Course Specification
(Postgraduate)

Course Title:	Current developments in molecular diagnostics
Course Code:	373524-2
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

Table of Contents

A. General information about the course:

1. Course Identification:

1. Credit hours: (2 hrs.)				
2. Course type				
A.	☐ University	☐College	☒ Department	☒ Track
B.	☒ Required		☐Elective	
3. Level/year at which this course is offered: (4th level/2nd year)				
4. Course general Description:				
The use of molecular diagnostics has accelerated in recent years, Indeed, integrated molecular diagnostics have now become a feature of even basic laboratories. This course focuses on molecular tests that have been implemented, the advantages of these new technologies over old methods. The importance of these advances can give a push to develop tests that can be used at the bedside of the patient, which can allow a timely result where a treatment decision can be made.				
5. Pre-requirements for this course (if any):				
6. Pre-requirements for this course (if any):				
None				
7. Course Main Objective(s):				
Students should be able to: **1- Introduce the students to the updated molecular diagnostics in different clinical fields.** **2- Develop the understanding of the dynamic demands for the molecular diagnostics tools.** **3- Provide a scientific integrity of the different molecular disorders and the importance of developing new methodologies and approaches for their diagnosis.**				

2. Teaching Mode:

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	2 hrs./week	100
2	E-learning	N/A	0
3	Hybrid • Traditional classroom • E-learning	N/A	0
4	Distance learning	N/A	0

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

No	Activity	Contact Hours
1.	**Lectures**	30
2.	**Laboratory/Studio**	N/A
3.	**Field**	N/A
4.	**Tutorial**	N/A
5.	**Others (specify)……**	N/A
	Total	30

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

Code	Course Learning Outcomes	Code of PLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Recognize the updated molecular diagnostics in different clinical fields	K2	Interactive lecture	Assignment Quiz
2.0	Skills			
2.1	Incorporate an adaptive mindset to understand the difficulties of diagnosing at the molecular level.	S1	Seminars Group Discussions	Case-based individual essay Rubric Clinical laboratory troubleshooting
3.0	Values, autonomy, and responsibility			
3.1	Adapt the advanced and technological tools for new methods and technology generation and innovation.	V2	Group Project Problem-based learning (PBL)	Project report Project presentation Case analysis
3.2	Initiate solutions to current and future needs in the organization of clinical diagnosis services..	V4	Group Project, Problem based learning (PBL)	Project report Project presentation Case analysis

C. Course Content:

No	List of Topics	Contact Hours
1.	Introduction to the molecular diagnostics current research and applications	2 hours
2.	**Advanced Techniques for** infectious diseases	4 hours
3.	**Advanced Techniques in Immunology**	4 hours
4.	**Advanced Techniques in Molecular genetics**	4 hours
5.	Epigenetics	2 hours
6.	**Advanced Techniques in cancer**	4 hours
7.	Biomarkers	2 hours
8.	**Advanced Techniques of metabolic diseases**	2 hours
9.	Molecular diagnostics approaches: case study	2 hours
10.	Up-coming molecular diagnostics: Overview	4 hours
	Total	**30**

D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Assignment (3)	One each 3 weeks	60%
2.	Case presentation	19th 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:

Essential References	van Pelt-Verkuil, Elizabeth, W. B. Van Leeuwen, and R. Te Witt, eds. ***Molecular Diagnostics: Part 2****: Clinical, Veterinary, Agrobotanical and Food Safety Applications*. Springer, 2017. O'Grady, Justin, and Jim Huggett. "**Molecular Diagnostics: Current Research and Applications**." (2014).
Supportive References	N/A
Electronic Materials	International Journal of Medical Science and Innovative Research Saudi Digital Library
Other Learning Materials	

2. Educational and Research Facilities and Equipment Required:

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Traditional classrooms
Technology equipment (Projector, smart board, software)	Data show, Blackboard and A/V, interactive presentations softwares e.g. https://www.mentimeter.com/
Other equipment (Depending on the nature of the specialty)	N/A

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 (Filed experience)	Filed supervisors/ Project supervisors/Clinical Laboratory specialist	Indirect: Questionnaire Survey at the end of each semester.

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

G. Specification Approval Data:

COUNCIL /COMMITTEE	Department council
REFERENCE NO.	06
DATE	**21/01/2024**