

Course Description Form

1. Course Name:	
Histology and Embryology	
2. Course Code:	
ANP 355	
3. Semester / Year:	
Semester	
4. Description Preparation Date:	
17/07/2025	
5. Available Attendance Forms:	
Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
75 / 3	
7. Course administrator's name (mention all, if more than one name)	
Name:	
Email:	
8. Course Objectives	
Course Objectives	Understand the basic structure of animal tissues and distinguish between the major tissue types (epithelial, connective, muscle, and nervous) in terms of structure and function. - Analyze basic embryonic processes and the sequence of embryonic development from fertilization to organ formation, with an emphasis on embryonic morphology and symmetry. - Acquire microscopic examination skills and identify the characteristic features of tissues on pre-prepared microscope slides. - Relate histological changes to the functional manifestations of animal organs, and apply them to pathological understanding in abnormal conditions. - Develop the ability to draw and scientifically describe embryonic tissues and organs as part of laboratory practice. - Use histological and embryological

	information to understand the mechanisms of growth, reproduction, and biological differences between different animal species.
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9. Teaching and Learning Strategies

Strategy	Course Outcomes Definition: A set of knowledge, skills, and values that a course seeks to achieve in students. Importance: It provides the learner with a clear idea of what they will be able to do after completing the course, and it helps in designing and evaluating courses. How They Are Determined: Course outcomes are determined based on the objectives of the academic program to which the course belongs.
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4 Hours (1Theory+3 3 Practical)	Theoretical: 1. The student will understand histology and tissue types. Practical: 1. The student will remember and understand cell shapes.	Theoretical: Introduction to Histology, Epithelial Tissues. Practical: Animal Cell Shapes.	Presentation, explanation, Q&A, interactive discussion, self-learning.	Oral, written and practical daily assessments and scientific reports.
2	4 Hours (1Theory+3 3 Practical)	Theoretical: 1: To explain the most important connective tissues. Practical: 1: To enable the student to identify connective tissues.	Theoretical: Connective tissues (cartilage and bone). Practical: Diagnosing epithelial, simple, and multilayered tissues.	Presentation, explanation, Q&A, interactive discussion, self-learning.	Oral, written and practical daily assessments and scientific reports.
3	4 Hours (1Theory+3 3 Practical)	Theoretical: 1: The student explains blood and how it is formed. Practical: 1: The student identifies connective tissue.	Blood and bone marrow biopsy: Diagnosis of connective tissue (cartilage and bone)	Presentation, explanation, Q&A, interactive discussion, self-learning.	Oral, written and practical daily assessments and scientific reports
3	4 Hours (1Theory+3 3 Practical)	Theoretical: 1: The student explains the types of tissues and	Theoretical: Muscle tissue (skeletal muscle, smooth muscle,	Presentation, explanation, Q&A, interactive	Oral, written and practical daily assessments and scientific reports

		distinguishes between them. Practical: 1: The student performs a blood test and observes the red blood cells.	cardiac muscle) Practical: Blood, white and red blood cells, and methods of distinguishing between them	discussion, self-learning.	
4	4 Hours (1Theory+3 3 Practical	Theoretical: 1: The student will understand nervous tissue. Practical: 1: The student will identify muscle tissue.	Theoretical: Nerve tissue Practical: Diagnosing muscle tissue	Presentation, explanation, Q&A, interactive discussion, self-learning.	Oral, written and practical daily assessments and scientific reports
6	4 Hours (1Theory+3 3 Practical	Theoretical: 1. The student will diagnose placental tissue and identify endocrine glands. Practical: 1. The student will diagnose nervous tissue.	Theoretical: Placental tissue and glands (endocrine glands) Practical: Diagnosing nervous tissue	Presentation, explanation, Q&A, interactive discussion, self-learning.	Oral, written and practical daily assessments and scientific reports
7	4 Hours (1Theory+3 3 Practical	Theoretical: 1: Explain the tissues of the digestive system. Practical: 1: The student will be able to distinguish between the types of glands.	Theoretical: Digestive system tissues Practical: Identifying the types of glands	Presentation, explanation, Q&A, interactive discussion, self-learning.	Oral, written and practical daily assessments and scientific reports
8	4 Hours (1Theory+3 3 Practical	Assessing student understanding	First semester exam	Presentation, explanation, Q&A, interactive discussion, self-learning.	Written examination
9	4 Hours (1Theory+3 3 Practical	Theoretical: 1: The student will know the sensory organs in animals. Practical: 1: The student will know the shapes of the cells in the digestive system and the function of each.	Theoretical: Sensory organs (eyes and ears) Practical: Observing the shapes and functions of cells in the digestive system	Presentation, explanation, Q&A, interactive discussion, self-learning.	Oral, written and practical daily assessments and scientific reports
10	4 Hours (1Theory+3 3 Practical	Theoretical: 1: To become familiar with the most important components of the male and female reproductive systems and the functions of each. Practical:	Theoretical: Male and female reproductive systems Practical: Anatomy of the female and male reproductive systems	Presentation, explanation, Q&A, interactive discussion, self-learning.	Oral, written and practical daily assessments and scientific reports

		1: To observe the components of the reproductive system and identify its components.			
11	4 Hours (1Theory+3 3 Practical	Theoretical: 1: The student explains embryology and how gametes are formed. Practical: 1: The student distinguishes between the formation of sperm and eggs.	Theoretical: Introduction to embryology, gamete formation (egg and sperm) Practical: Observing the processes of egg and sperm formation	Presentation, explanation, Q&A, interactive discussion, self-learning.	Oral, written and practical daily assessments and scientific reports
12	4 Hours (1Theory+3 3 Practical	Theoretical: 1: The student explains how fertilization occurs in animals. Practical: 1: The student understands internal and external fertilization.	Theoretical: Fertilization (poultry, mammals, fish) Practical: Applied study of external and internal fertilization	Presentation, explanation, Q&A, interactive discussion, self-learning.	Oral, written and practical daily assessments and scientific reports
13	4 Hours (1Theory+3 3 Practical	Assessing student understanding	Second semester exam	Presentation, explanation, Q&A, interactive discussion, self-learning.	Written examination
14	4 Hours (1Theory+3 3 Practical	Theoretical: 1: Explain the concept of fission and blastocyst formation. 1: The student will understand the stages of embryonic development in animals.	Theoretical: Fission and blastocyst formation Practical: Embryonic development in poultry, fish, and mammals	Presentation, explanation, Q&A, interactive discussion, self-learning.	Oral, written and practical daily assessments and scientific reports
15	4 Hours (1Theory+3 3 Practical	Theoretical: 1: Explain the stages of growth and the stages of differentiation and differentiation. Practical: 1: The student will summarize the embryonic development of different animals.	Theoretical: Growth phase and differentiation phase Practical: Embryonic development in poultry, fish, and mammals	Presentation, explanation, Q&A, interactive discussion, self-learning.	Oral, written and practical daily assessments and scientific reports

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Principles of Histology book / written by Dr. Hamid Ahmed Hajj
Main references (sources)	Color Atlas of Histology , Leslie P. Gartner & James L. Hiatt
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	https://skylineistedu.com/ar/majors/histology-and-embryology

