



Department of Animal Resources

College of Agricultural

Engineering Sciences

University of Salahaddin

Subject: Avian physiology

Course Book – (3rd stage)

Lecturer's name; Delman Deler Maulod

Academic Year: 2023/2024

Course Book

1. Course name	Avian physiology
2. Lecturer in charge	Delman Deler Maulod
3. Department/ College	Animal resource
4. Contact	e-mail: delman.Maulod@su.edu.krd; Tel: (07704220770)
5. Time (in hours) per week	Practical: 2
6. Office hours	
7. Course code	
8. Teacher's academic profile	<p>Delman D. Maulod</p> <ul style="list-style-type: none"> - B.Sc. 2009 from Salahaddin University-Erbil, Kurdistan Region, Iraq, Agriculture College, Animal Resources Department. - M.Sc. 2015 from Salahaddin University-Erbil Kurdistan Region, Iraq under avian physiology area of specialization. - Since 2009, I'm an academic staff of the University of Salahaddin, Faculty of Agriculture to date.
9. Keywords	
10. Course overview:	<p>The fact that the physiology of poultry a basis function in breeding and production of chicken, whether it for the purpose of egg production of egg production of meat, so is the integrated study of the aspects of different physiological entire input to increase production in the fields of poultry and could include some of these important aspects in the study of this course is to know the cell and its parts and functions, as well as the definition of blood and its parts and functions of their parts and their relationship to images and definition of immune sys. , respiratory sys. and its parts and functions of their parts and their relationship to images and then the doll with different physiological situations for poultry, especially for its contribution in determining the capacity of the health of poultry as well as the knowledge of organs of the body and the physiology of each part of the members of the body.</p> <p>Deals with many studies, showing by images such as blood, practical in laboratory to see all systems clearly and its relation with some physiological cases of chicken and its relationship to productivity, whether the production of chicken eggs or meat production.</p> <p>In order to obtain the following:</p> <ol style="list-style-type: none"> 1 - Study the picture of the blood and their types, functions and influence of some factors affecting it. 2 - Studying the various body organs and the autopsy to see every part of these organs and functions of which he is doing.

11. Course objective:

Instruction in this lesson should result in students achieving the following objectives:

- 1- To understand the definitions of anatomy and physiology.
- 2- To understand anatomical terms to describe areas of the animal body and also discussing some differences between blood of animals and poultry's.
- 3- To define and discuss the functions of major body systems of poultry differences between them and animals.

The aim of this course is to study the organs or systems and body parts of poultry that the material studied is very important because the physiology of poultry has to be knowledge and know all the members and parts of the body and to know every part of every part and function of these parts.

An intensive lecture and laboratory course designed to introduce an aspects of avian physiology with particular emphasis on systems and functions related to both egg and meat production including metabolism, circulation, respiration, excretion, neurology, digestion, immunology . Our main objective is to provide for students with both applied (laboratory) experiences. In addition to lecture, also will have multiple opportunities to work with live birds, participate in the design and execution of experiments, collect and analyze data, and appreciate the individual variation that is observed in the biology among animals.

12. Student's obligation

Students in this course should be exposed to thinking and work as group to make communications and also do quizzes before starting the lecture with after all 4 lecture students must do exams. However after doing practical lessons students should prepare reports, essays to assignments them..

13. Forms of teaching

- 1-powerpoint.
- 2- White board.
- 3- Pictures, images.
- 4- video.

14. Assessment scheme

Marks of the Exam:

1 exam will be done 10 marks and quiz with activities 5 marks.

35 Marks of the total term divided as :

1. Terminal Exam:

B. Practical Terminal Exams (1st exam 15+ 2nd exam 15+quizzes and activities 5 marks = 35 Marks

15. Student learning outcome:

1. Understand and appreciate;
 - a) the functional mechanisms of birds including the physiology of body systems and tissues

- b) the anatomy and histology of avian tissues; and
 c) the physiological and anatomical differences between avians and mammals
 Identify abnormal physiological mechanisms that impact avian health
 3. Critically evaluate information sources for scientific content and accuracy 2.
 4. Demonstrate qualitative and analytical skills.
 5. Effectively communicate principles of physiology both verbally and in writing

16. Course Reading List and References:

- 1- فسلجة الطيور الداجنة 2000 د. ضياء الحسني
 2- فسيولوجيا الحيوان : تأليف (د.مدحت حسين خليل محمد) 2005.
 3- الزبيدي طارق صالح، (2005)، علم المناعة والمصول، دار البيازودي، عمان، الأردن.
 4- Anatomy and physiology : تأليف (Rod. r. steely and Trent. d. Stephens) 1998.
 5- Poultry physiology : تأليف (Randall) 2000.

