



# Course Specification

(Postgraduate)

**Course Title:** Approaches to diagnosis and management of molecular disorders

**Course Code:** 373506-4

**Program:**

Master of Clinical Laboratory Sciences in Molecular Diagnostics

**Department:** Clinical Laboratory Sciences

**College:** Applied medical Sciences

**Institution:** Taif University

**Version:** No 3

**Last Revision Date:** 18/01/2024



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## A. General information about the course:

### 1. Course Identification:

<b>1. Credit hours: (4 hrs.)</b>			
<b>2. Course type</b>			
A.	<input type="checkbox"/> University	<input type="checkbox"/> College	<input checked="" type="checkbox"/> Department <input checked="" type="checkbox"/> Track
B.	<input checked="" type="checkbox"/> Required		<input type="checkbox"/> Elective
<b>3. Level/year at which this course is offered: (2<sup>nd</sup> level/1<sup>st</sup> year)</b>			
<b>4. Course general Description:</b>			
This course is designed to introduce students to different Molecular technologies used widely to identify variable molecular abnormalities that are related to different disorders and provide fundamental principles of diagnosis and management modalities in inherited human diseases NOW and potentially in FUTURE.			
<b>5. Pre-requirements for this course (if any):</b>			
None			
<b>6. Pre-requirements for this course (if any):</b>			
None			
<b>7. Course Main Objective(s):</b>			
It aims to empower students with basic knowledge of molecular technologies and current treatments in field of inborn error of metabolism as well as disorders due to genetic causes. Additionally, it provides a scope on current molecular technologies and potential novel treatments in field of medical molecular technologies genetics to enhance graduates to contribute in generating new ideas for translational researches to bridge the gap between basic sciences and clinical practice.			

### 2. Teaching Mode: (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	40	100%
2	E-learning	N/A	0
3	Hybrid	N/A	0
	<ul style="list-style-type: none"> <li>• Traditional classroom</li> <li>• E-learning</li> </ul>		
4	Distance learning	N/A	0
5	Others	N/A	0



### 3. Contact Hours: (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	60
2.	Laboratory/Studio	N/A
3.	Field	N/A
4.	Tutorial	N/A
5.	Others (specify).....	N/A
Total		60

### B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Code of PLOs aligned with program	Teaching Strategies	Assessment Methods
<b>1.0</b>	<b>Knowledge and understanding</b>			
1.1	Display the impact of molecular technology in the diagnosis and management molecular disorder	K1	Lectures, Problem based learning	- Group Discussion - Exam
1.2	Explain different molecular techniques that are used for management, development and innovation of molecular therapy and treatments	K2	Lectures, Problem based learning	- Group Discussion - Exam
<b>2.0</b>	<b>Skills</b>			
2.1	Evaluate theory and processes of current molecular techniques used to diagnose human disease.	S1	Lectures, Problem based learning	- Group Discussion - Exam
2.2	Assess molecular approaches for the diagnosis and management of common and rare molecular disorder	S2	Lectures, Problem based learning	- Group Discussion - Exam





Code	Course Learning Outcomes	Code of PLOs aligned with program	Teaching Strategies	Assessment Methods
3.0	Values, autonomy, and responsibility			
3.1	Commit to the ethical considerations of the molecular biology and patient rights.	V1	Lectures, Problem based learning	Case Report
3.2	Adapt challenges in the process of developing molecular disorder management approaches'	V3	Lectures, Problem based learning	Case Report

### C. Course Content:

No	List of Topics	Contact Hours
1.	Genomic Technologies in Diagnosis	4
2.	Genomic Technologies in Diagnosis	4
3.	Molecular Biomarkers in Disease Diagnosis and Prognosis	4
4.	Genome and Transcriptome Analysis	4
5.	Bioinformatics in Molecular Diagnosis	4
6.	Molecular Diagnosis of Chromosomal Disorders	4
7.	Molecular Diagnosis of Mutation and Inherited Diseases	4
8.	Molecular Diagnosis for Oncology	4
9.	Molecular Diagnosis of Infectious Diseases	4
10.	Integrative Approaches in Molecular Medicine	4
11.	Therapeutic Strategies in Molecular Medicine	4
12.	Case Studies in Rare Molecular Disorders (Discussion)	4
<b>Total</b>		<b>60</b>

### D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Case Report	6 <sup>th</sup> Week	20%
2.	Midterm Exam	10 <sup>th</sup> Week	25%
3.	Group Discussion	16 <sup>th</sup> week	15%
4.	Final exam	19 <sup>th</sup> week	40%
	Total		100%





\*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

## E. Learning Resources and Facilities:

### 1. References and Learning Resources:

<b>Essential References</b>	<p>-Diagnostic Molecular Pathology A Guide to Applied Molecular Testing 2nd Edition</p> <p>- Molecular Diagnostics: Fundamentals, Methods, and Clinical Applications 3rd Edition by <a href="#">Lela Buckingham PhD MB DLM</a></p> <p>- Gene and Cell Therapy: Therapeutic Mechanisms and Strategies, Fourth Edition 4th Edition by <a href="#">Nancy Smyth Templeton</a></p>
<b>Supportive References</b>	N/A
<b>Electronic Materials</b>	International Journal of Medical Science and Innovative Research Saudi Digital Library
<b>Other Learning Materials</b>	N/A

### 2. Educational and Research Facilities and Equipment Required:

Items	Resources
<b>facilities</b> (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classrooms
<b>Technology equipment</b> (Projector, smart board, software)	Data show and Blackboard
<b>Other equipment</b> (Depending on the nature of the specialty)	-



## F. Assessment of Course Quality:

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Peer evaluators	Direct: Peer evaluation
Effectiveness of student's assessment	Students	Indirect: Questionnaire Survey at the end of each semester.
Quality of learning resources	Program Leaders /Teaching staff/ Development and accreditation committee	Indirect: Review by Department Committee
The extent to which CLOs have been achieved	Program Leaders /Teaching staff/ Development and accreditation committee	Indirect: Review course reports and program annual reports by Department Committee
Other	-	-

**Assessor** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

**Assessment Methods** (Direct, Indirect)

## G. Specification Approval Data:

<b>COUNCIL /COMMITTEE</b>	Department council
<b>REFERENCE NO.</b>	06
<b>DATE</b>	21/01/2024

