sponge Division-General**	Understand the ideas of the	4	6-7

performance and exams	the board	**features and classification**	topic and be able to apply them with examples		
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. Ascucoi 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 elix, Anodontam Dentalium Octopus, Nautilus**	Understand the topic of the lecture	4	19_20
Classroom performance and exams	Demo	**Echinodermata, general characteristics and classification**	Understand the topic of the lecture	6	21_22_23

		Asterias, Ophiura, Cucumaria, Antedon Echinus			

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 povertyIatsubsequentIFMurad Baba Murad .Barnes 2006, - Zoology 2007. Dorn, Robert, L;Walkerjr , Warren F.; Barnes, Rober -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

https://sabq.org/saudia/663jk3sdjq--https://www.twinkl.com/teaching-wiki/anwa-alhywanat https://www.almrsal.com/post/874122	

Course Description Form

1. Course name	
Invertebrates Theory	
2. Course code	
217BIN	
3. Semester/Year	
2024-2024	
4. Date this description was prepared	
1/21/2024	
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. Mazin Fadli Namiq Email:muzayyan.fadhly@tu.edu.iq	
8. Course objectives	
• **This course aims to provide the student with basic information about the science of invertebrates** • **To enable students to gain knowledge and understanding of diseases common to humans and animals.** • **2- Enabling students to gain knowledge, understand invertebrates, and diagnose them practically.**	**Subject objectives**

• **3- Enabling students to gain knowledge and understanding of invertebrate science.** • **4- Introducing students to modern techniques and devices related to invertebrate organisms.** • **5- The student must be able to use laboratory equipment.** • **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

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. 4Assigning students homework related to the scientific subject.	**Strategy**

10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	The week
Daily questions + monthly exam + daily homework	**The lecture + Power Point + Educational films**	**the introduction, Invertebrates concept, The economic, scientific, and nutritional importance of invertebrates**	**Understand the topic of the lecture**	**2**	**1**
Daily questions + monthly exam + daily homework	**The lecture + Power Point + 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	**The lecture + Power Point +**	**KingdomsVital - Objective reasons for loss of system The two kingdoms are important**	**Understand the topic of the lecture**	**2**	**3**

homework	**Educational films**				
Daily questions + monthly exam + daily homework	**The lecture + Power Point + 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 + Power Point + Educational films**	**kingdomProtista 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 + Power Point + 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 + Power Point + Educational films**	**Representative models for primary schoolsPhytoflagellates Euglega: 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 +	**The lecture +**	**About Parasitic SomitesZooflagellates: Leishmania / Trypanosoma / Giardia, General appearance of diseases caused by**	**Understand the topic of the lecture**	**2**	**8**

monthly exam + daily homework	**Power Point + Educational films**	**humans And its typesTrichonympha general form/effect of its complementary living In the digestive tract of termites and cockroaches, in the digestion of cellulose**			
Daily questions + monthly exam + daily homework	**The lecture + Power Point + 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 + Power Point + Educational films**	**General shape ofMonocystis 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 + Power Point + 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 + Power Point + Educational films**	**Cnidaria DivisionCnidaria 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))ClassifyHydrozoa characteristics, model hydra**	**Understand the topic of the lecture**	**2**	**13-14**
Daily questions + monthl	**The lecture +**	**ClassifyCubuzoa Cuboid Animals / About Appearance External to sexCarybdea General characteristics, Flowerpots categoryAnthozoa / General**	**Understand the topic of the lecture**	**2**	**15**

y exam + daily homework	**Power Point + Educational films**	**Characteristics An example of a sea anemone species**			
Daily questions + monthly exam + daily homework	**The lecture + Power Point + Educational films**	**Corals form coral islands, Evolution of cnidarians and radial adaptation, CavitiesPhysicalIn 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 + Power Point + Educational films**	**Pseudocoelomate animals - Animals True coelomate**	**Understand the topic of the lecture**	**2**	**17**
Daily questions + monthly exam + daily homework	**The lecture + Power Point + Educational films**	**PlatyhelminthesPlatyhelminthes General Characteristics / Characteristics of Species Pasta typeTurbellaria,modelPlanaria**	**Understand the topic of the lecture**	**2**	**18**
Daily questions + monthly exam + daily homework	**The lecture + Power Point + Educational films**	**Cyst wormsAscheiminthes General Characteristics, DivisionRexifera 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 abdomenGastrotricha Overview of the characteristics of the phylum Khartoum movingKinorhyncha**	**Understand the topic of the lecture**	**2**	**19**
Daily questions +	**The lecture +**	**Nematode phylum nematode general characteristics Exterior appearance of the modelAscuris Body Wall Layers / Digestive**	**Understand the topic of the lecture**	**2**	**20**

monthly exam + daily homework	**Power Point + Educational films**	**System – Nervous System – Excretory System – Reproductive System, Reproduction and Life Cycle, About the characteristics of the species TrichinellaNematomorpha, About the characteristics of the phylum EchinodermataAcanthocephala, About the attributes of the internal directorateEntoprocta**			
Daily questions + monthly exam + daily homework	**The lecture + Power Point + Educational films**	**Division of annelidsAnnelid: Etymology - Somatic reasoning - Ecology of annelids, General characteristics, Multi-celled typePolychaeta, Distinctive features, and environment, modelers**	**Understand the topic of the lecture**	**2**	**21**
Daily questions + monthly exam + daily homework	**The lecture + Power Point + Educational films**	**Low milk yield category: Distinctive characteristics and environment of its modelLumbricus Terrestris**	**Understand the topic of the lecture**	**2**	**22**
Daily questions + monthly exam + daily homework	**The lecture + Power Point + Educational films**	**Leech class Characteristics and environment of individuals modelHirudo**	**Understand the topic of the lecture**	**2**	**23**
Daily questions + monthly exam + daily homework	**The lecture + Power Point + Educational films**	**Chelicerae DivisionOnychophora: 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	**The**	**Arthropoda DivisionArthropoda: General**	**Understand**	**2**	**25**

questions + monthly exam + daily homework	**lecture + Power Point + Educational films**	**Characteristics - Arthropod Ecology, Crustacean class - its distinguishing characteristics, Detailed explanation of the structure and organs of small crustacean daphnia, Types of crustacean larvae**	**the topic of the lecture**		
Daily questions + monthly exam + daily homework	**The lecture + Power Point + 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 sexButhus and the genus Argiope**	**Understand the topic of the lecture**	**2**	**26**
Daily questions + monthly exam + daily homework	**The lecture + Power Point + Educational films**	**Soft SectionMollusca:modelAnodonta 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 modelHelix – 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 povertyIatsubsequentIFMurad Baba Murad .Barnes 2006, - Zoology 2007. Dorn, Robert, L;Walkerjr , Warren F.; Barnes, Rober -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
2024/2024

4. Date this description was prepared
3/9/2024
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

• **Teaching the student to use the programMicrosoft Word 2010.** • **Teaching the student to type and understand the most important program instructions.** • **Teaching the student to use the programMicrosoft 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	Watches	The week
Daily and monthly exams, assignments and reporting	Theoretical + Practical	Microsoft Word	Program definition Microsoft Word	2	the first
Daily and monthly exams, assignments and reporting	Theoretical + Practical	Microsoft Word	Program interface explanation Microsoft Word	2	the second

Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Word**	**File tab**	**2**	**the third**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Word**	**Home tab: Clipboard, Font**	**2**	**Fourth**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Word**	**Home tab: Paragraph, Styles**	**2**	**Fifth**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Word**	**Home tab: Edit**	**2**	**Sixth**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Word**	**Page Layout Tab: Page layout and setup group**	**2**	**Seventh**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Word**	**Page Layout Tab: Page background, paragraph and arrangement**	**2**	**The eighth**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Word**	**Display tab: Document View, Show and Window**	**2**	**Ninth**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Word**	**Insert tab: Pages and illustrations**	**2**	**tenth**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Word**	**Insert tab: Table Table Tools**	**2**	**eleventh**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Word**	**Insert tab: Table and table design**	**2**	**twelfth**
Daily and monthly exams,	**Theoretical + Practical**	**Microsoft Word**	**Insert tab: Table layout**	**2**	**thirteenth**

assignments and reporting					
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Word**	**Insert tab: Table layout**	**2**	**fourteenth**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Word**	**Insert tab: Illustrations, drawings and footers**	**2**	**fifteenth**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Word**	**Insert tab: Text, symbol and equation**	**2**	**Sixteenth**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Word**	**References tab: Table of Contents and Footnotes**	**2**	**seventeenth**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Word**	**References tab: References, citations and index**	**2**	**eighteenth**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Word**	**Review tab: Spell check and word count**	**2**	**nineteenth**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Power Point**	**Run the program and explain the program interface**	**2**	**Twenty**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Power Point**	**File tab components**	**2**	**twenty-first**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Power Point**	**Home tab**	**2**	**twenty-second**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Power Point**	**Slideshow tab**	**2**	**twenty-third**
Daily and	**Theoretical**	**Microsoft**	**View tab**	**2**	**twenty fourth**

monthly exams, assignments and reporting	**+ Practical**	**Power Point**			
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Power Point**	**Design tab**	**2**	**twenty fifth**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Power Point**	**Insert objects and add animations**	**2**	**twenty-sixth**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Power Point**	**Drawing and editing group**	**2**	**twenty-seventh**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Power Point**	**Illustration and media collection**	**2**	**twenty-eighth**
Daily and monthly exams, assignments and reporting	**Theoretical + Practical**	**Microsoft Power Point**	**Transitions and Preview tab**	**2**	**twenty-ninth**
Daily and monthly exams, assignments 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	Required textbooks (methodology if any)