Useful reference:

- 1- تشريح ووظائف أعضاء الطيور الداجنة 2003 د. عبد الفتاح درويش.
 تشريح وفسلجة الحيوانات الزراعية 1981 د. اسماعيل عجام

Internet website and journal:

- 1- Journal of animal science.
- 2- Animal journal.
- 3- Biological Journal of the Linnaean Society.
- 4- National Agriculture Library.
- 5- Agricultural Research Service
www.ars.usda.gov
- 6- Agricultural Research Service
<http://www.science.gov/search.html>
- 7- Agriculture Network Information Center
<http://www.central.agnic.org/>
- 8- Agricultural researches
<http://images.google.com/images?q=+a...&start=20&sa=N>
- 9- Veterinary Medicine and Avian Disease Investigation Laboratory.
- 10- Web site: <http://www.biology-resources.com/all-biology-experiments.html>
- 11- Web site: http://highered.mcgraw-hill.com/sites/0072495855/student_view0/chapter10/

With internet web sites and some new researches until 2018.

17. The Topics:	Lecturer's name
<p>1st lect. : Course book introduce the lessons and it's important to studying with some examples for explaining more.</p>	<p>Mr. Delman (3 hrs)</p>

<p>+ Digestive sys.; what meaning of digestive sys. The importance of it, the comparisons of digestive sys. generally Between avian and other animals explaining that by figures</p> <p>1- Mechanical action.</p> <p>2- Chemical action.</p> <p>Explaining the actions of each, with some of microbial actions in ceca.</p> <p>The parts of digestion sys. And what is the effect of each parts on feed ingredients and how its doing and the secretions, glands. Showing all of that by slide images.</p> <p>What's the situation Omphalitis? Explaining this.</p>	<p>10/2/2022</p>
<p>2nd lect EXCRETORY SYSTEM (URINARY SYSTEM). The main organ of the excretory system is the kidney. The functional units of kidneys. The functions of the excretory system and its role in regulate the acid-base balance of the bird's body.</p> <p>What is the primary component of poultry waste?</p> <p>Definition of uric acid.</p> <p>What is meaning of Gout, the types of gout, visceral and articular, explaining of each parts.</p> <p>Showing all that by figures.</p>	<p>Mr. Delman (3 hrs)</p> <p>17/2/2022</p>
<p>3rd Lect. _RESPIRATORY SYSTEM. Showing Birds anatomy or the physiological structure of birds' bodies.</p> <p>Definition of RESPIRATORY SYSTEM, it's important of thermoregulation.</p> <p>The parts of respiratory sys..</p> <p><u>Respiratory system of the birds consists of:</u></p> <p>1- The lungs.</p> <p>2- Respiratory passages.</p> <p>3 - The respiratory bone.</p> <p>4 - Air sacs., With explaining of each.</p>	<p>Mr. Delman (3 hrs)</p> <p>24/2/2022</p>

