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

Description of the academic program, College of Basic Education, Department of Science

2024

Ministry of higher education and scientific research
Supervision and scientific evaluation apparatus
Department of quality assurance and academic accreditation

Academic description form for colleges and institutes

University: Misan
College : Basic education
Department : General sciences
Date of file filling : 7/7/2024

Signature :
Name of department head : Hashim Haneen Kareem

Signature :
Name of assistant dean: Ammar M ohammed

File have been checked by the division of quality assurance and academic accreditation
The manager of division of quality assurance and academic accreditation :

Signature :
Dr Husam Ahmed Ali
Date: 7/7/2024

Dean approval :

1. Program vision

Seeking college Basic Education to be one of the leading higher education institutions at the University of Mosul In the field of modern education and scientific research through its scientific, research and administrative activities, it also works to provide an integrated path for its students and professors to make them active and creative in serving society in the fields of .learning and teaching living languages

2. Program message

,Working to prepare and graduate leading scientific and leadership competencies in languages sciences and literature, and to develop the balance of knowledge in the field of scientific research to serve the local, regional and international community, as well as training and refining the minds of students scientifically and cognitively, and emphasizing social and cultural .values and responding to the requirements of the local market

3. Program Goals

1. Embodying the vision, mission and goals of a university Kufa , and applying the best educational practices with a focus on ensuring and enhancing quality and .performance
2. Preparing specialized cadres capable of serving the community and preparing .for the preparation of future specializations
3. Spreading the culture of human diversity in society, transferring knowledge and linguistic skills, writing academic research, and creative scientific achievement .through student- and teaching-focused activities

4. The college seeks to conclude scientific and cultural cooperation agreements with corresponding colleges and corresponding departments in different colleges .to achieve best practices in the fields of teaching, learning and translation

5. Focusing on the educational and moral aspects of all its members and spreading .the spirit of dedication, tolerance, commitment and work to serve the nation

6. Paying attention to intellectual and cultural construction through openness to the experiences of other countries in the fields of languages, literature and .translation

7. Focusing on the educational and moral aspect of the student and instilling a .spirit of dedication, tolerance and commitment

4. Program accreditation

nothing

5. Other external influences

nothing

6. Program structure

* comments	percentage	Study unit	Number of courses	Program structure
Basic course		90	90	Enterprise requirements
			Yes	College requirements
			Yes	Department requirements
			nothing	summer training
				Other

7. Program description

Credit hours		Name of the course or course	Course or course code	Year/level
practical	theoretical			
	2	Arabic	BEAR24 F1061	first /2024-2023
2	1	Computer	BEMA24F1121	
	2	Basics of psychology	BEKI24F1041	
	3	General biology	BESC24F1091	
	2	Logic mathematic	BESC24F1041	
	2	Fundamentals and principles of basic education	BEKI24F1031	
	2	Islamic education civilization for non-) (Muslims	BEIS24F1031	
	3	General physics	BESC24F1061	
	2	Human biology	BESC24F1081	
	2	Chemical safety and security	BESC24F1101	
	2	Arabic	BESE24F2041	second / 2024-2023 biology
	2	English	BESC24F2251	
1	2	the computer	BEMA24F2041	
	2	Orientation mental health	BESE24F2051	
	2	Wave motion and sound	BESC24F2071	
	2	Material properties	BESC24F2221	
2	2	Classic mechanics	BESC24F2231	
	1	Democracy	BEHI24F2101	
	3	Educational statistics	BESE24F2041	
	2	Educational psychology	BESE24F2041	
	2	Calculus	BESC24F2081	

2	2	Optical physics	BESC24F2211	
2	2	Thermodynamics	BESC23F2091	
2	3	Electric and magnetic	BESC23F2271	
	2	Arabic	BESE24F2041	Second /2024-2023 Year Chemistry
	2	English	BESC24F2251	
1	2	the computer	BEMA24F2041	
	2	Counseling and mental health	BESE24F2051	
2	2	Inorganic chemistry	BESC24F2061	
2	2	Volumetric analytical chemistry	BESC24F2051	
2	2	physical chemistry	BESC24F2091	
	1	Democracy	BEHI24F2101	
	3	Educational statistics	BESE24F2041	
	2	Educational psychology	BESE24F2041	
2	2	Gravimetric analytical chemistry	BESC24F2181	
2	2	organic chemistry	BESC24F2041	
2	2	Chemistry of represented elements	BESC24F2171	
	2	Calculus	BESC24F2201	
				second / 2024-2023 Biology
	2	Arabic	BESE24F2041	
	2	English	BESC24F2251	
1	2	the computer	BEMA24F2041	
	2	Orientation mental health	BESE24F2051	
2	2	Microbiology	BESC24F2021	
2	2	cytology	BESC24F2141	
-	2	Virology	BESC24F2151	
	1	Democracy	BEHI24F2101	

	3	Educational statistics	BESE24F2041	
	2	Educational psychology	BESE24F2041	
2	2	Invertebrate science T	BESC24F2121	
2	2	Histology and embryology	BESC24F2131	
	2	Biochemistry	BESC23F2301	
2	2	Plant Physiology	BESC23F2311	

				/ 2024-2023 Third Physics
	2	Arabic	**BESC24F3011**	
	3	General teaching methods	**BESKI24F3071**	
	3	Educational research methodology	**BEKI24F3101**	
	3	Modern physics	BESC24F3341	
	2	Quantum mechanics	**BESC24F2231**	
	2	Astronomy	**BESC24F3231**	
-	2	English	BEEN24F3011	
	2	Curricula and textbooks	BEKI24F4061	
2	2	Electronics science	BESC23F3271	
	3	Solid state physics	BESC23F3321	
2	2	Methods of teaching science	BEKI23F3071	
2	2	Radioactivity	BESC24F3241	
				/ 2024-2023 Third Chemistry
	2	Arabic	BESC24F3011	
	3	General teaching methods	BESKI24F3071	

	3	Educational research methodology	BEKI24F3101	
2	2	Coordination Chemistry	BESC24F3301	
2	2	Organic mechanics	BESC24F3221	
2	2	Industrial chemistry	BESC23F3071	
–	2	English	BEEN24F3011	
	2	Curricula and textbooks	BEKI24F4061	
2	2	Oil and petrochemicals	BESC23F3191	
2	2	Biochemistry	BESC23F3011	
	2	Methods of teaching science	BEKI23F3071	
2	2	Soil chemistry	BESC24F3241	
				2023–2024 / Third Biology
	2	Arabic	BESC24F3011	
	3	General teaching methods	BESKI24F3071	
	3	Educational research methodology	BEKI24F3101	
2	2	animal Physiology	BESC24F3171	
2	2	Parasitology	BESC24F3181	
2	3	Plant and animal production	BESC24F3331	
–	2	English	BEEN24F3011	
	2	Curricula and textbooks	BEKI24F4061	
2	2	Immunology	BESC24F3031	
2	2	world of insects	BESC24F3151	
	2	Methods of teaching science	BEKI23F3071	
	2	Plant classification	BESC24F3291	

				/ 2024-2023 Fourth Year Chemistry
	2	Arabic	BEAR23F4041	
	3	Professional ethics		
2	2	Educational supervision administration	BEKI23F4051	
2	1	Food industry	BESC23F4091	
-	2	General teaching methods	BESC23F4041	
	1.5	Computer		
2	2	Analytical chemistry	BESC24F4061	
	2	clinical Chemistry	BESC24F4051	
2	2	Graduation research project		
	12	Application		
				2023-2024 Fourth Physics
	2	Arabic	BEAR23F4041	
	3	Professional ethics		
2	2	Educational supervision administration	BEKI23F4051	
	2	General teaching methods	BESC23F4091	
2	1	Food industry	BESC23F4041	
	1.5	Computer		
2	3	Laser	BESC23F4081	
2	2	Electromagnitic physics	BESC23F4021	
2	2	Graduation research project	BEAR23F4041	
	12	Apllication		

				2023-2024, fourth Biology
	2	Arabic	BEAR23F4041	
	3	Professional ethics		
2	2	Educational supervision administration	BEKI23F4051	
2	1	Food industry	BESC23F4091	
	2	General teaching methods	BESC23F4041	
-	1.5	Computer		
	2	General teaching methods	BESC24F4011	
2	2	Genitics	BESC24F4011	
	2	Serums and vaccines	BEAR23F4041	
	3	Graduation research project		
		Apllication		

8. Expected learning outcomes of the programme	
Knowledge	
The academic program, in its three branches, aims to achieve the educational and scientific goals of students. By the end of this program, students will be able and qualified to provide the required level of various requirements of government institutions and others	.
Skills	
Within the program, students develop different and diverse skills educationally, scientifically, and culturally	Within the program, students develop different and diverse skills educationally, scientifically, and culturally
Value	
Be direct and indirect. There are many direct tests, including written tests, oral tests, discussion, and active participation .during the lecture	

Social and cultural activities at the college, university, or community level (according to the course objectives), as well as indirect ones, such as conducting questionnaires,	

9. Teaching and learning strategies

Lecture method

Discussion method-

Method of interrogation

Method of practical application in the laboratory

10. Evaluation methods

.Written tests

Oral exams

.Activities and reports

Active participation during the lecture –

11. Education institution

Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
	physics	Biophysics				
	Chemistry	Organic				
	Biology	Biollogical technologies				
	Chemistry	Inorganic				
	agriculture	Plant production				

	Chemistry	Inorganic				
	Chemistry	Inorganic				
	Chemistry	Biochemistry				
	Biology	Plant				
	Physics	Laser				
	Physics	Plasma physics				
	Biology	Microbiology				
	Biology	Microbiology				
	chemistry	Analytical Chemistry				
	Biology	Embryonic tissue				
	Biology	Microbiology				
	physics	Thioritical Physics				
	Chemistry	Inorganic				
	Biology	Animal physiology				
	physics	Solid physics				
	Biology	Animal physiology				
	Physics	Nuclear physics				
	Biology	Microbiology				
	Teaching methods	Teaching methods				
	chemistry	Industrial				

	Software engineering	Artificial intelligence				
	physics	Physics				
	Geologist	Geochemistry				
	agriculture	Plant protection				
	physics	Physics				
	chemistry	Inorganic				
	chemistry	Inorganic				
	Biology	Biology				
	Biology	Biology				
	Teaching methods	Teaching methods				
	Biology	Biology				
	Biology	Biology				
	Physics	Physics				
	Biology	Biology				
	Biology	Biology				
	agriculture	Plant protection				
	Chemistry	Chemistry				
	Chemistry	Industrial chemistry				
	Chemistry	Inorganic				
	Biology	Biology				
	Biology	Embryonic tissue				

12. Professional Development

Mentoring new faculty members

Briefly describes the process used to mentor new, visiting, full-time, and part-time faculty at the institution and department level.

Professional development of faculty members

The increasing use of materials and references that rely on information technology or the Internet

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Change in course content based on the results of new scientific research in the field, updating the infrastructure and ongoing programs, experimenting with different methods of teaching distance, automated, traditional, etc)

13. Acceptance Criterion

Central admission takes place through the Ministry of Higher Education and Scientific Research.

14. The most important sources of information about the program

- .Methodological books approved by sectoral committees
- .Basic references for each course
- .Foreign sources that support each course
- Scientific journals, reports…etc
- E-books, websites, etc
- Field visits through observation material for all departments

15. Program Development Plan

Searching for modern sources from reliable electronic sites, as well as diversity in methods of delivering lectures and using all modern methods used in teaching.

Curriculum skills chart																			
Please check the boxes corresponding to the individual learning outcomes from the program subject to evaluation																			
Learning outcomes required from the programme																			
General and transferable skills (or) Other skills related to employability and personal development				thinking skills				Subject-specific skills				Knowledge and understanding				Basic Or optional	Course Name	Course Code	Year/level
D4	D3	D2	D1	C4	C3	C2	C1	B4	B3	B2	B 1	A4	A3	A2	A1				
		/	/	/	/	/			/	/		/	/	/	/		general chemistry	BESC22F1021	
/	/				/	/	/			/	/	/	/	/	/		Logic mathemati) (cs	BESC22F1041	
	/	/	/	/					/	/			/	/	/		General physics	BESC22F1061	
	/	/	/		/	/	/	/					/	/	/		Human biology	BESC22F1081	

																biology	**BESC22F1091**	
																Laboratory security and safety	**BESC22F1101**	
/	/	/			/	/			/	/	/		/	/	/		**Arabic**	**BEAR22F1061**	
/	/	/		/	/							/	/	/	/		**human rights**	**BEHI22F1051**	
		/	/	/				/		/	/		/	/	/		**Basics of psychology**	**BEKI22F1041**	
	/					/	/			/		/	/	/	/		**the computer**	**BEMA22F1051**	
		/	/	/			/	/	/			/	/	/	/		**English**	**BEEN22F1111**	
			/	/	/	/							/	/	/		**Islamic education**	**BEIS22F1031**	
							/	/	/	/			/	/	/		**Principles of basic education**	**BEKI22F1031**	

				/	/	/				/	/	/					Invertebrates	BESC22F2121	The second phase
		/	/		/	/	/						/	/			Histology	BESC22F2131	
/	/	/		/	/			/		/	/	/	/				cytology	BESC22F2141	
	/					/	/			/		/	/	/	/		the computer	BEMA22F2041	
/				/	/	/		/		/	/		/	/	/		Microbiology	BESC 22F2021	
/				/	/	/		/		/	/		/	/	/		Environment and pollution	BESC 22F2011	
				/	/	/		/		/	/		/	/	/		Virology	BESC22F2151	
/			/	/	/								/	/	/		organic chemistry	BESC 22F2041	
/							/	/		/	/	/	/	/			Embryology	BESC 22F2261	
/			/	/	/			/	/	/			/	/	/		Soil chemistry	BESC 22F2281	
/						/	/	/				/	/	/			Inorganic chemistry1	BESC22F2061	

/						/	/	/				/	/	/			Inorganic chemistry2	BESC22F2171	
	/	/	/		/	/	/			/	/			/			Analytical chemistry1	BESC22F2051	
	/	/	/		/	/	/			/	/			/			Analytical Chemistry 2	BESC22F2181	
/				/	/	/	/			/	/		/		/		Physical chemistry	BESC22F2191	
/										/	/	/	/	/	/		Calculus	BESC 22F2081	
/			/	/	/		/	/		/	/	/	/	/	/		Heat and thermodynamics	BESC 22F2091	
/			/	/	/					/	/	/	/	/	/		Optical physics	BESC22F2211	
/			/	/	/		/	/		/	/	/	/	/	/		Wave motion and sound	BESC22F2071	
							/	/		/	/	/					Material properties	BESC22F2221	
/	/			/	/	/		/		/		/		/			Physics of mechanics	BESC22F2231	

