

**Research Ministry of Higher Education and Scientific
Scientific Supervision and Evaluation Authority
Department of Quality Assurance and Academic
Accreditation
Accreditation Department**



Academic Program Description

Animal Production Technique

2025-2026

Introduction:

The educational program is a coordinated and organized package of courses that include procedures and experiences organized into study modules. The primary purpose is to build and refine the skills of graduates, making them qualified to meet the requirements of the labor market. It is reviewed and evaluated annually through internal or external audit procedures and programs

The academic program description provides a brief summary of the program's main features and courses indicating the skills that students are expected to acquire based on the program's objectives. The importance of this description is evident in that it represents the cornerstone for obtaining program accreditation. It is written by faculty members under the supervision of the academic committees in the academic departments

This guide, in its second version, includes a description of the academic program after updating the vocabulary and paragraphs of the previous guide in light of the new developments and changes in the educational system in Iraq, which includes a description of the academic program in its traditional form (annual, semester) in addition to adopting the description of the academic program circulated pursuant to the letter of the Department of Studies TM 3/2906 on 5/3/2023 with regard to programs that adopt the Bologna process as the basis for their work

In this context, we cannot but emphasize the importance of writing descriptions of academic programs and courses to ensure the smooth running of the educational process

Concepts and terms

Academic Program Description : The academic program description provides a brief summary of its vision, mission, and objectives, including a precise description of the targeted learning outcomes according to specific learning strategies

Course Description : Provides a concise summary of the course's key features and the learning outcomes expected of the student, demonstrating whether the student has made the most of the available learning opportunities. It is derived from the program description

Program vision : An ambitious vision for the future of the academic program to be an advanced, inspiring, motivating, realistic, and applicable program

Program mission : It briefly explains the objectives and activities required to achieve them, and also identifies the program's development paths and directions

Program objectives : These are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable

Curriculum structure : All courses/subjects included in the academic program according to the approved education system (semester, year, Bologna track), whether required by (ministry, university, college, or scientific department), along with the number of academic units

Learning outcomes : A consistent set of knowledge, skills, and values acquired by the student after successfully completing the academic program. Learning outcomes for each course must be defined in a manner that achieves the program's objectives

Teaching and learning strategies : These are the strategies used by faculty members to develop student teaching and learning. They are plans followed to achieve educational objectives. They describe all Academic Program to achieve the program's learning outcomes extracurricular activities classroom and Description Form

Academic Program Description Form

name: Middle Euphrates Technical University University

Musayyab Technical Institute-Institute: Al

Scientific Department: Department of Animal Production Technologies

Name of academic or professional program: Technical Diploma / Animal Production

Name: Technical Diploma in Animal Production Final Certificate

Spring course -Academic system: Semester / Fall course

Description preparation date: 2025-2026

2026 /2 / 22 : File filling date

The signature : 

Name of the Head of Department: Asst. Prof. Dr . Marwan Zuher Rijeb

Date : 8 /3 /2026

The signature : 

Asst. Dr. Mohamed Hadi Sabry :Name of Scientific Assistant

Date : 8 / 3/ 2026

The signature : 

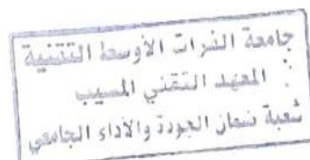
Check the file by

Quality Assurance and University Performance Division

Name of the Director of the Quality Assurance and University Performance

Walaa Hussein Alawi .Ms :Division

Date : 8/3/2026




Dean's approval

Assistant Professor Dr.

Malik Nema Hawass

8/3/2026

1- Program vision

It is manifested ,The department's vision is to be a pioneer in excellence and innovation in education scientific research and awareness that contributes to achieving sustainable development for society, the environment, leadership and the world, and keeps pace with the requirements of the labor market in the agricultural sector

2- Program message

The department's mission is to provide the work fields with distinguished technicians in the field of animal production techniques to serve development plans and contribute effectively to the ,implementation of agricultural projects, especially (animal production), providing scientific advice preparing economic feasibility studies, designing agricultural projects, and publishing solid research that supports the wheel of science and education, in addition to providing technical services and contributing to solving current problems, especially those related to the shortage of livestock and the low rate of production.

3- Program objectives

- 1. Graduating specialized technical cadres in the field of animal production technologies.**
- 2. Developing methods to improve animal production characteristics to meet future needs.**
- 3. ,Graduating qualified technical personnel to carry out animal production projects, manage them and work on developing them.**
- 4.Developing creative skills in finding solutions to problems facing animal production**
- 5 .Providing the student with technical skills in raising and managing productive field animals (cows, sheep, goats), poultry, and fish, which are the basis for sustaining work in government institutions and the private sector .**
- 6 .Preparing staff that will keep pace with scientific development in the field of animal production .**
- 7. Enabling the student to link the lesson information to the environment surrounding him .**
- 8.Provide the student with information that makes him think and develop his ideas .**
- 9 .Encouraging the student to present his information in seminars, seminars , and scientific debates, which enhances the student's self-confidence and makes him qualified to participate in scientific conferences and event**
- 10 .Raising the reality and performance of the teaching staff in the department by attracting specialists and developing the efficiency of the current teaching staff .**
- 11 .Providing the requirements for conducting scientific and graduation research to contribute to developing the reality and performance of the department**
- 12 .Raising the performance and standard of work in the department's laboratories and fields .**
- 13 .Finding ways to bring various types of farm animals into the country so that**

- the student can know these types and ways to deal with them .
- 14 .Establishing a small pioneer food industry laboratory to benefit from field products in preliminary research and studies .**
- 15 .Establishing a private fish farm to expand the scope of research and development of this important tributary.**

4- Program accreditation				
Is the program accredited? By which authority?				
Program structure: There is no course system				
Program structure	Number of courses	Study unit	percentage	comments
Institutional requirements				
College requirements	8	16	12.9	
Department requirements	25	108	87.1	
Summer training				
Other				
5-Other external influences				
Is there a sponsor for the program?				
both				

5- Program description			
year	Course name	Credit hours	
		theoretical (hr /w)	practical (hr /w)
First / Autumn	Veterinary Medicine Essentials	2	3
	Sheep and goat production	2	3
	Poultry production	2	3
	Agricultural tractors and equipment	1	3
	Dairy cattle production	1	3
	Food and Nutrition	1	3
	English language/1	2	0
	Democracy and human rights	2	0
	Arabic language /1	2	-
	Computer&artificial intelligence /1	1	1
First / Spring	Animal health	2	3
	Fish production	2	3
	poultry feed	2	2
	General Chemistry	2	2
	Animal production mechanization	1	3
	beef cattle production	1	3
Second/Autumn	Animal physiology and anatomy	2	3
	Meat preservation and processing	2	3
	Animal diseases	1	3
	Baath regime crimes	2	0
	animal feed	2	2
	Animal breeding and improvement	1	3
	Computer&artificial intelligence /2	1	2
	English/2	2	0
	Arabic language /2	2	0
Second/Spring	Research project	0	2
	Forage and pasture crops	1	3
	Poultry diseases	2	3
	Dairy manufacturing	1	3
	Animal production economics	2	0
	Hatchery technologies	2	3
	Fish farming	1	3
	Physiology of reproduction and artificial insemination	2	3
	Research project	0	2

6- Expected learning outcomes of the program	
Learning outcomes	A- Knowledge

A1- Providing students with skills in the fields of .raising large animals, poultry and fish A2- Teaching the skills of periodic animal .examination A3-Acquiring knowledge Theory in poultry A4- Learning how to use the computer and enter .software	Theoretical knowledge The process is used in various animal production applications .such as poultry and fish A2- Knowledge Theory The process Fundamentals of Veterinary Medicine and Animal Health A3- Read and understand the basics of .nutrition and food animal fields and conducting laboratory .tests to identify animal diseases
Learning outcomes	b- Skills
B1- Acquire the skill to conduct all physiological and .chemical analyses B2- Acquire the skill in laboratory and visual . diagnosis of poultry, animal and fish diseases B3- Acquire skills in manufacturing dairy products dairy products, cheeses, ice cream, and food) .(industries .(The other B4- Developing the ability to use the.computer	B1- Carrying out all physiological and .chemical analyses B2- Carrying out laboratory and visual diagnosis of diseases of poultry, animals and .fish B3- Processing of dairy derivatives (dairy products, cheeses, ice cream, and food (industries .(The other B4- Prepare records of computer use
Learning outcomes	C – Values
C1- Learning outcomes: Acquiring knowledge to meet the requirements and needs of establishing .animal fields C2- Adhering to ethical standards. Engineering -2 profession with ethics The profession of animal production and dealing with others according to the principles of democracy and human rights C3- Acquiring knowledge and achieving safety requirements in animal production projects C4- Acquiring knowledge to achieve sustainability - requirements, protect the environment, and . implement animal production projects	C1- Application of knowledge And skill To create animal fields C2- Commitment to ethics The profession of social responsibility in the practice of the profession of animal production and understanding human rights and democracy in Iraq and the world C3- Taking into consideration all professional safety requirements and spreading the .culture of animal care C4- Promoting sustainability- andenvironmental conservation when .implementing livestock production projects

7-	8.Teaching and learning strategies
	Students understand how to obtain scientific 1. sources from the Internet as well as, from the library and how to distinguish reliable sources from non .reliable ones 2. Using illustrative means during the lecture such as emodern audio-visual means interactive white board,data show ,lecture, workshop, laboratory ,scientific film screening, systematic training

	<p>summer training in relevant departments for the purpose of dairy and meat processing and blood sample examination, dissection of large animals and poultry, graduation projects conducted on .(animals and poultry.</p> <p>3. Asking students questions from time to time in order to ensure their participation in the lesson and discuss with them. participation in the lesson and opening the door to discussion .</p> <p>4. Giving students homework for the current topic and asking them to research the topic of the next lecture</p>
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8- Evaluation methods

1. The student is evaluated by dividing the grade between daily, monthly and oral exams, participation in lectures, in addition to the final exam .
2. Practical tests to regulate the extent to which the student benefits from basic sciences through practical applications
3. Conducting weekly and monthly exams
4. Giving homework and making reports
5. Encouraging daily attendance and allocating grades for attendance , participation, and daily tests.

9- Faculty

Faculty members

Academic rank	Specialization	Special. requirements/skills (if any)	Number of the teaching staff	
	The year	Flour	angel	lecturer
Mr				
assistant professor	Agriculture economic	Agriculture economic	1	
assistant professor	Veterinary medicine	Public health	1	
lecturer	Animal production	Fish breeding	1	
lecturer	Animal production	Reproductive physiology	1	
lecturer	Animal production	poultry breeding	1	
asistant Lecturer	Animal production	Animal breeding	1	
asistant Lecturer	Animal production	animal feed	1	

asis. Lecturer	Animal production	food industries	1	
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Orientation of new faculty members

- ☐ Involving new teachers in intensive courses in modern teaching methods .
- ☐ Directing them to conduct scientific research and publish in reputable scientific journals, whether local or international
- ☐ Continuous presence with the teaching staff in theoretical and practical lectures in order to encourage them to practice teaching and training processes and solve the problems they face in an educational manner .
- ☐ Conducting seminars, workshops, and meetings to inform them of the regulations , instructions, and laws followed in the Ministry of Higher Education related to their civil rights ,
- ☐ 5- obligations, and duties toward the educational institution at the institution and department level.

Professional development for faculty members

Professional development of faculty members is achieved through

- 1- Involving teaching staff in courses, seminars and workshops within their agricultural and veterinary specialization within the university and in other reputable universities inside and outside Iraq.
- 2- Facilitating difficulties and providing continuous support in preparing the requirements for scientific research
- 3- Forming research work teams within the department to solve the problems facing the agricultural and veterinary departments in other state departments

10- Acceptance criteria

The admission system criteria for the institute and the department in particular include

- 1- .Department development plans
- 2- .Academic accreditation program
- 3- .Student desire
- 4- .Student rate
- 5- .The type of branch the student graduated from: scientific/vocational Software

Program Skills Outline															
				Required learning outcomes of the program											
Year Level	Course code	Course name	Essential or optional	knowledge				Skills				values			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
/First Autumn\	APT114-30-C-M	Veterinary Medicine Essentials	essential		*			*							*
	APT115- 30 - C - M	Dairy cattle production	essential	*					*					*	
	APT111- 30 - C - M	Sheep and goat production	essential		*					*		*			
	APT112- 30 - C - M	Poultry production	essential			*			*						*
	APT113- 30 - C - M	Food and Nutrition	essential			*		*				*			
	APT116- 30 - C - M	Agricultural tractors and equipment	assistant	*									*		
	ATU12	Computer & artificial intellegence 1/	assistant				*	*							
	ATU13	Democracy and human rights	assistant										*		
	ATU10	English language /1	assistant												
	ATU11	Arabic language /1	assistant												
	APT124- 30 - C - M	Animal health	essential		*					*	*			*	
	APT121- 30 - C - M	beef cattle production	essential	*					*					*	

First / Spring															
	APT122- 30 - C - M	Fish production	essential	*						*				*	
	APT123- 30 - C - M	poultry feed	essential			*		*	*			*			
	APT126- 30 - C - M	Animal production mechanization	assistant	*											*
	APT125- 30 - C - M	General Chemistry	assistant	*				*				*			
	APT211- 30 - C - M	Animal physiology and anatomy	essential	*				*							*
	APT212- 30 - C - M	Animal diseases	essential		*				*					*	
	APT214- 30 - C - M	animal feed	essential	*				*							*
	APT213- 30 - C - M	Meat preservation and processing	essential	*						*				*	
	APT215- 30 - C - M	Animal breeding and improvement	essential	*					*			*			
	ATU22	Computer & artificial intelligence 2/	assistant				*				*				
	APT216- 30 - C - Y	Graduation research	essential	*				*				*			
	ATU20	English/2	assistant									*			

Seco / nd Autu mn	ATU21	Arabic language /2	assistant										*		
	ATU24	Baath regime crimes	assistant												
	APT225- 30 - C - M	Hatchery technologie s	essential	*				*							*
	APT224- 30 - C - M	Dairy manufactur ing	essential		*					*				*	
	APT223- 30 - C - M	Fish farming	essential	*					*						*
	APT221- 30 - C - M	Physiology of reproductio n and artificial inseminatio n	essential	*				*							*
	APT227- 30 - C - M	Forage and pasture crops	assistant		*			*							*
	APT226- 30 - C - M	Animal production economics	assistant	*											*
	APT222- 30 - C - M	Poultry diseases	essential		*				*					*	

Stage1 Autumn semester

Course Description Form

Course name					
Veterinary Principles					
Course code					
APT114-30-C-M					
semester/ year					
Fall Semester/ First Year					
Date this description was prepared 2025/3/20					
Available attendance forms					
.Attend a lecture daily according to the weekly schedule and practical work in the laboratory and field					
Total number of study hours/ Total number of units					
5 Hours (3 theoretical and 2 practical) / 5 units					
Name of the course administrator(if more than one name is mentioned)					
Name: L.Asis. Dalal .Omran Hamza Email. dalal.omran@atu.edu.iq					
Course objectives					
Course objectives	<p>After the end of the semester, the student will be able to know:</p> <p>The internal body systems of the animal and the animal's body's resistance to diseases and types of pathogens such as bacteria and parasites.</p> <p>The study of diseases that affect animals (classification, methods of transmission, etc.).</p> <p>Recognize on the condition natural The situation satisfactory For animals and that learn The student basics diseases How to knowledge the condition satisfactory How to Treat</p> <p>Gain The student knowledge and skill enough on Ways give pharmaceutical Veterinary and vaccines</p> <p>Gain The student knowledge and skill enough in procedure Tests Physiology. Types of veterinary medicines .</p> <p>Prevention and control of infectious diseases .</p> <p>Hormones (types of sex hormones) .</p> <p>Surgery, types of wounds, and others.</p>				
Teaching and learning strategies					
Strategy	Explaining on the board- Presentation- Coordination with students-Training- Discussion				
Course structure					
week	watches	Required learning outcomes	Name of unit or topic	Learning method	Evaluation method

1	5	Learn about the internal body systems	Internal body systems	Lecture	Written tests Midterm exams Final exams Daily evaluation
2	5	Identify the body's systems for various farm animals and its functions	Internal body systems	Lecture	Written tests Midterm exams Final exams Daily evaluation
3	5	Identify the different types of bacteria	Bacteria, their types and characteristics	Lecture	Written tests Midterm exams Final exams Daily evaluation
4	5	Learn about blood, its components and functions	Blood components and functions	Lecture	Written tests Midterm exams Final exams Daily evaluation
5	5	Identify the different types of anemia and its causes	Types and causes of Anemia	Lecture	Written tests Midterm exams Final exams Daily evaluation
6	5	Understand the concept of immunity and resistance .	Immunity and resistance	Lecture	Written tests Midterm exams Final exams Daily evaluation
7	5	Identify the different types of diseases and how they are transmitted between herd members	Diseases,classification and methods of Its transmission	Lecture	Written tests Midterm exams Final exams Daily evaluation
8	5	Learn about different methods Which are used for various diagnoses diseases affecting animals farm	Diagnoses of the diseases	Lecture	Written tests Midterm exams Final exams Daily evaluation

