**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:
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| 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 SabbarEmail: hassan.as@uowa.edu.iq |
| 1. Course Objectives
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| **Course Objectives** | A- Cognitive objectivesA1- Knowing what is meant by materials scienceA2- Differentiate between different types of materials and ways to use themA3- Differentiating between materials science and materials engineeringA4- Identifying materials that are medically compatible for use with the human body* A5- Identify the most important techniques used in materials engineering
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| 1. Teaching and Learning Strategies
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| **Strategy** | 1. Theoretical lectures.2. Discussion lectures.3. Practical experiments in laboratories4. Scientific seminars by students 5- Analysis of permanent and biodegradable agriculture by referring to case studies |
| 1. Course Structure
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| **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 |
| 678 | 4 | Phase DiagramIron-Carbone AlloysPhase Transformation | Phase DiagramIron-Carbone AlloysPhase Transformation | Lectures presented in PDF format | Daily exams + homework assignments + monthly |
| 910 | 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 |
| 121314 | 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
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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) | 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 |