/						/	/	/	/	/	/	/	/				Linear algebra	BESC 22F2201	
/	/			/	/					/	/	/	/	/	/		Electrical physics	BESC 22F2271	
/	/			/	/		/	/		/	/	/	/	/	/		Environmental and health education	BESC22F2241	
	/	/		/	/					/	/	/	/	/	/		English	BEEN22F2251	
/	/	/		/	/		/	/		/	/	/	/	/	/		Democracy	BEHI22F2101	
/				/	/					/	/	/	/	/	/		Arabic	BEAR22F2041	
/				/	/		/	/		/	/	/	/	/	/		Educational psychology	BESE22F2041	
	/					/	/			/		/	/	/	/		the computer	BEMA22F2051	
	/	/	/	/			/	/			/	/			/		Psychological health	BESE22F2051	
/	/	/	/			/	/				/	/	/	/	/		Educational guidance	BEKI22F2131	

/	/			/	/					/	/	/	/	/	/		Educational statistics	BEKI22F2141	
/	/			/	/		/	/		/	/	/	/	/	/		Biochemistry1	BESC22F3011	third level
/	/			/	/		/	/		/	/	/	/	/	/		Biochemistry2	BESC22F3311	
	/	/		/	/					/	/	/	/	/	/		Vegetable production	BESC22F3021	
/				/	/					/	/	/	/	/	/		Microbiology	BESC22F3041	
/				/	/		/	/		/	/	/	/	/	/		Phosphorus is a plant	BESC22F3051	
	/	/	/	/			/	/			/	/			/		Organic Chemistry1	BESC22F3061	
/	/	/	/			/	/				/	/	/	/	/		Industrial Chemistry1	BESC22F3071	
/				/	/	/		/		/	/		/	/	/		Coordination inorganic chemistry	BESC22F3301	
/				/	/	/		/		/	/		/	/	/		Electrical physics	BESC22F3091	

				/	/	/		/		/	/		/	/	/		Physical chemistry	BESC22F3101	
/			/	/	/								/	/	/		Atomic physics	BESC22F3111	
/							/	/		/	/	/	/	/			Relativistic physics	BESC22F3121	
/			/	/	/			/	/	/			/	/	/		Quantum physics	BESC22F3131	
/						/	/	/				/	/	/			animal production	BESC22F3141	
	/	/	/		/	/	/			/	/			/			Insects	BESC22F3142	
/				/	/	/	/			/	/		/		/		Immunology	BESC22F3031	
/				/	/	/		/		/	/		/	/	/		Faslaja is an animal	BESC22F3144	
/				/	/	/		/		/	/		/	/	/		Parasitology	BESC22F3145	
				/	/	/		/		/	/		/	/	/		Industrial Chemistry2	BESC22F3146	
/			/	/	/								/	/	/		My lunch metabolism	BESC22F3147	

/							/	/		/	/	/	/	/			Organic diagnosis 3	BESC22F3148	
/			/	/	/			/	/	/			/	/	/		Organic chemistry2	BESC22F3149	
/						/	/	/				/	/	/			Astronomy	BESC22F3150	
	/	/	/		/	/	/			/	/			/			Radioactivity	BESC22F3151	
/				/	/	/	/			/	/		/		/		Solid physics	BESC22F3321	
	/	/	/	/					/	/			/	/	/		Electronic	BESC22F3154	
				/	/	/			/	/			/	/	/		to watch	Without code	
	/	/	/		/	/	/	/					/	/	/		Algae fungi	BESC22F3281	
/	/	/			/	/			/	/	/		/	/	/		Zoning (taxonomy)	BESC22F3291	
																	the computer		
																	Arabic		
	/					/	/			/		/	/	/	/		Research Methods	BEKI22F3101	

			/	/	/	/	/		/	/			/	/	/		Educational techniques	BEAR22F3061	
	/	/	/	/					/	/			/	/	/		Measurement and evaluation	BEKI22F3061	
			/	/	/	/	/		/	/			/	/	/		General teaching methods	BEKI22F3071	
	/	/	/	/					/	/			/	/	/		Scientific education (watching)	Without code	
				/	/	/			/	/			/	/	/		Genetics	BESC22F4011	The fourth stage
	/	/	/		/	/	/	/					/	/	/		Serums and vaccines	BESC22F4031	
/	/	/			/	/			/	/	/		/	/	/		General teaching methods	BESC22F4041	
/	/	/		/	/							/	/	/	/		Clinical biochemistry	BESC22F4051	

			/	/	/	/	/		/	/			/	/	/		Analyze me	BESC22F4061	
	/	/	/	/					/	/			/	/	/		Laser	BESC22F4081	
				/	/	/			/	/			/	/	/		Electromagnetism	BESC22F4091	
	/	/	/		/	/	/	/					/	/	/		Food industry science	BESC22F4021	
/	/	/		/	/							/	/	/	/		Arabic	BEAR22F4041	
																	the computer		
		/	/	/			/	/	/			/	/	/	/		Curricula and textbooks	BEKI22F4061	
	/					/	/			/		/	/	/	/		Educational administration and supervision	BEKI22F4051	

			/	/	/	/	/		/	/			/	/	/		**Graduation research project**		
	/	/	/	/					/	/			/	/	/		**Scientific education applicatio) (n**		

Course description template

1. Course name	
; general chemistry	
2. Course code **BESC22F1021**	
3. Academic year/semester	
First academic year, first semester	
4. Date the description was prepared	
2024/26/3	
5. Attendance forms available	
Student attendance form	
6. Number of hours and study units	
hours / 3 units 48	
7. Names of the teachers responsible for the course, along with the official email	
8. Course objectives	
	a. general chemistry and the basics of Defining the concept of ,atomic components, compounds, types of chemical bonds chemical formulas, acids, bases, salts, and solutions, and their preparation. **b. Preparing students for the second stage, where general chemistry is the basis for understanding types of chemistry such as analytical, physical, organic, industrial, biological, and inorganic chemistry.**

	c. Developing students' attitudes towards applying this information in study and learning and in various applied situations related to chemistry

9. Learning and understanding strategies

Lecture method by the teacher

Discussion method

Lecture method by the student

1. Course structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week
All kinds of evaluation methods	**Lecture + discussion**	**Chemistry, a summary of the beginnings of chemistry, the atom, neutrons, protons and electrons**	**Know and understand**	**3 hours 2 + theory hours practical**	**1**
	Lecture + discussion	**Dalton, Bohr and Rutherford , theories**	**Know and understand**	**3 hours 2 + theory hours practical**	**2**
	Lecture + discussion	**Chemical element and chemical mixtures**	**Know and understand**	**3 hours 2 + theory hours practical**	**3**
	Lecture + discussion	**Chemical and physical properties of matter and states of matter**	**Know and understand**	**3 hours 2 + theory hours practical**	**4**
	Lecture + discussion	**Types of chemical bonds**	**Know and understand**	**3 hours 2 + theory hours practical**	**5**
	Lecture + discussion	**Atom functions and their calculations**	**Know and understand**	**3 hours 2 + theory hours practical**	**6**

	Lecture + discussion	Chemical equation and its balance. Lewis symbol and ,oxidation numbers	Know and understand	3 hours 2 + theory hours practical	7	
	Lecture + discussion	Lewis symbol and oxidation ,numbers	Know and understand	3 hours 2 + theory hours practical	8	
	Lecture + discussion	.Types of chemical formulas Molecular. Positivism and compositionality	Know and understand	3 hours 2 + theory hours practical	9	
	Lecture + discussion	Semester exam	Know and understand	3 hours 2 + theory hours practical	10	
	Lecture + discussion	Hammams , bases , and salts	Know and understand	3 hours 2 + theory hours practical	11	
	Lecture + discussion	,Solutions and their types chemical calculations, molarity ,and formality Chemical calculationsppt, ppm, ppb	Know and understand Know and understand	3 hours 2 + theory hours practical	12	

Evaluation	
Achievement exams and distribution of grades out of 100 **credits , which includes the semester exam for theory and practical, along with 40 daily exams and attendance . Score for the exam: 60 marks for the final exams**	
Formative evaluation	
Educational resources	
nothing	Methodical books
1. ,Principles of General Chemistry Mohieddin Al-Bakoush 2. Book of General and Applied Chemistry, Prof. Dr. Muhammad bin Ibrahim Al-Hassan 3. Foundations of general chemistry Mehdi Naji 4. Inorganic and coordination chemistry, Ihsan Abdel Ghani 5. Basics of General Chemistry by Hassan Ahmed Shehata	Main sources
	Additional sources
	websites

Course description form

1. Course name	
Math logic	
2. Course code	
BESC22F1041	
3. Academic year/semester	
First semester 2023-2024	
4. Date the description was prepared	
2024/22/3	
5. Attendance forms available	
My presence only	
6. Number of hours and study units	
hours / 2 units 30	
7. Names of the teachers responsible for the course, along with the official email	
8. Course objectives	
	1- and its terminology by reviewing various logic Defining the concept of mathematical concepts **-2Apply the skills in using these terms in daily life** **3- Teaching the basics of making logical tables and how to deal with them** **4- Study of practical simplification of logical sentences** **Developing students' attitudes towards applying this information in study and learning and in different life situations**
9. Learning and understanding strategies	
Lecture method by the teacher **Discussion method** **Lecture method by the student**	

10. Course structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week
All kinds of evaluation methods	**a lecture**	Principles of - mathematical logic logical expression	**Know and understand**	**hours 2 hours 2 hours 2 hours 2 evening)**	**1**
	a lecture	Truth tables - solve examples of truth tables	**Know and understand**	**hours 2 hours 2 hours 2 (evening**	**2**
	a lecture	Truth tables - solve examples of truth tables	**Know and understand**	**hours 2 hours 2 hours 2 hours 2) (evening**	**3**
	a lecture	Algebra of expressions	**Know and understand**	**hours 2 hours 2 hours 2 hours 2) (evening**	**4**
	a lecture	Sports dialogues	**Know and understand**	**hours 2 hours 2 hours 2 hours in the 2 evening**	**5**
	a lecture	Maswarat	**Know and understand**	**hours 2 hours 2 hours 2 hours in the 2 evening**	**6**
	a lecture	Examples of msorlet	**Know and understand**	**hours 2 hours 2 hours 2 hours in the 2 evening**	**7**
	a lecture	– Collections operations on collections	**Know and understand**	**hours 2 hours 2 hours 2 hours in the 2 evening**	**8**
	a lecture	Examples of operations on the group	**Know and understand**	**hours 2 hours 2 hours 2 hours 2 hours in the 2 evening**	**9**

	a lecture	Examples of operations on the group	**Know and understand**	**hours 2 hours 2 hours 2 hours in the 2 evening**	**10**
	a lecture	Theorems on groups	**Know and understand**	**hours 2 hours 2 hours 2 hours 2) (evening**	**11**
	a lecture a lecture	Examples of theorems on sets	**Know and understand Know and understand**	**hours 2 hours 2 hours 2 (hours in 2 the evening)**	**12**

Evaluation	
Achievement exams and distribution of grades out of 100 My final semester 70 30	
Formative evaluation	
Educational resources	
nothing	Methodical books
Principles of Mathematics by Bertrand Russell **Logical analysis of William Craig**	Main sources
	Additional sources
	websites

Course description form

1. : Name of the leg
biology
2. :Course Code
BESC22F1091
3. Semester/Year: Annual
quarterly
4. Date this description was prepared:
2024/15/4
5. Available forms of attendance:
My presence only
6. :Number of study hours (total)/number of units (total)
hours annually. 2 hours a week 24
7. Name of the course administrator (if more than one name is mentioned)
Name: **M. Dr. countenance Sam righteous** :**Teacher** email**Semasamy@uomosul.edu.iq**
8. Course objectives
The lesson aims to make the student fully aware of animal science and the activities tha animals perform Various methods of reproduction, transmission of genetic characteristics to successive .generations, and methods of coexistence with other species Its various characteristics, its relationship with it and its environment, and the study of its features and characteristics and theories of its development Learn about animal body systems
9. Teaching and learning strategies
Lecture method by the teacher **Discussion method** **Lecture method by the student** The strategy
10. Course structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week
All kinds of evaluation	a lecture theoretical	A general introduction to zoology and theories of its evolution	Know and understand	2 hours 2 hours	1
	a lecture theoretical	Definition of animals and theories of evolution	Know and understand	2 hours 2 hours	2
	a lecture theoretical	Classification of animal tissues and their characteristics, epithelial and connective tissues	Know and understand	2 hours 2 hours	3
	a lecture theoretical	Study of muscle and nervous tissue	Know and understand	2 hours 2 hours	4
	a lecture theoretical	Study of animal taxonomy and its primary division	Know and understand	2 hours 2 hours	5
	a lecture theoretical	Study of the characteristics and characteristics of the annelid phylum (earthworm)	Know and understand	2 hours 2 hours	6
	a lecture theoretical	Study of the characteristics and characteristics of the arthropod phylum	Know and understand	2 hours 2 hours	7
	a lecture theoretical	Semester exam	Know and understand	2 hours 2 hours	8
	a lecture theoretical	The difference between animal and plant	Know and understand	2 hours 2 hours	9

	a lecture theoretical	**Classification, the cell and its components**	**Know and understand**	**2 hours 2 hours**	**10**
	a lecture theoretical	**Simple plant tissue**	**Know and understand**	**2 hours 2 hours**	**11**
	a lecture theoretical	**Compound plant tissue**	**Know and understand Know and understand**	**2 hours 2 hours**	**12**

11. Course evaluation

Distribution is as follows: 25 marks for monthly and daily exams for the first semester. 25 marks for monthly and daily exams for the second semester. 50 marks for final exams

12. Learning and teaching resources

Nothing	Required textbooks (methodology, if (any
1Basics of zoology, written by Dr. Muhammad Ismail Muhammad, zoology book written by Dr. Mahmoud .Ahmed Al-Hitawi .Basics of botany/ Dr. Abdulaziz Al-Bayoumi + Dr . Yousry Al-Sayed Saleh Zoology and agricultural animal pests/ Dr. Abdel Aleem Saa Suleiman	Main references (sources)
Nothing	Recommended supporting books ,and references (scientific journals (….reports
Nothing	Electronic references, Internet sites

