A COURSE MODULE DESCRIPTOR FORM

Module Information			
Course Module Title	Lab devices		
ناوی کۆرس مۆدیول	ئامێرەکانی تاقیگە		
عنوان الوحدة	أجهزة المختبر		
Course Module Type	Type Core	**Module Code**	ML 302
ECTSs	7		
Department	Medical laboratory technician		
Department Code	ML		
Module Website (CMW)	nobleinstitute.krd		
Module Leader (ML)	Dr. Rabar Mohammed Hussein		
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Relation with Other Modules (Please specify)	
Pre-requisites	nA
Module Aims, Learning Outcomes and Indicative Contents	
Module Introductory Description	The course provides an introduction to Laboratory Devices with main focus on laboratory analysis, centrifuge and Spectrophotometer, sample preparation, Heating equipment …..
Module Aims	It will introduce the student to modern laboratory Devices methods of medical analysis. The topics included such as biological and chemical analysis. Working on problems of identification and quantification associated with chemical, physical or biological processes. It will enable to develop transferable skills of the type that graduates will need in their professional careers including scientific and analytical thinking, presenting written material, record keeping and research and time management

Module Learning Outcome	1. The students will have a broad understanding of the scope of Medical laboratory devices and its applications. 2. Introduce students to the fundamental aspects of heating equipment as it relates with their working in the lab. 3. The students will identify and be able to choose appropriate Physical or chemical methods for each equipment, materials, surfaces, and tools in the laboratory. 4. Recognize various Laboratory devices that have been used In the Medical Laboratories. 5. The students will be able to applying different devices in the Laboratory. 6. The students will be able to discuss, develop and apply the Concepts of laboratory devices and principles.
Learning and Teaching Strategies	

Strategies	Instruction includes lectures, seminars, workshops, case studies, simulations, classroom teaching, project and problem-based teaching, individual supervision, group supervision, master classes, role-play, field work, laboratory work, maths jams and project-oriented teaching, textbook studies, case methods, group work, placements and field work, work experience, excursions, project-based and teaching based within research medical analysis, clinical skills training.

Required texts and References

Basic medical laboratory

- Clinical core laboratory testing by Ross Molinaro
- Christopher R. McCudden .arjorie Bonhomme, Amy Saenger.2017
- Barbara H. Estridge , Anna P. Reynolds.2. Hand Book Of Analytical Instruments,3rd Edition, By R S

Khandpur, Published: July 27, 2015.

Module Delivery	
Total workload Per week	
Contact Theoretical Hours – Per term	30
Contact Practical Hours – Per term	15

Module Assessment			
The following activities or any other activities that match the Bologna process can be performed			
Module Activities	**Time /Number**	**Weight (Marks)**	**Week Due**
Contact hours – Participation	Daily bases	5%	Weekly
(Science / Lab) (Social science / Critical thinking)	5	5%	
Presentation / Seminar	5	5%	
Tutorial	5	5%	
Quiz	5	5%	
Self-study	5	5%	
Projects	5	5%	
Oral assessment	5	5%	
Midterm Exam	20	20%	
Final Exam	40	40%	
Total	100	100%	

Delivery Plan (Designed Syllabus)	
	Course Module Content
Week 1	Induction week, analyze course module
Week 2	-Microscope **(Theory)** Types and work

	-Microscope Techniques **(practical)**
Week 3	Heating equipments (Oven, water bath, Incubator) **Theory** - Oven, water bath, Incubator principles **practical**
Week 4	Autoclave and balance , Pipette **theory** -Principles of Autoclave and balance , Pipette **practical**
Week 5	Glassware and condition for best weighing accuracy **theory** Gram stain **practical**
Week 6	Centrifuges **theory** Principle of centrifuge **practical**
Week 7	Spectrophotometer **theory** Principle of spectrophotometer **practica**l
Week 8	seminar
Week 9	Midterm exam
Week 10	pH meter and PCR **theory** Principles **practical**
Week 11	Microtome and Principles **practical**
Week 12	Coulter (CBC) , Principles **practical**
Week 13	*Cobase theory* *Principles lab*
Week 14	*Elisa theory* *Principles lab*
Week 15	***Elisa theory 2***
Week 16	Report evaluation

Week 17	review
Week 18	Final Exam

Course Keywords
MEDICAL analysis, Laboratory devices, Determination, preparation, microscopy.