**Course Description Form**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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: | | | | | | | | |
|  | | | | | | | | |
| 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) | | | | | | | | |
| Name: mustafa habeeb  Email: mustafa.ha@uowa.edu.iq | | | | | | | | |
| 1. Course Objectives | | | | | | | | |
| **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** | | | | |
| 1. Teaching and Learning Strategies | | | | | | | | |
| **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 | | | | | | | | |
| **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 | | | | | | | | |
|  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 | | | | | | | | |
| 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 | | |