## A COURSE MODULE DESCRIPTOR FORM

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| Module Information | | | |
| **Course Module Title** | Lab Devices | | |
| **ناوى کۆرس مۆدیول** | ئامێرەکانی تاقیگە | | |
| **عنوان الوحدة** | أجهزة المختبر | | |
| **Course Module Type** | Type Core | **Module Code** | MLS 307 |
| **ECTSs** | 7 | | |
| **Department** | Medical laboratory technology | | |
| **Department Code** | ML | | |
| **Module Website (CMW)** | nobleinstitute.krd | | |
| **Module Leader (ML)** | Dr. Rabar Mohammed Hussein | | |
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| **ML Acad. Title** | Lecturer | | |
| **ML ORCID** | 0000-0002-7272-7095X | | |
| **ML Google Scholar Acc** | rabar.hussein@nobleinstitute.krd | | |

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| Relation with Other Modules | | |
| **Pre-requisites** | Lab technique , Clinical Biochemistry , Physiology , microbiology |
| 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. |

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| **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. |

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| Module Delivery | |
| **Total workload** | |
| **Contact Theoretical Hours – Per semester** | 15 |
| **Contact Practical Hours – Per Semester** | 30 |

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| Module Assessment | | | | |
| **Module Activities** | **Time /Number** | **Weight (Marks)** | **Week Due** | **Relevant Learning Outcome** |
| Contact hours - Participation | 10 | 5% | 2 to 12 | Intellectual skills |
| (Science / Lab)  (Social science / Critical thinking) | 1 | 5% | 5 | **Cognitive strategy** |
| Presentation /  Seminar | 2 | 5% | 7 | **Verbal information** |
| Tutorial | 2 | 5% | 2 and 8 | Intellectual skills |
| Quiz | 2 | 5% | 2 and 10 | **Verbal information** |
| Self-study | 2 | 5% | 3 and 11 | **Cognitive strategy** |
| Projects | 1 | 5% | 14 | **Verbal information** |
| Oral assessment | 1 | 5% | 12 | **Cognitive strategy** |
| Midterm Exam | 1 | 20% | 9 | Motor skills |
| Final Exam | 1 | 40% | 15 |  |
| **Total** |  | 100% |  |  |

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| 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 Elisa **theory**  Principles **practical** |
| Week 12 | Coulter (CBC) , Cobase **theory**  Principles **practical** |
| Week 13 | Oral exam |
| Week 14 | Report and review |
| Week 15 | Final Exam |

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| Course Keywords |
| **Medical analysis, Laboratory devices, Determination, preparation, microscopy.** |