MINISTRY OF EDUCATION AND TRAINING
CAN THO UNIVERSITY

SOCIALIST REPUBLIC OF VIETNAM
Independence - Freedom - Happiness

SUBJECT OUTLINE DETAILS

1. Subject: Animal Physiology

- **Code:** CS072C
- **Credits: 0**2
- **Hours:** 30 theory hours and 60 self-study hours.

2. Management Unit:

- **Department:** Molecular Biotechnology
- **Institute:** Biotechnology Institute for Research and Development

3. Prerequisites:

4. Subject objectives:

4.1. Knowledge:

4.1.1. Understanding physiological functions of each organ in the body, the relationships between them and the impacts of environment.

4.1.2. Understanding mechanisms of digestion, blood circulation, respiration, metabolism, urinary system, reproductive endocrine, development and reproduction.

4.1.3. Application of physiological characteristics of each species their living habitat to improve feeding efficiency and disease prevention

4.2. Skill:

4.2.1. Being able to comment and analyse the growth and reproductive development of animals.

4.2.2. Applying physiological knowledge, together with other specialized skills in biotechnology to develop animal production.

4.3. Attitude:

4.3.1. Highly specialized knowledge with proper attitudes for the job.

4.3.2. Active participation in the development and management of animals

5. Brief description of subject content:

The module content includes the meaning, importance in physiology, function and physiological activity regulatory mechanisms of muscle and nerve, blood, heart and vascular, respiratory, digestive, excretory, endocrine, physiological and reproductive systems in cattle and poultry.

6. Subject content structure:

	Content	Hours	Objectives
Chapter 1.	**Introduction of physiology**	1	4.1.1
1.1.	Purpose and meaning		
1.2.	The basic principle of physiology theory		
1.3.	Regulation of nerve - humoral system		
1.4.	Applications of physiology in animal science		
Chapter 2.	**Physiology of muscles and nerves**	2	4.1.1, 4.1.2
2.1.	Physiological characteristics of muscle cells		
2.2.	Physiological function of skeletal muscle, smooth muscle and heart muscle		
2.3.	Physiological characteristics of neurons		
2.4.	The nerve impulse conduction through synapses		
Chapter 3.	**Physiology of digestion**	6	4.1.1, 4.1.2, 4.1.2, 4.2.2, 4.1.3
3.1.	Overview of digestion activity		
3.2.	Digestion in the mouth		
3.3.	Digestion in the monogastric stomach		
3.4.	Digestion in ruminant stomach		
3.5.	Digestion in the small and large intestine		
3.6.	Absorption of nutrients		
3.7.	Digestion in poultry		
Chapter 4.	**Physiology of lood**	3	4.1.1, 4.1.2, 4.1.3
4.1.	Blood function		
4.2.	Blood characteristics		
4.3.	Blood composition		
4.4.	Coagulation		
4.5.	Blood groups		
Chapter 5.	**Physiology of circulation**	2	4.1.1, 4.1.2, 4.1.3
5.1.	Heart physiology		
5.2.	Physiology of cardiac muscle		
5.3.	Blood pressure		
5.4.	Physiology of vascular system		
5.5.	Regulation of heart and circuit system		

Chapter 6.	**Physiology of respiration**	2	4.1.1, 4.1.2
6.1.	Respiratory function		
6.2.	Respiration method		
6.3.	Lung volume and capacity		
6.4.	Air combination and transport in blood		
6.5.	Respiratory activity regulation		
6.6.	Poultry respiratory characteristics		
Chapter 7.	**Physiology of endocrine**	6	4.1.1, 4.1.2, 4.1.2, 4.2.2
7.1.	Relationship between the nerves and endocrine		
7.2.	General characteristics of hormones		
7.3.	Endocrine system		
7.3.1.	Pituitary gland		
7.3.1.1.	Structure of pituitary gland and the origin of hormones		
7.3.1.2.	Effects and applications of hormones on pituitary gland		
7.3.2.	Thyroid gland		
7.3.2.1.	Structure-iodine supply		
7.3.2.2.	Regulation of thyroid activity		
7.3.2.3.	The effects of the Thyroxin hormone		
7.3.2.4.	Applications of Thyroprotein on lactation and reproduction		
7.3.3.	Parathyroid gland		
7.3.3.1.	Structure-metabolism of calcium and phosphorus		
7.3.3.2.	Regulatory activities of parathyroid gland		
7.3.3.3.	Thyrocalcitonin		
7.3.4.	Adrenal medulla		
7.3.4.1.	The effects of adrenal gland hormones		
7.3.4.2.	Regulation of adrenal medulla		
7.3.5.	Pancreas		
7.3.5.1.	Structure and origins of hormones		
7.3.5.2.	Effects of Insulin hormone		
7.3.5.3.	Disorder caused by insulin deficiency		
7.3.5.4.	Glucagon hormones		