9	5	Identify the different types veterinary medicines and methods of administering medicines veterinary and vaccines	Medicine and types of veterinary medicines	Lecture	Written tests Midterm exams Final exams Daily evaluation
10	5	How to prevent and control infectious diseases	Prevention and control of Infectious diseases	Lecture	Written tests Midterm exams Final exams Daily evaluation
11	5	Different types of mastitis and its causes.	Mastitis types of inflammation of the udder	Lecture	Written tests Midterm exams Final exams Daily evaluation
12	5	Methods of diagnosing parasites Internal and external in the field and Laboratory	Animal parasites	Lecture	Written tests Midterm exams Final exams Daily evaluation
13	5	Identify the different types wounds and how to treat them	Veterinary Medicine Essentials Surgery, types of wounds	Lecture	Written tests Midterm exams Final exams Daily evaluation
14	5	Hormones, types of sex hormones	Hormones, sex hormones	Lecture	Written tests Midterm exams Final exams Daily evaluation
15	5	Childbirth: tools used in Childbirth , maternal and newborn care	Childbirth and types of dystocia	Lecture	Written tests Midterm exams Final exams Daily evaluation
Course Evaluation					
Grade distribution from 100= 50 To strive) according to the tasks assigned to the student, such as daily .preparation, daily, oral, monthly and written exams, reports, etc+50 for the final					
Learning and teaching resources					
Required textbooks(methodology if any)					
Main references(sources)			Fundamentals of Veterinary Medicine by Wahab Amin Hass Large Animal Internal Medicine: by Bradford P. Smith, DV		

Recommended supporting books and references(,scientific journals, reportsetc.)	
Electronic references, websites	https://www.vet-library.info/veterinary-medicine-books

Course Discription Form

Course name					
Dairy cattle production					
Course code					
APT115-30-C-M					
semester/ year					
First semester/ first year					
Date this description was prepared 2026/2/20					
Available attendance forms					
Attend a lecture daily according to the weekly schedule					
Total number of study hours/ Total number of units					
4 hours4 / unit					
Name of the course administrator(if more than one name is mentioned)					
Name: Assit. Prof. Husam Husain Alewi, e-mail: inm.hsm@atu.edu.iq					
Course objectives					
Course objectives		Learn about the components of a dairy farm, mechanical milking equipment, and .manual milking tools			
Teaching and learning strategies					
Strategy		Explaining on the board- Presentation- Coordination with students- Training– Discussion			
Course structure					
week	watches	Required learning outcomes	Name of unit or topic	Learning method	Evaluation method
1-2	4	Global dairy cattle breeds	Dairy cattle production	Lecture	Written tests Midterm exams Final exams
3-4	4	Cattle and their milk production	Dairy production cattle	Lecture	Written tests Midterm exams Final exams
5	4	Care and feeding of dairy cattle	Dairy production cattle	Lecture	Written tests Midterm exams Final exams
6	4	Structure and physiology of the udder	Dairy production cattle	Lecture	Written tests Midterm exams Final exams
7	4	Factors affecting the increase and decrease in milk production	Dairy production cattle	Lecture	Written tests Midterm exams

					Final exams Daily evaluation
8	4	Global and Iraqi buffalo	Dairy cattle production	Lecture	Written tests Midterm exams Final exams Daily evaluation
9	4	Milk production in buffalo	Dairy cattle production	Lecture	Written tests Midterm exams Final exams Daily evaluation
10	4	Goats and sheep and their milk production	Dairy cattle production	Lecture	Written tests Midterm exams Final exams Daily evaluation
11	4	Camels and their milk production	Dairy cattle production	Lecture	Written tests Midterm exams Final exams
12	4	Factors affecting milk components during the production period	Dairy cattle production	Lecture	Written tests Midterm exams Final exams
13	4	Hormones and their effect on milk production	Dairy cattle production	Lecture	Written tests Midterm exams Final exams Daily evaluation
14	4	Genetic improvement / methods of selecting dairy cattle	Dairy cattle production	Lecture	Written tests Midterm exams Final exams Daily evaluation
15	4	Establishing dairy farms	Dairy cattle production	Lecture	Written tests Midterm exams Final exams Daily evaluation

Course Evaluation

Grade distribution out of 100= 50 To strive) according to the tasks assigned to the student, such as daily .preparation, daily, oral, monthly and written exams, reports, etc+50 for the final

Learning and teaching resources

Required textbooks(methodology if any)	انتاج ماشية الحليب / 2010 / أ.د. ناطق حميد القدسي و السيد: جبال فكتور ايليا
Main references(sources)	تقنيات رعاية العجول / 2015 / أ.د. ناطق حميد القدسي و أ.م.د. محمد أحمد شويل
Recommended supporting books and references(,scientific journals, reportsetc.)	انتاج ماشية الحليب / 1986 / أ.م.د. فؤاد عبد اللطيف عبد الكريم
Electronic references, websites	Food and Agriculture Organization FAO

Course Description Form

Course name:					
Sheep and goat production					
Course code					
APT111- 30 - C – M					
semester/year					
First semester / First year					
Date this description was prepared					
15\2\2026					
Available attendance forms					
Weekly and according to the schedule					
Number of study hours (total) / Number of units (total)					
5 hours / 5 units					
Name of the course administrator (if more than one name is mentioned)					
Name : M. M. Yousif Hamad Kareem Email yousifhk@atu.edu.iq					
objectives Course					
Course objectives		<p>Introducing students to the scientific foundations of sheep and goat classification .and Iraqi and international breeds</p> <p>Introducing students to all field operations and types of housing for sheep and goats</p> <p>Introducing the student to the reproductive system of sheep, reproductive .efficiency, and the properties of milk, wool, and others</p> <p>Learn how to care for ewes and rams during estrus and pregnancy, and care for .calves from birth until weaning</p>			
Teaching and learning strategies					
Strategy		<ul style="list-style-type: none"> •Understanding the economic importance of sheep and goats and their development. •Identifying sheep and goat breeds raised in Iraq and worldwide. •Understanding the nutritional and environmental requirements for raising these animals. •Understanding sheep and goat products, including meat, milk, and wool. •Understanding field operations for sheep and goats and providing suitable housing for them. 			
Course structure					
week	watches	Name of unit or topic	Required learning outcomes	Learning method	Evaluation method
1	5	Scientific basis for sheep classification	Understanding the scientific basis for sheep classification	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams

					Daily evaluation
2	5	Meat, milk and wool sheep breeds	Identifying the characteristics of sheep breeds for meat, milk, and wool	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
3	5	Reproduction and ,fertilization in sheep reproductive systems	Identifying the reproductive systems of ewes and rams	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
4	5	,Sexual maturity ,breeding season methods of controlling the timing of estrus	Understanding puberty, sexual maturity, and estrous cycles	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
5	5	Pregnancy and birth period, care of ewes before and during birth	Identifying pregnancy in sheep and caring for ewes and newborns	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
6	5	Growth and development in sheep	Understanding prenatal and postnatal growth in newborns	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
7	5	Milk production in sheep and factors affecting milk production	Identifying sheep udders and the hormones that affect milk production	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
8	5	morphological anatomy	Understanding the components, characteristics, and properties of wool	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams

					Daily evaluation
9	5	Wool fiber growth stages, wool gradation	Understanding the components, characteristics, and properties of wool	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
10	5	Origin and classification of goats, position in the animal kingdom	Understanding wool gradation and its types	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
11	5	Goat breeds in the world	Identifying goats, their different breeds, and their distribution	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
12	5	Goat reproduction sexual maturity	Identifying goats, their different breeds, and their distribution	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
13	5	Milk, hair and skin production in goats	Understanding puberty, sexual maturity, and estrous cycles	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
14	5	Genetic improvement in sheep and goats	Identifying sheep udders and the hormones that affect milk production	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
15	5	Fattening lambs and kids, fattening field management for lambs and kids	Identifying genetic improvement and selecting good	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams

			animals for future generations		Daily evaluation
Course Evaluation :Evaluation is done through .Daily, monthly and semester exams .Group interaction and participation in discussing and solving exercises .2					
,The grade is distributed out of 100. 50 points are calculated based on the tasks assigned to the student such as daily preparation, daily, oral, monthly, written and practical exams, attendance and reports. 50 .points are for the final written and practical exam, etc					
Learning and teaching resources					
			Required textbooks (methodology if (any		
Sheep and Goat Production Book - Written by Zuhair Fakhri - 1 and Jalal Elia Al-Qas 1984 Basics of Sheep and Goat Production - Written by Zuhair Fakhri and Jalal Elia Al-Qass 1993			Main references (sources)		
Specialized websites			Recommended supporting books and references (scientific journals, reports, etc.)		

Course Description Form

Course name:
poultry production
Course code
APT112- 30 - C – M
semester/year
First semester / First year
Date this description was prepared
15\2\2026
Available attendance forms
Weekly and according to the schedule
Number of study hours (total) / Number of units (total)
5 hours / 5 units
Name of the course administrator (if more than one name is mentioned)
Name : M. Mohammed Mustafa Abdelaziz Email mohammed.mustafa@atu.edu.iq
objectives Course

Course objective	<ul style="list-style-type: none">•To introduce students to the poultry industry and its economic importance.•To introduce students to the various international and commercial breeds used for egg and meat production.•To introduce students to the management of poultry farms.• To teach students how to produce eggs and meat from laying hens, turkeys, and quail.				
9. Teaching and learning strategies					
Strategy	<ul style="list-style-type: none">•Understanding the importance of the poultry industry in Iraq and the world, including the breeds used for laying hens and meat.•Understanding the functions of the body systems, most importantly the male and female reproductive systems, the process of egg formation, and the digestive system.•Understanding hatching, its types, and its components, as well as the components of poultry farming including ventilation, temperature, and humidity.•Understanding how to produce eggs and meat in laying hens, turkeys, and quail.•Understanding the genetic improvement of poultry, as well as how to raise ornamental birds and ostriches.				
Course structure					
week	watches	Name of unit or topic	Required learning outcomes	Learning method	Evaluation method
1	5	The importance of the poultry industry in Iraq; international companies producing broiler and egg-laying chicken breeds.	Understanding the importance of the poultry industry in Iraq and the world; breeds produced for laying hens and meat.	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
2	5	The reproductive functions in poultry, egg formation, the male and female reproductive systems, hormones, and their control over egg formation.	Understanding the functions of the body's systems, most importantly the male and female reproductive systems and the method of egg formation.	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
3	5	Physiological functions in the digestive system	Understanding the workings of the digestive system	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams

					Daily evaluation
4	5	Natural and artificial hatching in chickens: basic components of hatching	Understanding hatching, its types, and its components	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
5	5	Chicken housing: elements to consider when selecting and designing the farm site, including calculations for ventilation, cooling, and lighting needs.	Identifying poultry housing and the equipment required for it	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
6	5	Various poultry equipment used in poultry houses	Identifying poultry housing equipment	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
7	5	Egg production, laying hen farming systems, factors affecting egg production, methods used to calculate egg production	Understanding the egg production process and the factors affecting it in laying hens	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
8	5	Egg production, laying hen rearing systems, factors affecting egg production, methods used in calculating egg production with biological or programmed egg production in laying hens and turkeys	Understanding the egg production process and the factors affecting it in turkeys	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
9	5	Quail egg production, economic importance, and general rules followed in egg production.	Understanding the egg production process and the factors affecting it in quail	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams

					Daily evaluation
10	5	Meat production, broiler farming systems, factors affecting meat production	Understanding the meat production process and the factors that affect it	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
11	5	Poultry slaughterhouse management and methods used in preparing and marketing broiler chickens	Understanding poultry slaughterhouses and the marketing process for broiler chickens	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
12	5	Genetic improvement of poultry, general principles of genetics, quantitative and qualitative traits, selection methods	Understanding how to perform genetic improvement and selection methods in poultry	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
13	5	Turkeys: Types and Breeding Methods	Getting to know turkeys and how to raise them	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
14	5	Ostrich breeding and production	Learn about ostrich breeding and production methods	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
15	5	The most important types of ornamental chickens and how to raise them	Learn how to raise ornamental chickens.	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams

					Daily evaluation
11. Course Evaluation					
The assessment out of 100 is based on daily tests, weekly activities, monthly tests, assignments, and a final exam. 50% is for coursework and 50% is for a final theoretical and practical exam.					
12. Learning and teaching resources					
Principles of Poultry Production book Poultry Health Management Book 2009				Required textbooks (methodology if any)	
Poultry Products Technology book by Saad Abdul-Hussein Naji				Main references (sources)	
Specialized websites				Recommended supporting books and references (scientific journals, reports, etc	

Course Description Form

Course name:	
Agricultural Tractors and Machinery	
Course code	
APT116-30-C-M	
semester/year	
First semester / First year	
Date this description was prepared	
15/2\2026	
Available attendance forms	
Weekly and according to the schedule	
Number of study hours (total) / Number of units (total)	
4hours / 4units	
Name of the course administrator (if more than one name is mentioned)	
Name : Name: Dr. Mena Mosaher Alwan Email mena.alwan@atu.edu.iq	
objectives Course	
Course objectives	☐ To introduce students to agricultural tractors and machinery, their general types, and specifically those related to animal production.
9. Teaching and learning strategies	
Strategy	Board explanation, presentations, coordination with students, training, and discussions.
Course structure	

week	watches	Name of unit or topic	Required learning outcomes	Learning method	Evaluation method
1	4	Importance of agricultural mechanization	Importance of agricultural mechanization	Lecture	Practical quizzes, Semester exams, Final exams, Daily evaluation
2	4	Types of tractors	Types of tractors	Lecture	Practical quizzes, Semester exams, Final exams, Daily evaluation
3	4	Function of main tractor parts	Function of main tractor parts	Lecture	Practical quizzes, Semester exams, Final exams, Daily evaluation
4	4	Four-stroke and two-stroke thermal cycles	Four-stroke and two-stroke thermal cycles	Lecture	Practical quizzes, Semester exams, Final exams, Daily evaluation
5	4	Fuel system (Diesel/Gasoline) for the engine	Fuel system (Diesel/Gasoline) for the engine	Lecture	Practical quizzes, Semester exams, Final exams, Daily evaluation
6	4	Air, exhaust, cooling, and lubrication systems	Air, exhaust, cooling, and lubrication systems	Lecture	Practical quizzes, Semester exams, Final exams, Daily evaluation.
7	4	Electrical system for diesel and gasoline engines	Electrical system for diesel and gasoline engines	Lecture	Practical quizzes, Semester exams, Final exams, Daily evaluation
8	4	Hydraulic system	Hydraulic system	Lecture	Practical quizzes, Semester exams, Final exams, Daily evaluation
9	4	Tractor chassis, motion, and steering assembly	Tractor chassis, motion, and steering assembly	Lecture	Practical quizzes, Semester exams, Final exams, Daily evaluation
10	4	Tractor maintenance	Tractor maintenance	Lecture	Practical quizzes, Semester exams, Final exams, Daily evaluation

11	4	Harrowing/Smoothing equipment	Harrowing/Smoothing equipment	Lecture	Practical quizzes, Semester exams, Final exams, Daily evaluation
12	4	Furrowing and canal digging equipment	Furrowing and canal digging equipment	Lecture	Practical quizzes, Semester exams, Final exams, Daily evaluation
13	4	Cleaning equipment for ruminant farms	Cleaning equipment for ruminant farms	Lecture	Practical quizzes, Semester exams, Final exams, Daily evaluation
14	4	Pest control/Spraying equipment	Pest control/Spraying equipment	Lecture	Practical quizzes, Semester exams, Final exams, Daily evaluation
15	4	Harvesting and reaping equipment	Harvesting and reaping equipment	Lecture	Practical quizzes, Semester exams, Final exams, Daily evaluation

11. Course Evaluation

- ☐ Daily, monthly, and annual examinations.
- ☐ Interaction and group participation in discussions and preparing weekly reports.
- ☐ Grade Distribution (out of 100): Distributed according to the tasks assigned to the student, such as daily preparation, daily/oral/monthly/written exams, reports, etc.