Course description form

1. Course name

General physics

2. Course code

BESC21F3131

3. Academic year/semester
The first stage/first course
4. Date the description was prepared
3/30/2024
5. Attendance forms available
6. Number of hours and study units
5 hours (3 hours theory + 2 hours practical)
7. Names of the teachers responsible for the course, along with the official email
8. Course objectives

•	**Laws of motion, concept of Defining the concept of classical physics gravity** **Apply the skills in using these terms in daily life** **Study the practical applications of mechanics** **Developing students' attitudes towards applying this information in – study and learning and in different life situations**

9. Learning and understanding strategies	
Lecture method by the teacher **Discussion method** **Lecture method by the student**	**The strategy**

10. Course structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week
All kinds of evaluation methods	**a lecture** **practical**	**Measurement: base and derived units** **.International System of Units –**	**Know and understand**	**3 hours** **2 hours**	**1**

		Finding the acceleration of a falling body (ground acceleration) using a simple pendulum.			
	a lecture practical	Vector and scalar quantities Transmission of movement using sprockets	Know and understand	3 hours 2 hours	2
	a lecture practical	Vectors: their concept and graphical representation – vector addition and subtraction, vector analysis, numerical and vector multiplication. Using an inclined surface to lift objects	Know and understand	3 hours 2 hours	3
	a lecture practical	Levers and their types Balancing and achieving the law of moments on a balanced lever.	Know and understand	3 hours 2 hours	4
	a lecture practical	Movement of objects in the Earth's gravitational field Find the coefficient of direct friction between two surfaces	Know and understand	3 hours 2 hours	5
	a lecture practical	Law of universal gravitation and mass movement of objects – Achieving the inverse relationship between force gain and speed gain for levers using types of levers	Know and understand	3 hours 2 hours	6
	a lecture practical	Free fall – projectiles from an inclined surface Using pulleys to lift weights or finding force gain (mechanical gain) and speed gain.	Know and understand	3 hours 2 hours	7

Evaluation	
Achievement exams and distribution of grades out of 100 **marks for monthly and daily exams . 15 marks for the practical exam. 60 marks for 25 semester exams**	
Formative evaluation	
Educational resources	
- Physics for the first year, Geologist Abdul Sattar Jawad - Physics for Earth Sciences Students Farouk Aboudi Qasira and Moayed Abdullah - General Physics for Non-Physicists Abdel Salam Abdel Amir and Abdel Karir	Methodical books
	Main sources
	Additional sources
	websites

Course description form

1. Course name
Human biology
2. Course code
BESC23G1081
3. Academic year/semester
second semester / 2024-2023
4. Date the description was prepared
2024/27/3
5. Attendance forms available
List of students' names
6. Number of hours and study units
hours/3 units 48
7. Names of the teachers responsible for the course, along with the official email
8. Course objectives

Introducing students to the different systems of the human body Make students able to visually identify the systems of the human body Introducing students to the chemical and mechanical mechanisms by which these devic work Providing students with the skill of drawing human body systems Introducing students to the function of each system in the daily physiological functioni of the body
9. Learning and understanding strategies
Theoretical lectures, pictures and practical experiments
10. Course structure

Evaluation methods	Learning methods	Topic names	Learning Outcomes	hours	the week
All kinds of ways Evaluation	a lecture Practical pa	The skeletal system, par one	Know and understand	4	1.
All kinds of evaluation methods	a lecture Practical pa	The skeletal system, par two	Know and understand	4	2.
All kinds of evaluation methods	a lecture Practical pa	Musculature	Know and understand	4	3.
All kinds of evaluation methods	a lecture Practical pa	Digestive system part or	Know and understand	4	4.
All kinds of evaluation methods	a lecture Practical pa	Digestive system part tv	Know and understand	4	5.
All kinds of evaluation methods	a lecture Practical pa	Mid-course exam	Know and understand	4	6.
All kinds of evaluation methods	a lecture Practical pa	Circulation device, part one	Know and understand	4	7.
All kinds of evaluation methods	a lecture Practical pa	,Circulation device part two	Know and understand	4	8.
All kinds of evaluation methods	a lecture Practical pa	,Circulatory system part three	Know and understand	4	9.
All kinds of evaluation methods	a lecture Practical pa	Respiratory system part one	Know and understand	4	10
All kinds of evaluation methods	a lecture Practical pa	Respiratory system part two	Know and understand	4	11
All kinds of evaluation methods	a lecture Practical pa	Nervous system	Know and understand	4	12

Evaluation	
Achievement exams and distribution of grades out of 100 daily attendance to the side for my view %5 daily exam for the theoretical aspect %5 of the theoretical half-course exam %15 for the practical aspect, daily exams, attendance, and reports %15 of the exam at the end of the course %60	
Formative evaluation	
Educational resources	
	Methodical books
Principles of histology – Dr. Hamid Ahmed Al–Hajj **.Anatomy of the human body – Dr Hikmat Abdel Karim** Human Biology Mader Sylvia et al., 201	Main sources
	Additional sources
	websites

Course description form

1. Course name
the computer
2. Course code
3. Academic year/semester
first 2024–2023
4. Date the description was prepared
2024/22/3
5. Attendance forms available
My presence only
6. Number of hours and study units
hours / 2 units 48
7. Names of the teachers responsible for the course, along with the official email
8. Course objectives

	1- Defining the conceptof MSoffies **and its terminology by reviewing t instructions various** 2- Applying **the skills in using these instructions in a practical applicatio** **3- Teaching the basics of making instructions and how to deal with th** **4- Study the practical applications of orders** **Developing students' attitudes towards applying this information in -5 practical situations study and learning and in various**

9. Learning and understanding strategies

Lecture method by the teacher

Discussion method

Lecture method by the student

10. Course structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week
All kinds of evaluation methods	**a lecture practical**	Introduction, opening the program, components ofthe Excel 2010 window ,file menu , and closing the program	**Know and understand**	**hours 3 hours 3 hours 3 hours 33 pm**	**1**
	a lecture practical	,Home tab, write text formatting, and find and replace text	**Know and understand**	**hours 3 hours 3 hours 33 pm**	**2**
	a lecture practical	Insert tab, insert images and shapes, header and footer	**Know and understand**	**hours 3 hours 3 hours 33 pm**	**3**
	a lecture	Insert tab, insert images and shapes, header and footer	**Know and understand**	**hours 3 hours 3 hours 33 pm**	**4**
	a lecture practical	Inserting mathematical equations and inserting tables	**Know and understand**	**hours 3 hours 3 hours 33 pm**	**5**
	a lecture practical	,Page layout tab, margins orientation + daily exam	**Know and understand**	**hours 3 hours 3 hours 33 pm**	**6**

	a lecture practical	Insert tab, insert images and shapes, header and footer	**Know and understand**	**hours 3 hours 3 hours 33 pm**	**7**
	a lecture	Review Tab, Spelling and Grammar Check, View Tab	**Know and understand**	**hours 3 hours 3 hours 33 pm**	**8**
	a lecture practical	the Powerpoint 2010 presentation program window	**Know and understand**	**hours 3 hours 3 hours 33 pm**	**9**
	a lecture practical	,Create a new presentation ,open a previous presentation save and print	**Know and understand**	**hours 3 hours 3 hours 33 pm**	**10**
	a lecture	Add slides, edit and arrange Change the ,presentations presentation design	**Know and understand**	**hours 3 hours 3 hours 33 pm**	**11**
	a lecture a lecture	,Open a previous presentation save and print	**Know and understand Know and understand**	**hours 3 hours 3 hours 33 pm**	**12**

Evaluation	
Achievement exams and distribution of grades out of 100 **marks for monthly and daily exams . 15 marks for the practical exam. 60 marks for 25 semester exams**	
Formative evaluation	
Educational resources	
nothing	Methodical books
Office 2010 **Islam Ahmed**	Main sources
Application on calculator and display on monitor	Additional sources
	websites

Course description form

1. Course name
Invertebrate science
2. Course code
BESC24F2121
3. Academic year/semester
second semester / 2024-2023
4. Date the description was prepared
3-31-2024
5. Attendance forms available
38 male and female students
6. Number of hours and study units
hours theoretical 24 practical hours (for each group 14A andB (academic credits 3
7. Names of the teachers responsible for the course, along with the official email
8. Course objectives

•	**1.** Defining the concept of invertebrates and their terminology b reviewing the various invertebrate animal phyla **2.** Apply the skills in using these terms in daily life **3.** Teaching the basics of identifying and classifying invertebrate **4.** Study the importance of invertebrates and their relationship with humans and the plants and animals surrounding them **5.** Developing students' attitudes towards applying this information in study and learning and in different life situations

9. Learning and understanding strategies
10. Course structure

Evaluation methods	Learning methods	Topic names	Learning Outcomes	hours	the week
	a lecture discussion Presentations Educational videos	Invertebrate science	The student gets ,to invertebrates ,understand distinguish, and compare invertebrates	24	12

Evaluation	
Achievement exams and distribution of grades out of 100 Pursuit 40% (25% theoretical + 15% practical). Final 60% (40% theoretical + 20% practical)	
Formative evaluation	
Educational resources	
	Methodical books
An Introduction to the Invertebrates, (Janet Moore, 2006) 2nd Ed . Cambridge University Press. Cambridge.UK.	Main sources
	Additional sources
	websites

Course description form

1. The name of the leg pain
Tissue
2. : Leg symbol
BESC22F2131
3. Academic year/semester
quarterly
4. Date this description was prepared:
2024/15/4
5. Available forms of attendance:
My presence only
6. :Number of study hours (total)/number of units (total)
theoretical hours + 24 practical hours (3) units 24
7. Name of the course administrator (if more than one name is mentioned)
8. Course objectives
It aims for the student to recognize the importance and types of tissues that make up the body of a .living organism, their characteristics, characteristics, and functions in the body
9. Teaching and learning strategies

Lecture method by the teacher **Discussion method** **Lecture method by the student**	The strategy

10. Course structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week
All kinds of evaluation method	a lecture theoretical	,Epithelial tissues: their definition types, and functions in the body	Know and understand	2 hours 2 hours	1
	a lecture theoretical	Connective tissues, their characteristics, types, importance and functions	Know and understand	2 hours 2 hours	2
	a lecture theoretical	Special connective tissue, which includes cartilage, the most important ,types of which are hyaline cartilage elastic cartilage, white fibrous .cartilage, and types of fibers	Know and understand	2 hours 2 hours	3
	a lecture theoretical	Blood and types of blood cells	Know and understand	2 hours 2 hours	4
	a lecture theoretical	Muscle tissue	Know and understand	2 hours 2 hours	5
	a lecture	,Study of embryology, its definition importance, and most important theories	Know and	2 hours 2 hours	6

	theor etical		understan d		
	a lectur e theor etical	Study of the stages of embryogenesis	Know and understan d	2 hours 2 hours	7
	a lectur e theor etical	Gamete formation, the fertilization process, and the difference between male and female gametes	Know and understan d	2 hours 2 hours	8
	a lectur e theor etical	Diploidy, the difference between mitosis and cleavage, and the types of mitosis	Know and understan d	2 hours 2 hours	9
	a lectur e theor etical	,Epithelial tissues: their definition types, and most important functions in the body	Know and understan d	2 hours 2 hours	10
	a lectur e theor etical	Semester exam	Know and understan d	2 hours 2 hours	11
	a lectur e theor etical	Review of chapter material	Know and understan d Know and understan d	2 hours 2 hours	12
11. Course evaluation					

Distribution is as follows: 25 marks for monthly and daily exams for the first semester. 25 marks for monthly and daily exams for the second semester. 50 marks for final exams	
12. Learning and teaching resources	
Nothing	Required textbooks (methodology, if (any
1	Main references (sources)
Nothing	Recommended supporting books ,and references (scientific journals (….reports
Nothing	Electronic references, Internet sites

Course description form

1. Course name
cytology
2. Course code
BESC24F214 1
3. Academic year/semester
First semester , 2023-2024
4. Date the description was prepared
16-4-2024
5. Attendance forms available
A list of the names of the students of the second stage, Biology branch / Sabahi
6. Number of hours and study units
hours theory + 2 hours practical , 3 units 3
7. Names of the teachers responsible for the course, along with the official email
8. Course objectives

Cell components and the difference between cell types **Cell proliferation and nucleic acid duplicatio**	**Giving the student an idea about the cell**

9. Learning and understanding strategies

road lecture from before Teaching
road Discussion
The method of assignments and intellectual questions encourages the student to read external sources and expand on the topic

10. Course structure

Evaluation methods	Learning methods	Topic names	Learning Outcomes	hours	the week
All learning methods	a lecture practical	introduction on cell And about Historical , relationship science cell With science The other	knowledge And understa	5	1
All learning methods	a lecture practical	, Cell theory , cell shape and si levels of organization In living organisms	knowledge And understa	5	2
All learning methods	a lecture practical	Prokaryotic and , eukaryotic cells bacteria and their structure	knowledge And understa	5	3
All learning methods	a lecture practical	,Plant cells, animal cells cell membrane	knowledge And understa	5	4
All learning methods	a lecture practical	Cytoplasm , organelles and membrane structures	knowledge And understa	5	5
All learning methods	a lecture practical	, Mitochondria , ribosomes , lysosomes Microbodies	knowledge And understa	5	6
All learning methods		Semester exam	knowledge And understa		7

All learning methods	a lecture practical	Centrosomes , plastids , cellula vacuoles	knowledge And understa	5	8
All learning methods	a lecture practical	Nucleus , ultrastructure of the nucleus , cell chemistry	knowledge And understa	5	9
All learning methods	a lecture practical	Chromosomal amino acids	knowledge And understa	5	10
All learning methods	a lecture practical	Acids Nuclear	knowledge And understa	5	11
All learning methods	a lecture practical	DNA replication mechanism	**knowledge And understand**	5	12
All learning methods	a lecture practical	Gene expression	**knowledge And understand**	5	13

Evaluation	
Achievement exams and distribution of grades out of 100 theoretical marks + 15 practical marks (40 marks annual average) and 60 marks for final exam 25	
Formative evaluation	
Educational resources	
nothing	Methodical books

Cell science book	Main sources
Master's and doctoral theses in the specialty	Additional sources
Scientific websites	websites