Chapter 8.	**Physiology of reproductition**	6	4.1.1, 4.1.2, 4.1.2, 4.2.2, 4.1.3
8.1	Physiology of male reproduction		
8.1.1.	Puberty in male animals		
8.1.2.	Biological characteristics of sperm		
8.1.3.	Complementary testis		
8.1.4.	Semen		
8.1.5.	Mating		
8.2.	Physiology of female reproduction		
8.2.1.	Reproductive maturity		
8.2.2.	The establishment of ovulation and luteal		
8.2.3.	Estrous cycle and duration of estrus		
8.2.4.	Reproductive cycles in some species		
8.3.	Pregnancy and parturition		
8.3.1.	Pregnancy		
8.3.2.	Pregnancy diagnosis		
8.3.3.	Laying		
8.3.4.	Abnormalities in the process of laying		
8.4	Physiology of lactation		
8.4.1.	The growth and development of the mammary gland		
8.4.2.	The function of the mammary gland: lactation and milky discharge		
8.4.3.	Control of milk secretion by hormones		
8.4.4.	The importance and composition of milk		
8.5.	Physiology of poutry reproduction		
8.5.1.	Male chicken		
8.5.1.1.	The creation of sperm-physiological characteristics of sperm		
8.5.1.2.	Genital reflexes and copulatory movements		
8.5.1.3.	Birth control in poultry		
8.5.2	Female chicken		
8.5.2.1.	Ovulation and fertilization		
8.5.2.2.	The transport and laying of eggs		
8.5.2.3.	Control of hormones on poultry reproduction		

Chapter 9.	**Physiology of urinary system**	2	4.1.1, 4.1.2, 4.1.3
9.1.	Structure and functions of the kidney		
9.2.	The formation of urine		
9.3.	Physical and chemical characteristics of urine		
9.9.	Composition and properties of urine		
9.5.	Mechanism of urination		

7. Teaching method:

- Lecture by visual methods, seminar presentation, raising questions/scenarios, direct discussions, comments and assessment of issues raised with students.
- Teaching means: writing table, computer and projector

8. Duties of student:

Students have to do the following duties:

- Attend at least 80% of the theoretical lessons.
- Perform group discussion and report as required.
- Attend the final examination for the module.
- Actively organize study time before or after class.

9. Assessment of student learning outcomes:

9.1. Assessment

No.	Point components	Rules and Requirement	Weights	Objectives
1	Overall attendance	- Number of classes attended	5%	4.1.1-4.3.2
2	Group assignments	- Carry out and report group discussion	25%	4.1.1-4.3.2
3	Final examination Score	- Essay and multiple choice examination	70%	4.1.1-4.3.2

9.2. Grading

- Grading components and final test scores will be marked on a scale of 10 (0 to 10), rounded to one decimal place.
- Subject score is the sum of all the components of the evaluation multiplied by the corresponding weight. The subject score is marked on a scale of 10 and rounded to one decimal place, then is converted to A-B-C-D score and score on a scale of 4 under the academic provisions of the University.

10. Materials:

Materials information	Code number
[1] Nguyen Thi Kim Dong, Nguyen Van Thu 2008. Textbook of animal physiology. Cantho University.	636.0892/ Đ455; NN012993
[2] Lauralee Sherwood, Hillar Klandorf, Paul Yancey 2005. Animal physiology: from genes to organisms. Second edition, Cengage Publisher	571.1/ S554; NN.011803
[3] Church D.C. 1988. The ruminant animal digestive physiology and nutrition. Long grove, Illinois : Prentice Hall.	599.735/ R936; DIG.003241

11. Self-study Guide:

Week	Content	Theory (hours)	Practice (hours)	Students' duties
1	Chapter 1: Introduction of physiology	2		Reading: Document [1], Chapter 1 Document [2], Chapter 1 Document [3], Chapter 1
2	Chapter 2: Physiology of muscles and nerves	4		Reading: Document [1], Chapter 2 Document [2], Section 4, 8
3-5	Chapter 3: Physiology of digestion	12		Reading: Document [1], Chapter 3 Document [2], Section 4/14 Document [3], Part 1
6-7	Chapter 4: Physiology of blood	6		Reading: Document [1], Chapter 6 Document [2], Section 4/9
8	Chapter 5: Physiology of circulation	4		Reading: Document [1], Chapter 7 Document [2], Section 4/9
9	Chapter 6: Physiology of respiration	4		Reading: Document [1], Chapter 5 Document [2], Section 4/11
10-12	Chapter 7: Physiology of endocrine	12		Reading: Document [1], Chapter 8 Document [2], Section 4/12
13-14	Chapter 8: Physiology of reproduction	12		Reading: Document [1], Chapter 9 Document [2], Section 5

15	Chapter 9: Physiology of urinary system	4		Reading: Document [1], Chapter 4 Document [3], Part 3

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ON BEHALF OF RECTOR
DEAN/ DIRECTOR

HEAD OF DEPARTMENT