**Course Description Form**

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| 1. Course Name: | | | | | | | | |
| Material Science | | | | | | | | |
| 1. Course Code: | | | | | | | | |
| WBM-21-02 | | | | | | | | |
| 1. Semester / Year: | | | | | | | | |
| Semester 1/ 2th | | | | | | | | |
| 1. Description Preparation Date: | | | | | | | | |
| 2024-03-19 | | | | | | | | |
| 1. Available Attendance Forms: | | | | | | | | |
| presence in the classroom | | | | | | | | |
| 1. Number of Credit Hours (Total) / Number of Units (Total) | | | | | | | | |
| 60 Hours / 3 Units | | | | | | | | |
| 1. Course administrator's name (mention all, if more than one name) | | | | | | | | |
| Name: Hasan Allawi Sabbar  Email: hassan.as@uowa.edu.iq | | | | | | | | |
| 1. Course Objectives | | | | | | | | |
| **Course Objectives** | | | | A- Cognitive objectives  A1- Knowing what is meant by materials science  A2- Differentiate between different types of materials and ways to use them  A3- Differentiating between materials science and materials engineering  A4- Identifying materials that are medically compatible for use with the human body   * A5- Identify the most important techniques used in materials engineering | | | | |
| 1. Teaching and Learning Strategies | | | | | | | | |
| **Strategy** | | 1. Theoretical lectures.  2. Discussion lectures.  3. Practical experiments in laboratories  4. Scientific seminars by students  5- Analysis of permanent and biodegradable agriculture by referring to case studies | | | | | | |
| 1. Course Structure | | | | | | | | |
| **Week** | **Hours** | | **Required Learning Outcomes** | | **Unit or subject name** | | **Learning method** | **Evaluation method** |
| 1 | 4 | | Introduction | | Introduction to material science and engineering | | Lectures presented in PDF format | Daily exams + homework assignments + monthly exams |
| 2 | 4 | | Materials classifications | | Materials classifications | | Lectures presented in PDF format | Daily exams + homework assignments + monthly exams |
| 3 | 4 | | Composite and advanced materials | | Advanced materials and their manufacturing | | Lectures presented in PDF format | Daily exams + homework assignments + monthly exams |
| 4 | 4 | | Solid Materials | | Solid Materials | | Lectures presented in PDF format | Daily exams + homework assignments + monthly exams |
| 5 | 4 | | Crystalline solids | | Crystalline solids | | Lectures presented in PDF format | Daily exams + homework assignments + monthly |
| 6  7  8 | 4 | | Phase Diagram  Iron-Carbone Alloys  Phase Transformation | | Phase Diagram  Iron-Carbone Alloys  Phase Transformation | | Lectures presented in PDF format | Daily exams + homework assignments + monthly |
| 9  10 | 4 | | Metal Alloys Applications | | Properties of Biomaterials, Physical Properties, Impact of biomaterial surface physical properties on biological responses, Mechanical Properties of Biomaterials | | Lectures presented in PDF format | Daily exams + homework assignments + monthly |
| 11 | 4 | | Chemical Properties of Bio ceramics | | Chemical Properties of Bio ceramics, Impact of biomaterial surface chemical properties on biological responses, Solubility and Erosion, Leaching of Constituents, Corrosion | | Lectures presented in PDF format | Daily exams + homework assignments + monthly |
| 12  13  14 | 4 | | Polymer as Biomaterial | | Polymer as Biomaterial, General Techniques, Materials in Maxillofacial Prosthetic, Latexes, Polyurethane polymers, Acrylic Resins, Resin Teeth for Prosthodontics' Applications | | Lectures presented in PDF format | Daily exams + homework assignments + monthly |
| 15 | 4 | | Polymer as Biomaterial | | synthesis, testing and applications of polymers | | Lectures presented in PDF format | Daily exams + homework assignments + monthly |
| 15 |  | | Final exam | |  | |  |  |
| 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) | | | | | | Biomaterials Science: An Introduction to Materials in Medicine | | |
| Main references (sources) | | | | | | Biomaterials Science: An Introduction to Materials in Medicine | | |
| Recommended books and references (scientific journals, reports...) | | | | | | An Introduction to Tissue-Biomaterial Interactions | | |