Course Description Form

1. Course Name:	
Animal Production Machinery	
2. Course Code:	
ANP 351	
3. Semester / Year:	
Second / 2024-2025	
4. Description Preparation Date:	
17/7/2025	
5. Available Attendance Forms:	
My presence	
6. Number of Credit Hours (Total) / Number of Units (Total)	
75hours/3 units	
7. Course administrator's name (mention all, if more than one name)	
Name: Yahya Younis Mohsin AL-Obaidi Email: Mti.lec176.yahya@ntu.edu.iq	
8. Course Objectives	
The main objective of the animal production machine is to introduce the student to the general concept of production mechanization, encourage him to understand the importance of using other parts in the various production processes, develop the student's skills in dealing with this feature, and accept the student to be in the development of the agricultural sector through the use of technology in production.	
9. Teaching and Learning Strategies	
A-Knowledge	A- Knowledge • 1- The ability to understand and apply mechanical principles in animal production: This includes understanding the principles of nutrition, care, micromanagement, and various uses in production. • 2- The ability to use modern technologies in animal production: such as the use of gynecological monitoring techniques in the breeding environment, new equipment and machinery in healthy nutrition, and targeted applications of artificial innovation in production. • 3- The ability to conduct production analysis: This includes evaluating the quality of animal products, production efficiency, and estimating the economic benefits and other benefits of animal products.

	• The ability to develop and apply solutions to problems facing animal production: such as developing a new feeding system, new technologies in the field of health care, and promising production potential
B - Skills	B - Skills • 1- Understanding Mechanical and Electrical Principles: This course aims to introduce students to the operating principles of equipment and machinery used in animal production, such as ventilation, cooling, heating, irrigation systems, and milking equipment. • 2- Selecting Appropriate Equipment: Students are trained to select the appropriate equipment and machinery for each type of animal production, taking into account environmental conditions and the specific needs of the animals. • 3- Using Equipment Skillfully: Students are trained on how to use equipment and machinery skillfully and efficiently, including installation, operation, and necessary preventive and maintenance. • 4- Managing Integrated Agricultural Projects: This course aims to enable students to manage integrated agricultural projects, utilizing modern technology in production planning, costing, quality control, and product marketing. • 5- Solving Technical Problems: Students are trained to identify and effectively solve technical problems that may arise in equipment and machinery.
C- Values	C- Values 1- Professionalism in handling agricultural machinery and equipment 2- Sustainability in managing agricultural resources 3- Training workers and encouraging trainees to work in the field of agricultural mechanization, encouraging them to work together to boost the economy and increase productivity.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2 theoretical + 3 practical	Agricultural buildings used for animal production and how to construct them	Conditions that must be followed when designing agricultural buildings	Introductory lecture and discussions about the curriculum	Homework
2	2 theoretical + 3 practical	Controlling environmental conditions	Mechanism to control	Presentation, explanation,	Quiz Exam

		inside animal pens	temperature, humidity, and ventilation for barns	questions and answers, discussion	
3	2 theoretical + 3 practical	Providing water to animal pens for daily consumption and storage	Components of the water supply network	Presentation, explanation, questions and answers, discussion	Report
4	2 theoretical + 3 practical	Pumps used in animal production, their types and sizes, and choosing the best one for the project	Pump maintenance, cleaning and installation	Presentation, explanation, questions and answers, discussion	Quiz Exam
5	2 theoretical + 3 practical	Agricultural tractors, their sizes and operating mechanisms	Teaching the student to drive agricultural tractors in the field	Presentation, explanation, questions and answers, discussion	Oral Questions and Answers
6	2 theoretical + 3 practical	Mechanisms for harvesting and collecting fodder in the field	Regulations for various types of conveyors	Presentation, explanation, questions and answers, discussion	Homework
7	2 theoretical + 3 practical	Mechanization of production and storage of gum as animal feed	Maintaining and adjusting feed baling and handling equipment before work	Presentation, explanation, questions and answers, discussion	Homework
8	2 theoretical + 3 practical	Exam	Preparing cows for automatic milking and maintaining the parlor	Presentation, explanation, questions and answers, discussion	Quiz Exam
9	2 theoretical + 3 practical	Automated milking equipment and systems	Transport vehicles, their types, and ways to connect them to agricultural tractors	Presentation, explanation, questions and answers, discussion	Report
10	2 theoretical + 3 practical	Mechanization of cleaning and disposal of animal waste	Grinders and feed mixers and their working mechanism	Presentation, explanation, questions and answers, discussion	Quiz Exam
11	2 theoretical + 3 practical	Technological methods for crushing fodder for animals	Cleaning, preparing and sterilizing the sheep before shearing the wool	Presentation, explanation, questions and answers, discussion	Oral Questions and Answers
12	2 theoretical + 3 practical	Mechanization of wool shearing for sheep	Visiting a model field for raising poultry and producing table	Presentation, explanation, questions and answers,	Homework

			eggs and learning about the work of hatcheries	discussion	
13	2 theoretical + 3 practical	Hatcheries and egg packing equipment	Visit to typical slaughterhouses and learn the correct methods of slaughtering animals	Presentation, explanation, questions and answers, discussion	Quiz Exam
14	2 theoretical + 3 practical	Animal slaughter equipment (sheep, cows)	Types of mechanical composting mechanisms for animal waste and how they work	Introductory lecture and discussions about the curriculum	Report
15	2 theoretical + 3 practical	How to benefit from animal waste and slaughterhouse waste as animal fertilizer that is beneficial to plants	Types of maintenance and storage of machinery	Presentation, explanation, questions and answers, discussion	Quiz Exam

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Available
Main references (sources)	Animal Production Machinery Book / Dr. Muhammad Jassim Al-Nama
Recommended books and references (scientific journals, reports...)	Animal Production Machinery Book / Dr. Lutfi Hussein
Electronic References, Websites	Animal Production Machinery Suit, Mahmoud Hassan and Thamany Mu'ayy

Course Description Form

1 .Course Title:					
Animal Breeding and Improvement					
2. Course Code:					
ANP309					
3.Level / Academic Year:					
Fourth Year / 2024–2025					
4.Date of Description Preparation:					
17/07/2025					
5. Available Attendance Modes:					
In-person					
6. Total Credit Hours / Units:					
60 hours (1 theoretical + 3 practical) × 15 weeks/3					
7.Course Coordinator (All names if multiple):					
Name: Haneen Mowfak Ahmed					
Email: Haneen.mowfak@ntu.edu.iq					
8. Course Objectives:					
- Understand the methods of breeding and improvement of farm animals. - Gain knowledge about ways to enhance animal productivity in terms of meat and milk. - Learn about the history and development of animal breeding and improvement sciences, including theories of evolution. - Understand selection methods and tools. - Enhance student skills regarding methods of increasing agricultural animal productivity.					
9. Teaching and Learning Strategies:					
- Discussion and dialogue strategy - Brainstorming - Self-learning - Group collaborative assignments - Report writing task					
10.Course Structure:					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