12. Learning and teaching resources

☐ Required Textbooks(Methodology, if available): ☐ Main References ☐ Recommended Supportive Books and References ☐ Specialized Websites	☐ <i>Encyclopedia of Agricultural Machinery and Tools</i> , prepared by Professor Dr. Abdul Razzaq Abdul Latif Jassim, 2017. ☐ (Scientific Journals, Reports...): <i>Journal of Agricultural Engineering Sciences</i>
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Course Description Form

Course name:
Food and Nutrition
Course code
APT113- 30 - C – M

semester/year					
First semester / First year					
Date this description was prepared					
15\2\2026					
Available attendance forms					
Weekly and according to the schedule					
Number of study hours (total) / Number of units (total)					
5 hours / 5 units					
Name of the course administrator (if more than one name is mentioned)					
Name : Name: Rehab Hassoon Ali Email rehab.ali@atu.edu.iq					
objectives Course					
Course objectives	<ul style="list-style-type: none">* Clarify the general principles of food.* Identify feeds and rations through chemical analysis.* Introduce students to the digestive system of animals, especially complex-stomach animals (ruminants).* Enable students to produce high nutritional value and economic feed for livestock.				
9. Teaching and learning strategies					
Strategy	<ul style="list-style-type: none">1. Identification of food, its components, and types.2. Identification of the types of feeds and rations provided to animals.3. Identification of the types of digestive systems in different animals, especially ruminants with complex stomachs.4. Identification of how to produce concentrated feed with high nutritional value and economic efficiency to achieve maximum production.				
Course structure					
week	watches	Name of unit or topic	Required learning outcomes	Learning method	Evaluation method
1	4	Identify nutrition types and their importance for animals.	Identify nutrition types and their importance for animals.	Lecture, Field, Lab, Summer Training	Written tests, Midterm exams, Final exams, Daily assessment
2	4	Identify the composition of feed materials.	Identify the composition of feed materials.	Lecture, Field, Lab, Summer Training	Written tests, Midterm exams, Final exams, Daily assessment
3	4	Identify digestion and absorption of nutritional compounds in animals.	Identify digestion and absorption of nutritional compounds in animals.	Lecture, Field, Lab, Summer Training	Written tests, Midterm exams, Final exams, Daily assessment

4+5	4	Identify the classification and specifications of different feed materials.	Identify the classification and specifications of different feed materials.	Lecture, Field, Lab, Summer Training	Written tests, Midterm exams, Final exams, Daily assessment
6	4	Identify nutritional and non-nutritional supplements added to rations.	Identify nutritional and non-nutritional supplements added to rations.	Lecture, Field, Lab, Summer Training	Written tests, Midterm exams, Final exams, Daily assessment
7	4	Identify how to utilize agricultural and industrial wastes in animal nutrition.	Identify how to utilize agricultural and industrial wastes in animal nutrition.	Lecture, Field, Lab, Summer Training	Written tests, Midterm exams, Final exams, Daily assessment nutrition.
8	4	Identify hay and silage in animal nutrition.	Identify hay and silage in animal nutrition.	Lecture, Field, Lab, Summer Training	Written tests, Midterm exams, Final exams, Daily assessment
9	4	Identify the basic rules in ration formulation.	Identify the basic rules in ration formulation.	Lecture, Field, Lab, Summer Training	Written tests, Midterm exams, Final exams, Daily assessment
10	4	Identify ration balancing and formulation.	Identify ration balancing and formulation.	Lecture, Field, Lab, Summer Training	Written tests, Midterm exams, Final exams, Daily assessment
11	4	Identify food poisoning.	Food poisoning – Types of food poisoning.	Lecture, Field, Lab, Summer Training	Written tests, Midterm exams, Final exams, Daily assessment
12	4	Identify animal energy requirements.	Studying animal energy requirements – The fate of energy in the animal body.	Lecture, Field, Lab, Summer Training	Written tests, Midterm exams, Final exams, Daily assessment
13	4	Identify nutritional measures.	Nutritional measures -	Lecture, Field,	Written tests, Midterm exams,

			Methods of measuring the nutritional value of feed materials.	Lab, Summer Training	Final exams, Daily assessment
14	4	Identify nutritional standards/balances.	Types of nutritional standards/balances.	Lecture, Field, Lab, Summer Training	Written tests, Midterm exams, Final exams, Daily assessment
15	4	Identify some important nutritional terms.	Nutritional terms - Weight gain - Digestion coefficient - Conversion efficiency - Nutritive ratio.	Lecture, Field, Lab, Summer Training	Written tests, Midterm exams, Final exams, Daily assessment

11. Course Evaluation

Distribution of the grade out of 100 based on the tasks assigned to the student such as daily preparation, daily quizzes, oral, monthly, written, and practical exams, reports, etc.

12. Learning and teaching resources

Required Textbooks Main References Recommended Supportive References Specialized Websites	1. Physiological Animal Nutrition 2. Animal Nutrition: Scientific & Practical Foundations and Feed Materials A collection of books in the field of food, animal nutrition, and types of feed materials. Reviewing electronic websites in this field.
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Course Description Form

Course name:
Computer and artificial intelligence1
Course code
ATU12
semester/year
First semester / First year
Date this description was prepared
15\2\2026
Available attendance forms
Weekly and according to the schedule

Number of study hours (total) / Number of units (total)					
2 hours / 2 units					
Name of the course administrator (if more than one name is mentioned)					
Name : M. M. Walaa Hussein Email walaa.allawi@atu.edu.iq					
objectives Course					
Course objectives		<ul style="list-style-type: none">• Students will learn about computers, their hardware and software .components, input and output devices, toolbar commands, and status• Students will be introduced to the internet, local and global networks, websites, browsers, search engines, and cloud computing.			
9.Teaching and learning strategies					
Strategy		<ul style="list-style-type: none">• Understanding computers, their hardware and software components, and input/output devices.• Understanding status bar and title bar commands, and how to use templates and documents and apply commands to them.• Understanding the internet, local and global networks, websites, browsers, search engines and cloud computing.			
Course structure					
week	watches	Name of unit or topic	Required learning outcomes	Learning method	Evaluation method
1	2	Introduction to computer : concepts of hardware and software with their components : concept of computing ,Data and Information , connecting input\ output devices, and .peripherals to CPU	Understanding computers, software, and computer hardware and software components	Lecture Laboratory	Practical tests Midterm exams Final exams Daily evaluation
2	2	Computer components: computer portions, hardware parts, I/O .units, Memory types	Identifying computer input and output components	Lecture Laboratory	Practical tests Midterm exams Final exams Daily evaluation
3	2	Computer components (Cont.): Basic CPU components, Computer Ports, personal Computer, personal Computer (Features (and types	Identifying the types of computers	Lecture Laboratory	Practical tests Midterm exams Final exams Daily evaluation

4	2	Operating System and Graphical User Interface GUI : Operating System, basics of common Operating System, the User Interface , using .mouse techniques	Understanding computer operating systems	Lecture Laboratory	Practical tests Midterm exams Final exams Daily evaluation
5	2	Operating System and Graphical User Interface GUI (Cont): Use of common icons , status bar, using menu and menu- selection, concept of folders and directories , opening and closing of different windows, creating short .cuts	Identifying some commands in the status bar and title bar	Lecture Laboratory	Practical tests Midterm exams Final exams Daily evaluation
6	2	Word processing : Word processing basics , basic features of Word processors, opening and closing of documents , text creation and manipulation formatting text and paragraphs, using templates for document .creation	How to process texts, documents, and templates	Lecture Laboratory	Practical tests Midterm exams Final exams Daily evaluation
7	2	Word processing(Cont.) : creation and managing tables, utilizing styles and themes, spell check and grammar tools, using headers and .footers	How to create tables and patterns, and perform spell and grammar checks	Lecture Laboratory	Practical tests Midterm exams Final exams Daily evaluation
8	2	Spread sheet: introduction to spreadsheet software, creating and formatting worksheets sorting and	How to input data, filter, sort, and use function formulas	Lecture Laboratory	Practical tests Midterm exams Final exams Daily evaluation

		filtering data, using .formulas and functions			
9	2	Spread sheet(Cont.): using formulas and functions using pivot tables for data analysis data validation and error checking , data visualization : creating .charts and graphs	Learn how function formulas work, analyze data, and create charts and graphs.	Lecture Laboratory	Practical tests Midterm exams Final exams Daily evaluation
10	2	Presentation software : introduction to Presentation software, overview of popular Presentation tools creating a new Presentation, using templates and themes , inserting and formatting text and images, transition and animation effects	How to design presentations, create templates, text, images, and graphics	Lecture Laboratory	Practical tests Midterm exams Final exams Daily evaluation
11	2	Presentation software(Cont.):using speaker notes and timers , advanced features: hyperlinks and action buttons, troubleshooting common Presentation issues, future trends in Presentation .technology	How to design presentations, create templates, text, images, and graphics	Lecture Laboratory	Practical tests Midterm exams Final exams Daily evaluation
12	2	Introduction to internet and web browsers: computer networks basic, LAN , WAN, concept of internet and its applications, . connecting to internet	Understanding the Internet, Networks, and Their Types	Lecture Laboratory	Practical tests Midterm exams Final exams Daily evaluation
13	2	Introduction to internet and web browsers	Getting to know the internet, types of	Lecture Laboratory	Practical tests

		(Cont.): world wide web, web browsers search engines, understanding URL, domain name, IP .address	browsers, and search engines		Midterm exams Final exams Daily evaluation
14	2	Communications and emails: basics of electronic mail , getting an email account , sending receiving emails , accessing sent emails, using emails, document .collaboration	How to create an email account and how to send and receive messages and documents	Lecture Laboratory	Practical tests Midterm exams Final exams Daily evaluation
15	2	Introduction to cloud computing and services : definition of cloud computing and its concept , cloud – based office suites (office 365 and Google workspace) Google docs, Google sheets, Google drive , .Google meet	Introduction to cloud computing and the cloud office suite of software.	Lecture Laboratory	Practical tests Midterm exams Final exams Daily evaluation

11. Course Evaluation

The assessment out of 100 is based on daily tests, weekly activities, monthly tests, assignments, and a final exam. 50% is for coursework and 50% is for a final theoretical and practical exam.

12. Learning and teaching resources

Required textbooks (methodology if any)

Main references (sources)

Specialized websites

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

Course Description Form

Course name:
Arabic Language
Course code
Version Number: ATU11
semester/year
First semester / First year

Date this description was prepared	
19\2\2026	
Available attendance forms	
Weekly and according to the schedule	
Number of study hours (total) / Number of units (total)	
2 hours / 2 units	
Name of the course administrator (if more than one name is mentioned)	
Name : Dr. Thamer Abdullah Mohammed Email:	
objectives Course	
Course objectives	<p>General Objective: To provide students with grammar and morphology rules and introduce them to notable figures of Arabic literature.</p> <p>Specific Objective: To equip students with the ability to correctly vocalize Arabic words and recognize the beauty of the Arabic language.</p>
9.Teaching and learning strategies	
Strategy	Lectures using the whiteboard, projector screen, multiple resources, and training materials.

Course Structure

Week	Hours	Required learning outcomes	Name of unit or topic	learning Method	Evaluation method
1	2 hrs	Understanding meanings of the verses & reasons for revelation	Surah Al-Baqarah (260–263)	In-class	Daily evaluation
2	2 hrs	Researching reason behind Hadith	Hadith: 'I was only sent to perfect good manners'	In-class	Daily evaluation
3	2 hrs	Understanding origins of Arabic literature	Pre-Islamic literature	In-class	Daily evaluation
4	2 hrs	Memorizing first five lines of the poem	Mu‘allaqa of Antarah	In-class	Daily evaluation
5	2 hrs	Distinguishing morphology and grammar	Morphological Scale	In-class	Daily evaluation
6	2 hrs	Differentiating broken plurals	Plurals in Arabic	In-class	Daily evaluation

7	2 hrs	Identifying subject and verb tense	Verb conjugation	In-class	Daily evaluation
8	2 hrs	Sound and weak verbs	Verb types	In-class	Daily evaluation
9	2 hrs	Solar & lunar letters, punctuation	Language skills	In-class	Daily evaluation
10	2 hrs	Using dictionaries	Arabic dictionaries	In-class	Daily evaluation
11	2 hrs	Listing unfamiliar Qur'anic vocabulary	Strange Qur'anic expressions	In-class	Daily evaluation
12	2 hrs	Distinguishing dād and zā'	Common language errors	In-class	Daily evaluation
13	2 hrs	Number agreement rules	Arabic numbers	In-class	Daily evaluation
14	2 hrs	Distinguishing tanween and nūn	Nunation	In-class	Daily evaluation
15	2 hrs	Understanding prepositions & uses	Arabic prepositions	In-class	Daily evaluation

Course Evaluation

Midterm Exam: 30%

Final Exam: 70%

Learning and Teaching Resources

Required Textbooks:

- Ministry of Higher Education Curriculum
- General Arabic for Universities and Technical Institutes (Dr. Safaa Kazem / Dr. Lama Mohammed)

Main References:

- Alfiyyat Ibn Malik
- Applied Grammar — Dr. Khalid Abdul-Aziz
- Meanings of Grammar — Dr. Fadel Al-Samaraai

Supporting References:

- Dawa Journal
- Journal of the College of Education for Human Sciences — University of Babylon
- Iraqi Scientific Academy

Stage1 spring semester

Course Description Form

Course name:					
Animal health					
Course code					
APT124-30-C-M					
semester/ year					
Second semester/ First year					
Date this description was prepared					
2026/3/20					
Available attendance forms					
My attendance is daily and according to the weekly schedule					
Total number of study hours)) / (Total number of units)					
5 hour/ 5 Units					
) Course Instructor Name (If more than one name is mentioned					
Name:L. A. Dalal Omran Hamza Email: dalal.omran@atu.edu.iq					
Course objectives					
Course objectives	<p>The student will be able to:</p> <p>A - General Objectives: The student is given a general idea of: Health conditions to be met in the air, drinking water, environmental conditions in animal pens</p> <p>B - Special Objectives: The student gets acquainted with: the health importance of air components, air pollutants , dust infection, ventilation, the role of water in the transfer of pathogens, types of sheds drainage waste and liquids from barns</p>				
Teaching and learning strategies					
Strategy	<p>.1Identify the clinical importance of the role of air and water in the transmission of pathoge</p> <p>.2Knowledge and understanding. For the health conditions that must be met in drinking wa and watering animals .</p> <p>3 . Clarify the basic concepts of healthy ways to dispose of waste in barns .</p>				
Course structure					
week	watches	Required learning outcomes	Name of unit or topic	Learning method	Evaluation method
1	5	Natural air Recognize the importance of air higene	Air, health importance of air higene .	Lecture and problem solving	Exams and Practical report
2	5	recognize the components of air	The aircomponents,	Lecture and problem solving	Exams and Practical report
3	5	pollutants and pollutants that	pollutants air inside residencesanimals	Lecture	Exams and Practical report

		Happening inside residences Animals		and problem solving	
4	5	of air The health importance of air speed, sun and light	Health importance For air, sun and light Inside the barns	Lecture and problem solving	Exams and Practical report
5	5	Definition of ventilation and its importance Inside the barns	Ventilation, air exchange and air volume	Lecture and problem solving	Exams and Practical report
6	5	Identify water sources animal parasites, and .chemical toxins	Water, water sources: rainwater, surface water, seas and groundwater	Lecture and problem solving	Exams and Practical report
7	5	The role of water in the transmission of pathogens, pathogenic microbes	Health requirements for drinking water and animal watering	Lecture and problem solving	Exams and Practical report
8	5	Learn about the conditions Health Duty Availability in drinking water purification of water, adding chlorine, bleaching powder and potassium permanganate	Drinking water purification the purpose of which is natural and artificial purification of water, add Chlorine and minor Animal	Lecture and problem solving	Exams and Practical report
9	5	Drainage of waste and ,liquids from barns ,liquid manure storage drainage pipes and traps	Healthy ways to dispose of waste and litter	Lecture and problem solving	Exams and Practical report
10	5	building site, construction, roof, thermal insulation	building site, construction, roof, thermal insulation	Lecture and problem solving	Exams and Practical report
11	5	General specifications Of the premises, Types (mobile and fixed)	pens, and its importance Inside	Lecture and problem solving	Exams and Practical report

12	5	General specifications for milking plants, their types (mobile and fixed)	General specifications of sheds milk cattle	Lecture and problem solving	Exams and Practical report
13	5	General specifications for theaters	General specifications of theaters	Lecture and problem solving	Exams and Practical report
14	5	Calf pens system	Calf pens, environment, calf pen systems, broiler pens , fattening cattle pens and sheep pens	Lecture and problem solving	Exams and Practical report
15	5	Sheep pens, cattle pens Fattening and sheep pens	Tick control, methods of controlling ticks in pastures, on animals and in animal housing . Sheep pens , cattle pens Fattening and sheep pens	Lecture and problem solving	Exams and Practical report

Course Evaluation

Evaluation is done through:

Grade distribution out of 100 = 50 for effort (according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc.) + 50 (final)

Learning and teaching resources

Required textbooks Methodology (if any)	
Main references Sources	Animal Health Dr. Mahmoud Ahmed Nadeem + Saadi Ahmed Ghan 1982 Agricultural Animal Health Abdel Hamid Mohamed Abdel Hamid 2008
Recommended supporting books and references (scientific journals, report setc.	Book: Animal Health © Author: Abdel Hamid Mohamed Abdel Hamid, Professor, Department of Animal Production Faculty of Agriculture - Mansoura University Publication date: 2005 First Edition
Electronic references, websites	https://www.agro-lib.site/2020/06/blog-post.html

Course Description Form

Course name:					
Meat cattle production					
Course code					
APT121- 30 - C - M					
semester/year					
Second semester / First year					
Date this description was prepared					
15\2\2026					
Available attendance forms					
Weekly and according to the schedule					
Number of study hours (total) / Number of units (total)					
4 hours / 4 units					
Name of the course administrator (if more than one name is mentioned)					
Name : M. M. Bahaa Abdul-Amir Hadi Email bahaa.hadi@katu.edu.iq					
objectives Course					
Course objectives		<ul style="list-style-type: none">•The student will be able to: identify global beef cattle breeds; understand the current state of meat production in the Arab world and globally.•classify farm animals such as cows, buffalo, and camels.•Learn about beef animal nutrition, nutritional requirements for beef animals, green concentrate feed, production requirements, types of feed rations, and fattening methods.			
9. Teaching and learning strategies					
Strategy		<ul style="list-style-type: none">•To familiarize students with global, Arab, and local beef cattle breeds.•To familiarize students with the specific needs of beef cattle for increased production.•To familiarize students with the practical principles of meat inspection in the slaughterhouse laboratory, and at the consumer.			
Course structure					
week	watch es	Name of unit or topic	Required learning outcomes	Learning method	Evaluation method
1	4	The reality of meat production in the Arab world and globally	Understanding the reality of meat production in the Arab world and globally	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
2	4	Meat production in Iraq, methods to increase production, problems in meat production, and the future of meat production in Iraq.	Understanding the current state of meat production in Iraq, ways to increase it, and solutions to the problems it faces.	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
3		Classification of farm animals that produce meat: cattle – buffalo – camels	Identifying the classification of meat-producing	Lecture Workshop Laboratory	Practical tests Midterm exams Final exams