Course description form

1. Course name					
Microbiology					
2. Course code					
BESC24F202 1					
3. Academic year/semester					
First semester2023-2024					
4. Date the description was prepared					
2024/14/4					
5. Attendance forms available					
List of students' names					
6. Number of hours and study units					
hours practical + 3 hours theoretical , 3 units 2					
7. Names of the teachers responsible for the course, along with the official email					
8. Course objectives					
ingredients The locations of microorganisms i **water, soil, and food**		**,Study of microbiology, its types** **bacterial cells and their components**			
9. Learning and understanding strategies					
road lecture from before Teaching **road Discussion** **The method of assignments and intellectual questions encourages the student to read external sources and expand on the topic**					
10. Course structure					
Evaluation methods	**Learning methods**	**Topic names**	**Learning Outcomes**	**hours**	**the week**
All learning methods	a lecture practical practical	identification science Biology Microscopic , Brief Historical on Genesis And develop science Biology	knowledge And understa	5	1

All learning methods	a lecture practical	features Biology And classification Bacteria And the foundations Approved in Classification And shap cells Bacterial	knowledge And understand	5	2
All learning methods	a lecture practical	Structure of the bacterial cell (extern structures (and interior	knowledge And understand	5	3
All learning methods	a lecture practical	Cell wall, membrane and protoplast	knowledge And understand	5	4
All learning methods	a lecture practical	feed Biology Microscopic	knowledge And understand	5	5
All learning methods	a lecture practical	Bacterial growth and growth stages	knowledge And understand	5	6
All learning methods	a lecture practical	Biology Microscopic Watercolor	knowledge And understand	5	7
All learning methods		Exam quarterly		5	8
All learning methods	a lecture practical	Tests Chemical life	knowledge And understand	5	9
All learning methods	a lecture practical	Microorganisms in food	knowledge And understand	5	10
All learning methods	a lecture practical	Soil microorganisms	knowledge And understand	5	11
All learning methods	a lecture practical	Industrial microbiology	knowledge And understand	5	12
All learning methods	a lecture practical	Pathogenic microorganisms	knowledge And understand	5	13

Evaluation	
Achievement exams and distribution of grades out of 100 theoretical marks + 15 practical marks (40 marks annual average) and 60 marks for final exam 25	
Formative evaluation	
Educational resources	
Prescot book	Methodical books

Principles of microbiology	Main sources
Master's and doctoral theses in the specialty	Additional sources
Scientific websites	websites

Course description form

1. :Course name
Environmental and health education
2. Course code
BESC22F2011
3. Academic year/semester
Second semester – 2024
4. :Description preparation date
2024/4/1
5. :Available attendance forms
Student absence forms
6. :Number of hours and study units
hours per week – 2 units 4
8. Course objectives For the student to learn about healthy habits and form correct attitudes to build an effective ,generation in society The student gets to know the levels of health, the student gets to know the requirements of the individual according to age, gender, at home or school, and what are the means of caring for him, the student gets to know the nutritional requirements necessary to build a ,healthy and disease-free body, the student gets to know the common pathogens. In society especially during childhood or school age, and how to prevent them, the student should know the harms of harmful habits and how to avoid them (Such as smoking, drugs...). The .student will be familiar with how to administer first aid in some emergency situations
9. Learning and understanding strategies – Using modern technologies in education, such as a display device (data show) – Use the brainstorming mechanism – Surprise exams

10. Course structure					
Evaluation methods	**Learning methods**	**Topic names**	**Learning Outcomes**	**hours**	**the week**
Homework and projects Participate in class and discussions the exams	Explanatory - .lectures Group - .discussions	Definition of environmental and health education and its objectives, the concept ,of public health components of public health, and family health. Vaccination schedule	Understanding the - concept of environmental and .health education Realizing the - importance of environmental and health education in promoting a sustainable and .healthy society	2	**the first**
Homework and projects Participate in class and discussions the exams	Explanatory - .lectures Group - .discussions	School health objectives, school services, opportunity between lessons, the role of the teacher in the school in caring for students	Understanding the - concept of public .health Identifying the basic - roles of public health in society	2	**the second**
Homework and projects Participate in class and discussions the exams	Explanatory - .lectures Group - .discussions	Food and its components, basic ,organic substances , inorganic substances additional organic substances (vitamins) Malnutrition, + **daily examination**	Understanding the - basic components of food and their .functions Identify vitamins and - their importance to the .body	2	**the third**
Homework and projects Participate in class and discussions the exams	Explanatory - .lectures Group - .discussions	,Food poisoning ,aetiological factors classification of .diseases and aetiology Disease resistance factors	Identify the causes - and symptoms of food .poisoning Understand how to - prevent infectious .diseases	2	**the fourth**
Homework and projects Participate in class and discussions the exams	Explanatory - .lectures Group - .discussions	Definition of ,communicable diseases ,tuberculosis ,meningitis, diphtheria ,whooping cough .diarrhea, and polio	Knowing the types - of communicable diseases and their methods of .transmission Understanding ways - to prevent infectious .and epidemic diseases	2	**Fifth**
Homework and projects Participate in class and discussions the exams	Explanatory - .lectures Group - .discussions	,Pandemic influenza general methods , AIDS of preventing infectious and epidemic diseases	Understanding the - nature of pandemic influenza and how it .spreads Identify the - symptoms of pandemic influenza and the differences between it and other .respiratory diseases Knowing ways to - prevent pandemic influenza and the importance of .vaccination	2	**VI**
		Semester exam			**Seventh**
Homework and projects Participate in class and discussions	Explanatory - .lectures Group - .discussions	Some harmful habits smoking, drug) addiction, drinking alcohol, using	Identify harmful - habits and their .impact on health	2	**VIII**

the exams		medications without (consulting a doctor	Mastering basic first - .aid skills		
Homework and projects Participate in class and discussions the exams	Explanatory - .lectures Group - .discussions Interactive - lectures with the use of realistic ambulance .equipment	,First aid (wounds (bleeding, fractures	Learn how to deal - with various emergency situations ,such as wounds bleeding, and .fractures effectively	2	**Ninth**
Homework and projects Participate in class and discussions the exams	Explanatory - .lectures Group - .discussions	First aid supplement (burns)	Understand the - basics of burn .management	2	**The tenth**
Homework and projects Participate in class and discussions the exams	Explanatory - .lectures Group - .discussions	First aid supplement ,epilepsy, drowning) (home pharmacy	Understanding the - basics of epilepsy and .drowning cases Master basic home - pharmacy setup and .use	2	**eleventh**
		General review of lectures		2	**twelveth**

Evaluation	
Achievement exams and distribution of grades out of 100 Daily exam 10% Semester exam 20% Final exam 70%	
Formative evaluation	
Educational resources	
nothing	Methodical books
nothing	Main sources
Essentials of environmental health. (2012) By Sudbury, MA Critical Environmental and Health Education (2001) By Weare, K.	Additional sources
https://dribraheem.blogspot.com/2017/12/blog-post_14.html https://annabaa.org/nbanews/2012/02/187.html https://en.wikipedia.org/wiki/Environmental_health	websites

Course description form

1. Course name
Virology
2. Course code
BESC24F2151
3. Academic year/semester
The first semester – the second stage, biology
4. Date the description was prepared
3-31-2024
5. Attendance forms available
male and female students 38
6. Number of hours and study units
weeks - 2 hours per week - 2 academic units 12
7. Names of the teachers responsible for the course, along with the official email
8. Course objectives

- 1. Defining the concept of virology and its terminology and reviewing various animal and plant viruses
- 2. Apply skills in using these terms and distinctive virus characteristics in daily life
- 3. education The basics of categorizing viruses and the characteristics adopted in that
- 4. Studying the health and environmental importance of viruses, especially those pathogenic to humans and their domestic animals
- 5. Developing students' attitudes towards applying this information in study, learning and in different life situations

9. Learning and understanding strategies
10. Course structure

Evaluation methods	Learning methods	Topic names	Learning Outcomes	hours	the week
		Introduction to virology a a brief history of virolog General characteristics viruses and their classification	The – 1 importance of learning how to	24	12

		Viruses multiply + dail testing Methods of isolating an growing viruses Viruses and other acellu factors, the importance viruses, factors determini the nature of the relationship between th virus and the host, comm methods of eliminating t .virus Virus diseases + semest exam Pathogenesis of influenz virus) Hepatitis viruses types B, C and their pathogenes Measles, rubella and mun viruses Smallpox and rabies viru AIDS virus, methods o detecting viruses General review and comprehensive exam	deal with viral diseases spread in the country Employing − 2 thinking strategies in learning and understanding the structure of the virus, the nature of its life cycle, and how to diagnose it, to		

Evaluation	
Achievement exams and distribution of grades out of 100 Strive 30% (monthly exam 20% + daily exam 10%) Final exam 70%	
Formative evaluation	
Educational resources	
	Methodical books
Willey, J.M.; Sherwood, L.M. and Woolverton, C.J. **(2009).** Prescott's Principles **of** Microbiology. 1 st ed. McGraw-Hill comp. New York. Brooks, G.F.; Morse, SA; Carroll, KC; Mietzner, T. and Butel, J. S. (2013). Jawetz, Melnick, & Adelberg Medical Microbiology, 26th ed. McGraw-Hill Companies, New York.	Main sources
	Additional sources
	websites

Course description form

11. Course name
; Soil chemistry
12. Course code
13. Academic year/semester
First academic year, first semester
14. Date the description was prepared
2024/26/3
15. Attendance forms available
Student attendance form
16. Number of hours and study units
hours / 3 units 48
17. Names of the teachers responsible for the course, along with the official email

18. Course objective

1. Students understand the importance of studying soil chemistry, types of earth rocks, and the concept of weathering
2. ,Apply students' skills to understand soil primary and secondary minerals sources of organic matter and cations, and replacement forces
3. Studying the practical applications of everything related to soil, such as soil acidity and basicity, and estimating some elements
4. ,Developing students' attitudes towards applying this information in study learning and in different life situations

19. Learning and understanding strategies

Lecture method by the teacher

Discussion method

Brainstorming method

2. Course structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week
All kinds of birds s evaluation	Dialogue and discussion	The importance of studying soil	Know and understand	2 hours 2 hours	1
	Dialogue and discussion	Essential elements in the soil	Know and understand	2 hours 2 hours	2
	Dialogue and discussion	Primary and secondary minerals in soil	Know and understand	2 hours 2 hours	3
	Dialogue and discussion	What is weathering and what are ?its sources	Know and understand	2 hours 2 hours	4
	Dialogue and discussion	Physical weathering and chemical weathering	Know and understand	2 hours 2 hours	5
	Dialogue and discussion	Organic matter in the soil	Know and understand	2 hours 2 hours	6
	Dialogue and discussion	Analysis of organic matter in soil	Know and understand	2 hours 2 hours	7
	Student participation and mental analysis	Study of clay soil using X-rays	Know and understand	2 hours 2 hours	8
	Dialogue and discussion	Cation capacity	Know and understand	2 hours 2 hours	9
	Student participation and mental	Semester exam	Know and understand	2 hours 2 hours	10
	Dialogue and discussion	Substitution power and its most important factors	Know and understand	2 hours 2 hours	11
	Student participation and mental analysis	The effect of cations on plant growth	Know and understand Know and understand	2 hours 2 hours	12

Evaluation	
Achievement exams and distribution of grades out of 100 **credits , which includes the semester exam for theory and practical, along with 40 daily exams and attendance . Score for the exam: 60 marks for the final exams**	
Formative evaluation	
Educational resources	
nothing	Methodical books
6. **.Soil Chemistry Daniel S Struan**	Main sources
	Additional sources
	websites

Course description form

1. : Course Name
Inorganic chemistry
2. : Course Code
BESC22F2061
3. Semester / Year : Annual
quarterly
4. Date this description was prepared**:**
3 202/10/2
5. Available forms of attendance**:**
My presence only
6. :Number of study hours (total)/number of units (total)
hours / 4 hours per week 48 units 3/

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

8. Course objectives

.1 Define the concept of inorganic chemistry in general

.2 Applying skills in knowing the types of bonds and the three theories of association and solving all examples of geometric shapes and .hybridization

Identify the four quantum numbers and solve .3 various examples to extract them

.4 Study of nuclear chemistry and its applications

.5 Developing students' skills in the benefits and types nuclear reactions

A study on enriched and depleted uranium -6

Identify methods of dissolution and crystallization -7

Identify the preparation of sodium thiosulfate -8

Learn about the preparation of calcium oxide -9

9. Teaching and learning strategies

e method by the teacher

ssion method

e method by the student

ategy

10. Course structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week
All kinds of evaluation methods	a lecture	Definition of inorganic chemistry	Know and understand	2 hours 2 hours	1

a lecture	Identify the types of bonds and theories of association	Know and understand	2 hours 2 hours	2
a lecture	Identify quantum numbers and term symbols	Know and understand	2 hours 2 hours	3
a lecture	Identify the geometric structure of the compound and the type of hybridization	Know and understand	2 hours 2 hours	4
a lecture	Crystal field recognition	Know and understand	2 hours 2 hours	5
a lecture	Definition of nuclear chemistry	Know and understand	2 hours 2 hours	6
a lecture	Types of nuclear reactions	Know and understand	2 hours 2 hours	7
a lecture	Benefits of nuclear reactions	Know and understand	2 hours 2 hours	8
a lecture	Chemical and physical methods for separating nuclear isotopes	Know and understand	2 hours 2 hours	9
a lecture	Identify enriched and depleted uranium	Know and understand	2 hours 2 hours	10
a lecture	Problems caused by radioactive elements	Know and understand	2 hours 2 hours	11
a lecture	Preparing sodium thio sulfate and calcium dioxide and giving a semester exam for students on the subject	Know and understand Know and understand	2 hours 2 hours	12

11. Course evaluation

final marks for monthly and daily exams . 15 marks for the practical exam. 60 marks for 25 semester exams

12. Learning and teaching resources

nothing	Required textbooks (methodology, if any)
Coordination Chemistry, Dr. Issam Girgis -1 Saloumi Inorganic Chemistry, Dr. Noman Saad Al-Din Al- -2 Nuaimi	Main references (sources)

Dr.. Munther Yousef Al-Janabi Dr.. Nazir Arian Mayara Inorganic Chemistry, Dr. Issam Girgis Saloumi -3	
---	Recommended supporting books and references (….scientific journals, reports)
---	Electronic references, Internet sites

