COURSE SPECIFICATION

Faculty of Medicine– Mansoura University

(A) Administrative information

(1) Program offering the course:	Doctorate degree of Medical Parasitology
(2) Department offering the program:	Department of Medical Parasitology
(3) Department responsible for teaching the course:	Department of Medical Parasitology
(4) Part of the program:	second part
(5) Date of approval by the Department`s council	5-9-2016
(6) Date of last approval of program specification by Faculty council	9-8-2016
(7) Course title:	Advanced molecular biology
(8) Course code:	PAR 608 AMB
(9) Total teaching hours:	60 hours/30weeks
(10) Credit hours	4 hours

(B) Professional information

(1) Course Aims:

- To enable students to study a wide range of molecular biology topics in depth.

-To provide the candidate with the recent molecular tools used in parasitology and their possible application in diagnosis of human parasitic and zoonotic diseases.

- To provide the candidate with mode of action and mechanism of resistance of different anti-parasitic agents at the molecular level.

- Provide the student the substantial knowledge about epigentics principles, and their importance in the Parasitology field.

-To enhance students' conceptual, analytical and generic skills to use them in the PhD program.

(2) Intended Learning Outcomes (ILOs):

On successful completion of the course, the candidate will be able to:

A- Knowledge and Understanding:

A1 A2	Explain the principles of molecular diagnostic techniques and recognize their application in Parasitology Define the principles of epigenetic control and recognize its importance in parasitology
A3 A4	Identify cloning vectors Recognize different methods of DNA sequencing
A5 A6	List methods of gene expression Know the basics of electrophoresis
A7	Explain gene library, hybridization technique and gene probes

B- Intellectual skills:

B1	Select the suitable cloning vector
B2	Select proper molecular diagnostic tools and to justify their use, advantage and indications.
B3	Predict the suitable electrophoresis method according to the sample

B4	Apply alignment to multiple sequences
B5	Analysis of sequence data

(3) Course content: Total teaching hours (60 hours)

Subject	NO. of teaching Ws	Total teaching hours	
		Lecture / week	Total
Nucleotide sequencing of DNA	2	2	4
Gene libraries	2	1	2
Cloning vectors	2	1	2
Hybridization and gene probes Epigenetic control	2 1	2 2	4 2
Applications of gene cloning	2	1	2
Expression of foreign genes	3	2	6
Analyzing genes and gene expression	2	2	4
Electrophoresis	3	2	6
Analysis of sequence data	3	3	9
Sequence alignment and phylogenetic analysis	3	3	9
Special topics in molecular parasitology: -Genotyping in protozoa (*Giardia & toxoplasma*) - Molecular diagnosis of human parasites	 2 3	 2 2	 4 6
Total	30		60

(4) Teaching methods:

4.1: Lectures

4.2: Student Power point presentation

4.3: Small group discussion and quiz

(5) Assessment methods and schedule:

5.1: multiple choice question exam: after completing the course, 10 min (at the end of each semester).

5.2: Written exam: after completing the course, 3 hours (at the end of 6th semester)

Percentage of each assessment to the total mark:

Tools	Marks	Percentage of the total mark
Continuous assessment (MCQ)		10
Written exam		40
Total	50	

Other assessment without marks: seminars as described above included in the log book.

(6) References of the course:

A) Text books (available at the library):

1- Molecular Biology: Principles of Genome Function, 2014.

2- Molecular Biology techniques: A Classroom Laboratory Manual, 2012.

3- Modern Clinical Molecular Techniques, 2012.

B) Web sites:

1- University of Glasgow/Institute of Molecular, Cell and Systems Biology (http://www.gla.ac.uk/researchinstitutes/biology/)

2- Kenyon College, program in Biochemistry and Molecular Biology (http://biology.kenyon.edu/BMB/websites.htm)

C) Useful links:

1- PubMed: http://www.ncbi.nlm.nih.gov/pubmed/

2- Entrez: http://www.ncbi.nlm.nih.gov/gquery/

3- REBASE Homepage: http://rebase.neb.com/rebase/rebase.html

4- BLAST: http://blast.ncbi.nlm.nih.gov/Blast.cgi

5- https://www.neb.com/

6- http://www.yourgenome.org/

(7) Facilities and resources mandatory for course completion:

Lecture halls and data show.

Research laboratories: the department has two research laboratories equipped with instruments needed for the course including:

- PCR machine
- Electrophoresis set
- Ultracentrifuge

- Computer for Data analysis.

Course coordinator: Dr. Amira Taman

Head of the department: Prof. Hala EL-Nahas