Ministry of Higher Education and Scientific Research 2016	
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
First and secondsemesters2024-2024 /
.4.Date this description was prepared
2024/17/9
.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 :Mohammed Khalil Ibrahim Email .muhammed.alkhalil@tu.edu.iq

:Name A.L. :Nahedh Ayad Faris Email .nahedh.a.faris@tu.edu.iq

.8.Course objectives

• This course aims to provide the student with basic .information about embryology • the embryo goes through Introducing the student to the stages 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 • inistry of Providing the Ministry of Education and the M Higher Education and Scientific Research with specialized .and qualified personnel in the field of life sciences	Subject objectives

.9.Teaching and learning strategies

1- Required books 2- to the course Scientific articles + websites related vocabulary 3- Using modern technology inpresentationsusing PowerPoint 4- illustrations on the videos + selected Show educational board 5- Slides + models + animal specimens Use of models and of the stages of embryonic development in vertebrate groups 6- dialogue, inference, research, ‹Methods of discussion ‹comparisonand links between science, religionand the ‹ .environment enrich the scientific material	Strategy

7- .Cooperative learning	

.10.Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	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 lecture the	4	**3-2**
Daily exam and oral questions	Using the whiteboard and the display screen	**Types of eggs in spearfish, fish, frogs,) mammals ،reptiles, birds .(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 ls, slides, Plaster mode) (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 of the notochord, formation of the intestine**	Understand the topic of the lecture	4	**6**
Daily exam	Using the	**netic composition of Ge**	Understand	4	**7**

and oral questions	whiteboard and the display screen	**the spear / early embryo, early larva, old larva**	the topic of the lecture		
Daily exam and oral questions	Using a blackboard, a projector screen, and a microscope embryo samples edSav previously	**Genetic development of amphibians (frog) / gametes, cleavage, a, early blastul gastrulation, advanced gastrulation (yolk plug), stages of neural tube formation (nervation ‹(processtailbudstage (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, serial cross-sections :cross-sectionpassing through ‹the solar discscross-sectionpassing through ‹the optic vesiclescross-sectionpassing through ‹the auditory vesicles cross-sectionpassing ‹through the heartcross-sectionpassing through the midgut and hepatic ‹diverticulumcross-sectionpassing through ‹the hindgutcross-section assing through the p 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 mm, 9 mm, lengths of 7 etc., in slides or 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	**Genetic composition of birds (chicken) / gametes, ‹unincubated egg definition of incubator -and how to use it, 13**	Understand the topic of the lecture	4	**15-14**

	screen	**old chicken embryo -hour old -hour-incubation, 16 chicken embryo .incubation**			
Daily exam and oral questions	Using the whiteboard and the display screen	**cken old chi-hour-18) embryo incubated) Complete preparation, ‹sagittal section-midand serial-widesections. Transverse section passing through the neural plate and notochord, Transverse section passing through the primitive ganglion, Transverse section e passing through th primitive groove**	Understand the topic of the lecture	4	**17-16**
Daily exam oral and questions	Using the whiteboard and the display screen	**Chicken embryo, 24) hours old, incubated): Complete preparation, sagittal section, -mid serialcross-sections ‹ cross-sectionpassing ‹through the vertical fold cross-sectionpassing through the anterior ‹pyloruscross-section passing through the ‹somitescross-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 sagittal -preparation, mid section, serial cross Cross section :sections passing through the optic vesicles, Cross section passing through the ngeal membrane, phary Cross section passing through the heart, Cross section passing through theretro pyloricregion**	Understand the topic of the lecture	4	**21-20**

		of the foregut, Cross section passing through the somite region, Cross section passing through the vascular region			
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 n crura, Cross sectio through the oral canal and pharyngeal membrane, Cross section through the auditory ‹sacsbulbousarteriosus and the second pair of aortic arches, Cross section through the second pair of pharyngeal sinuses, thyroid gland and ventricle, Cross section ugh the atrium, pink thro 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 he zona section through t pellucida Cross section through the .caudal bud**	Understand the topic of the lecture	4	**23-22**
Daily exam and oral questions	Using the whiteboard and the	**Chicken embryo, 72) hours old, incubated): Complete preparation:**	Understand the topic of the lecture	4	**25-24**

	display screen And the microscope embryo samples Saved previously	**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 hicken embryos (c paraffin method), making serial) ،transverse, longitudinal (or frontal sections**			

.11.Course Evaluation	
questions during the lecture and daily preparation = 10% Oral up test) = 10%-Daily short tests (pop Monthly exam and reporting = 80%	
.12.Learning and teaching resources	
Abdul Practical Embryology Dr. Written by Dr. Kawakib Rawi, Dr. Amal Khashab-Qader, Dr. Abdul Hakim Al	Required textbooks if ،methodology) (any
¬Medical Embryology Sadler, T. W. (2006)	PrimaryReferences (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.ht	Electronic references, websites

ml - http://www.google.com - http://sbalubaid.kau.edu.sa/ - http://www.You tube - www.as7apcool.com/vb/showthread.php?t=63744	

Course Description Form

1. Course name
with a strong emphasis on practical application)
2. Course code
215BPC
3. Semester/Year
Academic year 2024-2024
4. Date this description was prepared
9/17/2024
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)
Course Supervisor: Raghad Hassan Mahmoud is always available to provide support and guidance. Email:raghad.h.mahmood@tu.edu.iq
8. Course objectives

• 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

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	Watches	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	Presence	Flowering: Parts of the flower, calyx and its modifications, corolla and its modifications, floral quadrature, symmetry, central organ (its shapes and	Understand the topic of the	2 theoretical + 2 practical	**5-6-7**

exams		modifications), female organ (its shapes and modifications), gametophyte	lecture		
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 practical	**15-16**
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 /	Understand the topic of the lecture	2 theoretical + 2 practical	**17-25**

		Ranunculaceae Papaveraceae / Violoceae / Chenopodiaceae			

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
3. Semester/Year

annual	
4. Date this description was prepared	
21-1-2025	
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	
Subject objectives	• 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
9. Teaching and learning strategies	
Strategy	**Theoretical lectures, practical application, electronic lectures, daily exams, monthly exams.**

10. Course Structure					
Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	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

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
Bachelor
3. Semester/Year
2024/2024
4. Date this description was prepared
3/9/2024
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)
the name:M.M. Mukhallad Hamad Khalaf Email:mkhldalwyd380@gmail.com
8. Course objectives

• **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	Watches	The week

			outcomes		
nothing	Lectures	A descriptive overview of the political systems in Iraq	Chapter One Violations Rights and Freedoms	1	the first
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		1	fifteenth

		invasion of Kuwait			
discussion	**Lectures**	**The impact of the Baath regime's behavior on society**		**1**	**Sixteenth**
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**		**1**	**twenty-seventh**

		pollution			
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 2024, Ministry of Higher Education and Scientific Research	Primary References (Sources)
nothing	Recommended supporting books and references (scientific journals, reports...)

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 2024-2024	
4. Date this description was prepared	
2/29/2024	
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	
• 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	Subject objectives

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 ofbreedingMinistry of Higher Education and Scientific Research With a specialized staff of experts in the field of life sciences	

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	Watches	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**	Understand the topic of the lecture	2 theoretical + 2 practical	**5-6**

		role of cortical granules, Formation of the fertilization membrane			
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, mesoderm,notochord, The intestine, Hatching**	Understand the topic of the lecture	2 theoretical + 2 practical	**11-12**
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	Presence	**Appearance/Internal**	Understand	2	**15-16**

performance and exams		**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**	the topic of the lecture	theoretical + 2 practical	
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,**	Understand the topic of the lecture	2 theoretical + 2 practical	**22**

		endoderm (genetic changes between 18-24 hours of incubation)			
Classroom performance and exams	Presence	**neural foldsAnd the grooveNervous system, notochord, blood formationAnd the vesselsBlood, 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	
scienceEmbryos/ Dr. Kawakib Abdul Qader Al-MukhtarDr. Amal	Required textbooks (methodology, if any)

Ali Al-Khatib	
Medical Embryology	Main References (Sources)
comparative embryology	Recommended supporting books and references (scientific journals, reports...)
Embryologia and Histological arabicwww.jarir.com	Electronic references, websites

Course Description Form

1. Course name:	
theoretical histology	
2. Course code:	
218BHI	
3. Semester/Year:	
Academic year 2024-2024	
4. Date of preparation of this description:	
9/17/2024	
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. Qasim Aziz Razouki Email:razooqi.aasim@tu.edu.iq	
8. Course objectives	
• Help students understand science jobs, members, cell cells, and tissues existing in the body.	Subject objectives

• 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 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. • Support ministry Education And the ministry education High And research Scientific With the staff Specialist from Those with Efficiency in area sciences life.	

