**Ministry of Higher Education and Scientific Research**

**Supervision and Scientific Evaluation Body**

**Quality Assurance and Academic Accreditation Office**

**Course Description Sample**

**Subject:**

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| **Laboratory Medical Instrumentation I** |

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| 1. Educational Institution | Shatt Al Arab University |
| 2. Department / Center | Medical Instrumentation Engineering Techniques. |
| 3. Course Title /Code | Electrical Machines / MIET2101 |
| 4. Lecturer Name | Asst. Prof. Mazin Abdulelah Alawan |
| 5. Type of Teaching | Theory – Lab – Tutorial |
| 6. Academic Year /Term | 2024/2025 |
| 7. Total No. of Teaching Hours | 175 |
| 8. Date f Preparing this Course Description | 10/9/2024 |

9. **Course Objectives**

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| 1. The graduate get scientific and applied skills to diagnose 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 staff on medical device maintenance. |
| 4. Preparation of the research and studies to improve and develop the action of medical devices. |
| 5. Prepare application engineers in technical and electronic engineering. |
| 6. Put the proposals and alternatives for the medical devices. |
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10. **Course Output, Methodology and Evaluation**

(A) **Cognitive Objectives**

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| Upon completion of the course, students should be able to:  1. Define the Medical instrumentation and recognize what is the laboratory security system and determine the quality control results in the medical laboratory.  2. Classify the medical instrumentation.  3. Describe the hospital design. 4. Design and Describe the operating room. 5. Understand patient safety laws and rules. 6. Define and understand the medical Laboratory Instruments and Tools. 7. Calibration of Medical Laboratory Instruments. 8. Define, explain, and describe Balances and understand the electrical and electronic parts. 9. Explain the types of balances and their medical application. 10. Define, explain, and describe water bath and understand the electrical and electronic parts. |

(B) **Skill Objectives Related to the Program**:

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| Indicative content includes the following: Medical instrumentation classification, analysis lists, work security rules, and best laboratory use guidelines [14 hr]. Calibration of instruments criteria, types, components, advantages and disadvantages, physical and medical applications. [14hr] Medical instrumentation faults and maintenance, analysis lists, work security rules, and best laboratory use guidelines [14hr]. Patient safety and hospital design rules [15h].  Classification of different types of medical laboratories like medical, biological histological and chemical [13hr]. |

**Methods of Teaching and Learning**

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| 1-Lecturers.  2-Class discussion.  3-Lab Experiments.  4-Researchs.  5-Homework. |

**Methods of Evaluation**

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| **Number calendar element degree**  1-Examinations.  2-Lab Experiments.  3-Quizz.  4-Oral Exam.  5-Researchs. |

(C) **Sentimental and Value Objectives**

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**Methods of Teaching and Learning**

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**Methods of Evaluation**

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D) **General and Qualitative Skills (other skills related to the ability of employment and personal development)**

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11. **Course Structure**

**(In the table of course weekly outline)**

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| --- | --- | --- | --- | --- | --- |
| **Week** | **No of Hours** | **Required Learning Output** | **Title of Subject** | **Teaching Method** | **Evaluation** |
| 1 | 4 |  | Definition to medical instruments. |  |  |
| 2 | 4 |  | Introduction to medical instruments. |  |  |
| 3 | 4 |  | Classification of medical instrumentation. |  |  |
| 4 | 4 |  | Design of hospitals. |  |  |
| 5 | 4 |  | Design of operating room. |  |  |
| 6 | 4 |  | Patient Safety. |  |  |
| 7 | 4 |  | Mid-term exam |  |  |
| 8 | 4 |  | Medical Laboratory Instruments and Tools-1 |  |  |
| 9 | 4 |  | Medical Laboratory Instruments and Tools- 2 |  |  |
| 10 | 4 |  | Classification of different medical laboratories |  |  |
| 11 | 4 |  | Calibration of Medical Laboratory Instruments. |  |  |
| 12 | 4 |  | Introduction to Balance. |  |  |
| 13 | 4 |  | Balance and their types. |  |  |
| 14 | 4 |  | Wax bath.  Water bath. |  |  |
| 15 | 4 |  | The preparatory week before the final exam. |  |  |

12.**Infrastructure**

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| a. Textbooks | Electrical Technology B.L Theraja |
| b. References | Biomedical device technology ,by ANTHONY Y. K. CHAN, MSc, MEng, PEng, CCE |
| c. Recommended books and periodicals (journals, reports, etc.) | Ananthi ,2005,”A text book of medical instruments |
| d. Electronic references, internet websites, etc | Google |

13. **The Plan of Improving the Course**

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| 1- Rewrite the items .  2- Focusing on Equipment useding medical Instruments only. |