Specification for Biophysics course

2019/2020

A- Affiliation

1.	**Relevant program**	Bachelor of Veterinary Medical Science (BVMSc)
2.	**Department offering the course**	Department of Physics, Faculty of science

Date of specification approval: ministerial decree No. 1727 on 26/4/2017
(Approved in this template by the department council on 1/10/2019**)**

B- Basic information

1.	**Course title**	Biophysics
2.	**Course code**	101 (A) I
3.	**Level**	1st year
4.	**Semester**	1st Semester
5.	**Total hours**	3
6.	**Lecture hours**	1
7.	**Practical hours**	2

C- Professional Information

1- Course learning objectives

This course aims to Describe on the biophysics science. Understand the cell and cell membrane structure. Study some of the physical properties living materials. Understand the DNA and cell potential. This course provide appropriate practical skills for the DNA and cell potential**.**

2- Intended learning outcomes of the course (ILOs):

a- Knowledge and understanding

After successful completion of the course the students should be able to:

a1- Discover the fundamental component for biophysical system.
a2- Describe the composition and structure of living cell and cell membrane.
a3- Describe the relation between the activity of Nerve cell and cell voltage.
a4- Realize the basic of temperature and pressure.

b- Intellectual skills

After successful completion of the course the students should be able to:

b1- Analyze the cell structure, and Biopolymer.
b2- Design the electrical circuit used to measure the biological problems.
b3- Compare between the physical properties for DNA and cell .

c- Professional and practical skills

After successful completion of the course the students should be able to:
c1- Use the structural investigation techniques.
c2- Analyze the out pouts data from measuring techniques.
c.3- Analyze the out pout data from measuring techniques.

d- General and transferable skills

After successful completion of the course the students should have the following skills
d1- Decision skill.
d2- Team working skill .
d3- Reporting skill

3- Course contribution in the program ILOs:

Course ILOS		Program ILOS
A	**Knowledge and understanding**	a^1
B	**Intellectual skills**	-
C	**Professional and practical skills**	-
D	**General and transferable skills**	$d^{1,6}$

3.1- Course contents:

Topic	**Lecture hours**	**Practical hours**
Study DNA	**2**	**3**
Bio Polymers	**2**	**3**
Cell membrane	**1**	**3**
membrane Potential	**2**	**3**
Countuity of membrane Potential	**1**	**3**
Circuits and models of measurements	**2**	**3**
Electrical activity for nerve cell	**1**	**3**
Methods of measuring temperature	**1**	**3**
Methods of measuring pressure	**1**	**3**
Cell voltage measurements	**2**	**3**
Total hours	**15**	**30**

3.2- ILOs matrix:

Topic	A) Knowledge and understanding	B) Intellectual skills	C) Professional and practical skills	D) General and transferable skills
Study DNA	a1,a2	b1,b3	c1,c2,c3	d1,d2,d3
Bio Polymers	a1,a2	b1,b3	c1,c2,c3	d1,d2,d3
Cell membrane	a1,a2	b2	c1,c2,c3	d1,d2,d3
membrane	a1,a2,a3		c1,c2,c3	d1,d2,d3

Potential				
Countuity of membrane Potential	a3	b2	c1,c2,c3	d1,d2,d3
Circuits and models of measurements	a3	b2	c1,c2,c3	d1,d2,d3
Electrical activity for nerve cell	a3	b2	c1,c2,c3	d1,d2,d3
Methods of measuring temperature	a4	b2	c1,c2,c3	d1,d2,d3
Methods of measuring pressure	a4	b2	c1,c2,c3	d1,d2,d3
Cell voltage measurements	a3	b2	c1,c2,c3	d1,d2,d3

4- Teaching, learning and assessment methods:

ILOs		Teaching and Learning methods						Assessment method				
		L	P&M	D&S	T	Ps	Bs	semester	midterm	practical	oral	written
Knowledge and understanding	a1	x	0	x	0	0	x	x	x	0	x	x
	a2	x	0	x	0	0	0	x	x	0	x	x
	a3	x	x	x	0	0	0	0	x	0	x	x
	a4	x	0	x	0	0	x	0	0	0		x
Intellectual skills	b1	x	0	x	0	0	x	x	0	x	x	x
	b2	x	0	x	0	0	0	x	x	x	0	x
	b3	x	0	x	0	0	x	0	0	0	x	x
Professional and practical skills	c1	x	0	x	0	0	0	x	0	x	x	x
	c2	x	x	x	0	0	x	x	x	x	0	x
	c3	x	x	x	0	0	x	x	0	x	0	x
General skills	d1	x	0	x	0	0	0	x	x	0	0	x
	d2	x	0	x	0	0	x	x	x	0	0	x
	d3	x	x	x	0	0	0	0	0	0	x	x

L **:Lecture,** P&M**: Presentations & Movies,** D&S: **Discussions & Seminars** PT**: Practical training,** Ps: **Problem solving,** Bs: **Brain storming**

5Assessment timing and grading:

Assessment method	timing	grade
Mid-term exam	6th week	15
Practical exam	14th week	20
oral exam	End of semester	15
Written exam	End of semester	50
total		100

6- List of references

6.1- Course notes: Lecture note approved by Physics department

6.2- Essential books (text books)

- El-Sayed E.S. "Biophysics Concepts and Medical Applications", Ain shams Un. Press. 2007.
- Aidley D.J. & Stanfield P.R. " Ion Channels", Cambridge Un. Press. 1996.
- " Electroretinography", U.S. National Library of Medicine, 11 april 2005.
- Bagni, M. A., G. Cecchi, F. Colomo, and P. Garzella. 1992. Journal of Muscle Research and Cell Motility 13:516-522.

6.3- Recommended books

- Sybesma C. "An Introduction to Biophysics" Academic press,1977.
- Radiation Biophysics, Edward L.Alpen (1998).
- A primer in Applied Radiation Physics, FA Smith (2000).
- Physics and engineering of radiation detection, Sayed naeem Ahmed (2007).

6.4- Periodicals, Web sites, . . . etc

- http://cms.nelc.edu.eg.
- www.EKB.eg

7- Facilities required for teaching and learning

1- Data show.
2- Laboratory.
3- White board.

Course coordinator: Dr. MOSTAFA ISMAIL.

Head of department Dr. MOSTAFA ISMAIL

Date 1/10/2019