MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

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| **Module Information**  معلومات المادة الدراسية | | | | | | | |
| **Module Title** | Laboratory Medical Instrumentation II | | | | **Module Delivery** | | |
| **Module Type** | Core | | | | **☒ Theory**   * **Lecture**   **☒ Lab**   * **Tutorial**   **☒ Practical**   * **Seminar** | | |
| **Module Code** | MIE22101 | | | |
| **ECTS Credits** | 7 | | | |
| **SWL (hr/sem)** | 175 | | | |
| **Module Level** | | UGII | **Semester of Delivery** | | | | 4 |
| **Administering Department** | | MIE | **College** | MUC | | | |
| **Module Leader** | Ali Qutaiba | | **e-mail** | ali.qutaiba@muc.edu.iq | | | |
| **Module Leader’s Acad. Title** | | Assist Lecturer | **Module Leader’s Qualification** | | | | MSc. |
| **Module Tutor** | None | | **e-mail** |  | | | |
| **Peer Reviewer Name** | Dr.Noor Kadhim Meftin | | **e-mail** | noor.kadhim@muc.edu.iq | | | |
| **Scientific Committee Approval Date** | 17/6/2023 | | **Version Number** | | | 1.0 | |

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| **Relation with other Modules**  العلاقة مع المواد الدراسية الاخرى | | | |
| **Prerequisite module** | Laboratory Medical Instrumentation I | **Semester** | **UGII-S3** |
| **Co-requisites module** |  | **Semester** |  |

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| **Module Aims, Learning Outcomes and Indicative Contents**  أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية | |
| **Module Aims**  أهداف المادة الدراسية | 1. The graduate get scientific and applied skills to diagnosis the medical instruments faults. 2. The graduated students will gain the ability of knowledge of different parts of medical instruments. 3. Development and training the engineering technical staffs on the medical device maintenance. 4. Preparation of the research and studies to improve and develop the action of medical devices. 5. Put the proposals and alternatives for the medical devices. 6. To describe the types of laboratory medical instruments. 7. To explain the principal work of the laboratory medical devices techniques. 8. To understand the maintenance of laboratory medical devices and their electrical and mechanical faults. |
| **Module Learning Outcomes**  مخرجات التعلم للمادة الدراسية | Upon completion of the course, students should be able to:   1. Introduction about the laboratory Design, Rules and limitations. 2. Define, explain, and describe the centrifuge and understand the electrical and electronic parts. 3. Define, explain, and describe Microscope and understand the electrical and electronic parts. 4. List and recognize the types of microscopes. 5. Define, explain, and describe Polymerase chain reaction (PCR). and understand the electrical and electronic parts. 6. Definition of Laboratory incubators and explain their applications. 7. List and understand the types of Laboratory Incubators. 8. Define and explain Oven and its medical application. 9. Define and explain Autoclave and its medical application. 10. Describe and understand water distillation and its application with the medical field. 11. Definition and understanding of the CBC System. 12. Define the principle of CBC Medical system. 13. Faults and maintenance of medical instrumentations |
| **Indicative Contents** | Indicative content includes the following:  Medical instrumentation definition, analysis lists, work security rules, and |

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| المحتويات الارشادية | best laboratory use guidelines [12hr].  Laboratory instruments criteria, types, components, advantages and disadvantages, physical and medical application. [10hr].  Medical instrumentation faults and maintenance, analysis lists, work security rules, and best laboratory use guidelines [12hr].  Explain Polymerase chain reaction (pcr)and definition of Laboratory incubators[12 hr].  Types of Laboratory Incubators and oven and its medical application[12hr]. Autoclave medical application and water distillation[12hr]. |

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| **Learning and Teaching Strategies**  استراتيجيات التعلم والتعليم | |
| **Strategies** | The main strategy that will be adopted in delivering this module is to encourage students’ participation in the design, while at the same time refining and expanding their medical instrumentations thinking skills. This will be achieved through classes, interactive tutorials, and by considering types of simple experiments involving some sampling activities that are interesting to the students. |