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- 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	Watches	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	**17–18**

				practical	
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 Cameira. 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 2024-2024	
4. Date this description was prepared	
17\1\2024	
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. Maysar Abdullah Ahmed	
8. Course objectives	
Subject objectives	• 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.	

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 showand other appropriate educational means.	Strategy

10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	The week
Classroom	In-	**the**	Understan	2	**1–2–**

performance and exams	person and online	**introduction:Chordate evolution theories,Law of Biogenesis**	d the topic of the lecture	theoretical	**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,**	Understand the topic of the lecture	2 theoretical	**11–12**

		oral cavity and structures) (Attached to them, the pharynx, esophagus, stomach, intestines),digestive glands			
Classroom performance and exams	Presence And electronic	**theGRespiratory system:Formation of gill pockets and slits, gills, bladders,Swimming, nasal passages, larynx, trachea bronchioles, resonance, breathing mechanics/Comparative anatomy of the respiratory system in different vertebrates**	Understand the topic of the lecture	2 theoretical	**13–14–15**
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**	Understand the topic of the lecture	2 theoretical	**18–19**

		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			
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 performanc	Presence And	**Skeletal system:Internal skeleton sections,Axial**	Understand the topic	2 theoretic	**24**

e and exams	electronic	**skeleton: A – Skull, comparison of the skull in different vertebrates/Axial skeleton: B– Vertebral column C– The sternum D– The ribs**	of the lecture	al	
Classroom performance and exams	Presence And electronic	**Skeletal system:Peripheral structure: A– Shoulder girdle,B– Pelvic girdle Appendicular skeleton: forelimbs,B– Hind limbs**		2 theoretical	**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 theoretical	**26**
Classroom performance and exams	Presence And electronic	**peripheral nervous system:Spinal nerves,Cranial nerves**		2 theoretical	**27**
Classroom performance and exams	Presence And electronic	**sense organs:Nose,Eye,Ear/taste buds**		2 theoretical	**28**
Classroom performanc	Presence And	**skin receptors/side line**		2 theoretic	**29**

e and exams	electroni c			al	

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. 1. Personal Calendar (Short Daily Quizzes)=10% 2. Oral questions during the lecture=10% 3. 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

Course name:
ractical Entomology
Course code:
0BEN
Semester/Year:
r the academic year 2024/2024
Date this description was prepared
17/2024
Available forms of attendance
y attendance is mandatory
Number of study hours (total) / Number of units (total)
umber of hours: 60 hours, Number of units: 2 practical units
Name of the course supervisor (if more than one name is mentioned)
ame: Dr. Ali Hassan Al-Tayef Email:

Course objectives	
Explain the importance of insects in lifeman. Basic description of the structure and functions of insect dy parts. Benefits of insects. Insect damage. AFitnessInsectsBy human being. Reasons for the success of insectsIn the spread. Explain the importance of insect body accessories and what are the st important types of these accessories.	bject objectives
Teaching and learning strategies	
The lecture And use Blackboard And casting thout the help ofData show Offers Illustrative Help With plans And pictures nd movies Educational Discussion Interactive	rategy

Education Self E-learning, scientific seminars. numbers Reports Tests Operation Duties Home Contributions And activities Other Encourage the student to read modern scientific urces.	

. Course Structure

valuatio method	earning method	ame of the unit or pic	equired learning tcomes	c	he eek
ily and onthly ams	e of projectorsData ow and required aterials	roduction to tomology(General aracteristics,Importance d harms)	roduction to tomology(General aracteristics,Importance and rms)		
ily and onthly ams	e of projectorsData ow and required aterials	ect body regions(Head and pendages,Types of mouth rts)	ect body regions(Head and pendages,Types of mouth rts)		
ily and onthly ams	e of projectorsData ow and required aterials	est and its appendages	est and its appendages		
ily and onthly ams	e of projectorsData ow and required aterials	domen and its appendages	domen and its appendages		
ily and onthly ams	e of projectorsData ow and required aterials	ansformationAnd its pes,Larvae and its types	ansformationAnd its pes,Larvae and its types		
ily and onthly ams	e of projectorsData ow and required aterials	gestive system(Its mponents and parts)	gestive system(Its mponents and parts)		
ily and onthly ams	e of projectorsData ow and required aterials	gestion and excretion	gestion and excretion		
ily and onthly ams	e of projectorsData ow and required aterials	spiratory system-Structure d function	spiratory system-Structure d function		
ily and onthly ams	e of projectorsData ow and required aterials	culatory system-Structure d function	culatory system-Structure and nction		11

	e of nets, insect ning gear, insect llection bottles and llection boxes	**ganizing a scientific trip**	**orming students about ethods of catching and llecting insects, how to eserve them and transport em to the laboratory.**		
ily and onthly ams	e of projectorsData ow and required aterials	**rvous system-Structure d function**	**rvous system-Structure and nction**		14
ily and onthly ams	e of projectorsData ow and required aterials	**cretory system-Organs of pression and their nctions**	**cretory system-Organs of pression and their functions**		16
ily and onthly ams	e of projectorsData ow and required aterials	**ale and female productive system**	**ale and female reproductive stem**		18
ily and onthly ams	e of projectorsData ow and required aterials	**rphological transformation**	**rphological transformation**		20
ily and onthly ams	e of projectorsData ow and required aterials	**ssification of insect groups**	**ssification of insect groups**		22
ily and onthly ams	e of projectorsData ow and required aterials	**view**	**view**		

. Course Evaluation

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

. Learning and teaching resources

eneral Entomology (Ibrahim addouri Qaddo, et al.)	equired textbooks (methodology if any)
sics of insect classification adwan Muhammad Tawfiq 2010)	ain References (Sources)
Emirates Journal of Food and Agriculture, EJFA **nisian Journal of Plant Protection, TJPP:**	ecommended supporting books and references cientific journals, reports...)

ctronic library of insects (1-General tomology Yasser Afifi Al-Sayed) Disease-carrying insects Jalil rim Abu Al-Habb 1982 Radiostopes and radiation in tomology	ectronic references, websites

Course Description Form

1. Course name
Environment and practical pollution
2. Course code
3. Semester/Year
2024-2024
4. Date this description was prepared
9/17/2024
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. Israa Salman Dales Email:israa.salman@tu.edu.iq Name: M.M. Elaf Mohammed Harez Email:elaf.m.harz@tu.edu.iq
8. Course objectives

• Introducing the student to environmental science and pollution, andEcosystem components and ecological divisionsMethods of measuring and examining the physical, chemical and biological factors of water and soil . • Preparing scientific and qualitative cadres specialized in the field of	Subject objectives

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.	

9. Teaching and learning strategies	
Use of electronic means of clarification. **Conducting practical experiments in the laboratory.** **Assigning students to prepare reports.**	Strategy

10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	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**	Understand the topic of the	2	5

		oxygen concentration in water	lecture		
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**	Understand the topic of the lecture	2	19-20

		germination			
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,	Recommended supporting books and

Third Edition Frank R. Spellman	references (scientific journals, reports...)
Nothing	Electronic references, websites

