

Department of Animal Resources College of Agriculture Engineering Sciences

University of Salahaddin Subject: Ecology Course Book – Year 2

Lecturer's name: Nidhal Yas (MSc) Academic Year: 2021/2022

Course Book

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| **1. Course name** | **Ecology** |
| **2. Lecturer in charge** | **Nidhal Yas Yaaqub** |
| **3. Department/ College** | **Animal resources/Agriculture** |
| **4. Contact** | **e-mail:** **nidhal.yaakup@su.edu.krd****Tel: +9647507384500** |
| **5. Time (in hours) per****Week** | **Theory: 2****Practical: 3** |
| **6. Office hours** | **Sunday (8:30-11:30)****Sunday (11:30-2:30)** |
| **7. Course code** | **--** |
| **8. Teacher's academic profile** | **I got bachelor’s degree in general biology department of college of science of Salahaddin University in 1983. Then I got employed as a biologist in general biology department / college of Education/ Baghdad University. Then in 2006, I got master degree in biology (Ecology) from college of science / Baghdad University. In 2006 I became assistant lecturer in college of Agriculture. In 2019 I became lecturer in college of Agriculture.** |

***Course overview***

The environmental elements for animal resources projects is one of great importance such as temperature, humidity, ventilation, lighting….etc. all these things whether from the surrounding environment or internal within the animal houses are all affecting the animals health positively or negatively , affecting feed intake, reproduction and so the productivity of farm animals.

***Course objectives:***

Teaching the students how the environmental elements affect the various animal activities including nutrition ,production performance and the most important thing how to control these environmental elements and make it positive and adapted to the farm animals requirement for the purpose of providing comfort in the process of eating and living without stress in order to ensure the high production performance with economic cost.

Course reading list and references:

1. Farm Animals Ecology. By Dr.Akram thanoon younis khafaf, Mosul University, 1992.
2. Elements of Ecology, 4th edition, Robert Leo Smith, Thomas M. Smith, 1998.
3. Environmental Sciences, William P. Cunningham, Marry Ann Cunningham, Barbara Saigon. Magraw Hill, Eight edition, 2005.
4. Basic of Environmental Sciences, Michael Allaby, 2nd edition, 1996.

***Farm animal ecology course outline***

***1st week:***

Definition of ecology, weather, climate, macroclimate and microclimate.

Animal distribution rules on our planet, factors affecting physical weather in animal ecology, factors affecting the temperature.

 ***2nd week:***

Sources of heat in animal's body, heat loss, heat transfer, solar radiation, factors affecting the evaporation, humidity, humidity and the transfer of diseases, the affect of humidity on poultry, the absolute humidity, relative humidity, dew point and discomfort index.

***3rd week:***

The light, differences in light intensity, photoperiod, the affect of indirect light, solar radiation and spectrum, photo synthetically active radiation, the spectrum colors.

***4th week:***

Ultraviolet radiation, infra red radiation, the blue color of the sky, the white color for the clouds, the red and yellow color for the dusty sky, the blue color of the sea, the green color of the plant leaves.

***5th week:***

The importance of the light for poultry, the air currents, atmospheric pressure, factors affecting the atmospheric pressure, air components in animal houses.

***6th week:***

Health importance of air components, oxygen, ozone, nitrogen oxides, carbon dioxide, air pollutants inside the animal houses.

***7th week***:

The health importance for these pollutants, carbon monoxide, ammonia, sewer gases, H₂S ,CH₄ , solid pollutants, pollen grains ,dust, sands, sources of bacterial pollutions, animal litters.

***8th week:***

House air pollution with bacteria, the rule of the air for transferring disease, poultry wastes and environmental pollution, animal watering, the biological functions of the water in the body, water physiology in the dry regions.

***9th week:***

Factors affecting feed intake, factors affecting basal metabolic rate, the desert animals and the ways to reduce water loss.

***10th week:***

The precipitations, liquid precipitation, solid precipitations, snow, hailstone, dew, fog, the affects of precipitations on animals.

***11th week:***

The relationships of animals with the dry climates, the animals division according to their acclimation to the dry climates.

***12th week***:

The thermal balance, fort Knox equation, the heat gain sources because of the metabolic activities of the internal organs , the hormones of the thyroid glands, adrenal medullary hormones.

***13th week:***

Stress in the animals, stress factors , thermal regulation, thermal neutral zone, voluntary behavioral adjustments, involuntary behavioral adjustment.

***14th week:***

Temperature perception, peripheral thermo receptors, the animal behavior in case of low temperature, disturbances in thermoregulation.

***15th week***:

Sun stroke, heat cramp, fever, feed levels and thermal regulation, gross energy, gross energy divisions, energy measuring , bomb calorimeter, carbohydrates, lipids, proteins.

***First theoretical examination on Farm animal environment.***

Q1.Define 5 of these terms. (25) Marks

Ecology, macroclimate, albedo, ultra-violet ray, atmospheric pressure, wind.

Q2.Explane the following phenomenon. (25) Marks.

 a-the blue color of the sky.

 b-The yellow and red color in the dusty sky.

 c-The green color of the plant leaves.

 Q3.Name and explain the factors affecting the temperature. (25) Marks.

 Q4.There is many sources of heat in the animal’s body mention it with some explanation. (25).marks.

Examinations:

The first theoretical examine starting after 4 weeks of teaching. The second examine starting after the 8 weeks teaching.