

A- Basic InformationTitle: *Biotechnology*

Credit Hours: 3

Tutorial: 2

Code: Z6620

Lecture: 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

Leftwich,A.w (1983): A Dictionary of Entomology

Hassan, M. D. A (2003): Chemical studies on the behavior of some pesticides on some environmental elements

Fulekar ,M.H (2010):Bioremediation technology recent advances

AFIFY,D.G.D(2011): Biochemical and ecological studies

6.2. Recommended Books:

THABIT,T.M.A (2007): Biochemical studies on the contamination of two soybean

O'Donnell, C.P(2012):Ozone in food processing

Handa,S.K (2012): principles of pesticide chemistry

Hodgson ,Emest (2012): pesticide biotransformation and disposition

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/nucore>
- 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.

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