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| **Student Workload (SWL)**  الحمل الدراسي للطالب | | | |
| **Structured SWL (h/sem)**  الحمل الدراسي المنتظم للطالب خلال الفصل | 94 | **Structured SWL (h/w)**  الحمل الدراسي المنتظم للطالب أسبوعيا | 6 |
| **Unstructured SWL (h/sem)**  الحمل الدراسي غير المنتظم للطالب خلال الفصل | 81 | **Unstructured SWL (h/w)**  الحمل الدراسي غير المنتظم للطالب أسبوعيا | 7 |
| **Total SWL (h/sem)**  الحمل الدراسي الكلي للطالب خلال الفصل | 175 | | |

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| **Module Evaluation**  تقييم المادة الدراسية | | | | | |
|  | | **Time/Nu**  **mber** | **Weight (Marks)** | **Week Due** | **Relevant Learning**  **Outcome** |
| **Formative assessment** | **Quizzes** | 2 | 10% (10) | 5, 10 | LO #1, 2, 10 and 11 |
| **Assignments** | 2 | 10% (10) | 2, 12 | LO # 3, 4, 6 and 7 |
| **Projects / Lab.** | 1 | 10% (10) | Continuous | All |
| **Report** | 1 | 10% (10) | 13 | LO # 5, 8 and 10 |
| **Summative**  **assessment** | **Midterm Exam** | 2 hr | 10% (10) | 7 | LO # 1-7 |
| **Final Exam** | 4hr | 50% (50) | 16 | All |
| **Total assessment** | | | 100% (100 Marks) |  |  |

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| **Delivery Plan (Weekly Syllabus)**  المنهاج الاسبوعي النظري | |
|  | **Material Covered** |
| **Week 1** | Introduction about the laboratory Design. |
| **Week2** | Definition of Centrifuge |
| **Week 3** | Applications of Centrifuge |
| **Week 4** | Definition of Microscopes. |
| **Week 5** | Types of Microscopes. |
| **Week 6** | Water distillation |
| **Week7** | Mid Term |
| **Week 8** | Oven and its medical application. |
| **Week 9** | Autoclave and its medical application. |
| **Week 10** | Definition of Laboratory incubators. |
| **Week 11** | Types of Laboratory Incubators. |
| **Week 12** | Polymerase chain reaction (PCR). |
| **Week 13** | Applications of (PCR) |
| **Week 14** | Definition of Complete Blood Counter (CBC) |
| **Week 15** | Principle of (CBC) |
| **Week 16** | A preparatory week before final exam. |

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| **Delivery Plan (Weekly Lab. Syllabus)**  المنهاج الاسبوعي للمختبر | |
|  | **Material Covered** |
| **Week 1** | Introduction about the laboratory Design |
| **Week 2** | Centrifuge |
| **Week 3** | Microscopes. |
| **Week 4** | Types of Microscopes. |
| **Week 5** | Water distillation |
| **Week6** | Oven and its medical application. |
| **Week7** | Autoclave and its medical application. |
| **Week 8** | Laboratory Incubators. |
| **Week 9** | Polymerase chain reaction (PCR). |
| **Week10** | Complete Blood Counter (CBC) |
| **Week11** | Faults and maintenance of medical lab. instruments |

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| **Learning and Teaching Resources**  مصادر التعلم والتدريس | | |
|  | **Text** | **Available in the**  **Library?** |
| **Required Texts** | Biomedical device technology ,by ANTHONY  Y. K. CHAN, MSc, MEng, PEng, CCE |  |
| **Recommended Texts** | Ananthi ,2005,”A text book of medical  instruments |  |
| **Websites** |  | |

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| **Grading Scheme**  مخطط الدرجات | | | | |
| **Group** | **Grade** | التقدير | **Marks (%)** | **Definition** |
| **Success Group (50 - 100)** | **A -** Excellent | امتياز | 90 - 100 | Outstanding Performance |
| **B -** Very Good | جيد جدا | 80 - 89 | Above average with some errors |
| **C -** Good | جيد | 70 - 79 | Sound work with notable errors |
| **D -** Satisfactory | متوسط | 60 - 69 | Fair but with major shortcomings |

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|  | **E -** Sufficient | مقبول | 50 - 59 | Work meets minimum criteria |
| **Fail Group (0 – 49)** | **FX –** Fail | راسب (قيد المعالجة) | (45-49) | More work required but credit awarded |
| **F –** Fail | راسب | (0-44) | Considerable amount of work required |
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| **Note:** Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the  automatic rounding outlined above. | | | | |