

Course Specification

Programme on which the course is given: M.Sc. Zoology (Genetic engineering and molecular biology).

Major or Minor Element of Programme:

Department offering the programme: Zoology

Department offering the course: Zoology.

Academic Year/Level: 2012

Date of Specification approval: 2012

A- Basic Information

Title: *DNA fingerprints*

Code: Z6615

Credit Hours: 3

Lecture: 2

Tutorial: 2

Practical: 2

Total: 2

B- Professional Information**1- Overall aims of the course:**

By the end of this course, the student will be able to demonstrate knowledge of basic concepts in

- Genome, different types of DNA and isolation of DNA from bone.
- Micro satellite and DNA fingerprint.
- DNA patterns distinguish individual.
- Human multi-gene family and repetitive DNA .
- Application of DNA fingerprint in crime and relativity proof.

2- Intended Learning Outcomes (ILOs):**a- Knowledge and Understanding:**

- a1- Give an account of the genome
- a2. Summarize different types of DNA
- a3. Illustrate human multi-gene family and repetitive DNA
- a4. Describe multi-locous and single loco use DNA fingerprint
- a5. Summarize the application of DNA fingerprint
- a6. Know techniques applied in DNA fingerprint

b- Intellectual Skills:

- b1- Compare between different types of DNA
- b2. Analyze the main items of genome
- b3. Determine the multi and single locus that used in DNA fingerprint
- b4. Evaluate the human multigene family, repetitive DNA and satellite DNA in DNA fingerprint
- b5. Evaluate and apply techniques of DNA fingerprint

c- Professional and Practical Skills:

- c1- Use appropriate lab equipment and tools for DNA fingerprinting.
- c2- Design and perform experiments in the lab and field within proper technical, scientific and ethical frameworks for animal use in DNA fingerprinting .
- c3- Collect, preserve, store and handle samples and specimens obtained for DNA fingerprinting.

d- General and Transferable Skills:

- d1- Computer-based mining of databases and references about DNA fingerprinting.
- 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 genome	2	-	2
Different types of DNA	4	2	2
Isolation of DNA from bones	4	2	2
Microsatellites and DNA fingerprints	4	2	2
Individual variations of DNA patterns	4	2	2
Individual variations of DNA patterns	4	2	2
Multigene families and repetitive DNA	4	2	2
Multigene families and repetitive DNA	4	2	2
Multilocus and single locus DNA	4	2	2

fingerprinting			
DNA fingerprinting techniques	4	2	2
DNA fingerprinting techniques	4	2	2
Forensic applications of DNA fingerprinting	4	2	2
Forensic applications of DNA fingerprinting	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

- Trends in DNA fingerprinting research. By: M. M. Read, 2005.
- Focus on DNA fingerprinting research. By: Marina May, 2006.

- DNA fingerprinting: the ultimate identity. By: Ron Fridell, 2001.

6.2. Recommended Books:

- DNA profiling and DNA fingerprinting. By Jörg T. Epplen, Thomas Lubjuhn, 1999.
- DNA Fingerprinting: An Introduction. By Lorne T. Kirby, 1993.
- DNA fingerprinting: state of the science. By: Sergio D. J. Pena, 1993.

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>
- DNA fingerprintin-interactive lab:
<http://www2.edc.org/weblabs/DNAfingerprinting/DNAfingerprintingMenu.html>

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: Prof. Sobhy Hassab El-naby

Head of Department. Prof. Saber Sakr