Course description form

1. Course name	
Volumetric analysis	
2. Course code	
BESC24F3302	
3. Academic year/semester	
first/2023	
4. Date the description was prepared	
2024/26/3	
5. Attendance forms available	
My presence only	
6. Number of hours and study units	
hours / 3 units 48	
7. Names of the teachers responsible for the course, along with the official email	
8. Course objectives	
	1- Define the concept of chemistry Volumetric analysis and its terminology **-2**Apply **the skills in using these terms in daily life** **3- Teaching the basics of volumetric analytical chemistry and how to deal with it** **4- Study practical applications**

	Developing students' attitudes towards applying this information in study and learning and in different life situations -5

9. Learning and understanding strategies

Lecture method by the teacher

Discussion method

Lecture method by the student

10. Course struct

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week
kinds of evaluation methods	a lecture practical	Introduction to acids, bases, and salts General introduction	Know and understand	2 hours 2 hours	1
	a lecture practical	Methods of expressing concentrations Titration of hydrochloric acid with a standard solution of sodium carbonate	Know and understand	2 hours 2 hours	2
	a lecture practical	Daily exam + solving questions	Know and understand	2 hours 2 hours	3
	a lecture	Acid function calculations Titration of sodium hydroxide with hydrochloric acid	Know and understand	2 hours 2 hours	4
	a lecture practical	Classification of neutralization theory – acid neutralization a base Exam and review	Know and understand	2 hours 2 hours	5
	a lecture practical	Hydrolysis of salts Preparation of potassium permanganate and titration with oxalic acid	Know and understand	2 hours 2 hours	6
	a lecture practical	First monthly exam Titration of a mixture of sodium carbonate and sodium hydroxide with acidHCl	Know and understand	2 hours 2 hours	7
	Practical lecture	solutions , indicators of acids and bases Practical exam	Know and understand	2 hours 2 hours	8
	a lecture practical	,Tests of strong acid – strong base tests of weak acid – strong base	Know and understand	2 hours 2 hours	9

		Determination of carbonate and bicarbonate mixture usingHCl			
	a lecture practical	**Precipitation etchings, oxidation and reduction etchings Complete the experience**	**Know and understand**	**2 hours 2 hours**	**10**
	a lecture	**Studies on the formation of complexes / an idea about ligands and their types**	**Know and understand**	**2 hours 2 hours**	**11**
	a lecture a lecture	**Full review Practical exam**	**Know and understand Know and understand**	**2 hours 2 hours**	**12**

Evaluation	
Achievement exams and distribution of grades out of 100 **marks for monthly and daily exams . 15 marks for the practical exam. 60 marks for 25 semester exams**	
Formative evaluation	
Educational resources	
nothing	Methodical books
Theoretical fundamentals of quantitative gravimetric and volumetric analysis – of inorganic analytical chemistry – A. Dr. Hadi Kazem Awad1 **General Chemistry Principles and Structure (Part Two) – James Brady and –2 Gerard Humiston**	Main sources
nothing	Additional sources

Course description form

1. Course name
Weight analysis
2. Course code
BESC24F2052
3. Academic year/semester
second/2023
4. Date the description was prepared
2024/20/4
5. Attendance forms available
My presence only
6. Number of hours and study units
hours / 3 units 48
7. Names of the teachers responsible for the course, along with the official email
: a
8. Course objectives

	1- Defining the concept of analytical chemistry and its terminology **2-**Apply **the skills in using these terms in daily life** **3- Teaching the basics of weight analysis and how to deal with it** **4- Study practical applications** **5- Developing students' attitudes towards applying this information in study and learning and in different life situatio**

9. Learning and understanding strategies
Lecture method by the teacher **Discussion method** **Lecture method by the student**
10. Course structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours

All kinds of evaluation methods	a lecture practical	/ Introduction to gravimetric analysis sedimentation methods / precipitate characteristics / the gravimetric factor and its calculation method	Know and understand	2 hours 2 hours
	a lecture practical	Solubility of sediment/dissolution yield	Know and understand	2 hours 2 hours
	a lecture practical	/ Effectiveness and effectiveness factor effect of the common ion	Know and understand	2 hours 2 hours
	a lecture	The amount of precipitate needed to / carry out the sedimentation process factors affecting the dissolution of the precipitate	Know and understand	2 hours 2 hours
	a lecture practical	Crystalline formation of the sediment	Know and understand	2 hours 2 hours
	a lecture practical	/Stages of the sedimentation process organic precipitants	Know and understand	2 hours 2 hours
	a lecture practical	Daily exam and review	Know and understand	2 hours 2 hours
	a lecture	Sedimentation coefficient / degree of / sedimentation / separation methods	Know and understand	2 hours 2 hours
	a lecture practical	Semester exam	Know and understand	2 hours 2 hours
	a lecture practical	Extraction/ chromatography systems	Know and understand	2 hours 2 hours
	a lecture	,Solutions to problems on solubility ionic strength, and effectiveness	Know and understand	2 hours 2 hours
	a lecture a lecture	General Review	Know and understand Know and understand	2 hours 2 hours

Evaluation	
Achievement exams and distribution of grades out of 100 **marks for monthly and daily exams . 15 marks for the practical exam. 60 marks for 25 semester exams**	
Formative evaluation	
Educational resources	
1 Theoretical basics of quantitative gravimetric and volumetric analysis of inorganic – analytical chemistry – A. Dr. Hadi Kazem Awad 1 General Chemistry Principles and Structure (Part Two) – James Brady and Gerard –2 Humiston	Methodical books

Course description form

1. : Course Name
Calculus
2. : Course Code
3. Semester / Year : Annual
quarterly
4. Date this description was prepared:
2024 / 3 0 /22
5. Available forms of attendance:
My presence only
6. :Number of study hours (total)/number of units (total)
hours / 4 hours per week 48 /2 units
7. Name of the course administrator (if more than one name is mentioned)
8. Course objectives

	.1 differentiation and Define the concept of in general integration .2 Solving examples and skills in knowing real numbers and operations on them .3 Teaching the basics of functions and their types .4 Study examples of differentiation .5 Understanding integration and its types

9. Teaching and learning strategies

e method by the teacher ssion method e method by the student	rategy

10. Course structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week
All kinds of evaluation	a lecture	All vocabulary	Know and understand	2 hours 2 hours	1
	a lecture	- Introduction to real numbers	Know and understand	2 hours 2 hours	2
	a lecture	Inequalities - Introduction to absolute value	Know and understand	2 hours 2 hours	3
	a lecture	- Absolute value properties	Know and understand	2 hours 2 hours	4
	a lecture	Functions - types of functions	Know and understand	2 hours 2 hours	5
	a lecture	Installing functions	Know and understand	2 hours 2 hours	6
	a lecture	– Graph the function	Know and understand	2 hours	7

				2 hours	
	a lecture	Derivation	Know and understand	2 hours 2 hours	8
	a lecture	Examples of derivation forms	Know and understand	2 hours 2 hours	9
	a lecture	Theorems on groups	Know and understand	2 hours 2 hours	10
	a lecture	integration	Know and understand	2 hours 2 hours	11
	a lecture	Examples of integration theorems	Know and understand Know and understand	2 hours 2 hours	12

11. Course evaluation	
final semester exams marks for monthly and daily exams . . 7 0 marks for 30	
12. Learning and teaching resources	
	Required textbooks (methodology, if any)
Al-Mustansiriya University / Abdul Salam Muhammad Ali	Main references (sources)
---	Recommended supporting books and references (….scientific journals, reports)
---	Electronic references, Internet sites

Course description **form**

1. : Course Name
Chemistry of represented elements
2. : Course Code

3. Semester / Year : Annual
quarterly
4. Date this description was prepared**:**
2024/03/05
5. Available forms of attendance**:**
My presence only
6. :Number of study hours (total)/number of units (total)
hours / 4 hours per week 48 units 3/
7. Name of the course administrator (if more than one name is mentioned)

8. Course objectives	
	It aims to explain the concept of chemistry of the .1 ,interactions of the main elements of the first, second third, fourth, fifth, sixth, and seventh groups and the .inert elements .3 Teaching the basics of each group and its characteristics .4 Study the possible interactions of the elements of each group with sulfur, halogen, oxygen, and nitrogen Developing students' skills in knowing the characteristics of .5 each group and the subtleties that distinguish each group
9. Teaching and learning strategies	
e method by the teacher ssion method e method by the student	trategy

10. Course structure

Evaluation method	Learning method	Course units and an introduction to the periodic table	Required learning outcomes	hours	the week

All kinds of evaluation methods	a lecture	Introduction to chapter vocabulary and an introductory study of the sections of the periodic table	Know and understand	2 hours 2 hours	1
	a lecture	Hydrogen element	Know and understand	2 hours 2 hours	2
	a lecture	Elements of the second group	Know and understand	2 hours 2 hours	3
	a lecture	Elements of the third group	Know and understand	2 hours 2 hours	4
	a lecture	Conduct a daily test with group elements	Know and understand	2 hours 2 hours	5
	a lecture	Elements of the fourth group	Know and understand	2 hours 2 hours	6
	a lecture	Covalent and ionic compounds of group IV	Know and understand	2 hours 2 hours	7
	a lecture	Study of contemporaries of the fifth group	Know and understand	2 hours 2 hours	8
	a lecture	,Study of the elements of the fifth group ,including phosphorus, its compounds and its multiple oxidation states	Know and understand	2 hours 2 hours	9
	a lecture	Study of the contemporaries of the sixth group	Know and understand	2 hours 2 hours	10

	a lecture	Study of the contemporaries of the seventh group	Know and understand	2 hours 2 hours	11
	a lecture	Study of the contemporaries of the eighth group	Know and understand Know and understand	2 hours 2 hours	12

11. Course evaluation	
final marks for monthly and daily exams . 15 marks for the practical exam. 60 marks for 25 semester exams	
12. Learning and teaching resources	
	Required textbooks (methodology, if any)
Chemistry, translated by Dr. Issam Girgis Saloumi -1 Dr.. Wissam Ibrahim, Dr. Banan Aqrawi General Chemistry, Dr. Sami Abdel Ali -2 Dr.. Badie Ali Ahmed Dr.. Salem, Dr. Nabil Fadel Khalil	Main references (sources)
---	Recommended supporting books and references (….scientific journals, reports)
---	Electronic references, Internet sites

Course description form

1. Course name
Weight analysis
2. Course code
BESC24F2052
3. Academic year/semester
second/2023

4. Date the description was prepared	
2024/20/4	
5. Attendance forms available	
My presence only	
6. Number of hours and study units	
hours / 3 units 48	
7. Names of the teachers responsible for the course, along with the official email	
8. Course objectives	
	1- Defining the concept of analytical chemistry and its terminology -2**Apply** the skills in using these terms in daily life 3- Teaching the basics of weight analysis and how to deal with it 4- Study practical applications Developing students' attitudes towards applying this information in study -5 and learning and in different life situations
9. Learning and understanding strategies	
Lecture method by the teacher Discussion method Lecture method by the student	

10. Course structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week
All kinds of evaluation methods	a lecture practical	/ Introduction to gravimetric analysis sedimentation methods / precipitate characteristics / the gravimetric factor and its calculation method	Know and understand	2 hours 2 hours	1
	a lecture practical	Solubility of sediment/dissolution yield	Know and understand	2 hours 2 hours	2
	a lecture practical	/ Effectiveness and effectiveness factor effect of the common ion	Know and understand	2 hours 2 hours	3
	a lecture	The amount of precipitate needed to / carry out the sedimentation process	Know and understand	2 hours 2 hours	4

		factors affecting the dissolution of the precipitate			
	a lecture practical	Crystalline formation of the sediment	Know and understand	2 hours 2 hours	5
	a lecture practical	/Stages of the sedimentation process organic precipitants	Know and understand	2 hours 2 hours	6
	a lecture practical	Daily exam and review	Know and understand	2 hours 2 hours	7
	a lecture	Sedimentation coefficient / degree of / sedimentation / separation methods	Know and understand	2 hours 2 hours	8
	a lecture practical	Semester exam	Know and understand	2 hours 2 hours	9
	a lecture practical	Extraction/ chromatography systems	Know and understand	2 hours 2 hours	10
	a lecture	,Solutions to problems on solubility ionic strength, and effectiveness coefficient	Know and understand	2 hours 2 hours	11
	a lecture a lecture	General Review	Know and understand Know and understand	2 hours 2 hours	12

Evaluation
Achievement exams and distribution of grades out of 100 marks for monthly and daily exams . 15 marks for the practical exam. 60 marks for semester 25 exams

Formative evaluation	
Educational resources	
1 Theoretical basics of quantitative gravimetric and volumetric analysis of inorganic – analytical chemistry – A. Dr. Hadi Kazem Awad 1 General Chemistry Principles and Structure (Part Two) – James Brady and Gerard –2 Humiston	Methodical books

Course description form

1.	Course name
Optical physics	
2.	Course code
BESC23F2212	
3.	Academic year/semester
second /2024	
4.	Date the description was prepared
2024/5/4	
5.	Attendance forms available
6.	Number of hours and study units
hours per week - 3 units 4	
7.	Names of the teachers responsible for the course, along with the official email
8.	Course objectives
•	6. Define the concept of optics by reviewing terms related to light
7. Apply skills in using these terms in everyday life	
8. ,Studying the practical applications of the phenomena of reflection, refraction ,interference and diffraction, the principle of operation of the optical spectrometer .polarization and its types	
9. Developing students' attitudes towards applying this information in study, learning and in different life situations	

Evaluation methods	Learning methods	Topic names	Learning Outcomes	hours	the week
All types of evaluation methods	Dialogue and discussion	The nature of light	Know and understand	hours 2 hours 2	1
	Dialogue and discussion	Types of electromagnetic waves	Know and understand	hours 2 hours 2	2
	Dialogue and discussion	How to measure the speed of light	Know and understand	hours 2 hours 2	3
	Dialogue and discussion	Optical path and refractive index	Know and understand	hours 2 hours 2	4
	Dialogue and discussion	Reflection phenomenon	Know and understand	hours 2 hours 2	5
	Dialogue and discussion	The phenomenon of refraction	Know and understand	hours 2 hours 2	6
	Dialogue and discussion	Mirrors, lenses and their types	Know and understand	hours 2 hours 2	7
	Student participation and mental analysis	Solve questions and examples about the topic	Know and understand	hours 2 hours 2	8
	Dialogue and discussion	Interference phenomenon	Know and understand	hours 2 hours 2	9
	Student participation and mental analysis	Solve questions and examples about the topic	Know and understand	hours 2 hours 2	10
	Dialogue and discussion	Diffraction phenomenon	Know and understand	hours 2 hours 2	11

