



**The University of Jordan**  
**Accreditation & Quality Assurance Center**

**Course Syllabus**

**Course Name:**

Molecular toxicology

1	Course title	Molecular toxicology
2	Course number	0531705
3	Credit hours (theory, practical)	3 Credit hours
	Contact hours (theory, practical)	
4	Prerequisites/corequisites	None
5	Program title	Master Of Analytical Toxicology
6	Program code	46
7	Awarding institution	University Of Jordan
8	Faculty	School of Medicine
9	Department	Pathology, microbiology and Forensic medicine _
10	Level of course	Master Degree
11	Year of study and semester (s)	1 <sup>st</sup> Semester
12	Final Qualification	Master Of Analytical Toxicology
13	Other department (s) involved in teaching the course	Na
14	Language of Instruction	English
15	Date of production/revision	26/10/2016

#### 16. Course Coordinator:

*Dr. Hasan Abder-Rahman*  
*Office numbers: 2nd floor-Faculty of Medicine*  
*office hours,*

Office hours	
Day	Sunday
Time	8-10 am

*email address: toxico@ju.edu.jo*

#### 17. Other instructors:

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**18. Course Description:**

The course will cover the DNA extraction, quantitation, electrophoresis, analysis, and genotoxicity assessment. These subjects will be covered theoretically and practically. For this purpose tuitions in the form of seminars and laboratory work will be carried out. Assessment is through assignments, short essay questions and final examination using essay questions. For the recommended references, students are encouraged to use the available molecular books in addition to use the up to date references available on the scientific website.

**19. Course aims and outcomes:****A- Aims:**

The course aimed at setting the foundation for the practical techniques that were used to study the effect of toxicants on the macromolecules especially the DNA.

**B- Intended Learning Outcomes (ILOs):** Upon successful completion of this course students will be able to ...

***Subject Specific Skills:***

At the end of the course students will be able to:

1. Know and understand the definitions related to the scope and application of applied molecular toxicology.
2. Understand the different factors that influence techniques used in molecular toxicology analysis
3. Realize the duties and application of applied molecular toxicology disciplines

***Subject Specific Skills:***

At the end of the course students are expected to know

1. How to identify and evaluate factors influencing techniques used in molecular toxicology analysis
2. Basic principles of techniques used in molecular toxicology analysis
3. Principles of different applications of techniques used in molecular toxicology analysis
4. How to research the literature to answer questions regarding techniques used in molecular toxicology analysis
5. Evaluate data regarding inter-related scientific principles to understand how and why processes and events with critical evaluation of current literature.
6. Compose and practice effective written and oral communication regarding issues in this techniques used in molecular toxicology analysis course

***Core Academic Skills:***

4. At the end of the course students are expected to build up knowledge and scientific skills regarding the application of techniques used in the different branches of molecular toxicology analysis.

***Personal and Key Skills:***

1. Acquire knowledge of the fundamental principles of techniques used that are essential to different application in molecular toxicology analysis.
2. Know the outlines of different types of application and discipline of techniques used in molecular toxicology analysis.

**20. Topic Outline and Schedule:**

Topic	Week	Instructor	Achieved ILOs	Evaluation Methods	Reference
Introduction to molecular toxicology	1				
Principles of DNA extraction, Sources of biological materials and tissue and DNA preservation	2				
Conventional technique, Other techniques	3				
DNA extraction lab.	4				
DNA extraction lab	5				
<b>Midterms Exam</b>	6				
Introduction to DNA quantization and quality assessment	7				
Spectrophotometer and spectrofluorometer	8				
Spectrophotometer and spectrofluorometer practical lab.	9				
DNA electrophoresis, principles, types of electrophoresis	10				
DNA electrophoresis lab	11				
PCR analysis	12				
RFLP	13				

PCR analysis lab	14				
Comet assay	15				
Comet assay lab	16				
DNase activity	17				
<b>Final Exam</b>	18				

### 21. Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:

Seminars by individuals to encourage developing skills of self expression, group discussions to encourage team work. Attendance of the teaching activities is mandatory and will be followed up according to the university regulations. Teaching tools include transparencies, PowerPoint presentations. Carry out practical laboratory experiments related to the discussed applied molecular subjects.

**Assignments:** -

Each student is assigned a few topics from the course syllabus in which he/she explores the assigned references, literature and internet where he/she will write an essay in organized scientific style which will be presented and discussed with the other colleagues in a form of seminar.

**Assessment :-**

Midterm exam 30%, Assignments essays, presentation, attendance and discussion...ext 30%, Final Exam 40%.

### 22. Evaluation Methods and Course Requirements:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

Evaluation

☑ Exams:

-Mid Theory: 20-30%

-Final Theory: 40%

☑ In-Course: 20-30%

Assignments essays, presentation, attendance and discussion

**23. Course Policies:**

A- Attendance policies:

B- Absences from exams and handing in assignments on time:

C- Health and safety procedures:

D- Honesty policy regarding cheating, plagiarism, misbehavior:

E- Grading policy:

F- Available university services that support achievement in the course:

**24. Required equipment:****25. References:****INDICATIVE BASIC READING LIST/RELATED WEBSITES**

- 1- Use the up to date references available on the scientific website
- 2- Use the available molecular biology books

**26. Additional information:**

Name of Course Coordinator: -----Signature: ----- Date: -----

Head of curriculum committee/Department: ----- Signature: -----

Head of Department: Prof. Abdelkader Battah Signature: -----

Head of curriculum committee/Faculty: ----- Signature: -----

Dean: ----- -Signature: -----

Copy to:

Head of Department  
Assistant Dean for Quality Assurance  
Course File