University of Sadat City
Faculty of Veterinary Medicine
Dept. of Physiology
(2014-2015)

Physiology of Environment, Adaptation and Cell (626P)

PhD COURSE SPECIFICATION

A. BASIC INFORMATION

University:	**University of Sadat City**
Faculty:	**Veterinary Medicine**
Program on which the course is given:	**PhD in Veterinary Medical Sciences (physiology)**
Department offering the Course:	**Physiology**
Course code:	**626P**
Course title:	**Physiology of Environment, Adaptation, and Cell**
Lecture (hr/week):	**2**
Practical (hr/week):	**2**
Course coordinator:	**Prof. Dr. Said I. Fathalla**

B. PROFESSIONAL INFORMATION

1) Overall aims of course

To give the students basic and advanced knowledge and skills of types of environment impacts on the cellular function, and role of adaptation , the risks and the benefits that they will receive from it.

2) Intended learning outcomes of course (ILOs)

a) KNOWLEDGE AND UNDERSTANDING

By the end of this course, the graduate should be able to:-

a.1. Describe the cell physiology.

a.2. Define any information about cell "Homeostasis".

a.3. Describe the role of cell membrane in transmission between cell and the surrounding environment.

a.4. Realize the role of environment in managing cell function

a.5. Identify the role of adaptation to the environment conditions

a.6. Describe modifications in the cell function due to stress.

a.7. Defines Apoptosis

INTELLECTUAL SKILLS

By the end of this course, the student should be able to:-

b.1. Interpret methods for body fluids sampling from different animal species

b.2. Judge body Physiological parameters related to environmental adaptation.

b.3. Analyze the effect of different solutions on cell membrane.

b) PROFESSIONAL AND PRACTICAL SKILLS

By the end of this course, the student should be able to:-

c.1. Perform methods for body fluids sampling from different animal species.

c.2. Asses body Physiological parameters related to environmental adaptation.

c.3. Determine the effect of different solutions on cell membrane (erythrocyte osmotic fragility test).

GENERAL AND TRANSFERABLE SKILL

By the end of this course, the student should be able to:-

d.1. Work effectively as a member of a multidisciplinary team,

d.2. Identify the essential ethical issues involved in scientific research.

d.3. Search for new information and technologies.

d.4. Use available presentation aids (e.g. overhead projectors or data show) to present clearly and effectively a scientific topic in a tutorial, a staff meeting or the yearly scientific day.

3) Topics and contents

Topic	No. of hours		
	Lect.	Pract.	Total
Introduction to cell physiology	2	-	2

Physiological function of cell organells	4	-	4
Transmission through cell membrane	5	-	5
Apoptosis	8	-	8
Adaptation of the different cells to its function	8	-	8
Environmental stressors and its effects on cellular function	12	-	12
Modifications in the cell function due to stress	8	-	8
Stress analysis	8	-	8
Examples of adaptation in different cells, in different species	15	-	15
The biological effects of exposure to stress	8	-	8
Environmental stressors and systemic impacts	10	-	10
Effect of different solution on cell membrane (erythrocyte osmotic fragility test).		25	25
Methods for body fluids samples from different animal species.		25	25
Analysis of body fluid samples **to** environmental adaptation**.**		38	38
Total	**88**	**88**	**176**

4) Teaching and learning methods

a. Lectures to gain knowledge and understanding skills.
b. Practical sessions for the students to gain practical skills.
c. Self-learning activities.

d. Student assessment

a. METHODS:

- õ Written exam to assess knowledge, information and intellectual skills.
- õ Practical exam to assess professional and practical skills.
- õ Oral exam to assess knowledge and information and intellectual skills.
- õ Student activities for assessing knowledge and general and transferable skills.

b. MATRIX ALIGNMENT OF THE MEASURED ILOS/ ASSESSMENTS METHODS:

	K.U (a)	I.S (b)	P.P.S (c)	G.S (d)
Written exam	1,2,3,4,5,6,7	1-2-3		
Practical exam			1-2-3	
Oral exam	1,2,4,5,7	1-2-3		
Student activities				1-2-3-4

c. WEIGHT OF ASSESSMENTS:

Assessment	Allocated Mark	Evidence
Final written exam	**50%**	Marked and signed written paper
Practical exam	**20%**	Marked and signed practical exam paper
Oral exam	**20%**	Signed list of oral exam marks
Student activities	**10%**	Assay, presentations, discussions, review

e. List of references

6.1. Essential textbooks

1- **William O. Reece 2004,** Dukes' Physiology of Domestic Animals, 12th edition, Cornell University Press.
2-Berne, R.M. & Levy, M.N. (eds) 1996, Principles of Physiology, 2nd edition, Mosby, Sydney.
3-Bray, J.J., et al. (eds.) 1999, Lecture Notes on Human Physiology, 4th edition, Blackwell Science, Malden.
4-Vander, A.J., Sherman, J.H. & Luciano, D.S. 2001, *Human Physiology*, 8th edition.
5- Keith B. 2013, Fish physiology

6.3. Web sites

- Journal of animal science
- J. of applied physiology
- J. of veterinary physiology
- J. of comparative biochemistry & physiology

f. Facilities required for teaching and learning

7.1 Data-show.
7.2 Laboratory animals for experimental physiology.
7.3 Network for technology transfer.
7.4 Laboratory kits for experimental physiology.
7.5 Computer.

	Course coordinators	Head of department
Name	Prof. Dr. Said I. Fathalla	Prof. Dr. Shaaban Gadallah
Signature		

Matrix alignment of course topics and ILOs

Topic	No. of hours /week		Total hours	Hours for Lect.	Hours for Pract.	ILOs			
	Lect.	Pract.				K.U (a)	I.S (b)	P.P.S (c)	G.T.S (d)
Introduction to cell physiology	2		2	2		1			2
Physiological function of cell organells	2		4	4		1-2			1,4
Transmission through cell membrane	2		5	5		3	3		1,2
Apoptosis	2		8	8		7			1,3
Adaptation of the different cells to its function	2		8	8		1-5	2		1,4
Environmental stressors and its effects on cellular function	2		12	12		4	2		1,4
Modifications in the cell function due to stress	2		8	8		6	2		1,2
Stress analysis	2		8	8		6	1-2		1,3
Examples of adaptation in different cells, in different species	2		15	15		5	2		1,4
The biological effects of exposure to stress	2		8	8		6	1-2		1,2
Environmental stressors and systemic impacts	2		10	10		6	2		1,3
Effect of different solution on cell membrane (erythrocyte osmotic fragility test)		2	25		25		1-3	3	1,4
Methods for body fluids samples from different animal species.		2	25		25		1	1	1,2
Analysis of body fluid samples to environmental adaptation.		2	38		38		1-2	2	1,3
Total			176	88	88				