**Course Description Form**

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| 1. Course Name:
 |
| Medical Equipment |
| 1. Course Code:
 |
| WBM-31-06 |
| 1. Semester / Year:
 |
| Second semester \ fifth year |
| 1. Description Preparation Date:
 |
| 2024-03-19 |
| 1. Available Attendance Forms:
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| 1. Number of Credit Hours (Total) / Number of Units (Total)
 |
| 90 Hours / 3 Unit |
| 1. Course administrator's name (mention all, if more than one name)
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| Name: mustafa habeebEmail: mustafa.ha@uowa.edu.iq |
| 1. Course Objectives
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| **Course Objectives** | * **1- Identify the basic parts of the medical sensor and how to manufacture it**
* **2- How medical allergens develop over time**
* **3- Knowing the types of medical allergens**
* **4- Classification of medical allergens according to use**
* **5- The purpose of using medical sensors with the human body**
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| 1. Teaching and Learning Strategies
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| **Strategy** | 1- Theoretical lectures. Using the whiteboard and data show.2- Discussion lectures Tutorials.3- Practical experiments in laboratories.4- Homework assignments. |
| 1. Course Structure
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| **Week**  | **Hours**  | **Required Learning Outcomes**  | **Unit or subject name**  | **Learning method**  | **Evaluation method**  |
| 1 | 3 | X-Ray definition, theory and production | X-Ray definition, theory and production | Lectures presented in PDF format | Daily exams + homework assignments + monthly exams |
| 2 | 3 | Design of X-Ray tube, Heat loading characteristics of X-Ray tube | Design of X-Ray tube, Heat loading characteristics of X-Ray tube | Lectures presented in PDF format | Daily exams + homework assignments + monthly exams |
| 3 | 3 | X-Ray power supplies and circuits, X-Ray control unit, X-Ray switches and timing model | X-Ray power supplies and circuits, X-Ray control unit, X-Ray switches and timing model | Lectures presented in PDF format | Daily exams + homework assignments + monthly exams |
| 4 | 3 | Development of X-Ray films (automatic and manual),  | Development of X-Ray films (automatic and manual),  | Lectures presented in PDF format | Daily exams + homework assignments + monthly exams |
| 5 | 3 | X-ray fluoroscope machine | X-ray fluoroscope machine | Lectures presented in PDF format | Daily exams + homework assignments + monthly |
| 6 | 3 | Computed tomography data acquisition, geometrics,  | Computed tomography data acquisition, geometrics,  | Lectures presented in PDF format | Daily exams + homework assignments + monthly |
| 7 | 3 | X-ray system of the CT | X-ray system of the CT | Lectures presented in PDF format | Daily exams + homework assignments + monthly |
| 8 | 3 | Data acquisition system, computer system | Data acquisition system, computer system | Lectures presented in PDF format | Daily exams + homework assignments + monthly |
| 9 | 3 | Typical faults | Typical faults | Lectures presented in PDF format | Daily exams + homework assignments + monthly |
| 10 | 3 | Typical maintenance | Typical maintenance | Lectures presented in PDF format | Daily exams + homework assignments + monthly exams |
| 11 | 3 | Nuclear medicine and magnetic Resonance Imaging System: the hardware, | Nuclear medicine and magnetic Resonance Imaging System: the hardware, | Lectures presented in PDF format | Daily exams + homework assignments + monthly exams |
| 12 | 3 | Basic MRI Components, magnet types, RF coils, magnetization | Basic MRI Components, magnet types, RF coils, magnetization | Lectures presented in PDF format | Daily exams + homework assignments + monthly exams |
| 13 | 3 | Radioisotopes in medical diagnosis, Gamma Camera. Physics of radioactivity, biological effects of NMR imaging | Radioisotopes in medical diagnosis, Gamma Camera. Physics of radioactivity, biological effects of NMR imaging | Lectures presented in PDF format | Daily exams + homework assignments + monthly exams |
| 14 | 3 | Principles of NMR imaging system,  | Principles of NMR imaging system,  | Lectures presented in PDF format | Daily exams + homework assignments + monthly exams |
| 15 | 3 | Image reconstruction technique | Image reconstruction technique | Lectures presented in PDF format | Daily exams + homework assignments + monthly exams |
| 1. Course Evaluation
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|  Daily exams with practical and scientific questions. ‏ Participation scores for difficult competition questions among students Establishing grades for environmental duties and the reports assigned to them Semester exams for the curriculum, in addition to the mid-year exam and final exam |
| 1. Learning and Teaching Resources
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| Required textbooks (curricular books, if any) | Biomedical Instrumentation (R.S. Khandpur) |
| Main references (sources) | Biomedical Instrumentation Technology and Applications |
| Recommended books and references (scientific journals, reports...) | Standard handbook of biomedical sensors |