Course Description Form

1. Course name	
Theoretical fungi	
2. Course code	
BMT 327	
3. Semester/Year	
2024-2024	
4. Date this description was prepared	
3/9/2024	
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. Milad Adnan Mazhar Email:miladadnan@tu.edu.iq	
8. Course objectives	
• **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	
1- Use electronic means of clarification. **2- Using the discussion method in the lecture between the professor and**	**Strategy**

the students. **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	Watches	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, 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 FungiDivision MyxomycotaGeneral features, study of its classes, ranks and families, section of gelatinous fungiMyxomycotaGive 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 DepartmentDivision: EumycotaStudy the features of this section, then classify it into important sections, including:Sub-division: MastigomycotinaAnd 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 rowClass: Oomycetes Study its features and classify it into	Understand the topic of the lecture	2	5–6

		important ranks and families. Saproclineal ranks Order: Saprolegnia Study its life cycle and its importance eg Achlya, Aphanomyces, Dictyuchus			
Daily questions + monthly exam + daily homework	The lecture + PowerPoint + Educational films	Oomycetes row Class: Oomcetes 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 fungisubdivision: 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 questio	The lecture	True Fungi Division Division Eumycota Cyst Mycology Department Sub-division: Ascomycotina , Study its	Understand the topic of	2	13–14

ns + monthly exam + daily homework	+ PowerPoint + Educational films	features and classify it into classes, ranks, and important families, giving an example of it and studying it.	the lecture		
Daily questions + monthly exam + daily homework	The lecture + PowerPoint + Educational films	Study its features Class: Discomycetes Study its features Order: Pieces , 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 inequalis	Understand the topic of the lecture	2	17–18
Daily questions + monthly exam + daily homework	The lecture + PowerPoint + Educational films	True Fungi DivisionDivision: Eumycota , under the section of bezier fungiSub-division: Basidiomycotina Study its features and classify it into important classes, ranks and families. Study its featuresClass: Teliomycetes Study its featuresorder: Uredinales (rust fungi) Study its life cycle eg Puccinia graminis	Understand the topic of the lecture	2	19–20
Daily questions + monthly exam	The lecture + PowerPoint	Class: TeliomycetesStudy its features order: Uredinales (rust fungi) Study its life cycle eg Puccinia graminis Class: Teliomycetes Study its featuresOrder: Ustilaginales (sust	Understand the topic of the lecture	2	21–22

+ daily homework	+ Educational films	fungi)			
Daily questions + monthly exam + daily homework	The lecture + PowerPoint + Educational films	Under the section of bezier fungi Sub-division: Basidiomycotina Study its featuresClass: Hymenomycetes Study its features Class: Hymenomycetes Study its features and importanceOrder: Agaricales	Understand the topic of the lecture	2	23–24
Daily questions + monthly exam + daily homework	The lecture + PowerPoint + Educational films	True Fungi DivisionDivision: 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: DeuteromycotinaStudy its featuresclass:Hyphomycetes Order: Moniliales egAlternsris 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 importanceeg Lichens root-fungiMycorrhiza Study its features and importance	Understand the topic of the lecture	2	28
Daily questio	The lecture	Introduction to fungi, general characteristics, body structure / methods of nutrition and growth in fungi, presence,	Understand the topic of	2	1–2

ns + monthly exam + daily homework	+ PowerPoint + Educational films	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	the lecture		
Daily questions + monthly exam + daily homework	The lecture + PowerPoint + Educational films	Department of Jelly FungiDivision MyxomycotaGeneral features, study of its classes, ranks and families, section of gelatinous fungiMyxomycotaGive 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 DepartmentDivision: EumycotaStudy the features of this section, then classify it into important sections, including:Sub-division: MastigomycotinaAnd 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 rowClass: Oomycetes Study its features and classify it into important ranks and families. Saproclineal ranks Order: Saprolegnia Study its life cycle and its importance eg Achlya, Aphanomyces, Dictyuchus	Understand the topic of the lecture	2	5–6
Daily questions +	The lecture +	Oomycetes row Class: Oomcetes Order: Peronosporales Study its features and give an	Understand the topic of the lecture	2	7–8

monthly exam + daily homework	PowerPoint + Educational films	example.Family: Pythiaceae On it with studying its life cycleeg Pythium Phytophthora			
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 fungisubdivision: 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 + monthl	The lecture + PowerP	Study its features Class: Discomycetes Study its features Order: Pieces , eg Peziza Study its features Order:	Understand the topic of the lecture	2	15-16

y exam + daily homework	oint + Educational films	Helotiales Study its features eg Sclerotinia Fructigena			
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 inequalis	Understand the topic of the lecture	2	17–18
Daily questions + monthly exam + daily homework	The lecture + PowerPoint + Educational films	True Fungi DivisionDivision: Eumycota , under the section of bezier fungiSub-division: Basidiomycotina Study its features and classify it into important classes, ranks and families. Study its featuresClass: Teliomycetes Study its featuresorder: 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: TeliomycetesStudy its features order: Uredinales (rust fungi) Study its life cycle eg Puccinia graminis Class: Teliomycetes Study its featuresOrder: Ustilaginales (sust fungi)	Understand the topic of the lecture	2	21–22
Daily questions + monthly exam + daily homew	The lecture + PowerPoint + Educati	Under the section of bezier fungi Sub-division: Basidiomycotina Study its featuresClass: Hymenomycetes Study its features Class: Hymenomycetes Study its features and importanceOrder: Agaricales	Understand the topic of the lecture	2	23–24

ork	onal films				
Daily questions + monthly exam + daily homework	The lecture + PowerPoint + Educational films	True Fungi DivisionDivision: 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: DeuteromycotinaStudy its featuresclass:Hyphomycetes Order: Moniliales egAlternsris 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 importanceeg Lichens root-fungiMycorrhiza 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 (examSurprise) = 10% • Monthly exam and submissionReports . = 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
2024-2024
4. Date this description was prepared:
9/17/2024
5. Available forms of attendance
My attendance is mandatory
6. Number of study hours (total) / Number of units (total)

60

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

Name: M.D. Iman Nazhan Mahdi

M.M Shahd Tariq Khalaf Email: eman.nazhan@tu.edu.iq

shahadtareq@tu.edu.iq

8. Course objectives

• 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 assignments related to the scientific subject**	Strategy

10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	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	Presence	General lab, examining live	Understand the topic of the	2	5

and exams		specimens brought in by students to review algae shapes....	lecture		
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	
My fungi	
2. Course code	
327BMY	
3. Semester/Year	
Academic year2024/2024	
4. Date this description was prepared	
2024/9/17	
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)	
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	
8. Course objectives:	
• Introducing the student to fungi in terms of general characteristics, morphological and anatomical structure. • Knowing the methods of	Subject objectives

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.	
9. Teaching and learning strategies	
1- Curriculum approved by the Ministry of Higher Education and Scientific Research **2- Modern scientific theses and dissertations and scientific research** **3- Various teaching methods**	Strategy

including discussion, questions and answers, inference, presentation, etc. **4- The scientific part in preparing culture media and methods of isolating fungi from their locations** **5- Display information byPPTThe screen and the blackboard, as well as the models and objects infected with fungi (such as bread, fruits, tree leaves, etc.)** **6- Scientific trips to places where fungi are found, such as rivers, public parks, and mushroom fields.**	

10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	The week
Classroom performance and daily practical exam on how to	Presence	1- Devices and tools used in the fungi laboratory (identification and how to use them) 2- Nutritional media	Understand the topic of the	2 theoretical + 2 practical	1

prepare and sterilize media manually		3- Preparation of potato dextrose agar medium (PDA) 4- Sterilization methods (chemical and physical)	lecture		
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 dilutionDilution method - Direct methodDirect method	Underst and the topic of the lecture	2 theoreti cal + 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	Underst and the topic of the lecture	2 theoreti cal + 2 practical	3
Classroom performance and exams	Presence	- Classification of fungi - Department of Jelly Fungi Division: Myxomycota -Ex: Arcyria -Ex: Stemontis Ex: Physarum *Ex: Hemitrichia*	Underst and the topic of the lecture	2 theoreti cal + 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 theoreti cal + 2 practical	5
Classroom performance and exams	Presence	True fungiDivision: Eumycota Sub-Division: Mastigomycotina Class: Chytridiomycetes Ex: Synchytrium endobioticum Sub-Division: Mastigomycotina Class: Oomycetes O: Peronosporales F: Albuginaceae Ex: Albugo candida	Underst and the topic of the lecture	2 theoreti cal + 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: Peronosporeles	Underst and the topic of the lecture	2 theoreti cal + 2 practical	7

		F: Peronosporaceae Ex1: Plasmopara 2: Peronospora 3: Bremia 4: Sclerospora			
Classroom performance and exams	Presence	Sub-Division: Zygomycotina Cl: Zygomycetes O1: Mucorales Ex: Rhizoppus , Ex: Mucor O2: Entomophthorales Ex:Entomophthora mucae	Understand 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	Understand the topic of the lecture	2 theoretical + 2 practical	9
Classroom performance and exams	Presence	Sub-D: Basidiomycoina Cl: Hymenomycetes Or: Agarics Ex: Agaricus Ex: Amanita	Understand the topic of the lecture	2 theoretical + 2 practical	10 +11

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

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

Written by: Abdullah bin Nasser Mohammed, 1998	(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

Course name:
ractical Entomology
Course code:
0BEN
Semester/Year:
r the academic year 2024/2024
Date this description was prepared
17/2024
Available forms of attendance
y attendance is mandatory
Number of study hours (total) / Number of units (total)
umber 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. Alhan Jassim Hamash Email: alhan.j.hamash@tu.edu.iq