	Student participation and mental analysis	Solve questions and examples about the topic	Know and understand	hours 2 hours 2	12
	Dialogue and discussion	Polarization phenomenon	Know and understand	hours 2	13
	Student participation and mental analysis	Solve questions and examples about the topic	Know and understand	hours 2	14

Evaluation	
Achievement exams and distribution of grades out of100 25 marks for monthly and daily exams. 15 marks for the practical exam. 60 marks for semester exams	
Formative evaluation	
Educational resources	
Physics for Scientists and Engineers with Mode Physics,8th.Ed ,Serway.2010.	Methodical books
.Frederick J ,Fundamentals of Physics Bush. First edition. Egypt 2006	Main sources
	Additional sources
	websites

Course description form

1. Course name
Mechanics
2. Course code
BESC2 4F22 32
3. Academic year/semester
first/2024

4. Date the description was prepared
2024/5/4
5. Attendance forms available
6. Number of hours and study units
hours per week - 3 units 4
7. Names of the teachers responsible for the course, along with the official email
8. Course objectives
• 5. Defining the concept of classical mechanics by reviewing the concept of types of motion and forces and their effect on bodies
6. Apply mechanical skills in everyday life
7. Studying the practical applications of everything related to circular and rotational force and torque
8. Developing students' attitudes towards applying this information in study, learning and in different life situations

Evaluation methods	Learning methods	Topic names	Learning Outcomes	hours	the week
All kinds of evaluation methods	Dialogue and discussion	Linear equations of motion with uniform constant acceleration	Know and understand	hours 2 hours 2	1
	Dialogue and discussion	Newton's laws of linear motion and their applications	Know and understand	hours 2 hours 2	2
	Dialogue and discussion	Inertia and its relationship to mass	Know and understand	hours 2 hours 2	3
	Dialogue and discussion	Linear momentum, its conservation, linear impulse, and two types of collision	Know and understand	hours 2 hours 2	4
	Dialogue and discussion	Torque of force, ,work, energy	Know and understand	hours 2 hours 2	5

		conservation and capacity			
	Dialogue and discussion	Angular motion and its laws	Know and understand	hours 2 hours 2	6
	Dialogue and discussion	Central force	Know and understand	hours 2 hours 2	7
	Student participation and mental analysis	Rotational movement of a rigid body around a fixed axis	Know and understand	hours 2 hours 2	8
	Dialogue and discussion	Torque (rotating (torque	Know and understand	hours 2 hours 2	9
	Student participation and mental analysis	Equations of angular motion of a rigid body	Know and understand	hours 2 hours 2	10
	Dialogue and discussion	Moment of inertia of a rigid body	Know and understand	hours 2 hours 2	11
	Student participation and mental analysis	Newton's laws of rotational motion	Know and understand Know and understand	hours 2 hours 2	12

Evaluation	
Achievement exams and distribution of grades out of100 25 marks for monthly and daily exams. 15 marks for the practical exam. 60 marks for semester exams	
Formative evaluation	
Educational resources	
	Methodical books
1- Physics for first year geology students - Abdul Sattar Jawad 2- Physics for Earth Sciences Students - Farouk Aboudi	Main sources
	Additional sources
	websites

Course description form

1. : Course Name
Science of plant and animal production
2. : Course codeBESC24F3331
3. Semester / Year : Annual
quarterly
4. Date this description was prepared:
2024/03/7
5. Available forms of attendance:
My presence only
6. :Number of study hours (total)/number of units (total)
hours / 4 hours per week 48 units 3/
7. Name of the course administrator (if more than one name is mentioned)

8. Course objectives	
	Developing the student's ability to identify the main -1 plants widely cultivated in the world and Iraq and to .find the best way to grow these plants Preparing the student to identify the most -2 .productive crops Preparing the student to be able to carry out all -3 .agricultural work well for different crops Preparing the student to be able to make decisions -4 independently (without dependency) when solving crop .production problems Preparing the student to gain good experience in -5 the field of crop production and keeping pace with the .needs of the local market for these crops Prepare the student with the ability to implement -6 some projects (not alone, but in cooperation with .others) in the field of crop production

	The student should be able to choose the plants -7 most suitable for cultivation in the different .environmental conditions in Iraq

9. Teaching and learning strategies

e method by the teacher ssion method e method by the student	rategy

Course structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week
All kinds of evaluation methods	a lecture	Identify the different plant production crops that can be grown under .different environmental conditions	Know and understand	2 hours 2 hours	1
	a lecture		Know and understand	2 hours 2 hours	2
	a lecture	Getting to know the forests in the college gardens	Know and understand	2 hours 2 hours	3
	a lecture	Seed types and classification	Know and understand	2 hours 2 hours	4
	a lecture	Laboratory determination of seed types	Know and understand	2 hours 2 hours	5
	a lecture	Plants reproduce vegetatively	Know and understand	2 hours 2 hours	6
	a lecture	Planting types of ornamental seeds in the anvil and monitoring their growth	Know and	2 hours	7

			understand	2 hours	
	a lecture	Vegetative propagation of ornamental plants and how to reproduce them using anvils	Know and understand	2 hours 2 hours	8
	a lecture	Identify fruit trees and palm trees	Know and understand	2 hours 2 hours	9
	a lecture	decoration plants	Know and understand	2 hours 2 hours	10
	a lecture	Watch the shapes of ornamental plants and learn about them and methods of propagating them in the field and gardens	Know and understand	2 hours 2 hours	11
	a lecture	Animal production science	Know and understand Know and understand	2 hours 2 hours	12

10. Course evaluation	
final marks for monthly and daily exams . 15 marks for the practical exam. 60 marks for 25 semester exams	
11. Learning and teaching resources	
	Required textbooks (methodology, if any)
Lectures on plant and animal production science / Dr. Saad A Douri	Main references (sources)
---	Recommended supporting books and references (….scientific journals, reports)
---	Electronic references, Internet sites

Course description form

11. Course name	
Coordination Chemistry	
12. Course code	
BESC24F3302	
13. Academic year/semester	
first/2023	
14. Date the description was prepared	
2024/26/3	
15. Attendance forms available	
My presence only	
16. Number of hours and study units	
hours / 3 units 48	
17. Names of the teachers responsible for the course, along with the official email	
18. Course objectives	
	1- Defining the concept of coordination chemistry and its terminology -2**Apply** the skills in using these terms in daily life 3- Teaching the basics of coordination chemistry and how to deal with 4- Study practical applications through the preparation of some coordination compounds Developing students' attitudes towards applying this information in -5 study and learning and in different life situations
19. Learning and understanding strategies	
Lecture method by the teacher Discussion method Lecture method by the student	
20. Course structure **21.**	

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the wee
All kinds of evaluation methods	a lecture practical	General introduction	Know and understand	2 hours 2 hours	1
	a lecture practical	,Transition elements, central atom Lewis acids	Know and understand	2 hours 2 hours	2
	a lecture practical	Ligands, Lewis bases	Know and understand	2 hours 2 hours	3
	a lecture	Types of ligands	Know and understand	2 hours 2 hours	4
	a lecture practical	Effective atomic number rule	Know and understand	2 hours 2 hours	5
	a lecture practical	Naming coordination complexes	Know and understand	2 hours 2 hours	6
	a lecture practical	Monthly exam	Know and understand	2 hours 2 hours	7
	a lecture	Theories of the formation of coordination complexes**(VBT).**	Know and understand	2 hours 2 hours	8
	a lecture practical	Theories of formation of coordination complexes**CFT**	Know and understand	2 hours 2	9
	a lecture practical	Theories of formation of coordination complexes**MOT**	Know and understand	2 hours hours	10
	a lecture	Properties of coordination complexes Forms of coordination complexe	Know and understand	2 hours	11
	a lecture a lecture	Magnetic and spectroscopic properties of complexes	Know and understand understand	2 hours 2	12

Evaluation	
Achievement exams and distribution of grades out of 100 marks for monthly and daily exams . 15 marks for the practical exam. 60 marks for semester 25 exams	
Formative evaluation	
Educational resources	
nothing	Methodical books
Inorganic and coordination chemistry, Dr. Saad Ezzedine Al-Mukhtar, Dr. Ihsan Abdul-Ghani Mustafa, University of Mosul the	Main sources
	Additional sources
	websites

Course description form

1. : Course Name
Oil and petrochemicals
2. : Course Code
3. Semester / Year : Annual
quarterly
4. Date this description was prepared:
2024/03/05
5. Available forms of attendance:
My presence only
6. :Number of study hours (total)/number of units (total)
hours / 4 hours per week 48 units 3/

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

8. Course objectives

	.1 Define the concept of crude oil and petrochemicals in general .2 Applying skills in knowing the origin of crude oil and oil industries .3 Teaching the basics of separating and refining crude oil .4 Study the industrial applications of oil and petrochemicals .5 Developing students' skills in knowing the applicatio of petrochemical industries in daily life

9. Teaching and learning strategies

e method by the teacher ssion method e method by the student	ategy

10. Course structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week
All kinds of evaluation methods	a lecture	Definition of raw jump	Know and understand	2 hours 2 hours	1
	a lecture	Origin of crude oil	Know and understand	2 hours 2 hours	2
	a lecture	Methods of oil exploration and extraction	Know and understand	2 hours 2 hours	3
	a lecture	Crude oil transportation	Know and understand	2 hours 2 hours	4
	a lecture	Crude oil refining	Know and understand	2 hours	5

				2 hours	
	a lecture	Crude oil distillation	Know and understand	2 hours 2 hours	6
	a lecture	Crude oil composition	Know and understand	2 hours 2 hours	7
	a lecture	Crude oil evaluation	Know and understand	2 hours 2 hours	8
	a lecture	Chemical and physical methods for separating and improving petroleum derivatives	Know and understand	2 hours 2 hours	9
	a lecture	Introduction to petrochemical industries	Know and understand	2 hours 2 hours	10
	a lecture	Natural gas and manufactured gas	Know and understand	2 hours 2 hours	11
	a lecture	Some compounds resulting from petrochemical industries	Know and understand Know and understand	2 hours 2 hours	12

11. Course evaluation

final marks for monthly and daily exams . 15 marks for the practical exam. 60 marks for 25 semester exams

12. Learning and teaching resources

	Required textbooks (methodology, if any)
Oil, composition, origin and technology / Dr. Imad Abdel Qader Al-Dabouni Petrochemical industries / Dr. Imad Abdel Qader Al-Dabouni	Main references (sources)
---	Recommended supporting books and references (….scientific journals, reports)
---	Electronic references, Internet sites

Course description form

1. Course name
astronomy
2. Course code
BESC24F3231
3. Academic year/semester
The third stage/first course
4. Date the description was prepared
3/30/2024
5. Attendance forms available
My presence
6. Number of hours and study units
2 hour
7. Names of the teachers responsible for the course, along with the official email
8. Course objectives

●	Informing students about the importance of astronomy and explaining the most important .physical laws of planetary movement Star formation

9. Learning and understanding strategies	
Lecture method by the teacher **Discussion method** **Lecture method by the student**	**The strategy**

10. Course structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week

All kinds of evaluation methods	a lecture	,Astronomy, its definition importance, development, and basics	Know and understand	2 hours	1
	a lecture	Systems Coordinates The dome Heavenly	Know and understand	2 hours	2
	a lecture	the group The Solarsystem	Know and understand	2 hours	3
	a lecture	Moon(Moon) Exam /	Know and understand	2 hours	4
	a lecture	Eclipse And F Al-Khasu	Know and understand	2 hours	5
	a lecture	Properties Physics For the stars	Know and understand	2 hours	6
	a lecture	Star diameters	Know and understand	2 hours	7
	a lecture	Planets The Car(The Planets)	Know and understand	2 hours	8
	a lecture	GalaxiesGalaxies Exam	Know and understand	2 hours	9
	a lecture	Theories emergence Universe	Know and understand	2 hours	10
	a lecture	The future of the universe	Know and understand	2 hours	11
	a lecture	Do assignments/ review	Know and understand Know and understand	2 hours	12

Evaluation
marks for monthly and daily exams , 70 marks for quarterly exams 30
Formative evaluation
Educational resources

.Atmospheric and space physics (astronomy) Dr Hamid Majoul Al Nuaimi	Methodical books
	Main sources
Astronomical encyclopedia	Additional sources
	websites

Course description form

1. : Name of the leg
Solid physics
2. : Course code
BESC22F3321
3. Semester/Year: Annual
quarterly
4. Date this description was prepared:
2024/21/4
5. Available forms of attendance:
My presence only
6. :Number of study hours (total)/number of units (total)
hours / 3 hours per week 48 units 3/
7. Name of the course administrator (if more than one name is mentioned)
8. Course objectives
1- Define the concept of crystals by reviewing the terminology of crystalline materials 2- Apply skills in using these terms in everyday life 3- Teaching the basics of solid physics, how to distinguish crystalline materia from non-crystalline materials, and know their properties 4- ,Developing students' attitudes towards applying this information in study learning and in different life situations
9. Teaching and learning strategies

Lecture method by the teacher **Discussion method** **Lecture method by the student**	**The strategy**

10. Course structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week
All types of evaluati	Dialogue and discussion	Nature of solids	Know and understand	3 hours	1
	Dialogue and discussion	The crystal	Know and understand	3 hours	2
	Dialogue and discussion	Crystal structure	Know and understand	3 hours	3
	Dialogue and discussion	Crystal defects	Know and understand	3 hours	4
	Dialogue and discussion	Types of crystal defects	Know and understand	3 hours	5
	Dialogue and discussion	Ionic crystals	Know and understand	3 hours	6
	Dialogue and discussion	Properties and types of ionic crystals	Know and understand	3 hours	7
	Student participation and mental analysis	Covalent crystals	Know and understand	3 hours	8
	Dialogue and discussion	Types of covalent crystals	Know and understand	3 hours	9
	Student participation and mental analysis	Metallic crystals	Know and understand	3 hours	10
	Dialogue and discussion	crystals Types of metallic	Know and understand	3 hours	11
	Student participation and mental analysis	Miller transactions	Know and understand	3 hours	12

	Student participation and mental analysis	**Solve questions and examples about the topic**			

11. Course evaluation	
marks for monthly exams. 10 marks for the daily exam and 70 marks for the final 20 exams	
12. Learning and teaching resources	
	Required textbooks (methodology, if any)
1- .Frederick J ,Fundamentals of Physics Bush. First edition. Egypt 2006 **-2Physics for Scientists and Engineers with Modern Physics, 8th.Ed ,Serway.2010.**	**Main references (sources)**