	4		livestock such as cows, buffalo, and camels	Summer Training	Daily evaluation
4	4	Beef cattle breeds, physical characteristics, production traits	Identifying the morphological characteristics of a meat animal	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
5	4	Meat production from buffalo, buffalo in Iraq	Identifying the characteristics and specifications of buffalo meat	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
6	4	Meat production from camels	Identifying the stages of animal growth and development	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
7	4	Growth and development in meat animals – Growth theory – Growth curve	Identifying the characteristics and specifications of camel meat	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
8	4	Reproduction and fertility in meat animals	Identifying the breeding season for beef cattle	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
9	4	Feeding beef cattle, nutritional requirements of beef cattle, green concentrate feed, production requirements, types of feed rations and fattening methods	Identifying the essential feed requirements for producing a well-muscled animal	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
10	4	Study of the economic and productive characteristics of meat animals	Identifying the economic and productive characteristics of meat animals	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation

11	4	The nutritional value of red meat and its comparison with other human foods	Understanding the nutritional value of red meat	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
12	4	Animal body structure	Identifying the structure of an animal's body	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
13	4	Conduct a scientific trip	Conduct a scientific trip	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
14	4	The practical principles of meat inspection in the slaughterhouse, laboratory, and at the consumer.	Understanding meat inspection at the slaughterhouse, laboratory, and consumer.	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
15	4	Meat production from sheep	Meat production from sheep	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation

11. Course Evaluation	
The assessment out of 100 is based on daily tests, weekly activities, monthly tests, assignments, and a final exam. 50% is for coursework and 50% is for a final theoretical and practical exam.	
12. Learning and teaching resources	
Required textbooks (methodology if any)	Principles of beef cattle production
Main references (sources)	
Recommended supporting books and references (scientific journals, reports (.etc	Specialized websites

Course Description Form

Course name:	
Fish production	
Course code	
APT223-30-C-M	
semester/year	
Second semester / First year	
Date this description was prepared	
17/2/2026	
Available attendance forms	
Weekly and according to the schedule	
Number of study hours (total) / Number of units (total)	
4 hours / 4 units	
Name of the course administrator (if more than one name is mentioned)	
Name : Assist. Prof. Dr. Abdulhussein Hamza Abdulhussein Email im.abd4@atu.edu.iq	
objectives Course	
Course objectives	1- Introduce students to the economic importance of fish and the reasons for the rapid development of aquaculture. 2- Familiarize students with different aquaculture systems and pond types, and procedures for stocking fish into ponds. 3- Provide knowledge of the physical and chemical properties of water in aquaculture. Introduce fish diseases, their causes, prevention, and treatment methods.
9. Teaching and learning strategies	
Strategy	1- Understanding the economic importance of fish. 2- Identifying aquaculture systems and pond types. 3- Studying the physical and chemical properties of water 4- Recognizing fish diseases and their management

Course structure					
Week	Hours	Intended Learning Outcomes	Unit / Topic Title	Teaching Methods	Assessment Methods
1+2	4	Introduction to aquaculture; its economic importance and reasons for rapid development; fish farms and their components	Fish and Their Economic Importance	Lecture, Fieldwork, Laboratory, Summer Training	Written quizzes, Midterm exams, Final exams, Daily assessment
3+4	4	Types of fish farms; culture systems; types of ponds; construction of fish ponds and their components	Fish Farms and Culture Systems	Lecture, Fieldwork, Laboratory, Summer Training	Written quizzes, Midterm exams, Final exams, Daily assessment
5	4	Identification of cultured fish species and their characteristics (carp and its varieties, tilapia); aquaculture species worldwide, in the Arab region, and in Iraq	Characteristics of Cultured Fish	Lecture, Fieldwork, Laboratory, Summer Training	Written quizzes, Midterm exams, Final exams, Daily assessment
6	4	Aquaculture water: physicochemical properties and quantity; laboratory instruments (pH meter, dissolved oxygen meter, transparency measurement, microscope and its use); pond water sampling and analysis	Aquaculture Water Quality	Lecture, Fieldwork, Laboratory, Summer Training	Written quizzes, Midterm exams, Final exams, Daily assessment
7	4	Preparation for stocking a new batch of fish: pond preparation, fingerling sources, water filling; pond maintenance (cleaning, disinfection, fertilization, structural maintenance)	Pond Preparation and Maintenance	Lecture, Fieldwork, Laboratory, Summer Training	Written quizzes, Midterm exams, Final exams, Daily assessment
8+9	4	Fish hatcheries: components and broodstock holding tanks; water quality improvement and treatment of unsuitable parameters	Fish Hatcheries and Broodstock Management	Lecture, Fieldwork, Laboratory, Summer Training	Written quizzes, Midterm exams, Final exams, Daily assessment
10	4	Fish culture in closed systems and cages: objectives and advantages; cage types, components,	Closed Systems and Cage Culture	Lecture, Fieldwork, Laboratory, Summer Training	Written quizzes, Midterm exams, Final exams, Daily assessment

		fabrication materials, and site selection			
11	4	Reproduction in ponds: natural spawning, induced breeding, planning for fingerling production	Natural and Artificial Reproduction	Lecture, Fieldwork, Laboratory, Summer Training	Written quizzes, Midterm exams, Final exams, Daily assessment
12+13	4	Fish nutrition: requirements for protein, carbohydrates, lipids, minerals, and vitamins	Fish Nutritional Requirements	Lecture, Fieldwork, Laboratory, Summer Training	Written quizzes, Midterm exams, Final exams, Daily assessment
14+15	4	Fish farm planning; intensive aquaculture; feed formulation and calculation of supplementary feed components; fish diseases (definition, causative factors, signs in ponds, types of diseases)	Fish Farm Planning, Intensive Culture, and Fish Diseases	Lecture, Fieldwork, Laboratory	Comprehensive evaluation

Course Evaluation		
Total grade (100%) distributed according to student tasks, including daily preparation, quizzes, oral exams, monthly exams, written exams, practical work, and reports.		
Learning and Teaching Resources		
Learning and Teaching Resources	Al-Daham, N. Q. <i>Fish Culture</i>.	
Recommended References:	Scientific journals, reports, and supplementary academic sources.	
Relevant Websites:	https://www.noor-book.com/ Specialized online resources in aquaculture and fisheries science.	

Course Description Form

Course name					
poultry feed					
Course code					
APT123- 30 - C - M					
Spring semester					
Chapter Two / First Stage					
Date this description was prepared					
2026/2/20					
Available attendance forms					
Weekly and according to the schedule					
Number of study hours (total) / Number of units (total)					
hours / 5 units 5					
Name of the course administrator (if more than one name is mentioned)					
Name: M.M. Rehab Hassoun Ali Email: rehab.ali@atu.edu.iq					
objectives Course					
Course objectives		Learn about the poultry industry and the importance of nutrition, as nutrition constitutes 70% of the project cost. Learn about the metabolism of feed materials and the energy and protein they produce , which is necessary for .production			
Teaching and learning strategies					
Strategy		with studenTraining and Explaining on the board - Presentation - Coordination field visits - Discussion			
Course structure					
week	watches	Required learning outcomes	Name of unit or topic	Learning method	Evaluation method
1	3+2	Nutrition concept: the essential nutrients birds .need and their functions	poultry feed	Lecture	Practical tests Midterm exams Final exams Daily evaluation
2+3	3+2	,The concept of energy the main sources of energy, digestion and absorption of fats and carbohydrates, the relationship between ,energy and feed density factors affecting energy needs, symptoms of energy deficiency and ,excess in poultry feed energy needs of broiler and laying hens during different life stages	poultry feed	Lecture	Practical tests Midterm exams Final exams Daily evaluation

4+5	3+2	Poultry's protein and essential amino acid requirements, symptoms of protein deficiency and ,excess in poultry feed factors affecting poultry's protein requirements, energy to protein ratio		Lecture	Practical tests Midterm exams Final exams Daily evaluation
6	2+3	Nutritional requirements for vitamins and inorganic elements , the ,factors affecting them and nutritional and non-nutritive additives in poultry feed	poultry feed	Lecture	Practical tests Midterm exams Final exams Daily evaluation
7	2+3	Ostrich nutrition, feeds and different feeding methods	poultry feed	Lecture	Practical tests Midterm exams Final exams Daily evaluation
8+9	2+3	The relationship between nutrition and egg quality, shell quality, egg white quality, nutritional value of eggs, yolk ,quality and color nutrition, egg size and production	poultry feed	Lecture	Practical tests Midterm exams Final exams Daily evaluation
10	2+3	Feed rationing for poultry, methods used in feed rationing, types of feed provided to poultry	poultry feed	Lecture	Practical tests Midterm exams Final exams Daily evaluation
11+12	2+3	Turkey feeding and rations, nutritional requirements during the rearing period	poultry feed	Lecture	Practical tests Midterm exams Final exams Daily evaluation
13	2+3	Traditional feeds used in poultry rations (feed alternatives	poultry feed	Lecture	Practical tests Midterm exams Final exams Daily evaluation
14+15	3+2	Diseases and bad habits resulting from nutritional deficiency	poultry feed	Lecture	Practical tests Midterm exams Final exams

					Daily evaluation
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Course Evaluation :Evaluation is done through .Daily, monthly and annual exams .Group interaction and participation in discussing and solving exercises .2	
The grade is distributed out of 100 based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc	
Learning and teaching resources	
	Required textbooks (methodology if any)
	Main references (sources)
	Recommended supporting books and references (scientific journals, reports...)

Course Description Form

Course name:	
Mechanization of animal production	
Course code	
APT126- 30 - C – M	
semester/year	
Second semester / First year	
Date this description was prepared	
15/2/2026	
Available attendance forms	
Weekly and according to the schedule	
Number of study hours (total) / Number of units (total)	
4 hours / 4 units	
Name of the course administrator (if more than one name is mentioned)	
Name : M. M. Yousif Hamad Kareem Email yousifhk@atu.edu.iq	
objectives Course	
Course objective:	<ul style="list-style-type: none"> •Introduction to the mechanization of livestock and poultry farms and their equipment, welding processes in livestock farms, and electricity, and how to operate them. • Introducing students to refrigeration, heating, and ventilation equipment, types of milking machines, haymaking machines, and other related equipment. •Introducing students to types of hatcheries, feed manufacturing plants, sheep farm mechanization, and types of slaughterhouses.
9. Teaching and learning strategies	
Strategy	•Familiarization with machinery used in poultry, sheep, and cattle farming.

		<ul style="list-style-type: none">•Familiarization with refrigeration, heating, and ventilation equipment, types of milking machines, haymaking equipment, mixers, and feed troughs.•Familiarization with hatchery components, types of hatcheries, feed processing plants, sheep farm mechanization, and types of slaughterhouses.•Familiarization with gas and electric welding techniques and basic electrical principles			
Course structure					
week	watches	Name of unit or topic	Required learning outcomes	Learning method	Evaluation method
1	4	A general idea about the mechanization of livestock fields and poultry fields and their equipment	Identifying animal-specific mechanization	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
2	4	Use of blacksmithing and gas welding workshops	Getting to know welding and blacksmithing of all types	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
3	4	Use of electric arc welding	Understanding electric welding and its risks	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
4	4	Electricity in animal production fields, single-phase and three-phase electricity, electrical cycle, electrical terms and symbols	Understanding electricity and its role in mechanizing animal production	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
5	4	Engines. Installation of the electric motor and means of straightening the motor, maintenance and repair	Identifying and repairing different types of engines	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
6	4	Automatic parlor, types of parlor, milk preservation and cooling devices	Identifying milking parlors and milk storage equipment	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
7	4	Green fodder processing equipment, fodder harvesters, dry fodder collecting equipment, cheese pressing machine.	Identifying equipment for processing roughage	Lecture Workshop Laboratory	Practical tests Midterm exams Final exams Daily evaluation

		parts, work and maintenance		Summer Training	
8	4	Mechanization of concentrated feed processing, types of feed mills, feed mill parts, grinders, mixers	Identifying feed mills, grinders, and mixers	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
9	4	Mechanization of sheep fields, tools, crushing and dipping devices, wool shearing machines	Identifying feed mills, grinders, and mixers	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
10	4	Mechanization of poultry hatcheries, types of hatcheries, egg grading devices, egg inspection devices	Identifying the tools used in sheep farms	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
11	4	Poultry slaughterhouses, livestock slaughterhouses, slaughter methods, protein manufacturing from slaughterhouse waste	Identifying and maintaining different types of hatcheries	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
12	4	Ventilation and cooling systems, lighting systems in chicken fields	Identifying massacres	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
13	4	Automatic feeders and manholes, parts, maintenance and repair	Understanding ventilation, cooling, and lighting systems in poultry farms	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
14	4	Water pumps, types, operation, maintenance and repair	Identifying feeders and waterers of all types, how to operate and maintain them	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
15	4	Electrical generators, the basis of the generator's operation, parts, maintenance instructions according to the project's need for generators	Understanding the types of water pumps, their operation, and maintenance	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation

11. Course Evaluation	
The assessment out of 100 is based on daily tests, weekly activities, monthly tests, assignments, and a final exam. 50% is for coursework and 50% is for a final theoretical and practical exam.	
12. Learning and teaching resources	
General principles of mechanization of animal production	Required textbooks (methodology if any)
General principles of mechanization of animal production	Main references (sources)
Specialized websites	Recommended supporting books and ,references (scientific journals, reports (.etc

Course Description Form

1. Course name:					
General Chemistry					
Course code					
APT125- 30 - C - M					
semester/year					
Second semester / First year					
Date this description was prepared					
1\3\2026					
Available attendance forms					
Weekly and according to the schedule					
Number of study hours (total) / Number of units (total)					
4 hours / 4 units					
Name of the course administrator (if more than one name is mentioned)					
Name : Rehab Hassoon Ali Email rehab.ali@atu.edu.iq					
objectives Course					
Course objectives		<ul style="list-style-type: none"> *Introduce the science of chemistry and its related basic sciences. * Enable students to apply their chemical knowledge and skills. * Enable students to solve theoretical and practical problems in chemistry that serve sustainable development goals. * Introduce students to chemical elements/substances and their presence in daily life. 			
9. Teaching and learning strategies					
Strategy		<ul style="list-style-type: none"> * Introduce the science of chemistry and its related basic sciences. * Enable students to apply their chemical knowledge and skills. * Enable students to solve theoretical and practical problems in chemistry that serve sustainable development goals. * Introduce students to chemical elements/substances and their presence in daily life. 			
Course structure					
week	watches	Name of unit or topic	Required learning outcomes	Learning method	Evaluation method

1	4	Introduce the history of chemistry and its importance	History of Chemistry – Its importance in nature – Its types	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
2	4	Introduce solutions and their types	Chemical solutions – Their types – Methods of preparation	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
3	4	Introduce the chemical structure of inorganic compounds	Inorganic compounds – Their chemical structure – Their uses	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
4	4	Introduce the chemical structure of organic compounds	Organic compounds – Their chemical structure – Their presence and uses	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
6+5	4	Introduce saturated and unsaturated hydrocarbons	Hydrocarbons – Their structure – Their presence in nature	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
7+8	4	Introduce amines and alcohols	Amines (structure & uses) – Alcohols (chemical structure & uses)	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
9+10	4	Introduce carboxylic acids	Importance of carboxylic acids – Types of carboxylic acids – Their uses	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation

11+12+13	4	Introduce mineral salts	Mineral salts – Detection of key natural minerals	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
14+15	4	Introduce chemical detergents and disinfectants and their types	Types of detergents and disinfectants used in animal production fields	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation

11. Course Evaluation

Grading is distributed out of 100 based on assigned student tasks such as daily preparation, quizzes, oral exams, monthly exams, written exams, practical assessments, reports, etc.

