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 progarmme: Zoology

Department offering the course: Zoology.

Academic Year/Level: 2012

Date of Specification approval: 2012

A- Basic Information

Title: *Genetic techniques* Code: *Z6614*

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:

Demonstrate knowledge of basic concepts in diagnostic techniques in genetics, diagnosis of inherited disease, screening and identification of pathogenic and exogenic agents and identification using genetic fingerprints

2- Intended Learning Outcomes (ILOs):

a- Knowledge and Understanding:

a1- Describe the different types of genetic techniques

a2. Summarize different diagnosis of genetic disease

a3. Explain the screening and identification of pathogenic and exogenic agents.

a4. Give an account of DNA fingerprints and its applications

b- Intellectual Skills:

b1- Conclude the diagnostic genetic techniques

b2. Analyze and interpret the results of the analysis.

b3. Evaluate the pathogenic and exogenic agents

b4. Apply the DNA fingerprints in our life.

c- Professional and Practical Skills:

c1- Use appropriate lab equipment and tools for genetic techniques.

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

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

d- General and Transferable Skills:

d1- Computer-based mining of databases and references about different for genetic techniques.

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
Genetic diagnosis techniques	4	2	2
Genetic diagnosis techniques	4	2	2
Molecular biology techniques used in genetics	4	2	2
Molecular biology techniques used in genetics	4	2	2
Molecular biology techniques used in genetics	4	2	2
Diagnosis of inherited diseases	4	2	2
Diagnosis of inherited diseases	4	2	2
Screening and identification of pathogenic and exogenic agents	4	2	2
Screening and identification of pathogenic and exogenic agents	4	2	2
Genetic fingerprinting: applications in diagnosis	4	2	2
Genetic fingerprinting: applications in diagnosis	4	2	2
Environmental genetics	4	2	2
Environmental genetics	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

- Computational Methods for Analyzing Human Genetic Variation. By: Vikas Bansal, 2008.
- The Zebrafish: Genetics, Genomics, and Informatics. By: H. William Detrich, Monte Westerfield, Leonard I. Zon, 2004.
- Mobile Genetic Elements: Protocols and Genomic Applications. By: Wolfgang J. Miller, Pierre Capy, 2004.

6.2. Recommended Books:

- Genetic Methods for Diverse Prokaryotes. By: Margaret C. M. Smith, R. Elizabeth Sockett, 1999.
- Genetic manipulation: techniques and applications. By: John M. Grange, Arnold Fox, Neil L. Morgan, 1991.

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
- Sanger Institute genome database: www.sanger.ac.uk

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.

Course coordinator: Prof. Sobhy Hassab El-naby

Head of Department. Prof. Saber Sakr