Course description form

1. Course name
Thermodynamics
2. Course code
BESC23F2091
3. Academic year/semester
The second stage/second course
4. Date the description was prepared
7/4/2024
5. Attendance forms available
6. Number of hours and study units
5) hours2 + hours theory2 (hours practical
7. Names of the teachers responsible for the course, along with the official email
8. Course objectives

Teaching the student the basics of heat concepts and addressing the ,laws of temperature conversions types of heaters and their working principles, then methods of their transfer and how to calculate the ,amount of heat for each method then knowing the thermal coefficients of materials as well as the relationship of heat to work and the first and second laws of heat .and their applications	•

9. Learning and understanding strategies

The strategy	Lecture method by the teacher Discussion method Lecture method by the student

10. Course structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week
All kinds of evaluation methods	a lecture practical	,Concepts in heat, temperature thermal equilibrium, isolated and non-isolated systems, open and closed systems, zeroth law, temperature .units and their conversions Measuring the Experiment (1) thermal specific heat of a good conductor1	Know and understand	2 hours 2 hours	1
	a lecture practical	Thermometers, calibration of ,thermometers, types of thermometers medical mercury thermometer, gas thermometer, thermocouple thermometer, electrical resistance thermometer, other thermometers	Know and understand	2 hours 2 hours	2

		Determine the partial weight of the salt from the boiling point of water			
	a lecture practical	Heat transfer mechanisms, heat transfer by conduction (Thermal tendency, effect of thermal insulation ,on thermal tendency, thermal current .(thermal conductivity coefficient Investigation of Newton's law of cooling	Know and understand	2 hours 2 hours	3
	a lecture practical	Heat transfer by convection, heat transfer by radiation Experiment (2) fulfilling Boyle's law	Know and understand	2 hours 2 hours	4
	a lecture practical	The effect of temperature change on ,states of matter, thermal expansion expansion of solids (longitudinal ,expansion, surface expansion volumetric expansion) , expansion of liquids, expansion of gases Determine the coefficient of thermal conductivity of solids	Know and understand	2 hours 2 hours	5
	a lecture practical	Temperature and phase change of matter, melting and boiling points Experience the realization of Jarls' law	Know and understand	2 hours 2 hours	6
	a lecture practical	Temperature and energy chart and heat quantity calculation Determine the joule equivalent	Know and understand	2 hours 2 hours	7

Evaluation	
Achievement exams and distribution of grades out of 100 marks for monthly and daily exams . 15 marks for the practical exam. 60 marks for 25 semester exams	
Formative evaluation	
Educational resources	
There is no specific textbook	Methodical books

.Heat and thermodynamics / Ramzi Hanna .Fundamentals of Physics / Bosch .Heat and properties of matter / Ahmed Kazem Physics for Earth Sciences Students / Farouk .Aboudi “Physics for Scientists &Engineers”/Jewett 2008	Main sources
	Additional sources
	websites

Course description form

1. Course name					
Modern physics					
2. Course code					
3. Academic year/semester					
First semester					
4. Date the description was prepared					
03/14/2024					
5. Attendance forms available					
My presence only					
6. Number of hours and study units					
hours / 4 hours per week 48 units 3/					
7. Names of the teachers responsible for the course, along with the official email					
8. Course objectives					
	Introducing the student to modern physics, which includes atomic physics and the theory of relativity ●				
9. Learning and understanding strategies					
10. Course structure					
the week	hours	Learning Outcomes	Topic names	Learning methods	Evaluation methods
1 2 3 4 5	3 3 3 3 3	knowledg ,Rememb understar	Units of measurement in the atomic field, the duality property of light The dual nature of matter, de Broglie hypothesis	Lecture method Dialogue and discussion Lecture, discussion and dialogue	

6 7 8 9 10 11 12 13 14 15	3 3 3 3 3 3 3 3 3 3		Atomic structure, atomic theories Thomson model, Rutherford model Electronic orbitals, spectrum o the hydrogen atom Bohr's model, examples and exercises Foundations and implications Newtonian mechanics, the electromagnetic field, and Maxwell's equations ,The meaning of motion, rest and frame of reference, relativ motion, the Michelsen and Morley experiment ,Galileo transformations ,Lorentz transformations Einstein's relativity Length contraction, time dilation, examples and exercis The twins dilemma, adding speeds ,Relative mass, relative energy mass and energy equivalence Doppler phenomenon of relativity, general theory	Discussion and dialogue Lecture, discussion and dialogue Lecture, discussion and dialogue Lecture, discussion and dialogue Lecture, discussion and dialogue ,Lecture discussion and dialogue ,Lecture discussion and dialogue ,Lecture discussion and dialogue ,Lecture discussion and dialogue ,Lecture dialogue	

Evaluation	
marks for monthly and daily exams. 15 marks for the practical exam. 60 marks for semester 25 exams	
Formative evaluation	
Educational resources	
	Methodical books
,Concepts in modern physics, translated by Dr. Moneim Mashkour Shaker Jaber Shaker Physics for Earth Sciences Students, Farouk Aboudi Kassir, Mazen Atomic physics Introduction to modern physic	Main sources
Applied projects and their implementation through the simulation program	Additional sources
Forum of Arab Physicists www>hazemsakeek.com https://www.youtube.com/watch?v=Zn7mPk1Y1c4&list=PLDPQZrWTCHig-Of7f3IWHYq0rHRjSDSgt&pp=gAQBiAQB	websites

Course description form

1. Course name
Electronics
2. Course code
327
3. Academic year/semester
second/2023
4. Date the description was prepared
2024/26/3
5. Attendance forms available
My presence only
6. Number of hours and study units
hours / 3 units 48
7. Names of the teachers responsible for the course, along with the official email
8. Course objectives

1- Defining the concept of electronics and its terminology by reviewing various electronic parts

-2Apply the skills in using these terms in daily life

3- Teaching the basics of how to operate electronic parts and how to deal with them

4- Study the practical applications of electronic parts

Developing students' attitudes towards applying this information in study -5 and learning and in different life situations

9. Learning and understanding strategies
Lecture method by the teacher Discussion method Lecture method by the student

10. Course structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week
All kinds of evaluation methods	a lecture practical	Electronics industry progression How to measure the serviceability of some electronic parts	Know and understand	2 hours 2 hours	1

	a lecture practical	,Passive electronics / Resistance expansion and coil Study of the properties of silicon	Know and understand	2 hours 2 hours	2
	a lecture practical	Semiconductor materials Zener diode and voltage regulation	Know and understand	2 hours 2 hours	3
	a lecture	Active electronics/ the basis of diode operation Exam	Know and understand	2 hours 2 hours	4
	a lecture practical	Types of diodes and their uses Study of the properties of light emitting diodes	Know and understand	2 hours 2 hours	5
	a lecture practical	Active electronics/ the basis of transistor operation Using a transistor to increase voltages	Know and understand	2 hours 2 hours	6
	a lecture practical	Types of transistors And its differences Operational amplifierOP-AMP.741	Know and understand	2 hours 2 hours	7
	a lecture	Applications of transistors Exam	Know and understand	2 hours 2 hours	8
	a lecture practical	Power electronics Basic logic gates	Know and understand	2 hours 2 hours	9
	a lecture practical	Photoelectric electronics transmitters and receivers Timer 555	Know and understand	2 hours 2 hours	10
	a lecture	Integrated electronics Exam	Know and understand	2 hours 2 hours	11
	a lecture a lecture	Thermal electronics review	Know and understand Know and understand	2 hours 2 hours	12

Evaluation
Achievement exams and distribution of grades out of 100

marks for monthly and daily exams . 15 marks for the practical exam. 60 marks for semester 25 exams	
Formative evaluation	
Educational resources	
nothing	Methodical books
Encyclopedia of Digital Electronics 2007/AD. Farouk Sayed Hassan **Lectures by Dr. Mansour Al-Abadi / Jordan University of Science and Technology**	Main sourc
Applied projects and their implementation viathe Multisim simulation program	Additional sources
https://www.researchgate.net/publication/377188062_mnhj_alalktrwnyk **https://www.researchgate.net/publication/377490705_tjarb_alalktrwnyk_almhdtht**	websites

Course description form

1. Course name
Immunity
2. Course code
BESC20F3031
3. Academic year/semester
First semester2023-2024
4. Date the description was prepared
2024/14/4
5. Attendance forms available
List of students' names
6. Number of hours and study units
hours practical + 3 hours theoretical , 3 units 2
7. Names of the teachers responsible for the course, along with the official email

8. Course objectives	
Identify the components of the immune system	And the study of immune diseases

9. Learning and understanding strategies
road lecture from before Teaching **road Discussion** **The method of assignments and intellectual questions encourages the student to read external sources and expand on the topic**

10. Course structure

the week	hours	Learning Outcomes	Topic names	Learning methods	Evaluation methods
1	5	knowledge And understa	Definition of immunology and its types	a lecture practical practical	All learning methods
2	5	knowledge And understand	Natural immune components	a lecture practical	All learning methods
3	5	knowledge And understand	Acquired immunity and its types	a lecture practical	All learning methods
4	5	knowledge And understand	C immune system	a lecture practical	All learning methods
5	5	knowledge And understand	Major and minor components	a lecture practical	All learning methods
6	5	knowledge And understand	Blood cells	a lecture practical	All learning methods
7	5	knowledge And understand	The complement	a lecture practical	All learning methods
8	5		Antigens		All learning methods

9	5	knowledge And understand	Antibodies	a lecture practical	All learning methods
10	5	knowledge And understand	Lymph nodes	a lecture practical	All learning methods
11	5	knowledge And understand	Immune diseases	a lecture practical	All learning methods
12	5	knowledge And understand	Allergies	a lecture practical	All learning methods
13	5	knowledge And understand	Phagocytosis	a lecture practical	All learning methods

Evaluation	
Achievement exams and distribution of grades out of 100 theoretical marks + 15 practical marks (40 marks annual average) and 60 marks for final exam 25	
Formative evaluation	
Educational resources	
Immunity books	Methodical books
	Main sources
Master's and doctoral theses in the specialty	Additional sources
Scientific websites	websites

Course description form

1. Course name
Faslaja is an animal
2. Course code
BESC22F3171
3. Academic year/semester
2023-2024
4. Date the description was prepared
03-25-2024
5. Attendance forms available
6. Number of hours and study units
200 - 4
7. Names of the teachers responsible for the course, along with the official email
8. Course objectives

Physiology is a science concerned with studying t structure and functions of the organs of the huma and animal body in terms of the components of th nervous system and the mechanism of formation nerve impulses, as well as the mechanism of muscle contraction and relaxation, the basics of breathing processes, in addition to blood moveme .and heart function	•

9. Learning and understanding strategies
The lesson aims to make the student fully aware of all the functions performed by the organs and organs of the animal body in order to give the phenomenon of life to the organism and the .external and internal factors affecting it
10. Course structure

the week	hours	Learning Outcomes	Topic names	Learning methods	Evaluation methods

Notes	Practical material	Theoretical subject	the date	the week
	Introduction, instructions and laboratory safety conditions	A general introduction to physiology, the study of the physiological effect of heat.	2023/4/10	**the first**
	Experience dissecting a frog and preparing the sciatic nerve	The physiology of the nervous system, its structure and generation of nerve impulses	2023/10/7	**the second**
	Muscle impulse experiment of the calves muscle	Central and peripheral nervous system	2023/18/3	**the third**
	Experience temporal summation, spatial summation, and motor unity	The muscular system is the structure of the muscles and the way they contract and relax	2023/25/10	**the fourth**
	The relationship between the strength of the stimulus and the amount of response	The respiratory system explains the structure of the system, the mechanism of inhalation and exhalation, and the factors affecting its work	2023/11/2	**Fifth**
	Preparing the frog's heart and knowing its parts	Exam	2023/11/9	**VI**
	----------	.	2023/16/11	**Seventh**
	The physiological effect of heat on the functioning of the frog's heart	The structure of the circulatory system, the structure and function of the heart, the components of the blood and lymphatic system	2023/23/11	**VIII**

	Erythrocyte sedimentation coefficient ESR	The digestive system consists of the mouth, esophagus, stomach, small and large intestines	2023/30/11	**Ninth**
	Clotting time and bleeding time	A general introduction to physiology, the study of the physiological effect of heat.	2023/12/6	**The tenth**
	Blood pressure device and how to use it	The physiology of the nervous system, its structure and generation of nerve impulses	2023/13/12	**eleventh**
		Central and peripheral nervous system	2023/20/12	**twelveth**
				Thirteenth

Evaluation	
Achievement exams and distribution of grades out of 100	
Formative evaluation	
Educational resources	
	Methodical books
	Main sources
Abdullah. Shteiwi: Physiology , Jordan, Dar Al Masirah for Publishing and Distribution , first edition , 2012 . Агаджанян . Н. А : Основы физиология	Additional sources
	websites

Course description form

1. Course name	
Plant physiology	
2. Course code	
BESC24F2311	
3. Academic year/semester	
Second semester , 2023-2024	
4. Date the description was prepared	
16-4-2024	
5. Attendance forms available	
A list of the names of the students of the second stage, Biology branch / Sabahi	
6. Number of hours and study units	
hours theory + 2 hours practical , 3 units 3	
7. Names of the teachers responsible for the course, along with the official email	
8. Course objectives	
Giving the student an idea about the cell	Cell components and the difference between c types Cell proliferation and nucleic acid duplication
9. Learning and understanding strategies	
road lecture from before Teaching road Discussion The method of assignments and intellectual questions encourages the student to read external sources and expand on the topic	

10. Course structure

the week	hours	Learning Outcomes	Topic names	Learning methods	Evaluation methods
1	5	knowledge And understa	introduction on cell And about Historical , relationship science ce With science The other	a lecture practical	All learning methods
2	5	knowledge And understa	, Cell theory , cell shape and size levels of organization In living organisms	a lecture practical	All learning methods