Course objectives

Explain the importance of insects in lifeman. Basic description of the structure and functions of insect dy parts. Benefits of insects. Insect damage. AFitnessInsectsBy human being. Reasons for the success of insectsIn the spread. Explain the importance of insect body accessories and what are the st important types of these accessories.	bject objectives

Teaching and learning strategies

The lecture And use Blackboard And casting thout the help ofData show Offers Illustrative Help With plans And pictures nd 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 urces.	rategy

. Course Structure

valuation ethod	earning ethod	ame of the unit or pic	equired learning tcomes	atches	he eek
ily and onthly exams	e of bjectorsData ow and required terials	**troduction to tomology(General aracteristics,Importance d harms)**	**troduction to tomology(General aracteristics,Importance d harms)**	ours actical	
ily and onthly exams	e of bjectorsData ow and required	**ect body regions(Head d appendages,Types of outh parts)**	**ect body regions(Head d appendages,Types of outh parts)**	ours actical	

	aterials				
ily and onthly exams	e of bjectorsData ow and required aterials	**est and its appendages**	**est and its appendages**	ours actical	
ily and onthly exams	e of bjectorsData ow and required aterials	**domen and its pendages**	**domen and its pendages**	ours actical	
ily and onthly exams	e of bjectorsData ow and required aterials	**ansformationAnd its pes,Larvae and its types**	**ansformationAnd its pes,Larvae and its types**	ours actical	
ily and onthly exams	e of bjectorsData ow and required aterials	**gestive system(Its mponents and parts)**	**gestive system(Its mponents and parts)**	ours actical	
ily and onthly exams	e of bjectorsData ow and required aterials	**gestion and excretion**	**gestion and excretion**	ours actical	
ily and onthly exams	e of bjectorsData ow and required aterials	**spiratory system-ucture and function**	**spiratory system-ucture and function**	ours actical	
ily and onthly exams	e of bjectorsData ow and required aterials	**culatory system-ucture and function**	**culatory system-ucture and function**	ours actical	11
	e of nets, insect ning gear, insect llection bottles d collection xes	**ganizing a scientific trip**	**orming students about ethods of catching and llecting insects, how to eserve them and nsport them to the oratory.**		
ily and onthly exams	e of bjectorsData ow and required aterials	**rvous system-Structure d function**	**rvous system-Structure d function**	ours actical	14
ily and onthly exams	e of bjectorsData ow and required aterials	**cretory system-Organs of pression and their nctions**	**cretory system-Organs expression and their nctions**	ours actical	16

ily and onthly exams	e of ojectorsData ow and required terials	**ale and female productive system**	**ale and female productive system**	ours ctical	18
ily and onthly exams	e of ojectorsData ow and required terials	**orphological transformation**	**orphological nsformation**	ours ctical	20
ily and onthly exams	e of ojectorsData ow and required terials	**ssification of insect groups**	**ssification of insect oups**	ours ctical	22
ily and onthly exams	e of ojectorsData ow and required terials	**view**	**view**	ours ctical	

. Course Evaluation

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

. Learning and teaching resources

eneral Entomology (Ibrahim ddouri Qaddo, et al.)	equired textbooks (methodology if any)
sics of insect classification adwan Muhammad Tawfiq 2010)	ain References (Sources)
Emirates Journal of Food and Agriculture, EJFA **nisian Journal of Plant Protection, TJPP:**	ecommended supporting books and references cientific journals, reports...)
ctronic library of insects (1-General tomology Yasser Afifi Al-Sayed) Disease-carrying insects Jalil rim Abu Al-Habb 1982	ectronic references, websites

Radiostopes and radiation in tomology	

Course Description Form

1. Course name
My work inheritance
2. Course code
328BG
3. Semester/Year
2024-2024
4. Date this description was prepared
9/17/2024
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
Name: Dr. Mohammed Mutlaq Saleh Mohammed.alkafaji78@tu.ed.iq M.M. Ayat Sufyan AbbasAyatsufyan@tu.ed.iq M.M. Noha Hossam Abdulwahab Noha.h.abdelwahhab@tu.edu.iq
8. Course objectives

• 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 education through exposure to the latest developments in scientific research, both theoretically and practically. • Providing the Ministry of Education, Higher Education and Scientific Research with qualified personnel in the field of life sciences	Subject objectives

9. Teaching and learning strategies

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

10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	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	Presence	Mendel's second law, mating	to understand topic The	2theoretical+2practical	2

and exams		between parents that differ in two or three traits, using the square method and the fork method to determine the proportions of genotypes and phenotypic classes	lecture		
Classroom performance and exams	Presence	Multiple mechanisms	to understand topic The lecture	2theoretical+2practical	3
Classroom performance and exams	Presence	Genetic interference and modification of Mendelian ratios of phenotypic classes.	to understand topic The lecture	2theoretical+2practical	4-5
Classroom performance and exams	Presence	Sexual attachment	to understand topic The lecture	2theoretical+2practical	6
Classroom performance and exams	Presence	Genealogy records.	to understand topic The lecture	2theoretical+2practical	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	2theoretical+2practical	9
Classroom performance and exams	Presence	Probability and chi-square.	to understand topic The lecture	2theoretical+2practical	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	2theoretical+2practical	11
Classroom performance and exams	Presence	Examination and analysis of the results of mating	to understand topic The lecture	2theoretical+2practical	12-13

		between different insects on a pair of sex-linked traits.			
Classroom performance and exams	Presence	Connection and crossing	to understand topic The lecture	2theoretical+2practical	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	2theoretical+2practical	15
Classroom performance and exams	Presence	Cases of transit suppression and the resulting proportions.	to understand topic The lecture	2theoretical+2practical	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	2theoretical+2practical	17
Classroom performance and exams	Presence	Estimation of distances, concordance	to understand topic The lecture	2theoretical+2practical	18

		coefficient, overlap and chromosomal mapping.			
Classroom performance and exams	Presence	Using chromosome maps to predict the results of dihybridization.	to understand topic The lecture	2theoretical+2practical	19
Classroom performance and exams	Presence	Using chromosome maps to predict the results of triple hybridization	to understand topic The lecture	2theoretical+2practical	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	2theoretical+2practical	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	2theoretical+2practical	23
Classroom performance and exams	Presence	Calculating the frequency of sex-ordered mechanisms, testing equilibrium expectations, practical application of	to understand topic The lecture	2theoretical+2practical	24-25

		calculating the frequency of some genes in a group of students, the trait of attached and detached earlobes, taste test, blood groups.			
Classroom performance and exams	Presence	Quantitative inheritance, variance calculation, forms of gene action, degree of heritability.	to understand topic The lecture	2theoretical+2practical	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/Year2024-2024	
4. Date of preparation of this description 1/21/2024	
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. Zubaida Adnan Khader Email:zubaida.biology@tu.edu.iq	
8. Course objectives	
• ..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	
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	Strategy

through textbooks, and they also take notes during lectures, and they work independently, in addition to expressing...	

10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	The week
Daily questions + monthly exam + daily homework	The 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	The lecture + PowerPoint + Educational films	**، السيادة المشارك الجينات المميتة ، تداخل فعل الجين ، ر الجيني.**	Introducing the student to the basics of genetics and Mendel's experiments	2	2-3
Daily questions + monthly exam + daily homework	The 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	The 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 questio	The lecture	**Methods of emergence of new genetic**	Providing the student with	2	9

ns + monthly exam + daily homework	+ PowerPoint + Educational films	**structures in bacteria.**	an overview of genetics in microorganisms.		
Daily questions + monthly exam + daily homework	The 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	The 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	The 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	The 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	The lecture + PowerP	**DNA replication: Proof that replication is semi-conservative, replication enzymes, the role of DNA in replication, reverse transcription in DNA genomes, cutting and**	Introducing the student to the most important	4	14-15

exam + daily homework	oint + Educational films	**modification processes in its three types.**	cellular steps for protein building		
Daily questions + monthly exam + daily homework	The 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	The 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	The 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	The 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 +	The lecture + PowerPoint	**Genetic mutation: its types according to molecular changes, spontaneous mutation, the creation of mutations by radiation and some chemicals, DNA damage repair systems. Jumping genes.Transposable**	Introducing the student to the most important cellular steps	2	20

daily homework	+ Educational films	**elements.**	for protein building		
Daily questions + monthly exam + daily homework	The lecture + PowerPoint + Educational films	**GenomesGenomicsChromosome structure and DNA sequence regulation, DNA extraction and analysis of clonesClonesApplying 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	The 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	The 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	The lecture + PowerPoint + Educational films	**Genetics and evolution: chromosomal changes and their relationship to the emergence of species, doubling of the chromosome number.**	Student definitionOn 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 :Plant groups

Course Description Form

1. Course name	
Plant groups	
2. Course code	
329BAL	
3. Semester/Year	
Annual 2024-2024	
4. Date this description was prepared	
17\1\2024	
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	
Subject objectives	• 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.	
9. Teaching and learning strategies	
Strategy	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 showand other appropriate educational means.