1	4 Hours (1Theory+3 3 Practical)	Theory: A1. Understand statistical principles related to animal breeding including significance tests and analysis of variance. Practical: A1. Recall and understand statistical calculations related to animal breeding and improvement.	Theory: Principles of statistical operations in animal breeding. Practical: Measures of dispersion and central tendency	Presentation, explanation, Q&A, interactive discussion, self-learning.	Oral, written and practical daily assessments and scientific reports.
2	4 Hours (1Theory+3 3 Practical)	Theory: B1. Explain major gene expression patterns and gene types. Practical: A2. Understand regression and correlation coefficients	Theory: Gene expression patterns and genetic principles in breeding. Practical: Measures of correlation and regression	Presentation, explanation, Q&A, interactive discussion, self-learning.	Oral, written and practical daily assessments and scientific reports.
3	4 Hours (1Theory+3 3 Practical)	Theory: A3. Explain gene frequency in the case of single or multiple gene pairs. Practical: C3. Apply calculations of gene and allele frequencies.	Theory: Gene frequency and mating types. Practical: Understanding gene frequency and calculation of genetic compositions	Presentation, explanation, Q&A, interactive discussion, self-learning.	Oral, written and practical daily assessments and scientific reports
4	4 Hours (1Theory+3 3 Practical)	Theory: A4. Identify factors affecting gene frequency such as drift, migration, mutation, and selection. Practical: C3. Apply calculations for gene frequency and analyze influencing factors.	Theory: Factors affecting gene frequency. Practical: Application of gene frequency and its influencing factors.	Presentation, explanation, Q&A, interactive discussion, self-learning.	Oral, written and practical daily assessments and scientific reports
5	4 Hours (1Theory+3 3 Practical)	Theory: A4. Explain the relationship between reproduction and breeding. Practical: C4. Measure reproductive traits.	Theory: Reproduction and its rates in animals. Practical: Reproduction and its rates in animals.	Presentation, explanation, Q&A, interactive discussion, self-learning.	Oral, written and practical daily assessments and scientific reports
6	4 Hours (1Theory+3 3 Practical)	Theory: A5. Differentiate between types of selection. Practical: C5. Analyze selection data. B2. Collaborate in group work.	Theory: Types of selection - natural and artificial. Practical: Types of selection	Presentation, explanation, Q&A, interactive discussion, self-learning.	Oral, written and practical daily assessments and scientific reports
7	4 Hours (1Theory+3 3 Practical)	Theory: A6. Explain the concept of heritability and relationship among relatives. Practical: C4. Use and apply heritability rates and kinship formulas	Theory: Heritability, variance analysis, and relationships among relatives. Practical: Variance analysis and kinship.	Presentation, explanation, Q&A, interactive discussion, self-learning.	Oral, written and practical daily assessments and scientific reports

8	4 Hours (1Theory+3 3 Practical	Evaluate student comprehension	First Midterm Exam (Theory).	Presentation, explanation, Q&A, interactive discussion, self-learning.	Written examination
9	4 Hours (1Theory+3 3 Practical	Theory: B3. Explain breeding based on genetic and phenotypic similarity. Practical: C4. Calculate inbreeding and outbreeding coefficients.	Theory: Types of breeding (inbreeding, outbreeding, line breeding). Practical: Types of breeding.	Presentation, explanation, Q&A, interactive discussion, self-learning.	Oral, written and practical daily assessments and scientific reports
10	4 Hours (1Theory+3 3 Practical	Theory: A3. Understand main types of crossbreeding. Practical: C2. Evaluate improvement rates.	Theory: Types of crossbreeding. Practical: Hardy-Weinberg Law.	Presentation, explanation, Q&A, interactive discussion, self-learning.	Oral, written and practical daily assessments and scientific reports
11	4 Hours (1Theory+3 3 Practical	Theory: C6. Define genetic equivalence and genetic parameters. Practical: C5. Write and interpret a report on genetic equivalence and parameters.	Theory: Genetic parameters in animal herds. Practical: Genetic equivalence	Presentation, explanation, Q&A, interactive discussion, self-learning.	Oral, written and practical daily assessments and scientific reports
12	4 Hours (1Theory+3 3 Practical	Theory: C7. Explain calculation of repeatability. Practical: C6. Calculate repeatability coefficient.	Theory: Repeatability and its purpose. Practical: Method of calculating repeatability	Presentation, explanation, Q&A, interactive discussion, self-learning.	Oral, written and practical daily assessments and scientific reports
13	4 Hours (1Theory+3 3 Practical	Evaluate student comprehension	Second Midterm Exam (Practical).	Presentation, explanation, Q&A, interactive discussion, self-learning.	Written examination
14	4 Hours (1Theory+3 3 Practical	Theory: B2. Explain the concept of selection intensity and genetic correlation. Practical: C7. Calculate genetic correlation and selection intensity.	Theory: Genetic correlation, selection intensity, and genetic selection. Practical: Genetic correlation and its calculation	Presentation, explanation, Q&A, interactive discussion, self-learning.	Oral, written and practical daily assessments and scientific reports
15	4 Hours (1Theory+3 3 Practical	Theory: B6. Explain animal records and modern approaches in animal breeding and improvement. Practical: C8. Present a proposed project	Theory: Animal records and improvement projects in Iraq. Practical: Animal records	Presentation, explanation, Q&A, interactive discussion, self-learning.	Oral, written and practical daily assessments and scientific reports

11. Course Evaluation

Grade distribution out of 100 according to the tasks assigned to the student, such as daily preparation, daily oral tests, monthly or written exams, reports, etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Animal Breeding by Salah Jalal and Hassan Karam Principles of Animal Genetics and Breeding by Maher Hasab Al-Nabi Khalil
Electronic References, Websites	Animal Breeding and Genetics for BSc Students

Course Description Form

1. Course Name:	
Meat technology and marketing	
2. Course Code:	
ANP308	
3. Semester / Year:	
Semester	
4. Description Preparation Date:	
17/7/2025	
5. Available Attendance Forms:	
Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
75 / 3	
7. Course administrator's name (mention all, if more than one name)	
Name: Mohammed Waad Mohammed Email: mohammed.waad88@ntu.edu.iq	
8. Course Objectives	
Course Objectives	• Provide students with basic knowledge about meat varieties. • Learn about the latest technologies used in meat farm management. • Analyze the impact of nutrition and breeding on the quality of meat produced. • Use modern technologies to improve production.
9. Teaching and Learning Strategies	
Strategy	Course Outcomes Definition: A set of knowledge, skills, and values that a course seeks to achieve in students. Importance: It provides the learner with a clear idea of what they will be able to do after completing the course, and it helps in designing and evaluating courses. How They Are Determined: Course outcomes are determined based on the objectives of the academic program to which the

	course belongs.
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	The student should know the concept of meat science.	Introduction to meat science	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
2	5	Meat production	Conditions to be considered when establishing meat production farms and slaughterhouses	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
3	5	The biological importance of meat production	The importance of meat for the human body	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
3	5	The student will understand the types meat.	Origin and Classification of Poultry	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
4	5	Classification of types of meat	Carcass cuts	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
5	5	Per capita share of domestic production	Total share per person	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
6	5	Meat production patterns	Environmental factors affecting meat production	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
7	5	Definition of marketing	Marketing science	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
8	5	Modern technologies in production and marketing systems	Modern marketing technologies	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
9	5	Marketing issues	Marketing problems	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
10	5	Marketing types	Marketing channels	Presentation,	Oral, written and