3	5	knowledge And understa	Prokaryotic and eukaryotic cells , bacteria and their structure	a lecture practical	All learning methods
4	5	knowledge And understa	Plant cells, animal cells, cell membrane	a lecture practical	All learning methods
5	5	knowledge And understa	Cytoplasm , organelles and membrane structures	a lecture practical	All learning methods
6	5	knowledge And understa	, Mitochondria , ribosomes , lysosomes Microbodies	a lecture practical	All learning methods
7		knowledge And understa	Semester exam		All learning methods
8	5	knowledge And understa	Centrosomes , plastids , cellular vacuoles	a lecture practical	All learning methods
9	5	knowledge And understa	Nucleus , ultrastructure of the nucleus , cell chemistry	a lecture practical	All learning methods
10	5	knowledge And understa	Chromosomal amino acids	a lecture practical	All learning methods
11	5	knowledge And understa	Acids Nuclear	a lecture practical	All learning methods
12	5	knowledge And understa	DNA replication mechanism	a lecture practical	All learning methods
13	5	knowledge And understa	Gene expression	a lecture practical	All learning methods

Evaluation
Achievement exams and distribution of grades out of 100 theoretical marks + 15 practical marks (40 marks annual average) and 60 marks for final exam 25

Formative evaluation	
Educational resources	
nothing	Methodical books
Plant physiology book	Main sources
Master's and doctoral theses in the specialty	Additional sources
Scientific websites	websites

Course description form

1. Course name
Serums and vaccines
2. Course code
BESC23F4031
3. :Academic year/semester
first semester 2024-2023
4. :Description preparation date
2024/27/3
5. Attendance forms available
List of students' names
6. Number of hours and study units
hours 2
7. Names of the teachers responsible for the course, along with the official email
8. Course objectives

immune serums and different types of Learn about the importance o vaccines	Identify the importance of serums in treatme and laboratory diagnosis, and study the type of vaccines and their role in preventing .bacterial and viral infections
Apply basic thinking skills	●

Developing scientific thinking through linking, analyzing, and synthesising scientific ideas	•

9. Learning and understanding strategies

Theoretical lectures

10. Course structure

the week	hours	Learning Outcomes	Topic names	Learning methods	Evaluation methods
1	hours 2	Know and understand	- Introduction to serology historical overview - antigens specificity of - antibodies - antigens - specific acquired immunity	a lecture	All kinds of evaluation methods
2	hours 2	Know and understand	Vaccines - historical overview objectives of vaccines - types - - of vaccines - killed attenuated - toxoids - subparts vaccines	a lecture	
3	hours 2	Know and understand	- Immune response to vaccines ,primary immune response - secondary immune response immune memory	a lecture	
4	hours 2	Know and understand	Positive vaccination - applicationsBCG vaccine - pentavalent vaccine - polio vaccine	a lecture	
5	hours 2	Know and understand	Semester exam	a lecture	
6	hours 2	Know and understand	Vaccination risks - causes of vaccination failure - caveats in - vaccine production and use factors affecting vaccine preservation	a lecture	
7	hours 2	Know and understand	Immunotherapy	a lecture	

			Use of gamma globulin via intravenous injection		
8	**hours 2**	**Know and understand**	The use of gamma globulin in the prevention of hemolytic disease in newborns	**a lecture**	
9	**hours 2**	**Know and understand**	The most important serological tests: agglutination its types -	**a lecture**	
10	**hours 2**	**Know and understand**	Immunotherapy Use of gamma globulin via intravenous injection	**a lecture**	
11	**hours 2**	**Know and understand**	Sedimentation test - how to perform it	**a lecture**	
12	**hours 2**	**Know and understand**	Complement types and functions	**a lecture**	
13	**hours 2**	**Know and understand**	The use of gamma globulin in the prevention of hemolytic disease in newborns	**a lecture**	
14	**hours 2**	**Know and understand**	The most important serological tests: agglutination its types -	**a lecture**	

Evaluation	
Achievement exams and distribution of grades out of 100 student attendance %5 daily exams %5 mid-course exam %20 end-of-course exam %70	
Formative evaluation	
Educational resources	
nothing	Methodical books
Khalifa Ahmed Khalifa, 1990, Foundations of Immunology, University of Baghdad Roitt et..al 1993. Immunology.3rd.ed.-The official webs of the	Main sources

nothing	Additional sources
World Health Organization (WHO) website	websites

Course description form

11. Course name: Clinical Chemistry
12. Course code 4051**BESC 19F**
13. Academic year/semester: fourth/first
14. Date the description was prepared 3/20/2024
15. Attendance forms available for**60** students
16. The number of hours and study units is 24 theoretical hours
17. .Names of the teachers responsible for the course, along with the official email: A.M.D Ir
18. are to know the objectives of clinical chemistry and identify it and The objectives of the course its relationship with other sciences and diseases

	•

1. Learning and understanding strategies: employing thinking strategies in learning and knowing the causes of biochemical diseases , lecture method by the teacher
2. Discussion method
3. Lecture method by the student

Course structure

3. Course structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week

All kinds of evaluation	a lecture	Identifying biochemistry and its relationship with some sciences	Know and understand	2 hours	1
	a lecture	Liquids present inside the body and methods for measuring their variables and components	Know and understand	2 hours	2
	a lecture	,Estimating some variables in urine urine of sugar, urea, knowing the pH	Know and understand	2 hours	3
	a lecture	Study of blood components and methods of preserving blood samples	Know and understand	2 hours	4
	a lecture	Studying the causes of blood clotting and the process of blood clotting and decomposition is a daily exam	Know and understand	2 hours	5
	a lecture	Estimating the variable blood sugar, the causes of its rise, cases and symptoms of high and low levels, and studying life .cycles related to blood sugar	Know and understand	2 hours	6
	a lecture	Fats, their types, the reasons for their increase and decrease, their relationship to some diseases, and their normal values	Know and understand	2 hours	7
	a lecture	Enzymes and their types: Study of heart and liver enzymes, their basic substances, and the reasons for their increase and decrease	Know and understand	2 hours	8
	a lecture	Amylase enzyme, methods of measuring it, and the reasons for its increase and decrease Daily exam	Know and understand	2 hours	9
	a lecture	Semester exam	Know and understand	2 hours	10
	a lecture	Study of some nitrogenous compounds and proteins, the reasons for their rise and fall, normal values, and their .relationship to some diseases	Know and understand	2 hours	11

		a lecture a lecture	General Review	Know and understand Know and understand	2 hours	12	
4.	Course evaluation						

Course description form

1. Course Name:	
Cytology	
2. Course Code:	
BESC24F2141	
3. Semester / Year:	
The first / 2023-2024	
4. Description Preparation Date:	
16-4-2024	
5. Available Attendance Forms:	
List of students' names	
6. Number of Credit Hours (Total) / Number of Units (Total)	
2 hours practical + 3 hours theoretical, 3 units	
7. Course administrator's name (mention all, if more than one name)	
8. Course Objectives	
Course Objectives	• **Giving the student an idea about the cell Cell components and the difference between cell types** **Cell proliferation and nucleic acid duplication**
9. Teaching and Learning Strategies	
Strategy	Lecture method by the teacher Discussion method

	The method of assignments and intellectual questions pushes the student to read external sources and expand on the topic

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Knowledge understand	Introduction to the cell and a brief history, and the relationship of cell science to other sciences	a lecture practical	All learning methods
2	5	Knowledge understand	Cell theory, cell shape and size, levels of organization In living organisms	a lecture practical	All learning methods
3	5	Knowledge understand	Prokaryotic and eukaryotic cells, bacteria and their structure	a lecture practical	All learning methods
4	5	Knowledge understand	Plant cells, animal cells, cell membrane	a lecture practical	All learning methods
5	5	Knowledge understand	Cytoplasm, organelles and membrane structures	a lecture practical	All learning methods
6	5	Knowledge understand	Mitochondria, ribosomes, lysosomes, Microbodies	a lecture practical	All learning methods
7	5	Knowledge understand	Semester exam	a lecture practical	All learning methods
8	5	Knowledge understand	Centrosomes, plastids, cellular vacuoles	a lecture practical	All learning methods
9	5	Knowledge understand	Nucleus, fine structure of the nucleus, cell chemistry	a lecture practical	All learning methods
10	5	Knowledge	Nucleus, fine structure	a lecture	All learning

		understand	of the nucleus, cell chemistry	practical	methods
11	5	Knowledge understand	Nucleic acids	a lecture practical	All learning methods
12	5	Knowledge understand	Replication DNA mechanism	a lecture practical	All learning methods
13	5	Knowledge understand	Gene expression	a lecture practical	All learning methods

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

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	CYTOLOGY BOOK
Recommended books and references (scientific journals, reports…)	Master's and doctoral theses in the specialty
Electronic References, Websites	Scientific websites

Course Description Form

1. Course Name:
Invertebrates
2. Course Code:
BESC24F2121
3. Semester / Year:
the second/ 2023−2024
4. Description Preparation Date:
16−2−2024
5. Available Attendance Forms:
List of students' names
6. Number of Credit Hours (Total) / Number of Units (Total)
2 hours practical + 3 hours theoretical, 3 units

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

8. Course Objectives

Course Objectives	Giving the student an idea about invertebrate animals What are the phyla of invertebrate animals and their affiliated classes? Distinctive characteristics of each division Characteristics of invertebrates, how they reproduce, and the physiological processes they perform

9. Teaching and Learning Strategies

Strategy	Lecture method by the teacher Discussion method The method of assignments and intellectual questions pushes the student to read external sources and expand on the topic

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Knowledge unders	Definition of invertebrates, evolutionary relationship betwee phyla of invertebrate animals The importance of invertebrates, the benefits of invertebrates, Damage to invertebrates	a lecture practical	All learning metho
2	5	Knowledge understand	Protozoa	a lecture practical	All learning methods
3	5	Knowledge understand	Paramecium, Mesozoa phylum, Porifera phylur	a lecture practical	All learning methods
4	5	Knowledge understand	Cnidaria phylum , class: Hydrozoa	a lecture practical	All learning methods

5	5	Knowledge understand	Class: Scyphozoa, class: Anthozoa	a lecture practical	All learning methods
6	5	Knowledge understand	Phylum: Ctenophora, Three-layered animals Phylum: Platyhelminthes	a lecture practical	All learning methods
7	5	Knowledge understand	Semester exam	a lecture practical	All learning methods
8	5	Knowledge understand	Phylum: Nematoda	a lecture practical	All learning methods
9	5	Knowledge understand	Phylum: Annelida	a lecture practical	All learning methods
10	5	Knowledge understand	Phylum: Arthropoda	a lecture practical	All learning methods
11	5	Knowledge understand	Phylum: Mollusca	a lecture practical	All learning methods
12	5	Knowledge understand	Phylum: Echinodermata	a lecture practical	All learning methods

Course Description Form

13. Course Name:
Microbiology
14. Course Code:
BESC24F2021
15. Semester / Year:
The first 2023−2024
16. Description Preparation Date:
2024−4−14
17.Available Attendance Forms:
List of students' names
18.Number of Credit Hours (Total) / Number of Units (Total)
2 hours practical + 3 hours theoretical, 3 units

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

20. Course Objectives

Course Objectives	**Study of microbiology, its types, bacterial cells a their components….** • **Components and locations of microorganis in water, soil, and food**

21. Teaching and Learning Strategies

Strategy	Lecture method by the teacher Discussion method The method of assignments and intellectual questions pushes the student to read external sources and expand on the topic

22. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	Knowledg	Definition microbiology, historical overview of origins and developme biology	lecture ractical	All learning methods
2	5	Knowledge understan	Characteristics of biology, classification bacteria, the principle adopted for their classification, and the shapes of bacterial cel	lecture practical	All learning methods
3	5	Knowledge understand	Bacterial cell structure (external and internal structures).	lecture practical	All learning methods
4	5	Knowledge understand	Cell wall, membrane and protoplast	lecture practical	All learning methods
5	5	Knowledge understand	Nutrition microorganisms	lecture practical	All learning methods
6	5	Knowledge understand	Bacterial growth growth stages	lecture practical	All learning methods

7	5	Knowledge understand	Aquatic microbiology	lecture practical	All learning methods
8			Semester exam		
9	5	Knowledge understand	Biochemical tests	lecture practical	All learning methods
10	5	Knowledge understand	Microorganisms in foo	lecture practical	All learning methods
11	5	Knowledge understand	Microorganisms in soi	lecture practical	All learning methods
12	5	Knowledge understand	Industrial microbiolog	lecture practical	All learning methods
13	5	Knowledge understand	Pathogenic microorganisms	lecture practical	All learning methods

23. Course Evaluation

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

Formative assessment

24. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**Prescot**
Main references (sources)	Principles of microbiology
Recommended books and references (scientific journals, reports…)	Master's and doctoral theses in the specialty
Electronic References, Websites	Scientific websites

Course Description Form

. Course Name:
entamologhy
. Course Code:
. Semester / Year:
Semester
. Description Preparation Date:
5/3/2024
. Available Attendance Forms:
Attendance only
. Number of Credit Hours (Total) / Number of Units (Total)
48 hours / 4 hours per week / 3 units
. Course administrator's name (mention all, if more than one name)
]

32. Course Objectives

Enhance knowledge of entomology and learn about insects in the local environment
Study of hexapods and their relationship to other arthropods – external appearance – and whose body wall consists of layers and the most important appendages of the head, thorax, and abdome as well as the steps of the moulting process and its role in the life development of insects, as we as the study of environmental factors on insect behavior, as well as the study of the taxonomic positions of insects in the animal kingdom and the most important insect families and orders (Classification and naming of insects)

33. Teaching and Learning Strategies

Strategy	Lecture method by the teacher Discussion method Lecture method

34. Course Structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	hours	the week
All kinds of evaluation	Lecture	Definition of insects	Know and understand	2 hours 2 hours	1
	Lecture	Types of eyes in insects	Know and understand	2 hours 2 hours	2
	Lecture	Region of body	Know and understand	2 hours 2 hours	3
	Lecture	Heads of insects and its functions	Know and understand	2 hours 2 hours	4
	Lecture	Types of nutrition’s	Know and understand	2 hours 2 hours	5
	Lecture	Thorax in insects	Know and understand	2 hours 2 hours	6

	Lecture	Legs and eings	Know and understand	2 hours 2 hours	7
	Lecture	Aabdomens	Know and understand	2 hours 2 hours	8
	Lecture	Semester exams	Know and understand	2 hours 2 hours	9
	Lecture	Types of reproduction	Know and understand	2 hours 2 hours	10
	Lecture	metamorphosis	Know and understand	2 hours 2 hours	11
	Lecture	Insects classifications	Know and understand	2 hours 2 hours	12

35. Course Evaluation	
25 points monthly and daily exams. 15 marks for the practical exam. 60 marks for semester exams	
36. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	**General Entomology**
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	