**Course Description Form**

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| 1. Course Name: biosensor | | | | | | | | | | | |
|  | | | | | | | | | | | |
| 1. Course Code: WBM-52-08 | | | | | | | | | | | |
|  | | | | | | | | | | | |
| 1. Semester / Year: second \ fifth year | | | | | | | | | | | |
|  | | | | | | | | | | | |
| 1. Description Preparation Date: 19/3/2024 | | | | | | | | | | | |
|  | | | | | | | | | | | |
| 1. Available Attendance Forms: | | | | | | | | | | | |
|  | | | | | | | | | | | |
| 1. Number of Credit Hours (Total) / Number of Units (Total) | | | | | | | | | | | |
| 45 hours | | | | | | | | | | | |
| 1. Course administrator's name (mention all, if more than one name) | | | | | | | | | | | |
| Name:  Email: | | | | | | | | | | | |
| 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** | |
| First | 3 | | | Definition, characteristics, principles, and requirements. | Definition, characteristics, principles, and requirements. | | theory | Daily test and oral questions | |
| Second | 3 | | | Electrodes and definition | Electrodes and definition | | theory | Daily test and oral questions | |
| Third | 3 | | | electronic CCT and types. | electronic CCT and types. | | theory | Daily test and oral questions | |
| Fourth | 3 | | | Surface electrodes | Surface electrodes | | theory | Daily test and oral questions | |
| Fifth | 3 | | | Needle electrodes | Needle electrodes | | theory | Daily test and oral questions | |
| Sixth | 3 | | | Transducers and properties. | Transducers and properties. | | theory | Daily test and oral questions | |
| Seventh | 3 | | |  |  | | theory | Daily test and oral questions | |
| Eighth | 3 | | | Resistive transducers and thermometric transducers. | Resistive transducers and thermometric transducers. | | theory | Daily test and oral questions | |
| ninth | 3 | | | Medical applications | Medical applications | | theory | Daily test and oral questions | |
| tenth | 3 | | | Piezoelectric | Piezoelectric | | theory | Daily test and oral questions | |
| eleventh | 3 | | | ultrasound transducers | ultrasound transducers | | theory | Daily test and oral questions | |
| twelveth | 3 | | | Mechanical transducers, and medical applications. | Mechanical transducers, and medical applications. | | theory | Daily test and oral questions | |
| Thirteenth | 3 | | |  |  | | theory | Daily test and oral questions | |
| fourteenth | 3 | | | Chemical transducers and medical applications | Chemical transducers and medical applications | | theory | Daily test and oral questions | |
| fifteenth | 3 | | | pressure measurement transducers. | pressure measurement transducers. | | theory | Daily test and oral questions | |
| 1. Course Evaluation | | | | | | | | | | | |  |  |  | theory | Daily test and oral questions |
| Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc | | | | | | | | | | | |  |  |  | theory |
| 1. Learning and Teaching Resources | | | | | | | | | | | |  |  |  | theory |
| Required textbooks (curricular books, if any) | | | | | | Wang, P., & Liu, Q. (2017). Biomedical sensors and measurement. Springer Science & Business Media. | | | | | |  |  | theory |
| Main references (sources) | | | | | | 1. Wang, P., & Liu, Q. (2017). Biomedical sensors and measurement. Springer Science & Business Media. 2. Introduction to Biomedical Engineering, Joseph D. Bronzino, 3rd Ed. 2012, Academic Press. | | | | | |
| Recommended books and references (scientific journals, reports...) | | | | | | Standard handbook of biomedical sensors | | | | | |
| Electronic References, Websites | | | | | | https://books.google.iq/books/about/Handbook\_of\_Biomedical\_sensors.html?id=GyNprgEACAAJ&redir\_esc=y | | | | | |