# 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: *Mutagenicity* Code: *Z662*
Credit Hours: 2 Lecture: 2
Tutorial: 2 Practical: - Total: 2

## B- Professional Information

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

1- Know the mutagenic agents, their mechanisms, and different types of mutations.

2- Apply the relation between mutation and genetic disorder.

2- Intended Learning Outcomes (ILOs):

**a- Knowledge and Understanding:**

a1- Define the mutagenic agents and their classifications.

a2- Understand different types of mutations.

a3- Describe some cases of genetic disorders.

**b- Intellectual Skills:**

b1- Conclude the mutagenic substances.

b2- Evaluate different types of mutations.

b3- Diagnose some genetic disorders induced by mutagens.

**c- Professional Skills:**

c1- Distinguish between mutagens, teratogens, and carcinogens.

c2- Demonstrate the mechanisms of mutations.

c3- Designing and carrying out experiments based on different mutation tests.

**d- General and Transferable Skills:**

d1- Write reports about some genetic disorders.

d2- Computer-based mining of databases and references about mutations and mutagens.

d3- PowerPoint- based presentations for reports on mutagenicity and mutagens in seminars or group meetings.

d4- Work coherently and successfully as a part of team in projects and assignments.

d5- Study and find information independently, and finding realistic solutions through right analysis and anticipation.

3- Contents:

| Topic | No. of hours | Tutorial/ Practical | Lecture |
|---|---|---|---|
| Mutagenic agents | 2 | - | 2 |
| Mutagenic agents | 2 | - | 2 |
| Mutagenic agents | 2 | - | 2 |
| Mutagenic agents | 2 | - | 2 |
| Interaction DNA- Mutagens | 2 | - | 2 |
| Interaction DNA- Mutagens | 2 | - | 2 |
| Interaction DNA- Mutagens | 2 | - | 2 |
| Interaction DNA- Mutagens | 2 | - | 2 |
| Interaction DNA- Mutagens | 2 | - | 2 |
| Types of mutations-Introduction | 2 | - | 2 |
| Types of mutations-point mutations | 2 | - | 2 |
| Types of mutations-dynamic mutations | 2 | - | 2 |
| Types of mutations-dynamic mutations | 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 | 60 %. |
| Oral examination | 00% |
| Practical examination | 00% |
| Semester work | 20% |
| Other types of assessment | 00% |
| Total | 100% |

## 6- List of references

### 6.1. Essential Books

- Mutation testing for the new century. By: W. Eric Wong, 2001.
Molecules of Life & Mutations: Understanding Diseases by Understanding Proteins. By: Siegfried Schwarz, 2002.
- PCR Mutation Detection Protocols. By: Bimal D. M. Theophilus, Ralph Rapley, 2001.
- Mutation: the history of an idea from Darwin to genomics. By: Elof Axel Carlson- 2011.

### 6.2. Recommended Books:

- Mutation: an introduction to research in mutagenesis. By: Charlotte Auerbach, 1962.
- Discovering Molecular Genetics. By Jeffrey H. Miller, 1996.
- Mutation Breeding: Theory and Practical Applications. By: A. M. Van Harten, 1998.

### 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/
- The Transporter Mutagenesis Database: http://physiology.sci.csupomona.edu/GATMD/
- Insertional Mutagenesis Databases: http://gmod.org/wiki/Insertional_Mutagenesis_Database_%28IMDB%29, http://imdb.nki.nl/

**7- Facilities Required for Teaching and Learning:**

- Dark class room equipped with Data show device.
- 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**