Outputs of theScheduledTeaching, learning and assessment methods .10
A- TheCognitive 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 - ObjectivesSkillsYesSpecial forScheduled. B1 -The student should be able to prepare practical and theoretical research in algae science. B2 - He is toFor studentAbility to knowSpecial scientific factsWith 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 showand 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 .11					
Evaluation method	Teaching method	Unit name/topic	Required learning outcomes	Watches	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	Presence	**Division Algae Rehearsals or Algae The rotary**	Understand the topic of the lecture	2 theoretical + 2 practical	**8**

exams					
Classroom performance and exams	Presence	Divisiongolden 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	ImportanceEcology 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 .12	
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, ...)
	B - Electronic references, websites...

Curriculum Development Plan .13
The curriculum should be more comprehensive and the interest in algae science should be broader because it is linked to botany, as well as preparing modern editions with modern and valuable scientific sources to keep pace with modern science in this field.

Course Description Form

1. Course name
Practical comparative anatomy
2. Course code

326BCA
3. Semester/Year
Annual 2024-2024
4. Date this description was prepared
17\9\2024
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)
the name: Dr. Shaimaa Jumaa A.pod shimaa.jumaa@tu.edu.iq Name: M.M. Furat Latif Karim furat.k.mohammed@tu.edu.iq Name: M.MOmar Muzahim Tabouromar.m.taboor@tu.edu.iq

8. Course objectives	
• 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.	Subject objectives

• 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.	

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 showand other appropriate educational means.	Strategy

10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	The week
Classroom performance and exams	In-person and online	Classification of Chordates: Hemichordates, Caudal Chordates, Cephalochordates/Vertebrata (Cranial), Ectotherms, Cartilaginous Fishes, Bony Fishes, Amphibians, Reptiles, Birds, Mammals	Understand the topic of the lecture	2 practical	1-2-3
Classroom performance and exams	Presence And electroni	Integumentary system (skin and its derivatives): skin in	Understand the topic of the	2 practical	4-5

	c	lancelets, roundmouths, cartilaginous fish, bony fish, amphibians, birds, mammals, skin derivatives	lecture		
Classroom performance and exams	Presence And electronic	Muscular system: Muscles in spearfish, roundmouth, cartilaginous fish, bony fish, amphibians, reptiles, birds, mammals	Understand the topic of the lecture	2 practical	**6–7**
Classroom performance and exams	Presence And electronic	Digestive system: the digestive tract and its accessory glands in different models, for different vertebrate species and the lancelet of chordates.	Understand the topic of the lecture	2 practical	**8–9**
Classroom performance and exams	Presence And electronic	Respiratory system: Structure of the respiratory system and its parts in the lancelet and various vertebrates through selected models	Understand the topic of the lecture	2 practical	**10**
Classroom performance and exams	Presence And electronic	Excretory and reproductive system: Components of the excretory and reproductive system in the spear and models Selected from vertebrae	Understand the topic of the lecture	2 practical	**11–12**
Classroom performance and exams	Presence And electronic	Circulatory system: the heart and the arterial and venous systems in the cephalopods and various	Understand the topic of the lecture	2 practical	**13–14–15**

		vertebrates.			
Classroom performance and exams	Presence And electronic	Nervous system: brain in different vertebrates, cranial nerves in fish and amphibians	Understand the topic of the lecture	2 practical	**16–17**
Classroom performance and exams	Presence And electronic	Skeletal system: Axial skeleton – skull, cartilaginous cranium in dogfish Visceral skull in dogfish	Understand the topic of the lecture	2 practical	**18–19**
Classroom performance and exams	Presence And electronic	Skull in large fish, amphibians, reptiles, birds, mammals	Understand the topic of the lecture	2 practical	**21–21**
Classroom performance and exams	Presence And electronic	Axial skeleton: vertebral columnand Shear and ribsandshoulder strapand pelvic girdle	Understand the topic of the lecture	2 practical	**22–23**
Classroom performance and exams	Presence And electronic	Peripheral system – forelimbs andhind limbs	Understand the topic of the lecture	2 practical	**24–25–26**

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.

4. Personal Calendar (Short Daily Quizzes)=10%
5. Oral questions during the lecture=10%

6. 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

1. Course name:
Environment and Pollution/Third Stage
2. Course code:
3. Semester/Year
2024-2024 Annual
4. Date this description was prepared
17-9-2024
5. Available forms of attendance
Mandatory attendance
6. Number of study hours (total) / Number of units (total)
Number of hours =60Number of units4Theoretical+2practical)
7. Name of the course supervisor (if more than one name is mentioned)
Name: Asst. Prof. Dr. Muwaffaq Anhab Saleh Email: mawfaq.n.saleh@tu.edu.iq

8. Course objectives	
2- EmpowermentStudentsFrom gettingontheknowledgeUnderstanding diseases common to humans and the environment around them. 2-Enabling students to gain knowledge and understanding of pollutants. 3- Enabling students to gain knowledge and understanding of environmental science. 4- Introducing students to modern technologies and devices that specialize inEnvironmental science and pollution. 5-The student should be able to use laboratory equipment. .	Subject objectives
9. Teaching and learning strategies	
-Using the blackboard, electronic board, slides, performing scientific experiments. - Use a projectordata showTo 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

10. Course Structure					
Evaluation method	**Learning method**	**Name of the unit or topic**	**Required learning outcomes**	**Watches**	**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**	Understand the ideas of the topic and be able to apply them with examples		4-5

		natural revolution.			
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, fire, salinity, pH, gases, nutrients, currents and pressures.**	Understand the ideas of the topic and be able to apply them with examples	2 Theoretical, 2 Practical	8_9
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	Demo and view	**Ecoregions:**	Understand the	2	19

performance and exams	slides	**Introduction / Aquatic environment, Terrestrial environment**	topic of the lecture	Theoretical, 2 Practical	
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 WastesBOD , pathogens, synthetic organic compounds, plant nutrients, inorganic chemicals and minerals, sediments,**			**25_26**

		radioactive materials, thermal pollution, water pollution treatment and mitigation, water pollution by oil			
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**

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	
2024/1/21 :Date of preparation of thisThe description .4	
Student attendance registration in theoretical Available forms of presence .5 and practical lectures	
6/40 :Total number of units / Total number of study hours .6	
.Name of the course officerifMore than one name is mentioned .7	
:The email Mahmoud Khalaf Salehأ.م.د:Namedr.mahmod1978@tu.edu.iq	
Course objectives .8	
• 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	Objectives of the subject

ng microscope slides.to prepari conductLaboratory testsIn additionTo diagnostic teststhe .different • Understanding the principles and methods of sterilization and disinfection of .microorganisms • Identifying the different types of microorganisms and nguish methods to disti between them, as well as the diseases and infections they cause.For manAnd how to diagnose it and methods of .treatment	

Teaching and learning strategies .9

- .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	Knowing the methods of microorganisms controlling	2	5

		disinfection to control microorganisms			
The discussion	Theoretical Lecture	Karama dye and methodsDyeing	Understanding the principles of dyeing microorganisms	2	6
The discussion	Theoretical lecture	positive -Gram bacteria and negative -Gram bacteria	Differentiation between -positive and Gram-Gram negative bacteria	2	7
The scussiondi	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 organismsThe translator	Recognizing methods of nutrition and development of organismsMicrobiology	2	13
The discussion	Theoretical Lecture	ssification of Cla 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 circlesAgricultural	Identifying the mediumsAgriculturalUsed in the cultivation of microorganisms	2	15
semester The second					
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 الفسلجيةoperations 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	ungiF	Identifying fungi, their types, the diseases they cause, and methods of	2	4

			.treatment		
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 .treatment of	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 Zaydi-Majid Al	Required prescribed textbooks (syllabus if (available
	(Main references (sources
	The recommended books and supporting magazinesScientific,The references (the (...reports
	ReferencesElectronic,Internet sites

Course Description Form

1. Course name is optional.
Optional (contamination treatment)
2. Course code
442ME
3. Semester/Year

2024

4. Date of preparation of this description 2024

1/16/2024

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

• Environmental Treatment Process Basics • Pollution treatment (air, water, soil) • Advanced treatment methods (physical, chemical, biological)	Subject objectives

9. Teaching and learning strategies

Lecture **Brainstorming** **· 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	Watches	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	Chemical treatment	2	eleventh and twelfth

		adding a treatment material, provided that the result is not toxic.			
,Board Datashow,Paper luctures,	Presence	Use of microorganisms in the treatment of pollutants	Biological treatment	2	Hittite XIII
,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

	Required textbooks (methodology if any)
Environment-Treatment Al-Baridi, Abdullah bin Abdul	Main References (Sources)

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.	
Wastewatertreatment research	Recommended supporting books and references (scientific journals, reports...)
	Electronic references, websites

Course Description Form

1. Course name: Immunity
2. Course code:_ 438BIM
3. Semester/Year First and Second Semester/2024-2024
4. Date this description was prepared 29\1\2024
5. Available forms of attendance / In-person
6. Number of study hours (total) / Number of units (total) **56hour /6**

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

Name: Ms. Haifa Rajab Alwan

Email:hyfaass@tu.edu.iq

Name: Dr. Ayat Ali Saleh

Email:ayat.a.salih@tu.edu.iq

8. Course objectives

1- Delivering a general idea about immunity and its types, understanding the work of the immune system and identifying some immune diseases.

