Basic information	
Course Code:	**PHS:1105**
Course title :	Biophysics
Academic year:	1st year students, 2018/2019
Program title:	B. Sc. Veterinary Medical sciences
Contact hours/ week/semester:	4 h /week (Lecture: 2 h/week, Practical: 2h/week)
Last date of course specification approval	

2-Professional information

Overall aims of course:

This course aims to:

1- Analyze the principles of heat and properties of matter and interpret main idea of simple harmonic motion, concepts of fluid flow, temperature and Stefan-Boltzmann law.

2- Differentiate between the kinetic energy and potential energy.

3- Compare between different methods of heat transfer

3- Write a short report in a written form and orally using appropriate scientific language and time management.

3- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

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

a1. Define some physical quantities

a2. Describe how the refrigeration can operate.

a3. Define Hook's law, Archimedes's law, Pascal's law, Stefan's law, Newton's law, and the first and second laws of thermodynamics.

a4. Identify the validity of formulae from the point of view of dimensions.

a5. Describe some physical equation of motion, and equations of static and dynamic fluids.

B-Intellectual skills

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

b1. Illustrate physical quantities (centripetal acceleration, strain, stress, young's modulus, specific heat, latent heat, melting point of ice)

b2. Discuss the specific heat of solid.

b3. Explain the energy and work in thermodynamics.

b4. Distinguish the regions in Hooke's law and the regions of elasticity

b5. Summarize the different types of motions of solids and liquids, and different methods of heat transfer

C-Professional and practical skills

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

c1. Determine the different types of elasticity, liquids, thermometers, latent heat

c2. Use some figures to show the relations between the different physical quantities.

D-General and transferable skills

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

d1. Write a short report in a written form -using library or Internet resources.

d2. Work in a group and learning time management.

4-Topics and contents

Course	Topics	No. of hours	Lec.	Practical
Properties of matter 2h/week, training 1h/week	• ***Introduction***	2	1	--
	Mechanics I	3	1	--
	Mechanics II	3	1	--
	Elasticity	3	1	--
	States of matter	3	1	--
	Archimedes's principle, surface tension.	3	1	--
	Motion of fluids	3	1	--
	Viscosity.	2	1	--
Heat 2h/week training 1h/week	Heat and Energy	2	1	--
	Thermal expansion, thermal stresses heat capacity.	3	1	--
	Heat transfer	3	1	--
	Radiation, Stefan-Boltzmann law, the ideal radiator.	3	1	--
	The first law of thermodynamics I	3	1	--
	The first law of thermodynamics II	3	1	--
	The second law of thermodynamics	3	1	--
Practical physics 4h/week	Introduction	1	--	1
	Simple pendulum	1	--	1
	Hooks law	1	--	1
	Resonance Tube	1	--	1
	Archimedes law	1	--	1
	Surface tension	1	--	1
	Viscosity of a liquid	1	--	1
	Specific heat of solid	1	--	1
	Latent heat of ice	1	--	1
	Latent heat of wax	1	--	1
	Newton's law of cooling	1	--	1
	Jules law	1	--	1
	Mechanical equivalent of heat	1	--	1

5-Teaching and learning methods

-Lecture using Board and Data Show
-Experimental Models
-Discussion groups
- Quizzes, home works, exercises and exams.

6-Special teaching and learning methods for exceptional students

Office hours and special meeting

7-Student assessment

7.1. Assessments methods:

Method	Matrix alignment of the measured ILOs/ Assessments methods			
	K&U	**I.S**	**P&P.S**	**G.S**
Homework exercises	a1, a2,a4	b1,b5		d1d2
Oral discussions	a2,a3,a5	b2,b3,b4,b5		
Quizzes	a1,a3,a5	b1,b2,b5		
Mid- term examination	a1, a4,	b1,b4,b5		
Practical exam	a1, a4	b1,b4	c1,c2	
Final examination	a1, a2,a3, a4,a5	b1, b2 , b3, b4,b5		

7.2-Assessment schedules/semester

Method	Week(s)
Practical exams	13
Final exam	15
Student activity	Every week

7.3-Weight of assessments

Assessment	Weight of assessment
Final-term Examination	**50**
Practical Examination	**40**
Student activity	**10**
Total	**100%**

8- List of references

8.1.Notes and books

- Departmental notes on Heat
- Departmental notes on properties of matter
- Departmental notes on practical physics

8.2. Essential books:

1-Robert Oman and Daniel Oman, "How to solve Physics Problems", McGraw-Hill, 1984

2- F. Bueche, "Principles of Physics", McGraw-Hill, 1974

3- Serway, "Physics for Scientists and Engineers", Saunders College publishing, 1996.

8.3. Recommended texts

N/A

8.4. Journals, Websites ……..etc

N/A

Journals:

Websites:

Course Coordinator Head of Department

Dr. Mostafa Ali

Prof. Dr. Hany S. Hamdy

course	Topic	Week	Intended learning outcomes of course (ILOs)			
			K&U(a)	I.S(b)	P.P.S (c)	G.T.S (d)
Properties of matter 3h/week	***Introduction***	1	a1,a4	b1	c1	d1
	MechanicsI	2, 3	a1, a4	b1	c1	d1
	MechanicsII	4, 5	a1,a4,a5	b1,b5	c1	d1,
	Elasticity	6, 7	a1,a3,a4,a5	b1,b4	c1	d1
	States of matter	8, 9	a1, a3	b1,b5	c1	d1
	Archimedes principle, surface tension.	10, 11	a1, a3,a4,a5	b1		d1
	Motion of fluids	12, 13	a1, a4	b1, b5	c1	d1
	Viscosity.	14	a1, a4,a5	b1, b4	c1	d1
Heat 3h/week	Heat and Energy	1	a1,a4	b1	c1	d1
	Thermal expansion, thermal stresses, heat capacity.	2, 3	a1, a2	b1,b2, b5	c1	d1,
	Heat transfer	4, 5	a1,a4,a5	b1,b5	c1	d1
	Radiation, Stefan-Boltzmann law, the ideal radiator.	6, 7	a1,a3 a5	b1,b5		d1
	The first law of thermodynamics I	8, 9	a1,a3, a4	b1,b3		d1
	The first law of thermodynamics II	10, 11	a2, a3,a5	b1,b3		d1
	The second law of thermodynamics	12, 13	a1, a3	b1,b3		d1
	The Carnot theorem and conversion of energy.	14	a2, a3	b1,b3		d1
Practical physics 4h/week	Introduction	1	a1,a3	b1	C1,c2	d2
	Simple pendulum	2	a1,a5	b1	C1,c2	d2
	Hooks law	3	a1,a3	b1	C1,c2	d2
	Resonance Tube	4	a1,a5	b1	C1,c2	d2
	Archimedes law	5	a1,a3	b1	C1,c2	d2
	Surface tension	6	a1	b1	C1,c2	d2
	Viscosity of a liquid	7	a1	b1	C1,c2	d2
	Specific heat of solid	8	a1,a4	b1	C1,c2	d2
	Latent heat of ice	9	a1,a4	b1	C1,c2	d2
	Latent heat of wax	10	a1,a4	b1	C1,c2	d2
	Newton's law of cooling	11	a1,a3	b1	C1,c2	d2

	Jules law	12	a1,a3	b1	C1,c2	d2
	Mechanical equivalent of heat	13	a1,a3	b1	C1,c2	d2