Beni-Suef University
Faculty of Veterinary Medicine
Department of Biochemistry and chemistry of nutrition

Course Specification

1- Basic information:		
Code No.: S2-BIOC	Course title: Biochemistry	Academic Year: 2nd
Teaching Hours: Lecture: 4 Practical: 3 Total: 7		Specialization: BVSc

2- Overall aims of the Course:

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

Understand the structure, functions and metabolic role of carbohydrates, lipids proteins and vitamins. Identify the role of enzymes in diagnosis of the diseases. Differentiate between anabolic and catabolic pathways of various micro- and macromolecules. Understand and acquire practical skills in laboratory in analyses of various body fluids.

3- Intended Learning Outcomes:

a- Knowledge and Understanding

By successful completion of the course, the student should be able to:

a1. Recall structure and properties of water, buffers, fatty acids, lipids, amino acids, peptides, proteins and nucleic acids.
a2. List various classes of enzymes and vitamins and understand their roles in metabolism.
a3.. Describe the basis of anabolic and catabolic pathways of various micro- and macromolecules.
a4. Outline the biochemical functions of each mineral.
a5. Understand the role of the hormone in controlling cellular metabolism and signaling.
a6. Identify the normal and abnormal constituents of each body fluid.

b- Intellectual Skills

By successful completion of the course, the student should be able to:

b1. Differentiate between the effect of fed state, malnutrition, starvation, exercises, obesity, and diseased conditions on the metabolism of various food stuffs.
b2. Correlate the metabolic abnormalities to various diseases.

b3. Integrate the different metabolic pathways.
b4. Relate the deficiency manifestations to the vitamins or minerals.
b5. Interpret the results of chemical tests to identify an unknown solution.

c- Professional and Practical Skills: By successful completion of the course, the student should be able to:

c1. Identify laboratory reagents and instruments used in biochemistry laboratory.
c2. Measure pH of a solution and recognize the function of blood buffers .
c3. Perform some chemical tests to identify simple unknown of carbohydrates, lipids and proteins.
c4. Examine urine samples and interpret their results.
c5. Measure some blood parameters by spectrophotometer and interpret their results.
c6. Estimate lactose content of milk samples.

d- General and Transferable Skills: By successful completion of the course, the student should be able to:

d1. Follow the general and safety rules of the lab.
d2. Appreciate the danger of handling chemical reagents on people and environment.
d3. Co-operate with others during practical class.
d4. Present clearly and effectively a scientific topic (using computer facilities) in tutorial or a group discussion.

4- Course Contents:

1st semester

Week	Topics	Total (hr)	Lectures (hr)	Practical (hr)
	Course description general biochemistry			
1	Introduction to biochemistry	7	4	3
2- 4	Chemistry of carbohydrates	21	12	9
5 - 6	Chemistry of lipids	14	8	6
7 - 9	Chemistry of proteins &nucleoprotein	21	12	9
10 - 11	Chemistry of enzymes	14	8	6
12 - 13	Chemistry of vitamins	14	8	6
	Student activities: - Writing assays and preparing posters - Internet search			
		91	52	39

2nd semester

Week	Topics	Total (hr)	Lectures (hr)	Practical (hr)
	Course description metabolism and body fluids			
1	Introduction to metabolism	2	2	-
1-3	Metabolism of carbohydrates	19	10	9
4 - 6	Metabolism of lipids	19	10	9
6 - 8	Metabolism of proteins and nucleoproteins	16	10	6
9 - 10	Metabolism of minerals	12	6	6
10	Metabolism of xenobiotics	2	2	-
11	Hormones	7	4	3
12 -13	Body fluids	14	8	6
	Student activities: - Writing assays and preparing posters. - Internet search. - Urine and blood samples collection and preparation. - Writing urine and blood analyses reports.			
	Total	91	52	39