2-Preparing a qualified cadre of teaching assistants in the field of immunology.

• Learn about immunology. • Identifying types of immunity • Identifying immunoproteins	Subject objectives

9. Teaching and learning strategies

1- Use electronic visual aids **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.**	Strategy

10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	The week
oral exam	Presence	Immunity and its history of discovery	Understand the topic of the lecture	2	the first

viva voce	Presence	Natural immunity	Understand the topic of the lecture	2	the second
viva voce	Presence	Factors affecting natural immunity	Understand the topic of the lecture	2	the third
viva voce	Presence	Inflammation	Understand the topic of the lecture	2	Fourth
viva voce	Presence	Antigens	Understand the topic of the lecture	2	Fifth
viva voce	Presence	Antibodies	Understand the topic of the lecture	2	Sixth
viva voce	Presence	phagocytosis	Understand the topic of the lecture	2	Seventh
Written in-person exam	Presence	Monthly exam	Understand the topic of the lecture	2	The eighth
viva voce	Presence	immune system cells	Understand the topic of the lecture	2	Ninth
viva voce	Presence	Innate immunity-associated cells	Understand the topic of the lecture	2	tenth
viva voce	Presence	acquired immunity	Understand the topic of the lecture	2	eleventh
viva voce	Presence	Vaccines and serums	Understand the topic of the lecture	2	twelfth
viva voce	Presence	Cells associated with acquired immunity	Understand the topic of the lecture	2	thirteenth
viva voce	Presence	Cytokines	Understand the topic of the lecture	2	fourteenth
Written exam	Presence	Monthly exam	Understand the topic of the lecture	2	fifteenth
viva voce	Presence	Supplement system	Understand the topic of the lecture	2	Sixteenth
viva voce	Presence	Lymphatic	Understand the	2	seventeenth

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

Course Description Form

1. Course name
parasitology
2. Course code
441BOP

3. Semester/Year
Annual 2024-2024
4. Date this description was prepared
1/29/2024
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	Watches	The week

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 +an 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 +an 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 +an 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 +an offer video	**Meat classClass: Sarcodina (Class characteristics, types of protozoa and their relationship**	to understand topic The lecture	2	Fifth

	scientific	**to humans)** **1- Dysentery amoebaEntameoba histolytic** **2-Colon amoebaE.coli**			
Written exam	In-person exam	in Lectures Previous	exam monthly	2	Sixth
Questions Oral or exam	Presence +PowerPoint +an offer video scientific	**-Dwarf internal spit amoebaEndolimax 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 +an offer video scientific	**whip-bearing classClass: 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 +an offer	**B- Blood and tissue flagellates: It includes: 1-**	to understand topic The lecture	2	Ninth

	video scientific	**Leishmania tropica 2- Leishmania viscera**			
Questions Oral or exam	Presence +PowerPoint +an offer video scientific	**The genus Lepanosoma includes: 1- Trypanosoma gambiense 2- Trypanosoma americana** **Animalia classClass: Sporazoa and includes the genera: (Plasmodium vivax, P.ovale, P. malarae, P. falciparium)**	to understand topic The lecture	2	tenth
Questions Oral or exam	Presence +PowerPoint +an offer video scientific	**Study of the asexual cycle (cleavage) in the human body, the sexual cycle (gametophyte or spore) in the mosquito body, Toxoplasma gondiiTopxoplasma gondii**	to understand topic The lecture	2	eleventh
Questions Oral or exam	Presence +PowerPoint +an offer video scientific	**Class of cilia carriersClass: 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 +an offer video scientific	**PlatyhelminthesPhylum: Platyhelminthes, Phylum Features, Body Structure Study**	to understand topic The lecture	2	Fourth ten

Questions Oral or exam	Presence +PowerPoint +an offer video scientific	**Perforated typeClass: Trematoda (Class characteristics, Monogenetic order, Digenetic order) Liver borers, 1-Sheep liver snail cycle 2-Chinese liver borer**	to understand topic The lecture	2	Fifth ten
Questions Oral or exam	Presence +PowerPoint +an offer video scientific	**Intestinal perforationsIntestinal fluckes 1- Fasciolopsis buski 2- Heterophyes heterophyes**	to understand topic The lecture	2	Sixth ten
Questions Oral or exam	Presence +PowerPoint +an offer video scientific	**Blood holesBlood fluckes 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 +an offer video scientific	**Lung perforationsLung fluckes, eastern pulmonary effusion Class of tapewormsClass: 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
2024- 2024

4. Date this description was prepared
2 /10/2024
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**
8. Course objectives

• 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	Subject objectives

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**	**Watches**	**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	Understand the topic of the lecture	2 theoretical + 2 practical	**8-9-10-11**

		location of the pacemaker).			
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	Presence	Pancreatic amylase,	Understand	2	**21-22-**

performance and exams		pepsin, tricin, sucrase) i.e. study of the effect of some enzymes of saliva, stomach, pancreas, intestines.	the topic of the lecture	theoretical + 2 practical	**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	
2024-2024 / First and Second Semester	
4. Date this description was prepared	
2 /10/2024	
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. Munif Saab Ahmed Email:muneef.s962@tu.edu.iq	
8. Course objectives	
• 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	Subject objectives

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.	

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	Watches	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 pacemaker, accidents, the electricity in the heart	Understand the topic of the lecture	2 theoretical + 2 practical	**8**
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	Understand the topic of the lecture	2 theoretical + 2 practical	**10**

		respiration			
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	Presence	Endocrine glands, hormones, regulation of	Understand	2	**18**

performance and exams		formation and secretion, hormones, methods of studying hormones	the topic of the lecture	theoretical + 2 practical	
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	Main References (Sources)

Elsevier 2-Journals of physiology	

Course Description Form

1. Course name
Practical plant physiology
2. Course code
437Bpp
3. Semester/Year
Academic year 2024/2024
4. Date this description was prepared
9/17/2024
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)
Name: Fattah Raouf Mahmoud Al-Qaisi Email:OlfatRaouf@tu.edu.iq
8. Course objectives

• 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	
1- Using electronic means of clarification. **2- Using the discussion method in the lecture between the professor and the students.** **3- Assigning students homework related to the scientific subject.** **4- Using models and models of the studied plant samples, in addition to**	Strategy

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 lecture.**	

10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	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	Understand the topic of the lecture	2 Theoretical + 2 Practical	6

		their role			
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 method for osmotic potential	Understand the topic of the lecture	2 Theoretical + 2 Practical	10
Classroom performance and exams General questions and discussion + daily exam	Presence	Plasmosis 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, meadow, 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 titration method of T-	Understand the topic of the lecture	2 Theoretical + 2 Practical	19

		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	Recommended supporting books and references

Author: Mohamed Mahjoub Azouz Release date: January 1, 2014	(scientific journals, reports...)
https://www.researchgate.net/publication/233916256_asasyat_fsywlwjya_alnbat https://www.researchgate.net/publication/236234544_asasyat_fsywlwjya_alnbat_almlyt	Electronic references, websites

Course Description Form

1. Course name: Plant Physiology
2. Course code438BPP
3. Semester/Year2024-2024
4. Date of preparation of this description 1/21/2024
5. Available forms of attendance The lecture
6. Number of study hours (total) / Number of units (total) 2 theoretical + 6 p ractical
7. Name of the course supervisor (if more than one name is mentioned)
Name: Asst. Prof. Dr. Mohammed Adnan Hashim Sharif

Email:mohammadblesh@tu.edu.iq

8. Course objectives Providing students with knowledge of plant physiology, its importance and its relationship to other sciences.

• 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 s kill of interpreting physiol ogical phenomena based o n understanding rather tha n memorization.	Subject objectives

9. Teaching and learning strategies

Students move from a focus on skills in primary grades to a focus on content in all secondary grades, where students face many demands to read information through textbooks, take notes during lectures, and work independently, in addition to expressing

	Strategy Providing students with knowledge, i nformation and skills about the impor tance of physiological processes in pl ants, how they occur and what their i mportance is.

