

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 | 114(B) II |
| 3. | Level | 1 st year |
| 4. | Semester | Second semester |
| 5. | Total hours | 4h/week |
| 6. | Lecture hours | 2 h/week |
| 7. | Practical hours | 2 h/week |

C-Professional Information

1- Course learning objectives

The course provides the students with a basic education about the chemistry of enzymes, vitamins, minerals and detoxication

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 the basic knowledge about enzymes, vitamins, minerals and their classifications
- a2- Illustrate the basic knowledge about chemical composition of enzymes, vitamins, minerals
- a3- List the basis of comparison with other chemical compounds related to enzymes, vitamins, minerals
- a4- Mention the role of enzymes, vitamins, minerals in the living cells and detoxication
- a5- Describe the mechanism of detoxication

b- Intellectual skills

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

- b1- Determine the differences between the types of such basic nutrients found in the nature and in living cells

- b2- Analyze and tracing the appropriate chemical reactions for each compound.
b3- Judge the scheme for such different chemical reactions concerning with them

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 such chemical components.
c2- Prepare the different reagents of such chemical reaction
c.3- Perform and apply the basis of the chemical analysis.

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 |

3.1- Course contents:

| Topic | Lecture hours | Practical hours |
|---|---------------|-----------------|
| Classification of Enzymes | 1 | - |
| Chemical composition of Enzymes | 3 | 6 |
| Enzyme kinetics | 2 | 4 |
| Chemistry of Co-enzymes | 2 | 4 |
| Classifications and functions of Co-enzymes | 1 | - |
| Classification of Vitamins | 1 | - |
| Chemistry of Fat sol. Vitamins | 3 | 4 |
| Chemistry of water sol. Vitamins | 2 | 2 |
| Role of vitamins as Co-enzymes | 1 | 2 |
| Vitamins deficiencies | 2 | - |
| Classification of Minerals | 2 | - |
| Properties of Major elements | 2 | 2 |
| Properties of Trace elements | 1 | - |
| Properties of Electrolytes | 1 | 4 |
| Role of minerals as Co-factors of enzymes | 2 | 2 |
| Minerals deficiency | 2 | - |
| Detoxication | 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 |
|---|--------------------------------------|------------------------------|--|---|
| Classification of Enzymes | a1 | b1, b2,b3 | - | d1, d2, d3, d4 |
| Chemical composition of Enzymes | a2,a3 | b1, b2,b3 | c1, c2 , c3 | d1, d2, d3, d4 |
| Enzyme kinetics | a2, a3, a4 | b1, b2,b3 | c1, c2 , c3 | d1, d2, d3, d4 |
| Chemistry of Co-enzymes | a2, a3,a4 | b1, b2,b3 | c1, c2 , c3 | d1, d2, d3, d4 |
| Classifications and functions of Co-enzymes | a1,a3,a4 | b1, b2,b3 | - | d1, d2, d3, d4 |
| Classification of Vitamins | a1 | b1, b2,b3 | - | d1, d2, d3, d4 |
| Chemistry of Fat sol. Vitamins | a2,a3 | b1, b2,b3 | c1, c2 , c3 | d1, d2, d3, d4 |
| Chemistry of water sol. Vitamins | a2,a3 | b1, b2,b3 | c1, c2 , c3 | d1, d2, d3, d4 |
| Role of vitamins as Co-enzymes | a2,a3,a4 | b1, b2,b3 | c1, c2 , c3 | d1, d2, d3, d4 |
| Vitamins deficiencies | a3,a4 | b1, b2,b3 | - | d1, d2, d3, d4 |
| Classification of Minerals | a1 | b1, b2,b3 | - | d1, d2, d3, d4 |
| Properties of Major elements | a3,a4, | b1, b2,b3 | c1, c2 , c3 | d1, d2, d3, d4 |
| Properties of Trace elements | a3,a4 | b1, b2,b3 | c1, c2 , c3 | d1, d2, d3, d4 |
| Properties of Electrolytes | a3,a4 | b1, b2,b3 | | d1, d2, d3, d4 |
| Role of minerals as Co- factors of enzymes | a3,a4, | b1, b2,b3 | c1, c2 , c3 | d1, d2, d3, d4 |
| Minerals deficiency | a3,a4 | b1, b2,b3 | - | d1, d2, d3, d4 |
| Detoxication | a4,a5 | b1, b2,b3 | - | d1, d2, d3, d4 |

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 |
| a1 | x | x | x | x | x | x | 0 | x | x | x | 0 | x |

| | | | | | | | | | | | | | |
|------------------------------------|----|---|---|---|---|---|---|---|---|---|---|---|---|
| General and practical skills | a2 | x | x | x | x | x | x | x | x | x | x | 0 | x |
| | a3 | x | x | x | x | x | x | 0 | 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 |
| | b1 | x | x | x | x | x | x | 0 | x | x | x | 0 | x |
| | b2 | x | x | x | x | x | x | x | x | x | x | 0 | x |
| | 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 | 6 th week | 15 |
| Practical exam | 14 th 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 General Biochemistry edited by biochemistry staff members

6.2- Essential books (text books)

- Rc Gupta (2014) Practical biochemistry
- dr Acdeb (2008) fundamentals of biochemistry
- R.K. Murray; D.K. Granner; P.A. Mayes, and V.W. Rodwell, (1996): Harper's of Biochemistry. 24th ed. Appleton & Lange. Norwalk, Connecticut, Loss Atlos, California

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

1. Biochemistry laboratory.
2. Routine Biochemical kit.
3. Faculty central laboratory.
4. Computer and internet lab

Course coordinator: Prof. Dr. Omayma Ahmed Ragab

Head of department Prof. Dr. Omayma Ahmed Ragab

Signature

Date 1/10/2019