		illustrative program		explanation, questions and answers, discussion	daily practical tests and scientific reports
11	5	Animal transport and animal transport vehicles	Means of transportation	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
12	5	Growth and development of meat animals	Changes in carcass components	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
13	5	Changes in the proportions of carcass components	Carcass components ratios	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
14	5	Optimal investment for efficient meat production	Meat production efficiency	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
١٥	٥	Environment and management	Environment and management for meat animals	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	• Primary sources: Lectures by Asst. Prof. Dr. Amira Mohammed Saleh Al-Rubaie / University of Baghdad, College of Agricultural Engineering Sciences • Book of meat production /ghon ewart
Recommended books and references (scientific journals, reports...)	• Al-Taie, Munir Abboud and Al-Moussawi, Umm Al-Bashar Hamid Jaber (1992). Practical Meat and Fish Technology. College of Agriculture, University of Basra, 142 pages. • Al-Shareek, Youssef Mohammed (2005). Meat Technology. Al-Fateh University Publications, Tripoli, Libya, 376 pages. • Al-Afandy, Salah Mahmoud Youssef (2012). Meat Health and Safety, General Authority for Export and Import Control, Arab Republic of Egypt, 100 pages.
Electronic References, Websites	Meat production and processing on wekibidia Wikipedia.org

Course Description Form

1. Course Name:	
Northern Technical University / Technical Agricultural College	
2. Course Code:	
Poultry Nutrition / ANP 307	
3. Semester / Year:	
Semester	
4. Description Preparation Date:	
17/7/2025	
5. Available Attendance Forms:	
Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
75 / 3	
7. Course administrator's name (mention all, if more than one name)	
Name: Ameen Raaed Ali Email: ameen.r.ali@ntu.edu.iq	
8. Course Objectives	
Course Objectives	- Understand the nutritional requirements of poultry at various stages of growth and production. - Identify the nutritional components of feed and their impact on bird health and production. - Study the physiological processes associated with digestion, absorption, and metabolism in birds. - Analyze the impact of environmental and genetic factors on feed efficiency and production.
9. Teaching and Learning Strategies	
Strategy	Course Outcomes Definition: A set of knowledge, skills, and values that a course seeks to achieve in students. Importance: It provides the learner with a clear idea of what they will be able to do after completing the course, and it helps

in designing and evaluating courses.
How They Are Determined: Course outcomes are determined based on the objectives of the academic program to which the course belongs.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	The student should understand the concept of nutrition.	Nutrition and the Functions of Nutrients in the Bird's Body	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
2	5	The student should understand energy and its forms.	The Concept of Energy, Its Forms, and Fate in the Bird's Body	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
3	5	The student should know proteins, their forms, and their benefits.	Proteins	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
3	5	The student should distinguish the factors affecting proteins.	Factors Affecting Protein Needs	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
4	5	The student should understand the digestive processes.	Digestibility of Nutrients	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
6	5	The student should understand the effects of nutrition on production.	The Effect of Nutrition on Production Quality	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
7	5	The student should distinguish the water needs of poultry.	Water Needs of Poultry	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
8	5	The student should know the physiology of birds to overcome high temperatures.	Feeding Poultry in Hot Regions	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
9	5	The student should know the symptoms associated with malnutrition and poisoning.	Malnutrition and Feed Poisoning	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
10	5	The student should distinguish between feed	The Nature of Feedstuffs Used in Poultry Feeding	Presentation, explanation,	Oral, written and daily practical

		materials.		questions and answers, discussion	tests and scientific reports
11	5	The student should be able to calculate the energy needs of poultry.	Calculating Nutritional Energy Needs	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
12	5	The student should be able to calculate the protein needs of poultry.	Calculating Daily Protein Needs of Poultry	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
13	5	The student should be able to calculate the protein needs of poultry.	Calculating Daily Protein Needs of Poultry	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
14	5	The student should be able to formulate balanced rations.	Formulating and Mixing Feed	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
15	5	The student should understand the concept of nutrition.	Methods of Formulating and Mixing Feeds	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	Poultry Nutrition Basics, Dr. Ismail Khalil Ibrahim
Recommended books and references (scientific journals, reports...)	Poultry Nutrition, Vincenzo Tufarelli
Electronic References, Websites	(arabicpoultryedu.com)

Course Description Form

1. Course Name:
Animal diseases
2. Course Code:
ANP 306
3. Semester / Year:
Semester 3 / Year 2
4. Description Preparation Date:
17/7/2025
5. Available Attendance Forms:
Attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
75 hr. \ 3Units
7. Course administrator's name (mention all, if more than one name)
Name: Yahya Natiq Mohammed Email: yahyanatiq2003@ntu.edu.iq
8. Course Objectives
1. Understanding Animal diseases: The study of diseases that can be transmitted between animals. 2. Identifying diseases: Identifying types of Animal diseases, such as bacterial, viral, and parasitic diseases. 3. Studying biological pathogens: Understanding the biological basis of these diseases. 4. Transmission Methods: Study the ways diseases are transmitted between animals, and between susceptible animals. 5. Understanding the Health Impact: Understand the health impact of these diseases on animals. 6. Diagnosis and Treatment: Study the methods of diagnosing and treating these diseases. 7. Prevention and Control: Learn strategies for preventing and controlling these diseases.
9. Teaching and Learning Strategies
1. Problem-based learning: Using real-life problems to promote critical thinking and learning. 2. Cooperative learning: Encouraging teamwork and collaboration among students.

3. Field visits: Organizing field visits to health or veterinary centers.
4. Self-directed learning: Encouraging students to engage in independent learning and research.
5. Project-based learning: Encouraging students to work on research projects.
6. Learning through Discussion: Encourage students to participate in discussions and debates.
7. Continuous Assessment: Conduct ongoing assessments throughout the semester.
8. Self-Assessment: Encourage students to evaluate their performance and identify areas for improvement.
9. Additional Resources: Provide additional resources such as books and electronic references.
10. Summative Assessment: Conduct a final assessment at the end of the semester.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	The student learns about animal diseases.	Definition of disease, classification of diseases, methods of transmission, and control.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
2	5	The student learns about internal diseases.	Internal diseases.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
3	5	The student learns about the importance of respiratory diseases.	Respiratory diseases.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
4	5	The student can identify diseases of the urinary system.	Urinary system diseases.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
5	5	The student can classify metabolic diseases.	Metabolic diseases.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
6	5	The student can classify infectious diseases.	Infectious diseases.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
7	5	The student can identify the signs of anthrax.	Anthrax and hemorrhagic septicemia.	Presentation, explanation, questions and	Oral, written and daily practical tests and scientific

				answers, discussion	reports
8	5	The student can identify the signs of tuberculosis.	Tetanus, foot rot, tuberculosis, and pseudotuberculosis.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
9	5	The student will learn the details of some viral diseases.	Viral diseases.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
10	5	The student will learn about diseases that cause miscarriage.	Diseases that cause abortion.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
11	5	The student will learn the details of mastitis.	Mastitis.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
12	5	The student learns about a range of skin diseases.	Dermatitis.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
13	5	The student learns about a range of parasitic diseases.	Parasitic diseases.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
14	5	The student learns about a range of diseases caused by parasitic protozoa.	Protozoal diseases.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
15	5	The student learns about the most important equine diseases.	Equine diseases.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	No curricular books
Main references (sources)	Veterinary medicine (A text book of the diseases of cattle, sheep, pigs, goats and Horses) تالیف : Radostitis, O. M., Gay, C. C., Blood, D. C., Hinchcliff, K. W. and Constable, P.D.
Recommended books and references	Veterinary medicine (A text book of the