10. Course Structure

Evaluation method	Learning method	Name of the unit	Required learning	Watches	The week

		or topic	outcomes		
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 + Educational films	Plant cell and its physiology	Introducing the student to the plant cell and its physiology	2	the second
Daily questions + monthly exam + daily homework	The lecture + PowerPoint + 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 + Educational films	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	The lecture + PowerPoint + 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 + Educational films	Water and osmotic potential	Student definition of the role of water potential in plant cells	2	Sixth
Daily questions + monthly exam + daily homework	The lecture + PowerPoint + Educational films	Transpiration, its types and factors	Learn about transpiration, its importance, types, and how each type occurs.	2	Seventh
Daily questions +	The lecture +	Water absorption and tra	Identify the absorption of water fr	2	The eighth

monthly exam + daily homework	PowerPoint + Educational films	nsport	om the roots to t he rest of the pla nt parts		
Daily questions + monthly exam + daily homework	The lecture + PowerPoint + Educational films	Absorption a nd transport of mineral sa lts	Understanding th e absorption vers es of mineral salt s and their role in plant nutrition	2	Ninth
Daily questions + monthly exam + daily homework	The lecture + PowerPoint + Educational films	Photosynthe sis: Pigments , their comp osition and i mportance	Definition of pho tosynthesis and p igments and their importance in ab sorbing light	2	tenth
Daily questions + monthly exam + daily homework	The lecture + PowerPoint + Educational films	Mechanism of photosynt hesis Light re actions	The student learn s the role of light and light reaction s in the productio n of high energy compounds.		eleventh
Daily questions + monthly exam + daily homework	The lecture + PowerPoint + Educational films	Dark reactio ns and sugar formation	The student learn s about the Calvi n cycle and carbo n dioxide fixation and gains an und erstanding of lear ning pathways.		twelfth
Daily questions + monthly exam + daily homework	The lecture + PowerPoint + Educational films	Three- and f our-carbon p lants, their i mportance a nd physiolog y	Introducing the s tudent to plants, their importance, the differences b etween them, an d their physiologi cal role.		thirteenth
Daily questions + monthly exam + daily homework	The lecture + PowerPoint + Educational films	Plant hormo nes, their im portance, ty pes and phys iological func tions	Providing the stu dent with inform ation about horm ones, their types and their functio ns for plants.		fourteenth
Daily questions + monthly exam + daily homework	The lecture + PowerPoint + Educational	Auxins and gi bberellins an d their physi ological role	The student learn s about auxins, th eir synthesis, tra nsport, and impo rtance, as well as		fifteenth

	films		gibberellins.		
Daily questions + monthly exam + daily homework	The lecture + PowerPoint + Educational films	Ethylene, abscisic acid and its physiological role	The student learns about ethylene, abscisic acid and their physiological role.		Sixteenth
Daily questions + monthly exam + daily homework	The lecture + PowerPoint + Educational films	Mineral nutrition, its importance and physiological role	The student learns about mineral nutrition, its importance and its physiological role.		seventeenth
Daily questions + monthly exam + daily homework	The lecture + PowerPoint + Educational films	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		eighteenth
Daily questions + monthly exam + daily homework	The lecture + PowerPoint + 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		nineteenth
Daily questions + monthly exam + daily homework	The lecture + PowerPoint + Educational films	Anthropism and its types	Student understanding of tropism, how it occurs, and its physiological role.		Twenty
Daily questions + monthly exam + daily homework	The lecture + PowerPoint + Educational films	Subordination and its importance	The student understands the importance of equilibrium, how it occurs, and its physiological role.		Twenty one
Daily questions + monthly exam + daily	The lecture + PowerPoint +	Photochronology and Long, Medium and Short Day	The student understands photosyncratic activity, how it		Twenty-second

homework	Educational films	Plants	occurs, and its physiological role.		
Daily questions + monthly exam + daily homework	The lecture + PowerPoint + Educational films	Secondary m etabolism: p henols and a lkaloids	Student Understanding Secondary Metabolism: Phenols and Alkaloids		twenty-third
Daily questions + monthly exam + daily homework	The lecture + PowerPoint + Educational films	Glycosides, t erpenes and tannins	Student understanding of glycosides, terpenes and tannins		twenty-fourth
Daily questions + monthly exam + daily homework	The lecture + PowerPoint + Educational films	Environment al stress and its relationsh ip to physiol ogical proces ses	The student understands environmental stress and its relationship to physiological processes.		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 Physiolog	Required textbooks (methodology if any)

y Dr. Abdel Azim year2000 bookplant physiology taiz and zai geFor a yearr2020	
Plant physiology books	Main References (Sources)
Websites and scientific reports	Recommended supporting books and references (scientific journals, reports...)
Yes	Electronic references, websites

Course Description Form

1. Course name	
optional	
2. Course code	
442ME	
3. Semester/Year	
annual	
4. Date this description was prepared	
1/21/2024	
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: Mustafa Qahtan Mustafa Email:mostafa.km84@tu.edu.iq	
8. Course objectives	
• 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	Subject objectives

aromatic plants (glycosides, alkaloids, volatile oils, tannins, resins). • Estimation of active compounds in medicinal plants (gas chromatography and high-performance liquid chromatography) • Extraction methods • Methods of extraction and isolation of active compounds	

9. Teaching and learning strategies

- **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

10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	The week
- **Quick tests (quizzes).** - **Evaluation through classroom activity.**	Presence	Introduction to medicinal plants		2	the first
- **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
- **Quick tests (quizzes).**	Presence	Active ingredients in medicinal		2	Fourth

		plants essential oils			
Evaluation through classroom activity.	Presence	Alkaloids		2	Fifth
- **Quick tests (quizzes).**	Presence	Glycosides		2	Sixth
Evaluation through classroom activity.	Presence	Resins		2	Seventh
- **Quick tests (quizzes).**	Presence	Tannins		2	The eighth
Evaluation through classroom activity.	Presence	Phenols		2	Ninth
- **Quick tests (quizzes).**	Presence	Soaps		2	tenth
Evaluation through classroom activity.	Presence	Resins		2	eleventh
- **Quick tests (quizzes).**	Presence	Turbines		2	twelfth
Evaluation through classroom activity.	Presence	Methods of estimation of active compounds		2	thirteenth
- **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	Presence	Glycoside		2	twenty-third

classroom activity.		isolation			
- **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)
1- -Alternative medicine/treatmentunlessHerbs and Medicinal Plants / Andrew Chevalier - Translated by Omar A.NoAnd me 2- AFor aromatic plants and their agricultural and pharmaceutical products / Al-Shahat Nasr Abu Zaid	Recommended supporting books and references (scientific journals, reports...)

3- Basics of Medicinal Plants and Their Active Compounds / Dr. Maher Hamid Salman AlAMy dam 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 2024-2024
4. Date this description was prepared
10/1/2024
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

8. Course objectives

• **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

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	Watches	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 microbi ology / Prof. Dr. Osama Nazim Nanjris	**Required Textbooks**
*Bailey*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 http://www.chuibar.com/other/immunology.exam question-pdf-html	**Electronic references, websites....**

Course Description Form

1. Course name
Practical immunity
2. Course code
438BIM
3. Semester/Year
Academic year 2024/2024
4. Date this description was prepared
9/17/2024

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)
Name: Rehab Salman Kurdi Email:rehab.s.kurdy@tu.edu.iq Name: Omar Essam Mamdouh Email:Omar.e.mamdoouh@tu.edu.iq
8. Course objectives

.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 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.	Subject objectives
9. Teaching and learning strategies	
1- Lectures 2- Using DATASHOW 3- Using	Strategy

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

10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	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	
nothing	Required textbooks (methodology if any)
B - Electronic references, websites..	Main References (Sources)

Course Description Form

1. Course name:	
Practical parasites/Fourth stage	
2. Course code:	
44IBOP	
3. Semester/Year	
annual2024-2024	
4. Date this description was prepared	
2024/9/17	
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)	
Dr. Rasha Shamel Ismail Email:rasha.sh.huseen@tu.ed M.M. Hala Mahmoud Ismail Email:hala.m.ismail@tu.edu.iq M.M. Shahd Saad Daham Email:shahd.saad@tu.edu.iq	
8. Course objectives	
1- Enabling students to gain knowledge and understand parasites, study their types and diagnose them practically.. 2- Helping students understand andknowledgeDiseases common to humans and animals, their causes and how they are transmitted. 3-Introducing students to modern technologies and devicesAnd be able to use	Subject objectives

laboratory equipment. 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.	
9. Teaching and learning strategies	
1- Use of whiteboard, projectordata showTo attract students' attention and interact with the lecture and slides, perform scientific experiments. 2- Using models and models of the studied samples and preparing slides of those models. 3- Visiting the scientific laboratories by the academic staff. 4- Applying the topics studied theoretically on a practical level.	Strategy

10. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	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/anwa-alhywanat https://sabq.org/saudia/663jk3sdjq-	Electronic references, websites