12. Learning and teaching resources

☐ Required Textbooks: <i>(None specified in original)</i>	☐ 1. General Chemistry 2. Industrial Chemistry 3. General Chemistry (Theoretical Part)
☐ Main References (Sources):	selection of books in the field of chemistry (scientific journals, reports, etc.)
☐ Recommended Support Books & References	

second stage

Autumn

semester

Course Description Form

2. Course name:					
Animal feeding					
Course code					
APT214- 30 - C - M					
semester/year					
First semester / Second year					
Date this description was prepared					
1\3\2026					
Available attendance forms					
Weekly and according to the schedule					
Number of study hours (total) / Number of units (total)					
4 hours / 4 units					
Name of the course administrator (if more than one name is mentioned)					
Name : Rehab Hassoon Ali Email rehab.ali@atu.edu.iq					
objectives Course					
Course objectives		☐ Clarifying the general principles of animal nutrition. ☐ Identifying the evaluation of feed and ration samples through laboratory digestion experiments and chemical analysis. ☐ Enabling students to understand feedstuffs quantitatively and qualitatively, how they are metabolized in different animals, and their transformation mechanism into energy. ☐ Introducing students to producing safe food for human consumption in the form of animal protein products.			
9. Teaching and learning strategies					
Strategy		☐ Learning the scientific principles and methods used in animal nutrition. ☐ Identifying ration components that can be used in animal nutrition. ☐ Identifying the nutritional values of materials involved in ration formulation. ☐ Learning about the types of economical rations used in animal nutrition to achieve the highest possible production.			
Course structure					
week	watches	Name of unit or topic	Required learning outcomes	Learning method	Evaluation method
1+2	4	Understanding the ruminant digestive system	Parts of the digestive system – functions – development of the digestive system – and accessory glands of the digestive system and their functions	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation

3+4	4	Understanding the digestion and absorption of nutrients from feed materials	Simple and complex carbohydrates – proteins – lipids – products of metabolic processes	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
5	4	Identifying microorganisms in the ruminant digestive system	Types of microorganisms – their functions	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
6	4	Understanding how to use non-protein nitrogenous (NPN) substances in ruminant nutrition	Types of non-protein nitrogenous substances – feeding methods – toxicity of these substances	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
7	4	Understanding minerals and their importance in ruminant nutrition	Types of minerals – their functions – their sources	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
8+9	4	Understanding how to feed dairy cows and the feed materials used in dairy cow nutrition	Nutritional requirements of dairy cows for different purposes – feeding systems – stages of feeding females – stages of feeding newborns – stages of feeding males – types of feed materials – benefits – problems	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
10	4	Understanding how to feed beef cattle and buffalo	Nutritional requirements for different purposes – nutritional requirements for fattening animals – types and methods of fattening	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
11+12	4	Understanding how to feed sheep and goats	Nutritional requirements for	Lecture Workshop	Practical tests Midterm exams

			different purposes – stages of feeding females – stages of feeding newborns – feeding males	Laboratory Summer Training	Final exams Daily evaluation
13+14	4	Understanding the nutritional requirements of animals for growth purposes	Growth and development – factors affecting growth from a nutritional perspective	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation

11. Course Evaluation

Grading is distributed out of 100 based on assigned student tasks such as daily preparation, quizzes, oral exams, monthly exams, written exams, practical assessments, reports, etc.

12. Learning and teaching resources

☐ Required Textbooks (Methodological, if available)	* Animal Nutrition
☐ Main References (Sources):	1. <i>Physiological Animal Nutrition</i> – Dr. Abdel-Hamid Mohame Abdel-Hamid 2. <i>Animal Nutrition: Scientific and Applied Principles and Feedstuffs</i> – Dr. Mohamed Yahya Hussein
☐ Recommended Support Books & References Specialized Websites in this Field: *Review electronic websites in this field	group of books in the field of animal nutrition and scientific/practical principles

Course Description Form

:Course name	
Animal diseases	
Course code	
APT212- 30 - C - M	
semester/year	
First semester / second stage	
Date this description was prepared	
2025/10/20	
Available attendance forms	
Weekly and according to the schedule	
Number of study hours (total) / Number of units (total)	
hours / 4 units 4	
Name of the course administrator (if more than one name is mentioned)	
Name: Assit. Prof. Husam Husain Alewi, e.mail: inm.hsm@atu.edu.iq	
objectives Course	
Course objectives	<ul style="list-style-type: none"> • The disease, its definition, methods of spread and the most important diseases .that affect cows, calves and sheep

		● ,Learn about diseases affecting the digestive and urinary systems. Rinderpest ,smallpox, rabies, foot-and-mouth disease, milk fever, mastitis, their causes .symptoms, and treatment methods			
Teaching and learning strategies					
1. Training with students 2. Explaining on the board 3. Presentation 4. Coordination 5. Discussion					
Course structure					
week	watches	Required learning outcomes	Name of unit or topic	Learning method	Evaluation method
1	4	Learning d ,isease: definition methods of spread, disease control	d isease ,definition methods of ,spread disease control	Lecture	Practical tests Midterm exams Final exams Daily evaluation
2	4	Learning d igestive system ,diseases: indigestion bloating, diarrhea	Digestive system :diseases ,indigestion ,bloating diarrhea	Lecture	Practical tests Midterm exams Final exams Daily evaluation
3	4	Learning u rinary system diseases: nephritis, urinary retention. Respiratory .system diseases: bronchitis	Urinary system :diseases ,nephritis urinary .retention Respiratory system :diseases .bronchitis	Lecture	Practical tests Midterm exams Final exams Daily evaluation
4	4	Learning n utritional deficiency diseases: milk fever, ketosis	Nutritional deficiency diseases: milk fever, ketosis	Lecture	Practical tests Midterm exams Final exams Daily evaluation
5	4	Learning d iseases affecting , calves: Salmonellosis enterotoxemia, lamb dysentery	Diseases affecting :calves , Salmonellosis	Lecture	Practical tests Midterm exams Final exams

			,enterotoxemia lamb dysentery		Daily evaluation
6	4	Learning ,anthrax, tetanus soft kidney	,anthrax tetanus, soft kidney	Lecture	Practical tests Midterm exams Final exams Daily evaluation
7	4	Learning hemorrhagic septicemia, anthrax, hoof rot	hemorrhagic ,septicemia anthrax, hoof rot	Lecture	Practical tests Midterm exams Final exams Daily evaluation
8	4	Learning r ,inderpestsmallpox rabiesfoot-and-mouth disease	,Rinderpest ,smallpox rabies, foot- and-mouth disease	Lecture	Practical tests Midterm exams Final exams Daily evaluation
9	4	Learning m astitis CausesSymptoms, Control and Treatment	:Mastitis ,Causes ,Symptoms Control and Treatment	Lecture	Practical tests Midterm exams Final exams Daily evaluation
10	4	Learning t uberculosis Johne's disease, hydatid cysts	,Tuberculosis ,Johne's disease hydatid cysts	Lecture	Practical tests Midterm exams Final exams Daily evaluation
11	4	Learning d iseases that ,cause miscarriage piriformis , brucellosis	Diseases that cause ,miscarriage , piriformis brucellosis	Lecture	Practical tests Midterm exams Final exams Daily evaluation
12	4	Learning ,Glands strangulation, saddle	,Glands ,strangulation saddle	Lecture	Practical tests Midterm exams Final exams

					Daily evaluation
13	4	Learning skin diseases	Skin diseases	Lecture	Practical tests Midterm exams Final exams Daily evaluation
14	4	Learning blood parasites , Theileria , Bayesia Anaplasma	Blood :parasites , Theileria , Bayesia Anaplasma	Lecture	Practical tests Midterm exams Final exams Daily evaluation
15	4	Make visit a private farm or a veterinary hospital	Visit a private farm or a veterinary hospital	Lecture	Practical tests Midterm exams Final exams Daily evaluation

Course Evaluation

Evaluation is done through:Daily, monthly and annual exams

Group interaction and participation in discussing and solving exercises

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

Learning and teaching resources

Required textbooks (methodology if any)	Animal Diseases - University of Mosul
Main references (sources)	Book of Zoonoses and Infectious Diseases Common to Humans and Animals Third Edition 2017/ World Health Organization
Recommended supporting books ,and references (scientific journals (...reports	The Merck Veterinary Manual 7th ed.

Course Description Form

Course name:
Animal breeding
Course code
APT215- 30 - C – M
semester/year

First semester / Second year					
Date this description was prepared					
15/2\2026					
Available attendance forms					
Weekly and according to the schedule					
Number of study hours (total) / Number of units (total)					
4 hours / 4 units					
Name of the course administrator (if more than one name is mentioned)					
Name : M. M. Yousif Hamad Kareem Email yousifhk@atu.edu.iq					
objectives Course					
Course objectives	<ul style="list-style-type: none">•Introducing students to the general principles of genetics and statistics.•Introducing students to lethal and semi-lethal genes and how to eliminate them, as well as understanding breeding methods and their importance,and learning about hereditary equivalents.•Working on improving beef, dairy, sheep, and poultry cattle.				
9. Teaching and learning strategies					
Strategy	<ul style="list-style-type: none">• Understanding the statistical processes involved in animal breeding and improvement.• Identifying lethal genes and how to eliminate or treat them.• Understanding indoor and outdoor breeding and the importance of each.• Understanding how to improve dairy, beef, and sheep breeds, and the selection process the best breeds.				
Course structure					
week	watches	Name of unit or topic	Required learning outcomes	Learning method	Evaluation method
1	4	Genetic foundations	Introduction to farm animals and some breeding and improvement terminology	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
2	4	General basics of statistics (measures of dispersion and concentration) and measures of correlation (regression and correlation)	Understanding the measures of dispersion, concentration, and correlation, and how to calculate .them	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
3	4	Lethal and sub-lethal genes	Identifying lethal and semi-lethal genes and how to treat or eliminate them	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams

					Daily evaluation
4	4	Agricultural animal husbandry and its methods	Identifying animals and methods of raising them	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
5	4	Internal education (relative education)	Understanding kinship-based parenting, its importance and disadvantages	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
6	4	Foreign education (external education)	Understanding the importance and advantages of outdoor education	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
7	4	Selection of animals and quantitative and qualitative characteristics	Understanding how selection works, quantitative and qualitative characteristics, and the difference between them	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
8	4	Types of selection in animals	Identifying the types of elections	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
9	4	Objectives: Improving animals for the purpose of milk production and disease resistance	Identifying the types of elections	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
10	4	Reproductive efficiency, milk components, body size of the animal	How to improve dairy cattle and genetically increase their resistance to .certain diseases	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
11	4	Improving animals for meat production, the relationship between environment and	Identifying reproductive efficiency and milk components	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams

		belonging, improving breeding herds			Daily evaluation
12	4	Developing new breeds of meat animals, dual-purpose livestock	How to improve beef cattle	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
13	4	Improving sheep, types and shapes of sheep, commercial sheep, different breeds of sheep	Learn how to develop new strains	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
14	4	Population inheritance includes changes in gene frequency and genetic variation	Identifying and improving sheep breeds and producing good breeds	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
15	4	Raising and improving poultry for meat production, improving poultry for egg production	Identifying random mating and gene duplication	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation

Course Evaluation	
The assessment out of 100 is based on daily tests, weekly activities, monthly tests, assignments, and a final exam. 50% is for coursework and 50% is for a final theoretical and practical exam.	
12. Learning and teaching resources	
Required textbooks (methodology if any)	1 - Animal Husbandry, Dr. Salah Jalal and Dr. Hassan Karam, 1975
Main references (sources)	2 - Molecular Genetics, Dr. Abdul Hussein Al-Faisal, 2003 3- Genetic Engineering, Dr. Abdul Hussein Faisal, 1999
Recommended supporting books and references ,scientific journals, reports) (.etc	Specialized websites

Course Description Form

Course name:
Animal physiology and anatomy
Course code:

APT211- 30 - C - M	
Chapter/ Year:	
Chapter One/ Two	
Date this description was prepared:	
24\3\2026	
Available attendance forms:	
Daily attendance according to the weekly schedule	
Number of study hours Total) / (Total number of units)	
5 hours5 units	
Name of the course administrator(if more than one name is mentioned)	
Name: .M.MDalal Imran Hamza Email: dalal.omran@atu.edu.iq	
Course objectives	
Course objectives	<p>After the end of the semester, the student will be able to know :</p> <ol style="list-style-type: none"> 1. The anatomical structure of the bodies of different farm animals 2. Animal body composition: muscle tissue, connective tissue, adipose tissue, bones 3. Functions of different body systems 4. Endocrine glands, their types, hormonal secretions, and functions in various farm animals 5. Nervous and hormonal control of various animal body activities 6. How to take samples of blood, methods of preserving them, and the treatments that are performed on them before conducting laboratory tests, types of red and white blood cells and the function of each type, along with determining the blood type of the animal . 7. Diagnosing diseases through blood tests and identifying blood contamination
Teaching and learning strategies	
Strategy	<p>Providing the student with sufficient knowledge of the physiology of the animal and bird body and how the various body systems work.</p> <p>Providing the student with sufficient knowledge and skills to identify the internal parts of the animal body, how they work, the hormones secreted by the body glands, and the types of glands.</p> <p>Providing the student with sufficient knowledge and skill in methods of taking blood samples from the bodies of animals and birds.</p> <p>Providing the student with sufficient knowledge and skills in preserving blood samples taken from animals and performing plasma separation.</p> <p>Providing the student with sufficient knowledge and skill in working on various microscopes to conduct laboratory tests on blood samples, observe red and white blood cells, determine blood type, and calculate the number of different blood cells .</p>
Course structure	

week	watches	Required learning outcomes	Name of unit or topic	Learning method	Evaluation method
1	5	Understand the meaning of the term Physiology	Introduction to physiology , definition the animal's physiology	Lecture	Practical tests Midterm exams Final exams Daily evaluation
2	5	Identify parts The external body of animals farm	External parts of a body Animal and poultryand their importance Some parts	Lecture	Practical tests Midterm exams Final exams Daily evaluation
3	5	Identify the components of the digestive system and circulation with their functions in ruminants	Anatomy of the digestive system and circulation of the ruminants	Lecture	Practical tests Midterm exams Final exams Daily evaluation
4	5	Identify the components of the Respiratory and urinary tract with their functions in ruminants.	Anatomy of the respiratory system and urinary system for ruminants	Lecture	Practical tests Midterm exams Final exams Daily evaluation
5	5	Anatomy of bones and muscles The nervous system of ruminants	Skeletal anatomy muscles and nervous system & their functions in ruminants	Lecture	Practical tests Midterm exams Final exams Daily evaluation
6	5	Anatomy of the digestive and circulatory system of poultry.	Identify the components of the digestive system and circulation with their functions in poultry	Lecture	Practical tests Midterm exams Final exams Daily evaluation

7	5	Identify the components of the respiratory and urinary tract with their functions in poultry	Anatomy of the respiratory system and urinary system of poultry	Lecture	Practical tests Midterm exams Final exams Daily evaluation
8	5	Skeletal anatomy ,muscles and nervous system with their functions in poultry	Anatomy of bones and muscles and nervous system of poultry	Lecture	Practical tests Midterm exams Final exams Daily evaluation
9	5	Identify different tissues In the animal's body	Animal body structure: Muscle tissue, tissue association , adipose tissue , Bones	Lecture	Practical tests Midterm exams Final exams Daily evaluation
10	5	Learn about different Types of endocrine glands in ruminant	Endocrine glands and their types in the ruminants	Lecture	Practical tests Midterm exams Final exams Daily evaluation
11	5	Learn about different types of hormones and their functions in ruminants.	Endocrine secretions And its types in ruminants	Lecture	Practical tests Midterm exams Final exams Daily evaluation
12	5	How to control different the body's functions with hormones & nervous system	Nervous and hormonal control on the activities of the different animal body	Lecture	Practical tests Midterm exams Final exams Daily evaluation
13	5	How to take blood ,samples methods of	taking blood samples with its preservation	Lecture	Practical tests Midterm exams Final exams

		,storing them and the procedures performed on them before conducting laboratory tests, types of blood cells and the functions of each type.	and examinations that performed on it		Daily evaluation
14	5	Identify the types of factions of blood in animals and numbers white and red blood cells	Determine the blood type of the animal, Calculating the number of blood cells (red and white)	Lecture	Practical tests Midterm exams Final exams Daily evaluation
15	5	How are samples used? Blood to diagnose the diseases	Diagnosing of the diseases through Blood tests and infection detection Blood + a visit to one Veterinary colleges nearby To view the components of a body animal and blood tests	Lecture	Practical tests Midterm exams Final exams Daily evaluation
Course Evaluation					
The grade is distributed out of 50 = (100 for effort) ,according to the tasks assigned to the student .such as daily preparation, daily, oral, monthly and written exams, reports, etc 50 + (final					
Learning and teaching resources					
Required textbooks methodology if any					
Main References(Sources) Recommended supporting books and references (scientific journals, reports , etc.)			Physiology of Farm Animals Gamal El-Din Abdel Rahim 1994 Book: Animal Physiology Written by: Dr. Diaa Hassan Al-Hasani / Dr. Sadiq Muhammad Amin Al-Hiti		

	Electronic references, websites https://download-scientific-pdf-ebooks.com/1125-1-best-books

Course Description Form

Course name:					
Computer and artificial intelligence2					
Course code					
ATU22					
semester/year					
First semester / Second year					
Date this description was prepared					
15\2\2026					
Available attendance forms					
Weekly and according to the schedule					
Number of study hours (total) / Number of units (total)					
2 hours / 2 units					
Name of the course administrator (if more than one name is mentioned)					
Name :		walaa Hussein			
Email		walaa.allawi@atu.edu.iq			
objectives Course					
Course objectives		<ul style="list-style-type: none"> • Students will learn about networks and their components, security, threats, commerce, services, and automated banking. • They will learn how to troubleshoot computer problems and fix common issues with computers, phones, and virtual reality platforms. 			
9. Teaching and learning strategies					
Strategy		<ul style="list-style-type: none"> • Understanding networks, their components and types, security and threats, e-commerce, and services. • Understanding computer troubleshooting and fixing common computer problems. • Understanding artificial intelligence in phones and virtual spaces. 			
Course structure					
week	watches	Name of unit or topic	Required learning outcomes	Learning method	Evaluation method
1	2	Security and networking : what is network? Types of networks . basic network components.	Understanding networks, their components, and types	Lecture Laboratory	Practical tests Midterm exams Final exams Daily evaluation