5- Teaching and Learning Methods:	• **Lectures:** depending on the sharing efforts of the students and supported with macromedia and multimedia aids. • **Practical classes**: in which the demonstrators help the students to perform the laboratory tests by themselves. • **Self learning:** Electronic learning, Seminars, scientific search on related websites, international, national and local journals, related books in faculty library. • **Summer training course** • **Assays and reviews** • **Discussion groups**
6- Teaching and Learning Methods for Handicapped:	**Not applicable**
7- Students assessment:	

Methods of assessments:	Schedule	Weighing (degrees)		Intended learning outcomes
		Semester	Final	
a) **Written exam** by the end of each semester	**Week:15, 16,17**	**25**	**50**	**a1 to a6** **b1 to b5**
b) **Practical exam** at the end of each semester	**Week: 14**	**10**	**20**	**a1 to a6** **c1 to c6**
c) **Oral exam** by the end of each semester	**Week: 15, 16, 17**	**10**	**20**	**a1 to a6** **b1 to b5** **c1 to c6** **d1 to d4**
d) **Student activities**	**Along the semester**	**5**	**10**	**a1 to a6** **b1 to b5** **c1 to c6** **d1 to d4**

8- List of References:

a- Course notes:	• Biochemistry and chemistry of nutrition part I and II (prepared by staff members of biochemistry department- 2012) • Practical Biochemistry part I and II(prepared by staff members of biochemistry department- 2012)
b- Essential books:	• 1-Robert Murray, Victor Rodwell, David Bender, Kathleen M. Botham, P. Anthony Weil, Peter J. Kennelly. Harper's Illustrated Biochemistry, 28th Edition,2009. 2- Richard Harvey, Denise Ferrier. Lippincott's Illustrated Reviews: Biochemistry. 5 th Edition. 2010.
c- Recommended books	• 1- Lubert Stryer , Jeremy M. Berg , John L. Tymoczko . Biochemistry. 5th Revised edition. 2002. • 2- David L. Nelson, Michael M. Cox. Lehninger Principles of Biochemistry. 4 th Edition. 2004.
d- Periodicals, websites,…….etc	**Journals:** 1- Egyptian J. of Biochemistry and molecular biology. Cairo, Egypt. 2- Biochemical journal

	http://www.biochemj.org/bj/default.htm 3- Journal of biochemistry and molecular biology http://www.jbmb.or.kr/ **Websites:** 1- NLM Biochemistry http://www.ncbi.nlm.nih.gov/books/bv....TOC&depth =2 2-biochemistry Wikipedia http://en.wikipedia.org/wiki/Biochemistry

The programme specification was discussed and assigned in the department council in:
/ /2012

Course Coordinator **Head of Department**

Name: Prof.: Kamal Adel Amin **Prof. Kamal Adel Amin**
Sig. :
Date :

Course Matrix for Achievement of Intended Learning Outcomes

Topics		Wk	Knowledge and Understanding	Intellectual Skills	Practical and Professional Skills	General & Transferable Skills
1st semester						
1	Introduction to biochemistry	1	a1	b5	c1	d1 –d4
2	Chemistry of carbohydrates	2- 4	a1	b5	c3	d1 –d4
3	Chemistry of lipids	5 - 6	a1	b5	c3	d1 –d4
4	Chemistry of proteins &nucleoprotein	7 - 9	a1	b5	c3	d1 –d4
5	Chemistry of enzymes	10 - 11	a2	b1, b2	c5	d1 –d4
6	Chemistry of vitamins	12 - 13	a2	b4	c5	d1 –d4
2nd semester						
7	Introduction to metabolism	1	a3	b1, b2, b3	c1	d1 –d4
8	Metabolism of carbohydrates	1-3	a3	b1, b2, b3	c5	d1 –d4
9	Metabolism of lipids	4 - 6	a3	b1, b2, b3	c5	d1 –d4
10	Metabolism of proteins and nucleoproteins	6 - 8	a3	b1, b2, b3	c5	d1 –d4
11	Metabolism of minerals	9 - 10	a4	b4	c5	d1 –d4
12	Metabolism of xenobiotics	10	a3	b1, b2	c5	d1 –d4
13	Hormones	11	a5	b1	c5	d1 –d4
14	Body fluids	12 -13	a6	b1	c4, c6	d1 –d4