



Department of Biology

College of Education

Salahaddin University-Erbil

Subject: Practical Animal physiology

Course Book – (Year: 3)

Lecturer's name: Gawhar Ahmed Shekha

Ph.D. student

Academic Year: 2021/2022

Course Book

1. Course name	Practical Animal physiology
2. Lecturer in charge	Gawhar Ahmed Shekha
3. Department/ College	Biology Dept./ College of Education
4. Contact	e-mail: Gawhar.Shekha@su.edu.krd
5. Time (in hours) per week	Practical: 6 hrs.
6. Office hours	Approximately 18 Hours per week
7. Course code	EdB0303
8. Teacher's academic profile	<p>Teacher as an important factor in the realization of educational work is analyzed in several dimensions. From his professional development in relation of individual change as professional and educational protagonist , To achieve this development teacher necessarily must have a leader of the educational process that will plan, manage and evaluate their work to education.</p> <p>November 3, 2006 Date of first assignment: Demonstrator. Biology Dept., Education College, Salahaddin University – Erbil, Iraq.</p> <p>In May 8, 2012 Date of attainment M. Sc. Degree Animal physiology, Department of Biology, College of Education, University of Salahaddin – Erbil. Iraq.</p> <p>Title of thesis: Study of some Hematological and Biochemical parameters in patients with untreated breast cancer in Erbil city.</p> <p>October 10, 2013 Assist. Lecturer.</p> <p>2013 – 2014 Assist. Lecturer on Invertebrate Lab (Undergraduate study).</p>

	2014 – 2015 – 2016-2017 -2017-2018 Assist. Lecturer on Animal Physiology Lab (Undergraduate study). promote to lecture in 2019.
9. Keywords	Hematology, physiological experiments
<p>10. Course overview:</p> <p>This course will be designed to give an overview of the field of biology (practical Animal physiology), to provide a Sufficient basis for those who wish to go on in the field to take advanced courses. Animal physiology is the study of how animals body work, or more specifically the physical and chemical processes that occur within animals. Examples of these processes include gas exchange, blood and circulation, osmoregulation, digestion, nervous and muscle systems and endocrinology also An understanding of the physiological problems animals face and how they solve those problems. As a branch of biology, Animal physiology is closely related to histology, and cytology, Animal Physiology makes extensive use of the principles and methods of physics, chemistry, and mathematics. The chemical and physical processes occurring in the organism are studied in conjunction with biochemistry, biophysics, and evolutionary laws are studied in conjunction with embryology. Animal Physiology is most closely associated with medicine, which utilizes the achievements of physiology to diagnose, treat, and prevent a variety of diseases. Clinical medicine, in turn, provides physiology with new areas of investigation. The comparative approach can help us to develop a general evolutionary framework in which to address physiological problems. By comparing how different animals solve related problems in various environments, we can begin to gain insight into physiological principles that apply across levels of organisms and environments.</p>	
<p>11. Course objective:</p> <p>The course has two primary objectives:</p> <ul style="list-style-type: none"> • The first is for every student to obtain a working knowledge and understanding of basic Animal physiology including Describe the systems and processes involved in and explain the physiological processes and the major organ systems of the body, including the cardiovascular, circulatory system, gastrointestinal, muscular and nerve, endocrine systems. • The second is to apply these physiological principles to problem solving situations as observed in medical situations, including cardiac problems, hypertension, acid-base 	

balance disturbances, and endocrine imbalances. The end point of both objectives is to obtain a practical understanding of physiology which students can build upon.

12. Student's obligation

The role of students and their obligations throughout the academic year include:

- A. Quizzes and daily activities**
- B. 1st practical examination**
- C. 2nd practical examination**
- D. 3rd practical examination**
- D. Lab activities**
- E. Attendance of students**

13. Forms of teaching

Different forms of teaching will be used to reach the objectives of the course: by using Data-show (in power point) as well as using the white board with Colour pencils to illustrate the lecture or side's preparation, laboratory test or experiment.

14. Assessment scheme

Course grade

The grade will be determined by the following assignments: Quizzes, activities and participating in lab works, daily questions and examinations during the semester.

No.	Exam (Evaluation)	Marks
1.	Quizzes and daily activities	3
2.	1st Practical Exam	10
3.	2nd Practical Exam	10
4.	Attendance of students	2
5.	3rd Practical Exam	10
6.	Total Scores	35

15. Student learning outcome:

After completing this course, students should be able to describe, identify, and/or explain:

- 1. The various physiological organ-systems and their importance to the integrative functions of the human body.**
- 2. Body fluid compartments and the ionic composition of body fluids.**
- 3. Movement of water and solutes between the fluid compartments.**
- 4. The concept of homeostasis, including set point, negative and positive feedback loops, and compensatory responses.**
- 5. Structure of biological membranes. Function of biological membranes including the role of membrane proteins in catalysis, recognition, and transport.**
- 6. Demonstrate an understanding of the components of human blood and characteristics, functions, and abnormalities and disease states of each.**
- 7. Demonstrate proficiency in the skills necessary to perform blood cell counts, and evaluation of blood elements within stated limits of accuracy.**
- 8. Motility, secretion, digestion, absorption in the gastrointestinal system.**
- 9. Organization structural and functional organization of the nervous system, including the central and peripheral nervous systems, the autonomic nervous system, and the enteric nervous system.**
- 10. The resting membrane potential, the action potential, action potential propagation along the axon.**
- 11. Structure and function of skeletal muscle, including excitation-contraction coupling, sliding filament mechanism, force generation, and isometric versus isotonic contractions.**
- 12. Structure and functions of the cardiovascular system, including the mechanical and electrical properties of cardiac muscle function.**
- 13. Reflex regulation of blood pressure.**
- 14. Principles of hormone action, including structure, mechanism of release from endocrine cell, mode of transport in blood, mechanism of action in target cells, and systemic effects of important hormones.**
- 15. Structure and functions of the kidney nephrons, including glomerular filtration, tubular reabsorption, tubular secretion, and excretion.**