2	2	Security and networking (Cont.) : networking Security basics. Understanding network threats.	Understanding networks, security, and threats.	Lecture Laboratory	Practical tests Midterm exams Final exams Daily evaluation
3	2	E-Commerce : concepts of electronic banking services this include online banking: ATM and debit card services phone banking SMS banking, electronic alert , mobile banking.	Learn about e-commerce, e-banking, and ATM services.	Lecture Laboratory	Practical tests Midterm exams Final exams Daily evaluation
4	2	Computer troubleshooting : identifying and solving common hardware and software problems that computer users encounter.	Learn how to troubleshoot and fix common computer problems.	Lecture Laboratory	Practical tests Midterm exams Final exams Daily evaluation
5	2	Computer troubleshooting(Cont.) : basic troubleshooting techniques and tools for diagnosing and resolving issues.	Learn how to troubleshoot and fix common computer problems.	Lecture Laboratory	Practical tests Midterm exams Final exams Daily evaluation
6	2	Introduction to AI: definition of AI, history of AI, AI techniques and approaches.	Understanding artificial intelligence, AI technologies, and AI methodologies	Lecture Laboratory	Practical tests Midterm exams Final exams Daily evaluation
7	2	Introduction to AI(Cont.) : Key characteristics of AI, benefits of AI, challenges and ethical considerations.	Understanding artificial intelligence: its characteristics, benefits, and challenges	Lecture Laboratory	Practical tests Midterm exams Final exams Daily evaluation
8	2	The Role of AI in modern smartphones:	Understanding artificial	Lecture Laboratory	Practical tests Midterm exams

		AL-Driven mobile technologies, virtual assistants (Siri, Google Assistant, Alexa).	intelligence in phones and virtual spaces		Final exams Daily evaluation
9	2	The Role of AI in modern smartphones(Cont.) : Adaptive Learning, Real – Time Translation services.	Understanding artificial intelligence in phones and instant translation services	Lecture Laboratory	Practical tests Midterm exams Final exams Daily evaluation
10	2	Applications and Tools of AI: overview of AI Applications in various industries, education and healthcare.	Learn about shopping, transportation, and advertising.	Lecture Laboratory	Practical tests Midterm exams Final exams Daily evaluation
11	2	Applications and Tools of AI (Cont.) : transportation, marketing and advertising.	Understanding financing techniques and robotics	Lecture Laboratory	Practical tests Midterm exams Final exams Daily evaluation
12	2	Applications and Tools of AI (Cont.) : finance robotics and automation technologies.	Understanding how artificial intelligence can build social and international relationships	Lecture Laboratory	Practical tests Midterm exams Final exams Daily evaluation
13	2	AI and society : how AI affects social , AI and international relations, AI and the future of humanity.	Identifying ethical and regulatory challenges	Lecture Laboratory	Practical tests Midterm exams Final exams Daily evaluation
14	2	Ethical challenges in AI: AI Ethics privacy and surveillance, the impact of AI on the fob market.	Identifying ethical and regulatory challenges	Lecture Laboratory	Practical tests Midterm exams Final exams Daily evaluation
15	2	The Future of AI: Future trends in AI , recent research and emerging technologies.	Understanding the future of artificial intelligence and recent research on it	Lecture Laboratory	Practical tests Midterm exams Final exams Daily evaluation

11. Course Evaluation	
The assessment out of 100 is based on daily tests, weekly activities, monthly tests, assignments, and a final exam. 50% is for coursework and 50% is for a final theoretical and practical exam.	
12. Learning and teaching resources	
Required textbooks (methodology if any)	
Main references (sources)	
Recommended supporting books and ,references (scientific journals, reports (.etc	Specialized websites

Course Description Form

Course name:					
English Language2					
Course code					
ATU20					
semester/year					
First semester / Second year					
Date this description was prepared					
15\2\2026					
Available attendance forms					
Weekly and according to the schedule					
Number of study hours (total) / Number of units (total)					
2 hours / 2 units					
Name of the course administrator (if more than one name is mentioned)					
Asst. Lect. Zaid Talib Shamran (Email: zaid.shamran@atu.edu.iq)					
objectives Course					
Course objectives		☐ Providing students with information enabling them to understand English grammar rules. ☐ Recognizing the importance of the English language. ☐ Training students to use English words and sentences. ☐ Gradually introducing students to technical terminology related to their specialization.			
9. Teaching and learning strategies					
Strategy		Strategies Used: Lectures, video presentations, homework, and conducting dialogues among students.			
Course structure					
week	watches	Name of unit or topic	Required learning outcomes	Learning method	Evaluation method
1	2	Tenses (Present, past, future p6-8), Questions words (Who	Tenses (Present, past, future p6-8), Questions	Lecture	Midterm exams Final exams Daily evaluation

		... ?, Why ... ?, How much ... ? p7)	words (Who ... ?, Why ... ?, How much ... ? p7)		
2	2	Present tenses (Present Simple, Present Continuous, have/have got)	Present tenses (Present Simple, Present Continuous, have/have got)	Lecture	Midterm exams Final exams Daily evaluation
3	2	Past tenses (Past Simple, Past Continuous)	Past tenses (Past Simple, Past Continuous)	Lecture	Midterm exams Final exams Daily evaluation
4	2	Quantity, Articles	Quantity, Articles	Lecture	Midterm exams Final exams Daily evaluation
5	2	Verb patterns, Future intentions	Verb patterns, Future intentions	Lecture	Midterm exams Final exams Daily evaluation
6	2	What's it like?, Comparative and superlative adjectives	What's it like?, Comparative and superlative adjectives	Lecture	Midterm exams Final exams Daily evaluation
7	2	Present Perfect and Past Simple, for and since, Tense revision	Present Perfect and Past Simple, for and since, Tense revision	Lecture	Midterm exams Final exams Daily evaluation
8+9	2	have (got) to, should, must	have (got) to, should, must	Lecture	Midterm exams Final exams Daily evaluation
10	2	Time and conditional clauses	Time and conditional clauses	Lecture	Midterm exams Final exams Daily evaluation
11	2	Verb patterns 2, Infinitives	Verb patterns 2, Infinitives	Lecture	Midterm exams Final exams Daily evaluation
12	2	Passives	Passives	Lecture	Midterm exams Final exams Daily evaluation
13	2	Second conditional	Second conditional	Lecture	Midterm exams Final exams Daily evaluation

14	2	Present Perfect Continuous, Present Perfect Simple versus Continuous	Present Perfect Continuous, Present Perfect Simple versus Continuous	Lecture	Midterm exams Final exams Daily evaluation
15	2	Past Perfect, Reported statements	Past Perfect, Reported statements	Lecture	Midterm exams Final exams Daily evaluation

Course Evaluation

- ☐ The evaluation is out of 100, based on daily quizzes, weekly activities, monthly exams, assignments, and the final exam.
- ☐ Distribution: 50% Year-work (Sae'e) and 50% Final Exam.

12. Learning and teaching resources

Required textbooks (methodology if any)	New Headway Beginner Workbook
Main references (sources)	
Recommended supporting books and ,references (scientific journals, reports (.etc	Specialized websites

Course Description Form

Course name:	
Arabic Language2	
Course code	
Version Number: ATU21	
semester/year	
First semester / Second year	
Date this description was prepared	
15\2\2026	
Available attendance forms	
Weekly and according to the schedule	
Number of study hours (total) / Number of units (total)	
2 hours / 2 units	
Name of the course administrator (if more than one name is mentioned)	
Dr. Thamer Abdullah Mohammed	
objectives Course	
Course objectives	☐ General Objective: To provide students with grammar and morphology rules and introduce them to notable figures of Arabic literature. Specific Objective: To equip students with the ability to correctly vocalize Arabic words and recognize the beauty of the Arabic language.
9. Teaching and learning strategies	

Strategy		Lectures using the whiteboard, projector screen, multiple resources, and training materials.			
Course structure					
week	watches	Name of unit or topic	Required learning outcomes	Learning method	Evaluation method
1	2	Surah Al-Baqarah (260–263)	Understanding meanings of the verses & reasons for revelation	Lecture	Midterm exams Final exams Daily evaluation
2	2	Hadith: 'I was only sent to perfect good manners'	Researching reason behind Hadith	Lecture	Midterm exams Final exams Daily evaluation
3	2	Pre-Islamic literature	Understanding origins of Arabic literature	Lecture	Midterm exams Final exams Daily evaluation
4	2	Mu‘allaqa of Antarah	Memorizing first five lines of the poem	Lecture	Midterm exams Final exams Daily evaluation
5	2	Morphological Scale	Distinguishing morphology and grammar	Lecture	Midterm exams Final exams Daily evaluation
6	2	Plurals in Arabic	Differentiating broken plurals	Lecture	Midterm exams Final exams Daily evaluation
7	2	Verb conjugation	Identifying subject and verb tense	Lecture	Midterm exams Final exams Daily evaluation
8	2	Verb types	Sound and weak verbs	Lecture	Midterm exams Final exams Daily evaluation
9	2	Language skills	Solar & lunar letters, punctuation	Lecture	Midterm exams Final exams Daily evaluation
10	2	Arabic dictionaries	Using dictionaries	Lecture	Midterm exams Final exams Daily evaluation
11	2	Strange Qur’anic expressions	Listing unfamiliar Qur’anic vocabulary	Lecture	Midterm exams Final exams Daily evaluation

12	2	Common language errors	Distinguishing ḍād and ḏā'	Lecture	Midterm exams Final exams Daily evaluation
13	2	Arabic numbers	Number agreement rules	Lecture	Midterm exams Final exams Daily evaluation
14	2	Nunation	Distinguishing tanween and nūn	Lecture	Midterm exams Final exams Daily evaluation
15	2	Arabic prepositions	Understanding prepositions & uses	Lecture	Midterm exams Final exams Daily evaluation

Course Evaluation

Midterm Exam: 30%

Final Exam: 70%

12. Learning and teaching resources

Required textbooks (methodology if any)	- Ministry of Higher Education Curriculum - General Arabic for Universities and Technical Institutes (Dr. Safaa Kazem / Dr. Lama Mohammed)
Main references (sources)	- Alfiyyat Ibn Malik - Applied Grammar — Dr. Khalid Abdul-Aziz - Meanings of Grammar — Dr. Fadel Al-Samaraai
Recommended supporting books and ,references (scientific journals, reports (.etc Electronic References:	-Dawa Journal - Journal of the College of Education for Human Sciences — University of Babylon - Iraqi Scientific Academy - Fasīḥ Forum Archive

Course Description Form

Course name:
Crimes of the Ba'ath Regime in Iraq
Course code
ATU24
semester/year
First semester / Second year
Date this description was prepared
15\2\2026
Available attendance forms

Weekly and according to the schedule						
Number of study hours (total) / Number of units (total)						
2 hours / 2 units						
Name of the course administrator (if more than one name is mentioned)						
Asst. Lect. Mustafa Ahmed Abed			Email: mustafs.abed.ims2401@atu.edu.iq			
objectives Course						
Course objectives		☐ Introducing students to the crimes of the Ba'ath regime in Iraq against humanity and the people. ☐ Enabling students to identify the types of crimes committed within the state and distinguish them from crimes against humanity. ☐ Identifying the chaotic behaviors of the Ba'ath regime and its violations of rights and freedoms. ☐ Introducing students to the impacts of biological warfare and genocide against the people.				
9. Teaching and learning strategies						
Strategy		☐ Learning about the political systems in Iraq. ☐ Learning about the Ba'ath regime's violations of rights and freedoms. ☐ Learning about the psychological mechanisms utilized by the Ba'ath regime. ☐ Learning about the Ba'ath crimes in fighting against religion and the state.				
Course structure						
week	watches	Name of unit or topic	Required learning outcomes	Learning method	Evaluation method	
1	2	A Brief Overview of Political Systems in Iraq (1921–2003): The Monarchy, the Republican Era (1958–1968), and the Republican (Ba'athist) Era (1968–2003).	Identify political systems in Iraq.	Lecture	Midterm exams Final exams Daily evaluation	
2	2	Violations of Public Rights and Freedoms by the Ba'ath Regime: Violation of intellectual rights and public freedoms, violation of intellectual rights, violation of public freedoms, and violation of the right to political pluralism.	Identify the Ba'ath regime's violations of rights and freedoms.	Lecture	Midterm exams Final exams Daily evaluation	

3	2	Violations affecting Social, Political, and Cultural Rights: Violation of freedom of opinion, revocation of citizenship, other social rights, violation of cultural rights and freedoms, violation of international law, the First and Second Gulf Wars, and the international embargo on Iraq due to the invasion of Kuwait.	Identify the Ba'ath regime's violations of social rights.	Lecture	Midterm exams Final exams Daily evaluation
4	2	The Impact of the Ba'ath Regime's Behavior on Society and its Hegemony over the State: Random arrests, torture of prisoners, executions, arbitrary detention of suspects, and execution of military personnel and civilians.	Identify the chaotic behaviors of the Ba'ath regime.	Lecture	Midterm exams Final exams Daily evaluation
5	2	Monopolizing the Three Authorities by the Ba'ath Regime: Separation of powers, governing authorities under the regime (Executive, Legislative, and Judicial), party conditions to restrict power, despotism in corrupting morals, and fighting scholars.	Identify the Ba'ath's role in monopolizing power.	Lecture	Midterm exams Final exams Daily evaluation
6		The Impact of the Transitional Phase in Combating	Learn about the transitional phase	Lecture	Midterm exams Final exams Daily evaluation

	2	Tyrannical Policy: The concept of transitional justice and mechanisms for achieving it, the concept of transitional justice and its advantages, and the goals of transitional justice.	in combating tyrannical policy.		
7	2	The Psychological Field: Psychological and social mechanisms used by the former ruling regime (the phenomenon of scarcity and shortage, the phenomenon of distraction, the mechanism of terror and intimidation, the mechanism of psychological pressure and punishment, ethnic cleansing, and scientific/cultural impoverishment).	Identify the psychological mechanisms used by the Ba'ath regime.	Lecture	Midterm exams Final exams Daily evaluation
8	2	Family Rule and Reducing the Homeland to the Ruler's Personality: The dialectic of the ruler and the citizen between hypocrisy and injustice, promoting the culture of praise, loyalty first, and the militarization of society.	Understand how the Ba'ath regime reduced the homeland to the person of the ruler.	Lecture	Midterm exams Final exams Daily evaluation
9	2	Religion and the State: Crimes of preventing the dissemination of	Identify Ba'ath crimes in fighting against religion and the state	Lecture	Midterm exams Final exams Daily evaluation

		religious teachings and confiscating science and knowledge, crimes of killing scholars and religious youth, banning political parties in general, and religious parties in particular (the Religious Authority "Marja'iyah" and the Hawza).			
10	2	Culture, Media, and the Militarization of Society: Militarization of the educational institution, militarization of media discourse, and militarization of literature and art.	Learn about the Ba'ath method of controlling media and militarizing society.	Lecture	Midterm exams Final exams Daily evaluation
11	2	The Impact of Oppression and Wars on Environment and Population: The use of internationally banned weapons and environmental pollution (Halabja - Basra).	Identify the impacts of biological warfare.	Lecture	Midterm exams Final exams Daily evaluation
12	2	Scorched Earth Policy: The Battle of Nahr Jasim and its environmental impacts, burning of oil wells, minefields, remnants of war, and bombardment of Iraqi cities.	Identify Ba'ath crimes in burning oil wells.	Lecture	Midterm exams Final exams Daily evaluation
13	2	Draining Marshes and Forced Migration: Concept and	Understand the impact of draining	Lecture	Midterm exams Final exams Daily evaluation

		significance, the role of the defunct regime in draining the marshes, and the consequences of draining the marshes.	the marshes and forced migration.		
14	2	Destruction of the Agricultural and Livestock Environment, and Radioactive Contamination: Dujail, bulldozing palm groves, and Basra.	Learn about the destruction of the agricultural and livestock environment	Lecture	Midterm exams Final exams Daily evaluation
15	2	Mass Graves and Bombing of Places of Worship.	Identify the Ba'ath's role in mass graves.	Lecture	Midterm exams Final exams Daily evaluation

Course Evaluation

Grades are distributed as follows:

- **First Month Exam: 20 Marks**
- **Second Month Exam: 20 Marks**
- **Daily Evaluation: 10 Marks (includes scientific reports, class participation, actual attendance, oral exams, and short quizzes)**
- **Final Exam: 50 Marks**
- **Total: 100 Marks**

12. Learning and teaching resources

Required textbooks(Curriculum)	- A curriculum approved by the Ministry of Higher Education and Scientific Research.
Main references	
Recommended supporting books and references (.scientific journals, reports, etc)	-
Electronic References, Internet Sites::	

Course Description Form

Course name:
Meat maintains & processing
Course code
APT213- 30 - C - M

semester/year						
First semester / Second year						
Date this description was prepared						
15\2\2026						
Available attendance forms						
Weekly and according to the schedule						
Number of study hours (total) / Number of units (total)						
5 hours / 5 units						
Name of the course administrator (if more than one name is mentioned)						
Name : M. M. Bahaa Abdul-Amir Hadi Email bahaa.hadi@katu.edu.iq						
objectives Course						
Course objectives		<ul style="list-style-type: none">• Introducing students to the general principles of meat and its economic and nutritional importance.• Introducing students to methods of preserving meat such as refrigeration, freezing, salting, and other methods.• Working to improve meat cooking methods.				
9. Teaching and learning strategies						
Strategy		<ul style="list-style-type: none">• Understanding meat processing and its types.• Understanding the chemical and physical properties of meat.• Understanding beef, sheep, buffalo, and camel meat.• Understanding how to improve animal slaughterhouses.				
Course structure						
week	watches	Name of unit or topic	Required learning outcomes	Learning method	Evaluation method	
1	5	General principles for identifying meat and its economic and nutritional importance	Understanding meat and its economic and nutritional importance	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation	
2	5	General basics about the factors affecting the nature and composition of meat	Identifying the parts of an animal's body and the chemical composition of its meat	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation	
3	5	Identifying and preparing animals before slaughter, their importance, and different slaughtering methods.	Identifying and preparing animals before slaughter and their importance	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation	
4		Factors affecting meat palatability and	Identifying the factors that influence meat	Lecture Workshop	Practical tests Midterm exams	

	5	dressing percentage in meat	palatability and dressing percentage in meat	Laboratory Summer Training	Final exams Daily evaluation
5	5	Methods of preserving meat	Learn about the different methods of preserving meat	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
6	5	Minced meat for sausage and burger making	Understanding the importance of minced meat	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
7	5	Cooking dry and wet meats	Understanding the importance of cooking meat	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
8	5	Cooking dry and wet meats	Identifying the different cooking methods used for meat	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
9	5	Cooking methods used in meat	How to identify chemical spoilage in meat	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
10	5	Objectives of identifying chemical corruption	Understanding massacres, their importance, and their design	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
11	5	The importance of modern and traditional slaughterhouses	How to improve beef cattle	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
12	5	Developing new breeds of meat animals, dual-purpose cattle	Learn how to develop new strains	Lecture Workshop Laboratory	Practical tests Midterm exams Final exams Daily evaluation

				Summer Training	
13	5	Sheep improvement, sheep breeds and types, commercial flocks, different sheep breeds	Identifying and improving sheep breeds and producing good breeds	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
14	5	Inheritance patterns include variations in gene frequency and genetic variation.	Identifying meat by-products and how to utilize them	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
15	5	Inheritance patterns include variations in gene frequency and genetic variation.	Identifying meat by-products and how to utilize them	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation

11. Course Evaluation

The assessment out of 100 is based on daily tests, weekly activities, monthly tests, assignments, and a final exam. 50% is for coursework and 50% is for a final theoretical and practical exam.