(scientific journals, reports...)	diseases of cattle, sheep, pigs, goats and Horses) تالیف : Radostitis, O. M., Gay, C. C., Blood, D. C., Hinchcliff, K. W. and Constable, P.D.
Electronic References, Websites	https://www.vet-library.info/veterinary-medicine-books

Course Description Form

1. Course Name:					
Poultry physiology					
2. Course Code:					
ANP 305					
3. Semester / Year:					
yearly					
4. Description Preparation Date:					
2025/7/17					
5. Available Attendance Forms:					
Weekly attendance					
6. Number of Credit Hours (Total) / Number of Units (Total)					
75 hours/3					
7. Course administrator's name (mention all, if more than one name)					
Name: As. Pr. Dr. Azhar Majid Ibrahim Email: dr.azharm@ntu.edu.iq					
8. Course Objectives					
Course Objectives The cognitive objectives for the poultry physiology lesson focus on enabling students to understand the vital functions of chickens and other poultry production birds in a scientific and systematic manner. Here are the most important cognitive objectives, systematically classified according to cognitive levels			• Knowledge..... • Comprehension..... • Application.....		
9. Teaching and Learning Strategies					
Strategy	The subject takes into account the nature of the subject as an applied scientific subject, combining theoretical and practical aspects, using a combination of strategies that develop deep understanding, applied skills, and analytical thinking among students				
10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
		Understanding	The concept of	Lectures	exam

1	5	basic biological processes	physiology	& presentation	
2	5	Knowledge and understanding of the basic components of a cell	Cell structure and physiology	Questions and Answers, Discussion	Submitting research proposals
3	5	Distinguish the functional characteristics of each tissue type	Tissue structure and physiology	Interactive lecture	Diagnosis of body tissues is a brief
4	5	Explanation of the main physiological functions of the digestive system	Physiology of the digestive system	Interactive lecture, Anatomy of the Digestive System	Short tests
5	5	Explanation of the functional structure of the heart and blood vessels	Physiology of the circulatory system	Lecture, practical training	Submit a report on a field experiment
6	5	Explaining the relationship between cardiac output and blood pressure	Physiology of the circulatory system	Anatomy of the circulatory system	Short tests
7	5	Explaining the physiological structure of the respiratory system and explaining the mechanism of gas exchange	Physiology of the respiratory system	Interactive lecture, group discussions	Submit a report, short tests
8	5	Knowing and understanding the	Physiology of the urinary system	teractive lecture	Short tests

		physiological structure of the urinary system			
9	5	Understanding and recognizing the physiological structure of the male reproductive system	Physiology of the male reproductive system	Lecture, practical training	Short tests
10	5	Knowing and understanding the physiological structure of the female reproductive system	Physiology of the female reproductive system	Lecture, group discussions	Submit a report, short tests
11	5	A general explanation of the endocrine glands and their vital functions	Physiology of endocrine glands and hormones	Lecture, group discussions	Write a report
12	5	Analyzing the relationship between hormones and target organ functions	Physiology of endocrine glands and hormones	Case study	short tests
13	5	Explaining the concept of heat stress	Physiology of heat stress	Interactive lecture	Submit a search
14	5	Description of the physiological adaptation mechanisms of poultry to environmental	Environmental physiology	Interactive lecture	short tests

		changes			
15	5	Proposing management strategies and solving problems	A visit to one of the productive poultry farms	Practical training	short tests

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Animal physiology for dr. dyaa al-hasany
Main references (sources)	Physiology of domestic birds for dr. dyaa al-hasani
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Animal production techniques
2. Course Code:
Fish farming and production / ANP304
3. Semester / Year:
Second / 2024-2025
4. Description Preparation Date:
17/7/2025
5. Available Attendance Forms:
My presence
6. Number of Credit Hours (Total) / Number of Units (Total)
75 hours/ Number of Units(۳)
7. Course administrator's name (mention all, if more than one name)
Name: AbdulRhman B. Al-Hamdani Email: abdalrahman.ba.aw@ntu.edu.iq
8. Course Objectives
Course Objectives - The student will understand fish biology (anatomy, physiology, reproduction). - Understand water quality factors (oxygen, temperature, ammonia, pH) and their impact on fish growth. - Know aquatic ecosystems and the requirements of farmed species. - Learn artificial propagation techniques (inducing spawning, egg collection, and larval hatching). - Acquire skills in managing the rearing stages (nurseries, fattening, feeding, and vaccination). - Have knowledge of the design of aquaculture systems (earthen ponds, tanks, and floating cages). - Apply the principles of optimal nutrition (feed selection and feeding schedules). - Be able to identify the risk of infection and prevent and diagnose diseases and parasites. - Analyze the feasibility of projects (costs, profitability, and risk management). - Understand the environmental impact of aquaculture and adopt sustainable

practices.

- Conduct field visits to fish farms and hatchery centers.

- The student should be able to establish and manage a fish farm, achieve high productivity while reducing waste, and contribute to food security and supporting the economy through sustainable projects.

9. Teaching and Learning Strategies

A- Knowledge	A1 - Understand fish biology (anatomy, physiology, reproduction). A2 - Understand water quality factors (oxygen, temperature, ammonia, pH) and their impact on fish growth. A3 - Gain knowledge of aquatic ecosystems and the requirements of farmed species. A4 - The student will be able to establish and manage a fish farm.
B – Skills	1- Acquire technical skills in operating artificial breeding and hatchery systems, nutrition, and health. 2. Apply operational management skills in controlling environmental conditions, managing harvest and handling, and preventing risks. 3. Implement analytical and planning skills in economic feasibility analysis and environmental impact assessment. 4. Plan innovation skills by integrating modern technologies such as artificial intelligence systems and the use of renewable energy.
C- Values	1- Professionalism in animal handling 2- Sustainability as a central value (because it is the essence of modern agriculture) 3- Animal welfare 4- Teamwork in the production environment

