



Course specification

University/Academy: Damnhour

Faculty/Institute: Science

Department: Zoology Dept.

1. course Data:

Course code: Zool410	Course title: Molecular biology	Academic year/level: 4 th year / 1 st term 2010/2011		
Specialization: zoolgy	No. of instructional units: lecture	2hrs/ week	practical	2hrs/ week

2. course Aim

- Studying the structures and function of genes, chromosomes, DNA and RNA.
- Understanding the tools used in recombinant DNA technology including: restriction enzymes, host-vector systems, gene isolation and cloning.
- To study the impact of molecular biology and nucleic acids in animal health.
- To understand the application of molecular biology in disease diagnosis, animal breeding bioinformatics and recent advances in biology.
- To enable students to understand the essential topics of biochemistry including micro- and macromolecules of carbohydrates, lipids, proteins, nucleotides and nucleic acids.



- To enable the student to describe the biological membrane, the role of free nucleotides in signal transduction control, and macromolecules involved in transmission of information from gene expression to the formation of functioning proteins.
- To familiarize the students with basic principles of molecular biology and protein synthesis.
- To enable the student to be oriented with the biochemical importance of macro- and micronutrients as well as the structure and functions of enzymes.
- Gain knowledge and skills required to perform laboratory experiments safely with appropriate equipments.
- To approach student to the advanced computational techniques that are applied in modern approaches to solve complex molecular biology problems.
- Use a clear, friendly style that conveys the excitement of research, stimulates imagination, and invites students to learn more.

3. Intended learning outcome



a) Knowledge and understanding	<p>A1: Define molecular biology and differentiate between DNA and RNA structurally and functionally.</p> <p>A2: recognize DNA replication and RNA synthesis.</p> <p>A3: describe the scientific and theoretical backgrounds for molecular diagnostic techniques and to differentiate between their applications.</p> <p>A4: mention the environmental concepts.</p> <p>A5: list the properties and structure of the living cell.</p> <p>A6: list water sources and quality control.</p> <p>A7: Enumerate water pollution sources and control.</p> <p>A8: Describe the structure and properties of carbohydrates, lipids and proteins of biological importance.</p> <p>A9: Describe the structure of cells membrane and point out its importance.</p> <p>A10: Describe the structure of home and proteins of the extra-cellular matrix.</p> <p>A11: Describe the chemistry of nucleotides and nucleic acids.</p>
b) Intellectual skills	<p>B1: evaluate some basic chemical tests to identify different sugars and proteins.</p> <p>B2: Analyze, create, think, identify & solve problem.</p>
c) Professional skills	<p>C1: elicit the observations of chemical tests to identify unknown sugar or protein solutions.</p> <p>C2: examine and describe cells organelles under the microscope.</p>



	C3: prepare & adopts topics into professional application.
d) General skills	D1: Work effectively in a group in lab or during preparation of seminars. D2: Respects the role of staff and co-staff members regardless of degree or occupation. D3: Ability to work in a team to conduct a specific project. D4: Ability to work independently to conduct a specific project. D5: Ability to communicate results of work to others. D6: Ability to conduct searches and restore information.
4. course content	Biophysical principles Protein structure Genetic control Viruses Kinetics of chemical Diffusion Transport phenomena Non equilibrium process.
5. Teaching and learning methods	5.1. Lectures to gain the knowledge and understanding. 5.2. Writing a review paper to gain the skills of self-learning and presentation. 5.3. Practical sessions (small group teaching, practice of laboratory skills, Av aids) for the students to gain practical skills. 5.4. Activities and homework. 5.5. Quizzes during the lectures for a short



	time.
6. teaching and learning methods for students with special needs	-----
7. Student Assessment	
a) Procedures used:	7.1. final-term exam: to assess the student's skills of the overall amount of the course. 7.2. Practical exam: to assess the student skills of practical points of the course.
b) Schedule:	Assessment 1: Semester work Assessment 2: Mid-term Assessment 3: final practical exam Assessment 4: final written exam
c) Weighing of Assessment:	



	Mid-Term Examination: (15) 10%
	Final-Term Examination: (100) 66%
	Oral Examination: 0%
	Practical Examination: (25) 24%
	Semester Work: 10%
	Other types of assessment: 0%
	Total (150) 100%
8. List of Textbooks and References:	-----
a) Course Notes	-----
b) Required Books (Textbooks)	-----
c) Recommended Books	-----
d) Periodicals, web sites,....,etc	http://www.wekepedia.com

Course Instructor: Dr. Ali Eldib

Head of Department: Prof . Karoline Kamel Abdel Aziz

Date: -----/-----/-----