12. Learning and teaching resources

Required textbooks (methodology if (any	Meat Preservation and Processing Book / Authored by Prof. Dr. El-Shahat Abdullah and Prof. Dr. Rashed Abdullah, 2011
Main references (sources)	
Recommended supporting books and ,references (scientific journals, reports (.etc	Specialized websites

Second stage second semester

Course Description Form

Course name:					
Poultry Diseases					
Course code					
APT222- 30 - C – M					
semester/year					
Chapter Two / Second Stage					
Date this description was prepared					
2025/2/20					
Available attendance forms					
Weekly and according to the schedule					
Number of study hours (total) / Number of units (total					
hours / 4 units 4					
Name of the course administrator (if more than one name is mentioned)					
Name: Husam Husein Alewi: Email inm.hsm@atu.edu.iq					
objectives Course					
Course objectives		.A general idea about all diseases affecting poultry in Iraq <ul style="list-style-type: none"> Identify viral, fungal, and bacterial diseases The most important nutritional deficiency diseases: diagnosis and treatment 			
Teaching and learning strategies					
1. with students Training 2. Explaining on the board 3. Presentation 4. Coordination 5. Discussion					
Course structure					
week	watches	Required learning outcomes	Name of unit or topic	Learning method	Evaluation method
1	4	Learning c lassification of poultry diseases	poultry diseases according to	Lecture	Practical tests Midterm exams Final exams

		according to the pathogen, and addressing the most important nutritional deficiency diseases and methods of ,preventing them especially diseases caused by vitamin .and salt deficiency	,the pathogen and addressing the most important nutritional deficiency diseases and methods of preventing ,them especially diseases caused by vitamin and .salt deficiency		Daily evaluation
2	4	Learning Bacterial diseases ,such as diarrhea paratyphoid , fowl cholera	Learning Bacterial diseases such ,as diarrhea , paratyphoid fowl cholera	Lecture	Practical tests Midterm exams Final exams Daily evaluation
3	4	Learning d iagnosis and treatment of the :following diseases contagious avian ,influenza mycoplasmosis(CRD) .and Escherichia coli , How to reduce the spread of these .diseases	Learning d iagnosis and treatment of the following :diseases contagious avian ,influenza mycoplasmosis (CRD) and , Escherichia coli. How to reduce the spread of these .diseases	Lecture	Practical tests Midterm exams Final exams Daily evaluation
4	4	Learning v iral diseases, their transmission ,methods, symptoms diagnosis, and ,limiting their spread such as (Newcastle (disease, bronchitis	,Viral diseases their transmission ,methods ,symptoms diagnosis, and limiting their spread, such as Newcastle) ,disease (bronchitis	Lecture	Practical tests Midterm exams Final exams Daily evaluation
5	4	Learning d iagnosis and treatment of the :following diseases	Diagnosis and treatment of the following	Lecture	Practical tests Midterm exams

		, Camporo , Merck laryngitis and bronchitis	:diseases , Camporo , Merck laryngitis and bronchitis		Final exams Daily evaluation
6	4	Learning how to identify fungal diseases, how to diagnose and treat them, and methods of ,controlling them , such as (bergillosis .(monilia	Identify fungal diseases, how to diagnose ,and treat them and methods of controlling) them, such as , bergillosis .(monilia	Lecture	Practical tests Midterm exams Final exams Daily evaluation
7	4	Learning the most important diseases caused by internal parasites, their spread, and how to) reduce them, such as .(coccidia , tapeworms	The most important diseases caused by internal parasites, their spread, and how to reduce) them, such as ,coccidia .(tapeworms	Lecture	Practical tests Midterm exams Final exams Daily evaluation
8	4	Learning the most important diseases caused by external parasites and how to diagnose them, such .as mites and lice	The most important diseases caused by external parasites and how to diagnose them, such as mites and lice.	Lecture	Practical tests Midterm exams Final exams Daily evaluation
9	4	Learning The most important metabolic diseases and how to diagnose, treat and limit their spread gout, tendon) ,slippage, fatty liver (cage paralysis	The most important metabolic diseases and how to diagnose, treat and limit their spread (gout, tendon slippage, fatty liver, cage paralysis)	Lecture	Practical tests Midterm exams Final exams Daily evaluation
10	4	Learning Diseases resulting from	Diseases resulting from	Lecture	Practical tests Midterm exams

		breeding errors, their causes, and how to limit their spread predation, tendency) (to lie down	breeding errors, their causes, and how to limit their spread (predation, tendency to lie down)		Final exams Daily evaluation
11	4	Learning d isinfection and disinfectants used in poultry farms and how to choose the appropriate disinfectant and use) disinfection methods formalin And the Parmenkens	Disinfection and disinfectants used in poultry farms and how to choose the appropriate disinfectant and use disinfection methods (formalin And the Parmenkens	Lecture	Practical tests Midterm exams Final exams Daily evaluation
12	4	Learning p reventive programs used in poultry to limit the ,spread of diseases how to administer vaccines, and when to administer .medications	Preventive programs used in poultry to limit the spread of diseases, how to administer vaccines, and when to administer .medications	Lecture	Practical tests Midterm exams Final exams Daily evaluation
13	4	Learning t he most important medicines ,used in poultry methods of giving them to limit the ,spread of diseases and how to add them	The most important medicines used ,in poultry methods of giving them to limit the spread of diseases, and how to add them	Lecture	Practical tests Midterm exams Final exams Daily evaluation
14	4	Learning d ,iagnosis treatment and prevention methods	,Diagnosis treatment and prevention	Lecture	Practical tests Midterm exams

		for the following diseases: viral ,arthritis, encephalitis hemorrhagic enteritis	methods for the following diseases: viral ,arthritis ,encephalitis hemorrhagic enteritis		Final exams Daily evaluation
15	4	Make a scientific visit to one of the poultry fields in the region	A scientific visit to one of the poultry fields in the region	Lecture	Practical tests Midterm exams Final exams Daily evaluation

Course Evaluation

Evaluation is done through: Daily monthly and annual exams ,

Group interaction and participation in discussing and solving exercises .

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

Learning and teaching resources

Required textbooks (methodology if any)	Diseases of Poultry 14th Edition 2020 David E. Swayne
Main references (sources)	Avian disease manuals 7th ed
Recommended supporting books ,and references (scientific journals (...reports	1. Chauhan , H. V. S. and S. Roy (2007). Poultry diseases, diagnosis and treatment. 3rd edition, New Age International (P) Ltd., Publishers, New Delhi, India.

Course Description Form

:Course name	
Physiology of reproduction and artificial insemination	
Course code	
APT221- 30 - C - M	
semester/year	
Chapter Two / Second Stage	
Date this description was prepared	
2026/2/20	
Available attendance forms	
Weekly and according to the schedule	
Number of study hours (total) / Number of units (total)	
hours / 5 units 5	
Name of the course administrator (if more than one name is mentioned)	
Name: Assit. Prof. Husam Husain Alewi, e-mail: inm.hsm@atu.edu.iq	
objectives Course	
Course objectives	Introducing the student to the importance of artificial insemination and its relationship to genetic improvement and the factors affecting .it

		Introducing the student to the endocrine glands and their role in the reproductive process and identifying the reproductive systems of .livestock The student learns about reproductive efficiency and fertility in .livestock and poultry Learn about the artificial vagina and its role in the insemination process			
Teaching and learning strategies					
Strategy		Training - with students Explaining on the board - Presentation - Coordinat Practical application - Discussion -			
Course structure					
week	watches	Required learning outcomes	Name of unit or topic	Learning method	Evaluation method
1	5	The importance of artificial insemination and its relationship to genetic improvement	Physiology of reproduction and artificial insemination	Lecture	Practical tests Midterm exams Final exams Daily evaluation
2	5	Identify the endocrine glands involved in the reproductive process and the hormones they secrete, and define the ,reproductive process hormone, and endocrine .gland	Physiology of reproduction and artificial insemination	Lecture	Practical tests Midterm exams Final exams Daily evaluation
3	5	Puberty, sexual maturity and the factors affecting ,them (genetic (environmental	Physiology of reproduction and artificial insemination	Lecture	Practical tests Midterm exams Final exams Daily evaluation
4	5	Physiology of the female reproductive system, its anatomy, and the function of each of its organs	Physiology of reproduction and artificial insemination	Lecture	Practical tests Midterm exams Final exams Daily evaluation
5	5	Estrus cycle and its ,stages, estrus period stages of the estrus cycle and factors affecting it	Physiology of reproduction and artificial insemination	Lecture	Practical tests Midterm exams Final exams Daily evaluation
6	5	Ovarian function, egg ,formation, egg transport factors affecting them	Physiology of reproduction and artificial insemination	Lecture	Practical tests Midterm exams Final exams Daily evaluation
7	5	Hormonal function of the ovary, ovarian hormones ,related to reproduction chemical composition	Physiology of reproduction and artificial insemination	Lecture	Practical tests Midterm exams Final exams Daily evaluation

8	5	Physiology of the male ,reproductive system parts of the male ,reproductive system testicles	Physiology of reproduction and artificial insemination	Lecture	Practical tests Midterm exams Final exams Daily evaluation
9	5	) Male reproductive cell ,sperm), male quantity ,its external shape physiological characteristics, and function	Physiology of reproduction and artificial insemination	Lecture	Practical tests Midterm exams Final exams Daily evaluation
10	5	Reproductive efficiency ,of males and females reproductive efficiency of cows , reproductive efficiency of bulls methods of examining ,organs, fertility infertility, reproductive .diseases	Physiology of reproduction and artificial insemination	Lecture	Practical tests Midterm exams Final exams Daily evaluation
11	5	Fertilization and pregnancy, the journey of sperm inside the female reproductive ,system, implantation pregnancy, changes that occur in the female reproductive system during pregnancy	Physiology of reproduction and artificial insemination	Lecture	Practical tests Midterm exams Final exams Daily evaluation
12	5	Pregnancy hormones ,(maternal and fetal) pregnancy diagnosis (idea and benefits)	Physiology of reproduction and artificial insemination	Lecture	Practical tests Midterm exams Final exams Daily evaluation
13	5	,Childbirth and its stages childbirth, stages of childbirth, natural ,childbirth, dystocia ,retained placenta inversion of the uterus	Physiology of reproduction and artificial insemination	Lecture	Practical tests Midterm exams Final exams Daily evaluation
14	5	Anatomy and physiology of the reproductive system of chickens and roosters	Physiology of reproduction and artificial insemination	Lecture	Practical tests Midterm exams Final exams Daily evaluation
15	5	Use of artificial insemination in poultry	Physiology of reproduction and artificial insemination	Lecture	Practical tests Midterm exams Final exams Daily evaluation

Course Evaluation :Evaluation is done through Daily, monthly and semester exams .Group interaction and participation in discussing and solving exercises	
The grade is distributed out of 100. 50 points are calculated based on the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written and practical exams attendance and reports. 50 points are for the final written and practical exam, etc	
Learning and teaching resources	
Required textbooks (methodology if (any	
Main references (sources)	Physiology of Reproduction and Artificial Insemination Dr. Aziz Kaber Hanna Dr. Tawfiq Wahib 1983
Recommended supporting books and references (scientific journals, reports (.etc	Food and Agriculture Organization FAO

Course Description Form

:Course name	
Fish production	
Course code	
APT223-30-C-M	
semester/year	
Second Stage /Second Semester	
Date this description was prepared	
2026/2/17	
Available attendance forms	
Weekly and according to the schedule	
Number of study hours (total) / Number of units (total)	
4 units/4hours	
Name of the course administrator (if more than one name is mentioned)	
Name: Assist. Prof. Dr. Abdulhussein Hamza Abdulhussein e-mail/ im.abd4@atu.edu.iq	
objectives Course	
Course objectives	<ul style="list-style-type: none"> -Introduce students to the economic importance of fish and the reasons for the rapid development of aquaculture. -Familiarize students with different aquaculture systems and pond types, and procedures for stocking fish into ponds. -Provide knowledge of the physical and chemical properties of water in aquaculture. - Introduce fish diseases, their causes, prevention, and treatment methods.
Teaching and learning strategies	

Strategy		<ul style="list-style-type: none">-Understanding the economic importance of fish.-Identifying aquaculture systems and pond types.-Studying the physical and chemical properties of water-Recognizing fish diseases and their management			
Course structure					
week	watches	Required learning outcomes	Name of unit or topic	Learning method	Evaluation method
1–2	4	Introduction to aquaculture; its economic importance and reasons for rapid development; fish farms and their components	Fish and Their Economic Importance	Lecture, Fieldwork, Laboratory, Summer Training	Written quizzes, Midterm exams, Final exams, Daily assessment
3–4	4	Types of fish farms; culture systems; types of ponds; construction of fish ponds and their components	Fish Farms and Culture Systems	Lecture, Fieldwork, Laboratory, Summer Training	Written quizzes, Midterm exams, Final exams, Daily assessment
5	4	Identification of cultured fish species and their characteristics (carp and its varieties, tilapia); aquaculture species worldwide, in the Arab region, and in Iraq	Characteristics of Cultured Fish	Lecture, Fieldwork, Laboratory, Summer Training	Written quizzes, Midterm exams, Final exams, Daily assessment
6	4	Aquaculture water: physicochemical properties and quantity; laboratory instruments (pH meter, dissolved oxygen meter, transparency measurement, microscope and its use); pond water sampling and analysis	Aquaculture Water Quality	Lecture, Fieldwork, Laboratory, Summer Training	Written quizzes, Midterm exams, Final exams, Daily assessment
7	4	Preparation for stocking a new batch of fish: pond preparation, fingerling sources, water filling; pond maintenance (cleaning, disinfection, fertilization, structural maintenance)	Pond Preparation and Maintenance	Lecture, Fieldwork, Laboratory, Summer Training	Written quizzes, Midterm exams, Final exams, Daily assessment
8–9	4	Fish hatcheries: components and	Fish Hatcheries and	Lecture, Fieldwork,	Written quizzes, Midterm exams,

		broodstock holding tanks; water quality improvement and treatment of unsuitable parameters	Broodstock Management	Laboratory, Summer Training	Final exams, Daily assessment
10	4	Fish culture in closed systems and cages: objectives and advantages; cage types, components, fabrication materials, and site selection	Closed Systems and Cage Culture	Lecture, Fieldwork, Laboratory, Summer Training	Written quizzes, Midterm exams, Final exams, Daily assessment
11	4	Reproduction in ponds: natural spawning, induced breeding, planning for fingerling production	Natural and Artificial Reproduction	Lecture, Fieldwork, Laboratory, Summer Training	Written quizzes, Midterm exams, Final exams, Daily assessment
12–13	4	Fish nutrition: requirements for protein, carbohydrates, lipids, minerals, and vitamins	Fish Nutritional Requirements	Lecture, Fieldwork, Laboratory, Summer Training	Written quizzes, Midterm exams, Final exams, Daily assessment
14–15	4	Fish farm planning; intensive aquaculture; feed formulation and calculation of supplementary feed components; fish diseases (definition, causative factors, signs in ponds, types of diseases)	Fish Farm Planning, Intensive Culture, and Fish Diseases	Lecture, Fieldwork, Laboratory	Comprehensive evaluation

