

Programme(s) on which the course is given:	MSc of Fish Biology and Aquatic Ecology
Department responsible for teaching the course:	Zoology
Academic year:	2012-2013
Course title and code:	Biotechnology Z6620
Contact hours (credit hours):	Total: 3 hrs
Course coordinator:	Prof. Dr. Khaled Gibba

A- Basic Information

Title: *Biotechnology*

Code: *Z6620*

Credit Hours: 3

Lecture: 2

Tutorial: 2

Practical: 2

Total: 3

B- Professional Information

1- Overall aims of the course: By the end of this course, the student will be able to:

- A. Demonstrate knowledge of basic concepts in application of DNA and protein technology in biotechnology production of biomaterials used in diagnosis and production of antibodies.
- B. Application of biotechnology to improve our lifestyle.

2- Intended Learning Outcomes (ILOs):

a- Knowledge and Understanding:

- a1- Know the application of nucleic acid and protein techniques in the field of biotechnology.
- a2. Illustrate the production of biomaterials by biotechnology
- a3. Name the biomaterials, drugs, antibodies produced by biotechnology.
- a4. Describe the relationship between transgenic animals and production of biomaterials in their milk
- b5. Describe the production of transgenic animals by cloning techniques

b- Intellectual Skills:

- b1- Conclude different techniques applied in biotechnology
- b2. Synthesis of biomaterials
- b3. Apply and analysis of biomaterials
- b4. Apply of biotechnology in industries and agriculture
- b5. Apply of biotechnology in production of drugs

b6. Modify some methods for production of biomaterials

c- Professional and Practical Skills:

c1- Use appropriate lab equipment and tools for biotechnology.

c2- Design and perform experiments in the lab and field within proper technical, scientific and ethical frameworks for animal use in biotechnology.

c3- Collect, preserve, store and handle samples and specimens obtained for biotechnological techniques.

d- General and Transferable Skills:

d1- Computer-based mining of databases and references about biotechnology.

d2- PowerPoint- based presentations for reports in seminars or group meetings.

d3- Work coherently and successfully as a part of team in projects and assignments.

d4- Study and find information independently, and finding realistic solutions through right analysis and anticipation.

3- Contents:

Topic	No. of hours	Tutorial/ Practical	Lecture
Introduction to the Biotechnology	2	-	2
Introduction to the Biotechnology	2	-	2
Biotechnology and DNA	4	2	2

Biotechnology and DNA	4	2	2
Biotechnology and RNA	4	2	2
Biotechnology and RNA	4	2	2
Biotechnology and protein	4	2	2
Biotechnology and protein	4	2	2
Production of biomaterials used in diagnosis	4	2	2
Production of antibiotics	4	2	2
Applications of Biotechnology in disease diagnosis	4	2	2
Applications of Biotechnology in animal production	4	2	2
Applications of Biotechnology in animal production	4	2	2

4- Teaching and Learning Methods

- 4.1- Lectures
- 4.2- Oral presentations.
- 4.3- Research assignment.
- 4.4- Exams.

5- Student Assessment Methods

- 5.1- Reports to assess collection of course material.
- 5.2- Mid-term exam to assess mid-term performance.
- 5.3- Final exam to assess final term performance.

Assessment Schedule

- Assessment 1: Reports a report/ three weeks.
- Assessment 2: Report defense a presentation/ three weeks.
- Assessment 3: Mid-Term week 8 (Mid-Term week)
- Assessment 4: Final term exam week 15 -16 (final-Term week)

Weighing of Assessments

- Mid-term examination: 20 %.
- Final-term examination 40 %.
- Oral examination 00%
- Practical examination 20%
- Semester work 20%

Other types of assessment	00%
Total	100%

6- List of references

6.1. Essential Books

- Aquaculture and Fisheries Biotechnology: Genetic Approaches. By: Rex A. Dunham, 2011.
- Biotechnology: Academic Cell Update. By: David P. Clark, Nanette J. Pazdernik, 2010.
- Biotechnology: Our Future As Human Beings and Citizens. By: Sean D. Sutton, 2009.

6.2. Recommended Books:

- Biotechnology: The Science and the Business. By: V. Moses, D. G. Springham, Ronald E. Cape, 1999.
- Biotechnology unzipped: promises & realities. By: Eric S. Grace, 1997.
- Environmental Biotechnology: Principles and Applications. By Murray Moo-Young, William A. Anderson, Ananda M. Chakrabarty, 1996.

6.3. Periodicals, Websites,etc

- Google books: <http://books.google.com/bkshp?hl=en&tab=wp>
- <http://www.sciencedirect.com/>
- <http://www.ncbi.nlm.nih.gov/pubmed/>
- Nucleotide database:
<http://www.ncbi.nlm.nih.gov/nuccore>
- Protein database:
<http://www.ncbi.nlm.nih.gov/protein>

7- Facilities Required for Teaching and Learning:

- Dark class room equipped with Data show device and a high-speed internet connection.
- Molecular biology lab equipped with: PCR cycler, electrophoresis units, trans-illuminator, incubator and water path-shaker.
- Slide microscopes.
- Different DNA staining and banding dyes.

Course coordinator: Dr. Khaled Gobba

Head of Department: Prof. Dr. Saber Sakr

Date: 2013

5. 2. Elective Faculty required courses (6 hours):

Code	Course Title	No. of hourse			Programme ILOs covered (by No)
		Lect.	Prac t.	Total	
F601	Statistics	2	-	2	
F602	Computer sciences	2	-	2	
F603	Language	2	-	2	
F604	Methods of Scientific research	2	-	2	
F605	Nature reserves	2	-	2	