Specification for Biochemistry and molecular biology course 2019/2020

A-Affiliation

1.	**Relevant program**	Bachelor of Veterinary Medical Science (BVMSc)
2.	**Department offering the course**	Biochemistry

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**	Biochemistry and molecular biology
2.	**Course code**	204 (A) III
3.	**Level**	2nd year
4.	**Semester**	First semester
5.	**Total hours**	4
6.	**Lecture hours**	2
7.	**Practical hours**	2

C-Professional Information

1- Course learning objectives

The course provides the students with the basic education about the respiratory chain and metabolism of carbohydrates and Lipids and their molecular basics

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-Identify and enumerate the basic knowledge about cellular energy production
a2-Describe basis of the metabolism and energy
a3- Illustrate basis of the anabolism
a4- Identify basis of catabolism
a5- Depict basis of metabolic disturbances

b- Intellectual skills

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

b1- Determine the nature of energy in the living cells
b2- Analyze and tracing the relations between the metabolism and diseases.
b3- Judge the changes between the microbial and metabolic diseases

c- Professional and practical skills

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

c1- Practice the accurate chemical reactions concerning with the cell gain energy.

c2- Demonstrate differentiations between the normal and abnormal metabolic pathways

c.3-Investigate the normal homeostasis of the cellular functions.

d- General and transferable skills

After successful completion of the course the students should have the following skills

d1- Communication skill(be a successful member chemists).

d2- Research skills (illustrate a scientific study in the biochemistry laboratories)

d3- Solve scientific problems

3- Course contribution in the program ILOs:

Course ILOS		Program ILOS
A	**Knowledge and understanding**	a^4
B	**Intellectual skills**	b^4
C	**Professional and practical skills**	c^4
D	**General and transferable skills**	$d^{1,2}$

3.1- Course contents:

Topic	**Lecture hours**	**Practical hours**
Biological Oxidations	1	-
Oxidative Phosphorelation	2	4
High energy bonds	2	4
Absorption of carbohydrates	1	4
Aerobic oxidation of carbohydrates	1	-
Anaerobic oxidation of carbohydrates	1	-
Glycogenolysis and Glycogenesis	2	4
Gluconeogenesis	2	4
Blood sugar level	2	4
Glucosuria	2	-
Absorption of lipids	2	-
Transport of lipids and role of lipoproteins	2	2
Oxidation of Fatty acids	2	-
Biosynthesis of Fatty acids	2	2
Depot fat biosynthesis	2	2
Obesity	2	-
Fatty liver	2	-
Total	**30**	**30**

The midterm and practical exams are included during the semester

3.2- ILOs matrix:

Topic	A) Knowledge and understanding	B) Intellectual skills	C) Professional and practical skills	D) General and transferable skills
Biological Oxidations	a1	b1, b2,b3	c1, c2 , c3	d1, d2, d3
Oxidative Phosphorelation	a1, a2, a3	b1, b2,b3	c1, c2 , c3	d1, d2, d3
High energy bonds	a1, a2, a3	b1, b2,b3	c1, c2 , c3	d1, d2, d3
Absorption of carbohydrates	a1, a2, a3	b1, b2,b3	c1, c2 , c3	d1, d2, d3
Aerobic oxidation of carbohydrates	a1, a2, a3	b1, b2,b3	c1, c2 , c3	d1, d2, d3
Anaerobic oxidation of carbohydrates	a1, a2, a3	b1, b2,b3	c1, c2 , c3	d1, d2, d3
Glycogenolysis and Glycogenesis	a3,a4	b1, b2,b3	c1, c2 , c3	d1, d2, d3
Gluconeogenesis	a3,a4	b1, b2,b3	c1, c2 , c3	d1, d2, d3
Blood sugar level	a3,a4	b1, b2,b3	c1, c2 , c3	d1, d2, d3
Glucosuria	a3,a4	b1, b2,b3	c1, c2 , c3	d1, d2, d3
Absorption of lipids	a1, a2, a3	b1, b2,b3	c1, c2 , c3	d1, d2, d3
Transport of lipids and role of lipoproteins	a1, a2, a3	b1, b2,b3	c1, c2 , c3	d1, d2, d3
Oxidation of Fatty acids	a1, a2, a3	b1, b2,b3	c1, c2 , c3	d1, d2, d3
Biosynthesis of Fatty acids	a1, a2, a3	b1, b2,b3	c1, c2 , c3	d1, d2, d3
Depot fat biosynthesis	a1, a2, a3	b1, b2,b3	c1, c2 , c3	d1, d2, d3
Obesity	a5	b1, b2,b3	c1, c2 , c3	d1, d2, d3
Fatty liver	a5	b1, b2,b3	c1, c2 , c3	d1, d2, d3

4- Teaching and learning and assessment methods:

ILOs		Teaching and Learning method							assessment method				
		L	P&M	D&S	P	Ps	Bs	PM	semester	midterm	oral	practical	written
Knowledge and understanding	a1	x	x	x	x	x	x	0	x	x	x	**0**	x
	a2	x	x	x	x	x	x	0	x	x	x	**0**	x
	a3	x	x	x	x	x	x	x	x	x	x	**0**	x
	a4	x	x	x	x	x	x	x	x	0	x	**0**	x
	a5	x	x	x	x	x	x	x	x	0	x	**0**	x
ectu l	b1	x	x	x	x	x	x	0	x	x	x	**0**	x
	b2	x	x	x	x	x	x	0	x	x	x	**0**	x

General and professional skills	b3	x	x	x	x	x	x	x	x	0	x	**0**	x
	c1	**0**	x	x	x	x	x	0	x	0	x	x	**0**
	c2	**0**	x	x	x	x	x	0	x	0	x	x	**0**
	c3	**0**	x	x	x	x	x	0	x	0	x	x	**0**
	d1	x	x	0	x	x	0	0	x	0	x	**0**	**0**
	d2	**0**	x	x	**0**	0	x	0	x	0	x	0	x
	d3	x	x	x	x	x	x	x	x	0	x	x	x

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

5- Assessment timing and grading:

Assessment method	timing	grade
Mid-term exam and semester work	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:

A concise Guide of metabolism edited by biochemistry staff members

6.2- Essential books (text books)

- Rc Gupta (2014) Practical biochemistry
- T.H.El.Metwally (2012) Advanced Topics In Medical & Clinical Biochemistry
- Robert K,Murray (2006) Harper.s illustrated Biochemistry
- Martin A. Crook, (2006): Clinical Chemistry& Metabolic Medicine

6.3- Recommended books

- Course note
- Rc Gupta (2014) Practical biochemistry
- Khalifa, A. (1997): Biochemistry for Medical Students. Fac. Of Med., Ain Shams Univ.
- Bakry, M.A. (1995): Review of Medical Biochemistry. 3rd ed
- Salah, E. (1993): Medical Biochemistry. 2nd. Ed. Fac. of Med., Ain Shams Univ.

6.4- Periodicals, Web sites, . . . etc

- Journal of Biochemistry.
- American Journal of Biochemical Association
- American Journal of Veterinary research
- www.ekb.eg

7- Facilities required for teaching and learning

- Data show
- White board
- Biochemistry laboratory.

- Routine Biochemical kit.
- Faculty central laboratory.

Course coordinator: **Prof. Dr.** Omayma Ahmed Ragab

Head of department **Prof. Dr.** Omayma Ahmed Ragab

Signature

Date 1/10/2019