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2theoretical + 3 practical	Acquire knowledge and skills	Introduction to fish farming and production	Introductory lecture and discussions about the	Brainstorming

				curriculum	
2	2 theoretical + 3 practical	Student knowledge of the types of water and fish suitable for living in it	Aquaculture	Presentation, explanation, questions and answers, discussion	Quiz Exam
3	2 theoretical + 3 practical	Countries rely on meeting more than 50% of their daily animal protein requirements.	The importance and advantages of fish farming	Presentation, explanation, questions and answers, discussion	Homework
4	2 theoretical + 3 practical	Production methods for fish farms	Possibility of increasing fish production	Presentation, explanation, questions and answers, discussion	Quiz Exam
5	2 theoretical + 3 practical	Artificial and natural reproduction in fish	Methods used in fish propagation	Presentation, explanation, questions and answers, discussion	Homework
6	2 theoretical + 3 practical	Explanation of the mechanism for creating a hatchery	hatchery equipment	Presentation, explanation, questions and answers, discussion	brainstorming
7	2 theoretical + 3 practical	Methods of reproduction in fish	Characteristics of carp mothers prepared for breeding	Presentation, explanation, questions and answers, discussion	Homework
8	2 theoretical + 3 practical	Determine standards or criteria to raise production efficiency	Systems followed in fish farming and production	Presentation, explanation, questions and answers, discussion	Quiz Exam
9	2 theoretical + 3 practical	Balance of dissolved oxygen with other environmental factors	Rules for choosing the location of fences	Presentation, explanation, questions and answers, discussion	Homework
10	2 theoretical + 3 practical	Integration of agriculture with ducks or geese	Mixed fish farming	Presentation, explanation, questions and answers, discussion	Quiz Exam
11	2 theoretical + 3 practical	The most common systems in fish farming	Fish farming in tanks or cages	Presentation, explanation, questions and answers, discussion	Oral questions and answers
12	2 theoretical + 3 practical	Environmental factors on which cage construction	Cage breeding requirements	Presentation, explanation, questions and	Homework

		depends		answers, discussion	
13	2 theoretical + 3 practical	Pituitary gland and reproductive hormones	Reproduction in fish	Presentation, explanation, questions and answers, discussion	Quiz Exam
14	2 theoretical + 3 practical	Understanding management in reducing losses and increasing growth rates	Biological success of cage farming	Introductory lecture and discussions about the curriculum	Homework
15	2theoretical +3practical	Dobsch method, Hoover method, and hatchery method	Natural reproduction methods	Presentation, explanation, questions and answers, discussion	brainstorming

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	unavailable
Main references (sources)	Fish Breeding and Production (P. Dr. Nidal Mahmoud, Prof. Dr.Mahmoud Ahmed Mohammed)
Recommended books and references (scientific journals, reports...)	unavailable
Electronic References, Websites	unavailable

Course Description Form

1. Course Name:
Fish Diseases
2. Course Code:
ANP 303
3. Semester / Year:
Semester 6 / Year 3
4. Description Preparation Date:
17/7/2025
5. Available Attendance Forms:
Attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
75 hr. \ 5 Units
7. Course administrator's name (mention all, if more than one name)
Name: Yahya Natiq Mohammed Email: yahyanatiq2003@ntu.edu.iq
8. Course Objectives
1. Understanding fishs diseases: The study of diseases that can be transmitted between fishs. 2. Identifying diseases: Identifying types of fishs diseases, such as bacterial, viral, and parasitic diseases. 3. Studying biological pathogens: Understanding the biological basis of these diseases. 4. Transmission Methods: Study the ways diseases are transmitted between fishs, and between susceptible one. 5. Understanding the Health Impact: Understand the health impact of these diseases fishs. 6. Diagnosis and Treatment: Study the methods of diagnosing and treating these diseases. 7. Prevention and Control: Learn strategies for preventing and controlling these diseases.
9. Teaching and Learning Strategies
1. Problem-based learning: Using real-life problems to promote critical thinking and learning. 2. Cooperative learning: Encouraging teamwork and collaboration among students. 3. Field visits: Organizing field visits to health or veterinary centers.

4. Self-directed learning: Encouraging students to engage in independent learning and research.
5. Project-based learning: Encouraging students to work on research projects.
6. Learning through Discussion: Encourage students to participate in discussions and debates.
7. Continuous Assessment: Conduct ongoing assessments throughout the semester.
8. Self-Assessment: Encourage students to evaluate their performance and identify areas for improvement.
9. Additional Resources: Provide additional resources such as books and electronic references.
10. Summative Assessment: Conduct a final assessment at the end of the semester.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	The student learns about fish in general and the environment in which they live.	Introduction, Animal Relationships, Classification of Animal Relationships, Animal Diseases	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
2	5	The student learns about fish enemies.	Fish Enemies: 1. Coelenterates - 2. Constrictors - 3. Crustaceans - 4. Aquatic Insects	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
3	5	The student learns about fish's response to disease.	Effect of Diseases on Fish Growth (Fish Response)	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
4	5	The student learns about attachment and feeding adaptations.	Adaptations: Fixation and Feeding Adaptations, Reduction or Absence of Organs	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
5	5	The student learns about the symptoms of fish disease.	Symptoms of Disease in Fish: Fish Behavior, Fish Color	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
6	5	Students learn about environmental diseases, nutritional deficiencies, and treatment methods.	Environmental diseases, nutritional deficiencies, treatment methods.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
7	5	Students learn about bacterial diseases.	Bacterial diseases: Introduction, rash disease, fish tuberculosis, dropsy disease.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports

8	5	Students learn about viral diseases.	Viral diseases: Introduction, smallpox, viral hemorrhagic fever.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
9	5	Students learn about fungal diseases.	Fungal diseases: Introduction, control of fungal diseases, prevention, treatment.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
10	5	Students learn about primary diseases.	Primary (parasitic) diseases: Introduction, sarcomas.	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
11	5	The student learns about primary disease control.	Ciliates: Primary Disease Control, Prevention, and Treatment	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
12	5	The student learns about flatworms that infect fish.	Fish Flatworms: Flukes	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
13	5	The student learns about the class of tapeworms, control of flatworm diseases, prevention, and treatment.	Tapeworms: Control of Flatworm Diseases, Prevention, and Treatment	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
14	5	The student learns about nematode diseases.	Nematode Diseases: Life Cycle and Disease Control	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports
15	5	The student learns about diseases of annelids and crustaceans.	Diseases of annelids and crustaceans: 1. Polychaetes - 2. Oligochetes - Control of annelids and crustaceans	Presentation, explanation, questions and answers, discussion	Oral, written and daily practical tests and scientific reports

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books any)	No curricular books
Main references (sources)	كتاب انتاج و رعاية و امراض الاسماك المؤلف صلاح الدين محمد حسن العياط تاريخ النشر ٢٠٠٦ الطبعة الاولى
Recommended books and references (scientific journals, reports...)	Fish Disease: Diagnosis and Treatment Author(s): Edward J. Noga M.S., D.V.M., First published:18 June 2010 Print ISBN:9780813806976 Online

	ISBN:9781118786758 DOI:10.1002/9781118786758 Copyright © 2010 by Blackwell Publishing, Inc.
Electronic References, Websites	https://www.youtube.com/watch?v=PDOEHFB2uKE

Course Description Form

1. Course Name:
Animal production techniques
2. Course Code:
Veterinary Pharmacology and Toxicology / ANP٣٠٢
3. Semester / Year:
Second / 2024-2025
4. Description Preparation Date:
17/7/2025
5. Available Attendance Forms:
My presence
6. Number of Credit Hours (Total) / Number of Units (Total)
60 hours/ Number of Units(2)
7. Course administrator's name (mention all, if more than one name)
Name: Ghassan Fathi Muhammad Email: ghassanalubaidy1961@ntu.edu.iq
8. Course Objectives
Course Objectives 1- To prepare the student to handle and use medications effectively and safely 2- To understand the principles of pharmacokinetics. 3- To develop therapeutic skills and clinical application. To understand toxicology.
9. Teaching and Learning Strategies