<p>The main function of the air sacs,</p> <p><u>There are nine air sacs in the domestic fowl. These are:</u></p> <ul style="list-style-type: none">- Single clavicular air sac.- Pair of cervical air sacs.- Pair of cranial thoracic air sacs.- Pair of abdominal air sacs.- Pair of caudal thoracic air sacs. <p>Explaining by images for each air sac.</p> <p><u>How Gas exchanging will do?</u></p> <p>4th Lect. THE IMMUNE SYSTEM OF AVIAN. The Latin term "IMMUNIS" means EXEMPT, referring to protection against foreign agents.</p> <ul style="list-style-type: none">-The immune system of a bird enables it to resist and overcome infection. Birds, like all animals, have very strong, built-in defenses (immunity) against diseases caused by invasion of the body by various microorganisms and toxins (collectively called 'antigens').-The specific and non-specific defense mechanism and its division, <u>The First line of defense.</u>-definition of Antigen and antibody <p>showing Anatomy of immune system.</p> <p>What is the role of Bursa of fabricius and thymus of immunity. Explaining of <u>Function of immune system.</u></p> <p><u>Neonatal immunity</u> and the effect of that in gene conversion.</p> <p>Showing by images.</p> <p><u>5th Lect. Practical lesson</u></p>	<p>Mr. Delman (3 hrs) 2/3/2022</p> <p>Mr. Delman (3 hrs) /3/2022</p>
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<ul style="list-style-type: none">• Blood cells• Corpuscles: <p>First - Erythrocytes (Red Blood Cells) RBC:</p> <ul style="list-style-type: none">• factors affected on number of red blood cell• Red Blood Cells Formation:• Erythrocytes or red blood cells Storage and Removal:• Erythrocytes or red blood cells Functions:• A measure of the RBC: <p>1- Erythrocytes or red blood cells Hemoglobin (Hb):</p> <ul style="list-style-type: none">• Hemoglobin (Hb) Structure:• Erythrocytes or red blood cells Hemoglobin (Hb) Structure. <p>2- Packed Cell Volume (hematocrit):</p> <ul style="list-style-type: none">• Among the factors that affect the size of the PCV: <p>3- The rate of deposition of red blood cells Erythrocyte Sedimentation Rate (ESR):</p> <ul style="list-style-type: none">❖ Red Blood Cells Anemia:❖ Red Blood Cells Excess. <p>Second- White blood cells or Leukocytes:</p> <ul style="list-style-type: none">• White blood cell or Leukocyte Types: <ul style="list-style-type: none">- Agranulocytes- Granulocytes <ul style="list-style-type: none">• The numbers and types of white cells (WBC) in birds influenced by several factors: <p>Thirds- Thrombocytes (platelets):</p> <ul style="list-style-type: none">• Clotting and inflammation: <p><u>9th lecture;</u></p>	<p>Mr. Delman (3 hrs)</p> <p>/4/2022</p>
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<p>Anti-coagulation:</p> <p>There are several types of anti-coagulation each with their characteristic work and the amount of blood necessary for the collection in addition to the advantages and evening that must be taken as considered before used.</p> <ul style="list-style-type: none"> • Method of counting: <ul style="list-style-type: none"> - Red blood cell count: - White blood cell account: • White Blood Cells Differentiation: <p>10th Lect. Nerve system definition of nerve sys., Division of the nervous system; 1- Central Nervous System (CNS) including:</p> <p>a-Brain. b- Spinal cord.</p> <p>2- Peripheral Nervous System including:</p> <p>a- Cranial Nerves. b- Spinal Nerves. c- Plexui. d- Ganglia.</p> <p>functionally divided in to two main parts which are the</p> <p>1- Central nervous system (CNS).</p> <p>2- Autonomic Nervous System (ANS).</p> <p>The function of nerve sys. , structural of nerve sys. explaining the composition of each.</p> <p>Explaining the blood-brain barrier.</p> <p>11th lect. Go to scientific laboratory for applying all of the lessons practically on chicken by slaughtering and separate all systems together to see all parts clearly and doing that by group for students for interesting and for being more focus and understand , and using microscope when any part cannot see by eyes.</p> <p>12th lect.go to research center Doing some tests</p> <p>13th lect. Doing some reports about the lect.</p>	<p>Mr. Delman (3 hrs) /4/2022</p> <p>Mr. Delman (3 hrs) /5/2022</p> <p>Mr. Dilman</p>
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<p>19. Examinations: Q1/ multiple choices. (marks) 1- Birds characterized by. (bursa fabricia, cloaca. Gall bladder) Q2/ Fill in the blanks with specific words or sentences. (Marks) 1- Nervous system consists of ----- ----- . The neurons are in contact with another cell by a ----- -- so does not have ----- connection between the cells of the nervous system, but----- connection. Q3/ what's the type of body fluids and the percentages. Q4/ indicate true or false of the following sentences. Avian kidneys consist of 2 lobes like other animals.</p>	
<p><i>Degree dividing</i> <i>10 1st exam + 10 nd exam+ 10 report +5 degree & quizzes activities = 35</i></p>	