16-Course Reading List and References

1-Textbook of Medical Physiology by Arthur C. Guyton and John E. Hall,

11th edition, 2006.

2-Essentials of Anatomy and Physiology by Valerie C. Scanlon and Tina Sanders,

5th edition, 2007.

▪ Useful references:

1. Experiments in physiology by Gerald D. Tharp, 5th edition, 1986.

2. A laboratory guide to human physiology by Stuart Ira Fox, 2002.

▪ Magazines and review (internet):

17. The Topics: Animal physiology lab supervised by

Dr. Nader Mustafa nanakali

Lecturer's name: Gawhar A . Shekha

Dr. Saman Muhsin Abdulkarim

18. Practical Topics

Week	Topics
1-Osmosis and cell permeability Purpose of lab, Background, Procedure Biological membrane, solutions depending on tonicity	Gawhar A . Shekha Time: (6 hrs.)
2-Blood groups and matching Purpose of lab, Background, Procedure Crossmatching, blood groups and pregnancy	Gawhar A . Shekha Time: (6 hrs.)
3.Haemoglobin determination Purpose of lab, Background, Procedure Function, factors influencing haemoglobin levels	Gawhar A . Shekha Time: (6 hrs.)
4.Red blood cell count Purpose of lab, Background, Procedure Mammalian erythrocytes, Data interpretation	Gawhar A . Shekha Time: (6 hrs.)
5.Packed cell volume (PCV) and Blood indices Purpose of lab, Background, Procedure Relationship between haematocrit and haemoglobin	Gawhar A . Shekha Time: (6 hrs.)

6.White blood cell count Purpose of lab, Background, Procedure Clinical significance, Causes of leukocytosis	Gawhar A . Shekha Time: (6 hrs.)
7.Differential white blood cell count Purpose of lab, Background, Procedure Granulocytes, agranulocytes, Wright's stain	Gawhar A . Shekha Time: (6 hrs.)
8. Blood coagulation Purpose of lab, Background, Procedure Bleeding time, clotting time	Gawhar A . Shekha Time: (6 hrs.)
9. Erythrocyte sedimentation rate Purpose of lab, Background, Procedure Normal values, Factors affecting the ESR	Gawhar A . Shekha Time: (6 hrs.)
10. Blood pressure measurement Purpose of lab, Background, Procedure Systolic blood pressure, Diastolic blood pressure	Gawhar A . Shekha Time: (6 hrs.)
11. Digestion of carbohydrate by salivary amylase Purpose of lab, Background, Procedure physical digestion, chemical digestion, maltose test	Gawhar A . Shekha Time: (6 hrs.)
12. Gastric Digestion of Protein Purpose of lab, Background, Procedure gastric juice, protease pepsin, pH	Gawhar A . Shekha Time: (6 hrs.)
13. Glucose tolerance test Purpose of lab, Background, Procedure Pancreas, insulin, What is diabetes	Gawhar A . Shekha Time: (6 hrs.)
14. Insulin shock Purpose of lab, Background, Procedure Hypoglycaemia, symptoms of glucose deficiency	Gawhar A . Shekha Time: (6 hrs.)
15. Microcirculation Purpose of lab, Background, Procedure Capillary function, autoregulation	Gawhar A . Shekha Time: (6 hrs.)

<p>16. Skeletal muscle physiology Purpose of lab, Background, Procedure Simple twitch, stages of a simple twitch, kymograph</p>	<p>Gawhar A . Shekha Time: (6 hrs.)</p>
<p>17. Skeletal muscle physiology Purpose of lab, Background, Procedure Effect of frequency on skeletal muscle contraction</p>	<p>Gawhar A . Shekha Time: (6 hrs.)</p>
<p>18. Cardiac muscle physiology Purpose of lab, Background, Procedure The frog heart, pacemaker, heart beat</p>	<p>Gawhar A . Shekha Time: (6 hrs.)</p>
<p>19. Cardiac muscle physiology Purpose of lab, Background, Procedure Effects of drugs and temperature on the frog heart</p>	<p>Gawhar A . Shekha Time: (6 hrs.)</p>
<p>20. Reflex action Purpose of lab, Background, Procedure Reflex arc, spinal shock, crossed extensor reflex</p>	<p>Gawhar A . Shekha Time: (6 hrs.)</p>
<p>21. General urine examination (GUE) Purpose of lab, Background, Procedure Physical examination, Chemical, microscopic examination</p>	<p>Gawhar A . Shekha Time: (6 hrs.)</p>
<p>19. Extra notes:</p>	
<p>20. Peer review</p>	<p>پیداچونہوہی ہاوہل</p>