A– Knowledge	A1–The student will understand veterinary pharmacology in terms of general principles, classification of major drugs, and their application in the field of livestock. A2–The student will be familiar with veterinary toxicology techniques, which include (common toxins in the agricultural environment, diagnosis and treatment, and preventive aspects). A3–The student will analyze practical and applied aspects, which include (legal obligations, antibiotic resistance, risk assessment)..
B – Skills	- The student will acquire technical and practical skills, including (accurately calculating medication doses, managing group therapy, implementing withdrawal periods, and dealing with emergency poisoning cases). 2 - Possess diagnostic and analytical skills, including (reading laboratory test results, evaluating the quality of pharmaceutical preparations, and diagnosing drug interactions).
C- Values	3 - Implement prevention and management skills. 4 - Acquire occupational safety skills. Ensuring food chain safety and ensuring that animal –\ products (meat, dairy, eggs) are free of drug residues or toxins, protecting consumer health, and strictly adhering to .and documenting drug withdrawal periods Public health and preventing the transmission of –٢ resistant microbes–antibiotic Animal welfare –٣ Environmental sustainability –٤

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	\ theoretical + 3 practical	Familiarity with the basics of pharmacology	Introduction to Pharmacology	Introductory lecture and discussions about the curriculum	Brainstorming
2	\ theoretical + 3 practical	Study of the functions of the	Fundamentals of Pharmacology	Presentation, explanation, questions and	Quiz Exam

		body's organs and the mechanism of action of various drugs on them		answers, discussion	
3	1 theoretical + 3 practical	The student's knowledge of how to calculate doses and prescribe medication accurately	Study of the functions of the body's organs and the mechanism of action of various drugs on them	Presentation, explanation, questions and answers, discussion	Homework
4	1 theoretical + 3 practical	Animal handling skills and methods of giving them medication	How to calculate doses and prescribe medication accurately	Presentation, explanation, questions and answers, discussion	Quiz Exam
5	1 theoretical + 3 practical	Knowing the drug interactions and side effects of each drug and how to deal with it	Pharmacokinetics	Presentation, explanation, questions and answers, discussion	Homework
6	1 theoretical + 3 practical	Evaluate the factors influencing drug response and characterize their action	Drug dynamics	Presentation, explanation, questions and answers, discussion	brainstorming
7	1 theoretical + 3 practical	The effect of metabolic processes on drug efficacy and toxicity	Drug metabolism	Presentation, explanation, questions and answers, discussion	Homework
8	1 theoretical + 3 practical	The effect of the drug at the molecular,	Mechanism of action of the drug	Presentation, explanation, questions and answers, discussion	Quiz Exam

		cellular and tissue levels to induce a biological response			
9	1 theoretical + 3 practical	Toxicokinetics, Toxic Dynamics	Side effects of medications	Presentation, explanation, questions and answers, discussion	Homework
10	1 theoretical + 3 practical	on the Effect sympathetic and parasympathetic nervous systems, their mechanisms of action and veterinary uses	Autonomic nervous system medications	Presentation, explanation, questions and answers, discussion	Quiz Exam
11	1 theoretical + 3 practical	The effect of drugs on brain and spinal cord functions and their clinical uses in veterinary medicine	Central nervous system drugs	Presentation, explanation, questions and answers, discussion	Oral questions and answers
12	1 theoretical + 3 practical	The use of laboratory animals in scientific research and pharmaceutical experiments, while ensuring the application of the principles of animal welfare and biosafety	Laboratory Animal Technology and Handling	Presentation, explanation, questions and answers, discussion	Homework

13	1 theoretical + 3 practical	The student has sufficient experience to know the safety of medicines by calculating ED50, LD50 and TI.	Diagnostic aspects of toxicology	Presentation, explanation, questions and answers, discussion	Quiz Exam
14	1 theoretical + 3 practical	Familiarity with toxicology concepts and terminology Students have		Introductory lecture and discussions about the curriculum	Homework
15	1 theoretical + 3 practical	experience in diagnosing poisoning cases and prescribing appropriate antidotes for each case	drug poisoning	Presentation, explanation, questions and answers, discussion	brainstorming

11. Course Evaluation

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

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	unavailable
Main references (sources)	unavailable
Recommended books and references (scientific journals, reports...)	Text book of veterinary pharmacology
Electronic References, Websites	Hand book of veterinary pharmacology

Course Description Form

1. Course Name:		
Animal Nutrition		
2. Course Code:		
ANP301		
3. Semester / Year:		
Second / 2025		
4. Description Preparation Date:		
17/7/2025		
5. Available Attendance Forms:		
In-person		
6. Number of Credit Hours (Total) / Number of Units (Total)		
75/3		
7. Course administrator's name (mention all, if more than one name)		
Name: Ahmed Abdul-Muhsin Qasim Email: ahmed.qa@ntu.edu.iq		
8. Course Objectives		
Course Objectives	1. To prepare students to work efficiently in the field of animal nutrition and feed formulation based on modern scientific approaches aligned with developments in advanced countries. 2. To enable students to enter the agricultural sector effectively by participating in government projects and the job market. 3. To guide students toward gaining better experience when applying for postgraduate studies.	
9. Teaching and Learning Strategies		
Strategy Definition: A set of knowledge, skills, and values that the course aims to develop in students. Importance: Provides the learner with a clear understanding of what they will be able to do by the end of the course and helps in course design and assessment. How they are determined: CLOs are defined based on the academic program objectives to which the course belongs.		
Learning Outcomes	Teaching & Learning Methods	Assessment Methods
Knowledge 1. Student explains the scientific	Theoretical explanation, illustrative examples,	Quizzes, oral, written, and daily practical exams,

principles of animal nutrition. 2. Student lists the basic components of animal nutrition. 3. Student explains the relationship between animal nutrition and production.	brainstorming, and video presentations.	scientific reports.
Skills 1. Apply steps of producing various food products according to quality standards. 2. Use industrial tools and equipment safely and effectively. 3. Analyze factors affecting the final food product quality. 4. Conduct preliminary sensory and chemical evaluation of certain food products.	Case studies, presentations, field visits, discussions, group and collaborative activities, showcasing successful experiments.	Field reports, self-evaluation, problem-solving and decision-making, presentations, field visits, oral discussions.
Values 1. Commitment to professional safety and hygiene rules in the nutrition environment. 2. Show interest in reducing food loss and improving production efficiency. 3. Demonstrate honesty and integrity in preparing and evaluating food products.	Discussions, group activities.	Observation of practical behavior to assess teamwork, value-based self-evaluation, professional conduct.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1	3+2	Understanding of animal nutrition science.	Overview of Animal Nutrition	Presentation, explanation, discussion	Oral, written, daily practical tests, scientific reports
Week 2	3+2	Student learns important laboratory guidelines.	General Laboratory Instructions and Guidelines	Presentation, explanation, discussion	Oral, written, daily practical tests, scientific reports
Week 3	3+2	Student understands the	Role of Water and Its Requirements in the Body	Presentation, explanation,	Oral, written, daily