Course Evaluation		
Total grade (100%) distributed according to student tasks, including daily preparation, quizzes, oral exams, monthly exams, written exams, practical work, and reports.		
Learning and Teaching Resources		
Learning and Teaching Resources	Al-Daham, N. Q. <i>Fish Culture</i>	

Course Description Form

Course name:
Dairy manufacturing
Course code:
APT224- 30 - C – M

Chapter/ Year:					
Second semester/ second year					
Date this description was prepared:					
2026/3/22					
Available attendance forms:					
Daily attendance according to the weekly schedule					
Total number / of study hoursTotal number ofunits					
4 hours/ 4 units					
Course Instructor Name (If more than one name is mentioned)					
Name: .M.MDalal Imran Hamza Email: : dalal.omran@atu.edu.iq					
Course objectives					
Course objectives		The student should know the importance of milk as food For humans , value Food For milk The student should know the components milk Includes/ water , Materials Fatty , Materials Other Fatty and other Providing the student with the necessary skills to conduct laboratory tests for examining milk and its derivatives. The student should be able to identify the causes of milk contamination and diseases transmitted through milk to humans, and to identify the methods and causes of milk and milk products spoiling, the methods of .contamination, and its impact on consumers			
Teaching and learning strategies					
Strategy		1 -Teach students how to obtain scientific resources from the library as well as from the Internet . 2 - Using illustrative means during the lecture, such as point power presentation using the projector, and providing students with mock educational videos to increase their understanding of the topics . 3 - Asking students questions from time to time for the purpose of their participation in the lesson and opening the door to discussion . 4 - Giving students homework for the current topic and asking them to research the topic of the next lecture For the purpose of developing their scientific research skills			
Course structure					
week	watches	Required learning outcomes	Name of unit or topic	Learning method	Evaluation method
1	4	identification milk Andimportance His production Include/ Importance milk as food For humans value Food For milk production milk in the world , production milk in Homeland Arabic	Good milk, clean milk, sensory checks	Lecture Laboratory experiments	Written tests Midterm exams Final exams Daily evaluation

		production milk in Iraq			
2	4	ingredients milk Includes/ water , Materials Fatty Materials Other Oily	Milk components include water, fatty substances, and non fatty substances	Lecture Laboratory experiments	Written tests Midterm exams Final exams Daily evaluation
3	4	ingredients milk Includes/ protein , enzymes , salts and minerals	Milk components include protein , enzymes, salts and minerals	Lecture Laboratory experiments	Written tests Midterm exams Final exams Daily evaluation
4	4	ingredients milk It includes carbohydrates , sugar lactose , vitamins	Milk components include carbohydrates , lactose, and vitamins	Lecture Laboratory experiments	Written tests Midterm exams Final exams Daily evaluation
5	4	pollution milk and diseases that Move by milk to man	Milk contamination and diseases transmitted through milk to humans	Lecture Laboratory experiments	Written tests Midterm exams Final exams Daily evaluation
6	4	corruption milk and its products and methods Pollution Its effect on consumers	The spoilage of milk and its products , methods of contamination, and its impact on consumers	Lecture Laboratory experiments	Written tests Midterm exams Final exams Daily evaluation
7	4	Centers collection milk , Its location , Transactions that Running on milk in Centers collection milk It includes Tests sensory , Liquidation , the weight , save milk from Changes , Transportation	Milk collection centers ,their location, the transactions that take place on milk in the milk collection centers , including sensory checks, filtering , weighing, preserving the milk from changes , and transportation.	Lecture Laboratory experiments	Written tests Midterm exams Final exams Daily evaluation
8	4	Transactions that Running on milk in Factories It includes	The transactions that	Lecture Laboratory experiments	Written tests Midterm exams Final exams

		to receive milk , liquidate it , take Samples , Nominate it amendment rate Fat , Pasteurization, Sterilization	take place on milk in factories include receiving the milk , filtering it, taking samples, filtering it , adjusting the fat percentage , pasteurization, and sterilization.		Daily evaluation
9	4	industry milk Sterilizer By the roads Different , industry milk The restaurant	Manufacture of sterilized milk using various methods manufacture of grafted milk	Lecture Laboratory experiments	Written tests Midterm exams Final exams Daily evaluation
10	4	cheese , Its importance Economic , value Food For cheese , classification cheese	Cheese, its economic importance , nutritional value of cheese, classification of cheese	Lecture Laboratory experiments	Written tests Midterm exams Final exams Daily evaluation
11	4	Fermented foods , Its importance , Its value Food , microbes used in Its manufacture	Fermenters, their importance , nutritional value, and microbes used in their manufacture	Lecture Laboratory experiments	Written tests Midterm exams Final exams Daily evaluation
12	4	Cream/ Definition , Importance Economic , Ways Get on Mechanical(local) cream	Cream/its definition , Economic Importance methods of obtaining mechanical (local) cream	Lecture Laboratory experiments	Written tests Midterm exams Final exams Daily evaluation
13	4	Butter tariff , Importance Economic , Ways Get on Butter(local) mechanical((churn	Butter, its definition , economic importance , methods of obtaining (local) mechanical butter (churn)	Lecture Laboratory experiments	Written tests Midterm exams Final exams Daily evaluation

14	4	ice cream Milk Definition Importance Economic and nutritional , Ways Get on ice cream Milk and others Labneh And comparison Between them	Dairy ice cream, its definition, economic and nutritional importance, ways to obtain milk and non dairy ice cream, and comparison between them	Lecture Laboratory experiments	Written tests Midterm exams Final exams Daily evaluation
15	4	Materials laundry And cleaning and materials Sterile used in Laboratories and coefficient manufacturing Dairy	Washing, cleaning andsterilizing materials used in laboratories and dairy processing plants	Lecture Laboratory experiments	Written tests Midterm exams Final exams Daily evaluation

Course Evaluation

Grade distribution from = 100 for striving 50) according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly and written exams, reports, etc50 + (final)

Learning and teaching resources

Required curriculum textbooks (if any)	
Main references(Sources)	- Dairy Products Manufacturing Technology - Cheese - Cre Yogurt Mohamed Nagati Al-Ghazali 2010
Recommended supporting books and references (scientific journals, reportsetc.	Dairy Industry Basics Nadia Abdel Majeed Abu Zeid 2010 Dairy Industry Basics
Electronic references, websites	noor-book.com/pm2bki

Course Description Form

Course name:
Hatching Technology
Course code
APT225- 30 - C – M
semester/year
Second semester / Second year
Date this description was prepared
15/2\2026
Available attendance forms
Weekly and according to the schedule

Number of study hours (total) / Number of units (total)					
5 hours / 5 units					
Name of the course administrator (if more than one name is mentioned)					
Name : M. Mohammed Mustafa Abdelaziz Email mohammed.mustafa@atu.edu.iq					
objectives Course					
Course objectives		<ul style="list-style-type: none">• To introduce students to the history of artificial incubation, as well as provide a comprehensive overview of hatching components, incubator parts and types, methods of operation, and how to handle chicks within the incubator.• To introduce students to the fundamentals of hatching.			
Teaching and learning strategies					
Strategy		<ul style="list-style-type: none">• Understanding the importance of this technology.• Learning how to successfully manage hatcheries.• Increasing field visits to key projects in this field.			
Course structure					
week	watches	Name of unit or topic	Required learning outcomes	Learning method	Evaluation method
1	5	The hatching industry and its history of development	The student learns about the components of this technology.	Lectur Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
2	5	Natural and artificial hatching methods	The student learns about modern methods in this field.	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
3	5	Hatching machines and specifications of a typical hatchery	The student will be familiar with the parts of hatching machines and their most important standard specifications.	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
4	5	The mechanism of operation of the cooling, humidity, ventilation and stirring system inside hatching machines	The student learns about ventilation and cooling management systems and how they work.	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation

5	5	Conditions that must be met by eggs intended for hatching	The student learns that the most important aspect of this technique is selecting suitable egg sources for hatching.	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
6	5	Care of hatching eggs in the parent stock, during transport, and in the hatchery	The student should be familiar with the care of eggs upon receiving them from the fields.	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
7	5	Conditions and orientation of hatching eggs and storage duration of eggs intended for hatching	The student learns about the stages of this technology.	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
8	5	Artificial hatching components	The student learns about the stages of this technology.	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
9	5	Photo-inspection of hatching eggs	The student learns about the stages of this technology.	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
10	5	Daily stages of embryonic development	The student learns about embryonic development and the stages of embryonic sac formation.	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
11	5	Embryonic membranes and stages of embryonic death during hatching	The student learns about the stages of embryonic cyst formation and the causes of embryonic demise.	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
12	5	Functions and symptoms of nutrient deficiencies in fetal development	The student learns about the importance of feeding the breeding flocks so that the food reserves	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation

			in the egg are sufficient for growth.		
13	5	Reasons for the low hatching rate	The student learns about hatching problems	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
14	5	Fertilization, factors affecting the fertilization rate in eggs intended for hatching	The student learns about fertilization and what affects production.	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
15	5	Modern techniques in the artificial hatching process	Upon completion of the curriculum, the student will be familiar with the most important modern production methods.	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation

Course Evaluation

The assessment out of 100 is based on daily tests, weekly activities, monthly tests, assignments, and a final exam. 50% is for coursework and 50% is for a final theoretical and practical exam.

Learning and teaching resources

Required textbooks (methodology if any)	The book "Hatching and Hatchery Management" by Dr. Reda Jawad and Dr. Ismail Khalil
Main references (sources)	The book "Hatching and Hatchery Management" by Professor Saad Abdul-Hussein Naji and his colleagues, 2009
Recommended supporting books and ,references (scientific journals, reports (.etc	Specialized websites

Course Description Form

Course name:
Forage Crops
Course code
APT227- 30 - C - M
semester/year
Second semester / Second year
Date this description was prepared
15\2\2026
Available attendance forms

Weekly and according to the schedule					
Number of study hours (total) / Number of units (total)					
4 hours / 4 units					
Name of the course administrator (if more than one name is mentioned)					
Name : M. D. Oras Mohsen Kazem Email : Oras.hamza@atu.edu.iq					
objectives Course					
Course objectives	<ul style="list-style-type: none">• To equip students with the skills to apply scientific methods related to forage crops.• To train students in producing crops using appropriate breeding methods to achieve high productivity.• To introduce students to the cultivation and management of forage crops, including the appropriate stage for cutting and feeding them to animals.• To introduce students to the utilization of natural pastures and grazing methods.				
Teaching and learning strategies					
Strategy	<ul style="list-style-type: none">• To enable students to apply theoretical knowledge practically.• To cultivate a sense of national pride in students to increase both the quantity and quality of production.• To instill the concept of community service and the best practices for interacting with vulnerable segments of society, such as farmers and agricultural workers.• To develop the ethical standards of the agricultural engineering profession among students by promoting proper professional conduct.				
Course structure					
week	watches	Name of unit or topic	Required learning outcomes	Learning method	Evaluation method
1	4	General evaluation of coarse and concentrated plant feed materials; nutritional value of plant feed materials.	Identifying forage crops and their nutritional value	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
2	4	Study of the morphology and diagnosis of the seeds of the following crops: barley, oats, Sudan grass, millet, white and yellow corn, broad beans, alfalfa, clover, sorghum, soil preparation, and modification of the planting plates.	Differentiating between crops in terms of the appearance of forage crop seeds	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation

3	4	The importance of conducting experiments and research in the field of fodder crop production and natural grazing areas, explaining a plan for planting summer fodder crops in the designated field, soil preparation (continued).	Identifying the planting dates for fodder crops according to a well-thought-out plan	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
4	4	Planting the demonstration field with forage crops.	Learning about forage crop cultivation for observation purposes	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
5	4	Botanical description of alfalfa, its types and groups, use of the fodder crop in animal feeding (cutting, grazing, preservation), completion of the remaining field operations.	Identifying and describing alfalfa plants and how to feed them to animals	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
6	4	Botanical description of clover, its cultivation, and the use of clover in animal feed (cutting, grazing, and preservation).	Identifying and describing clover plants and how to feed them to animals	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
7	4	Botanical description of the following crops: hartman, kakoz, kashun, basalia, fodder, kart, and the use of these crops in animal feed.	Identifying and describing the plants Hartman, Kakoz, Kashon, and Kart, and how to feed them to animals	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
8	4	Botanical description of the following grass	Identifying and describing yellow and	Lecture Workshop	Practical tests

		fodder crops, yellow and white corn, use of these crops in animal feed, scientific films shown.	white corn plants and how to feed them to animals	Laboratory Summer Training	Midterm exams Final exams Daily evaluation
9	4	Botanical description of Sudan grass, millet, barley, oats, exploitation of these crops in animal feed, field follow-up.	Identifying and describing Sudanese grass, millet, barley, and oats, and how to feed them to animals.	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
10	4	Manufacturing green fodder as hay, preparing work supplies, manufacturing fodder as hay using natural and industrial methods.	Learn how to make a dress	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
11	4	Manufacturing green fodder as silage, steps for preparing silage, preparing work supplies, showing a scientific film.	Learn how to make silage feed	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
12	4	Discussing student reports about their observations, and delivering seminars.	Research discussion	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
13	4	Scientific visit	Scientific visit	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
14	4	Collect and preserve specimens of forage plants, display preserved specimens.	Learn how to preserve forage crop samples	Lecture Workshop Laboratory	Practical tests Midterm exams Final exams

				Summer Training	Daily evaluation
15	4	Productivity per dunam, animal load, estimating and mathematically calculating the productivity of a dunam of fodder.	Identifying the estimated productivity per dunam	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation

Course Evaluation	
The assessment out of 100 is based on daily tests, weekly activities, monthly tests, assignments, and a final exam. 50% is for coursework and 50% is for a final theoretical and practical exam.	
12. Learning and teaching resources	
Required textbooks (methodology if any)	Systematic Forage Crops Book, Course Learning Kit
Main references (sources)	Textbooks used in similar colleges and universities
Recommended supporting books and ,references (scientific journals (.reports, etc	Specialized websites

Course discription form

Course name:
Animal production economies
Course code
APT226- 30 - C – M
semester/year
Second semester / Second year
Date this description was prepared
15\2\2026
Available attendance forms
Weekly and according to the schedule
Number of study hours (total) / Number of units (total)
2 hours / 2 units
Name of the course administrator (if more than one name is mentioned)
Name : Dr. Marwan Zuhair Rajab Email mrn@atu.edu.iq
objectives Course

Course objectives		<ul style="list-style-type: none">• To introduce students to the importance of livestock and its relationship to .economics, as well as how to manage, plan, and evaluate livestock projects• To understand the elasticity of supply and demand for animal products and the factors that influence them.			
9. Teaching and learning strategies					
Strategy		<ul style="list-style-type: none">• Understanding the importance of livestock and its relationship to economics.• Understanding the elasticity of supply and demand for animal products and t factors influencing them.• Understanding substitution and production levels.• Understanding the costs, management, planning, and evaluation of livestock projects.			
Course structure					
week	watches	Name of unit or topic	Required learning outcomes	Learning method	Evaluation method
1	2	The importance of livestock in the Iraqi agricultural economy, the economic importance of animal products, and the nutritional importance of animal products.	Understanding the importance of livestock and its products	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
2	2	Agricultural Economics: The general concept of agricultural economics, the emergence of agricultural economics, and the relationship between agricultural economics and economics in general.	Understanding agricultural economics and the relationship between agricultural science and economics	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
3	2	Demand for animal products, demand schedule, factors affecting demand, elasticity of demand for animal products, factors affecting demand elasticity	Understanding the elasticity of demand for animal products and the factors influencing it	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
4		Supply of animal products, supply	Understanding the elasticity of supply	Lecture Workshop	Practical tests Midterm exams

	2	schedule, factors affecting supply, factors affecting supply elasticity	for animal products and the factors influencing it	Laboratory Summer Training	Final exams Daily evaluation
5	2	Agricultural production: The concept of agricultural production, factors of agricultural production, production functions, the law of diminishing returns	Understanding agricultural production and the law of diminishing returns	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
6	2	Principle of optimal production level	Identify the level of production	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
7	2	The principle of substitution or replacement	Understanding substitution and replacement	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
8	2	Production costs	Identifying production costs	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
9	2	Marketing animal products	Identifying production costs	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
10	2	Livestock project management	How to market animal products	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
11	2	Production patterns for livestock production projects	Knowledge of how to manage livestock	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation

12	2	Agricultural records	Identifying animal project patterns	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
13	2	Planning livestock production projects	Identify agricultural records	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
14	2	Principles and methods for evaluating livestock projects	How to plan livestock projects	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation
15	2	Principles and methods for evaluating livestock projects	Identifying methods for evaluating livestock projects	Lecture Workshop Laboratory Summer Training	Practical tests Midterm exams Final exams Daily evaluation

11. Course Evaluation	
The assessment out of 100 is based on daily tests, weekly activities, monthly tests, assignments, and a final exam. 50% is for coursework and 50% is for a final theoretical and practical exam.	
12. Learning and teaching resources	
Required textbooks (methodology if any)	Agricultural economics book
Main references (sources)	
Recommended supporting books and references (scientific journals, reports (.etc	Specialized websites