		importance of water in the body.		discussion	practical tests, scientific reports
Week 4	3+2	Student understands bioenergy and its transformations.	Bioenergy and Its Conversions	Presentation, explanation, discussion	Oral, written, daily practical tests, scientific reports
Week 5	3+2	Student analyzes feed.	Feed Analysis	Presentation, explanation, discussion	Oral, written, daily practical tests, scientific reports
Week 6	3+2	Student understands enzyme functions.	Enzymes	Presentation, explanation, discussion	Oral, written, daily practical tests, scientific reports
Week 7	3+2	Student understands the digestion process.	Digestion Processes in Animals	Presentation, explanation, discussion	Oral, written, daily practical tests, scientific reports
Week 8	—	Midterm Exam	—	—	—
Week 9	3+2	Student learns about vitamins.	Vitamins	Presentation, explanation, discussion	Oral, written, daily practical tests, scientific reports
Week 10	3+2	Student understands carbohydrate metabolism.	Carbohydrates and Their Metabolism	Presentation, explanation, discussion	Oral, written, daily practical tests, scientific reports
Week 11	3+2	Student learns about types of proteins.	Proteins	Presentation, explanation, discussion	Oral, written, daily practical tests,

					scientific reports
Week 12	3+2	Student differentiates between protein digestion in ruminants and non-ruminants.	Protein Digestion in Non-Ruminants	Presentation, explanation, discussion	Oral, written, daily practical tests, scientific reports
Week 13	3+2	Student learns about fats.	Fats	Presentation, explanation, discussion	Oral, written, daily practical tests, scientific reports
Week 14	3+2	Student analyzes feed materials in the lab.	Laboratory Estimation of Feed Components	Presentation, explanation, discussion	Oral, written, daily practical tests, scientific reports
Week 15	—	Final Exam	—	—	—

11. Course Evaluation

Assessment Item	Frequency / Number	Weight (%)	Week
Quizzes	2	10%	Weeks 3 & 9
Lab Projects	1	10%	Weeks 4 & 11
Assignments	2	10%	Ongoing
Reports	1	10%	Week 12
Midterm Exam	2 hours	10%	Week 8
Final Exam	3 hours	50%	Week 15
Total Assessment	—	100%	—

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Available
Main references (sources)	Ruminant Nutrition
Recommended books and references (scientific journals, reports...)	<i>Principles of Animal Nutrition</i>

Course Description Form

1. Course name:	
Biochemistry	
2. Course code:	
TAMO 302	
3. Level/Academic Year:	
Level Three \ 2024-2025	
4. Description preparation date:	
17/7/2025	
5. Available attendance forms:	
Paper form containing name, Date of attendance and signature	
6. Number of credit hours (total) / Number of units (total):	
75/3	
7. Name of course supervisor (mention all names if there are multiple supervisors):	
Name: Dr. Hala Aouf Abdel Rahman amyl: dr_hala.awf.chilmeran@ntu.edu.iq	
8. Course objectives:	
At the end of the course, the student is expected to be able to:for me: 1. Understand the basic principles of chemistry.vitality 2. Identify the types of metabolic processes (destruction and construction) in cells. 3. RecognitiononCellular respiration and active metabolism. 4.Understanding how enzymes act as cofactors in biological reactions 5.Understanding the biological and regulatory balance of biological processes 6.Learn about the structure and functions of	Course objectives:

biomolecules and vitamins.					
7.Understanding how energy is produced in living cells					
9. Teaching and learning strategies:					
There are many effective strategies for teaching the subject. Biochemistry , which aims to promote a deep understanding of genetic concepts and develop critical thinking skills.They have: 1. Learning based on dialogue and discussion. 2. brainstorming. 3. cooperative learning. 4. simulation-based learning. 5. Practical training. 6. Self-learning.				Strategy:	
10. Course structure					
Evaluation method	Learning method	Name of unit or topic	Required learning outcomes	watches	week
Questions and answers + exercise solutions	Lecture, presentation, illustrations	Introduction to Biochemistry	1-To knowFStudent basic concepts in chemistryVitality 2-For the student to understandChemical composition of cell parts.	5	1
Questions and answers + exercise solutions	Lecture, presentation, illustrations	sugars	1- The student should know that sugars are important molecules in metabolic processes. 2- The student	5	2

			should understand that sugars are the main source of energy needed to perform the body's functions.		
Questions and answers + exercise solutions	Lecture, presentation, illustrations	sugars	1- The student should know Types of monosaccharides, disaccharides, and polysaccharides 2- For the student to understand Chemical composition of sugars Mono, dual, and multi	5	3
Questions and answers + exercise solutions	Lecture, presentation, illustrations	Fats	1- The student should know the importance and functions of fats. 2- The student should know the difference between oils and fats.	5	4
Questions and answers + exercise	Lecture, presentation,	Fats	1- The student should know the	5	5

solutions	illustrations		chemical composition of neutral fats. 2- The student should know the importance of fats for energy production.		
Questions and answers + exercise solutions	Lecture, presentation, illustrations	Fats	1- The student should know the difference between saturated and unsaturated fats. 2- The student should know about fat metabolism.	5	6
Questions and answers + exercise solutions	Lecture, presentation, illustrations	Amino acids and peptides	1- The student should know the types of amino acids. 2- The student should understand the importance of amino acids for plants.	5	7

Questions and answers + exercise solutions	Lecture, presentation, illustrations	Amino acids and peptides	1-The student should know the types of amino acids.And how they are linked to form peptides 2- For the student to understandAEx amples of existing peptidesFor plants	5	8
Questions and answers + exercise solutions	Lecture, presentation, illustrations	proteins	1- The student should know the concept of proteins and their importance. 2- The student understands the functions of proteins.	5	9
Questions and answers + exercise solutions	Lecture, presentation, illustrations	proteins	1- The student will be able to identify the types of globular and fibrous proteins. 2- The student understands the shapes and composition	5	10

			of proteins.		
Questions and answers + exercise solutions	Lecture, presentation, illustrations	enzymes	1- To enable the student to understand the role of enzymes as catalysts in biological reactions. 2- The student should understand the mechanism of enzyme action.	5	11
Questions and answers + exercise solutions	Lecture, presentation, illustrations	enzymes	1- The student should know the types of enzymes. 2- The student should understand the activity of the enzyme, the active site of the enzyme, and the specific activity of the enzyme.	5	12
Questions and answers + exercise solutions	Lecture, presentation, illustrations	enzymes	1- The student should know the theories of enzyme	5	13

			action.		
Questions and answers + exercise solutions	Lecture, presentation, illustrations	nucleic acids	1- The student should know the importance of nucleic acids. 2- The student understands the chemical composition of nucleic acids. DNA, RNA	5	14
Questions and answers + exercise solutions	Lecture, presentation, illustrations	nucleic acids	1- The student should know the types of DNA. RNA 2- The student should understand the difference between for nucleic acids DNA, RNA	5	15
11. Course Evaluation:					
Tests + Exercises + Discussions + Submissions Questions					
12. Learning and teaching resources:					
The vocabulary prescribed by the Ministry of Higher Education and Scientific Research			Required textbooks (curriculum books, if any)		
Fundamentals of Biochemistry Dr. Sami Al-Muzaffar Leininger's Fundamentals of Biochemistry			Main References (Sources)		

2021	
Google Scholar, the scientific researcher portal	Recommended books and references (scientific journals, reports...)
All sites that provide reliable sources and also artificial intelligence tools	Electronic references, websites