

Course Description Form

1. اسم المقرر	
مواد حيوية	
2. رمز المقرر	
WBM-42-02	
3. السنة \ الفصل	
الفصل الثاني	
4. تاريخ كتابة الوصف	
6/9/2024	
5. اشكال الحضور المتاحة	
حضور	
6. عدد الساعات الدراسية (الكلية) / عدد الوحدات (الكلية):	
2\30	
7. اسم مسؤول المقرر الدراسي (اذا اكثر من اسم يذكر)	
الاسم : م.م احمد عودة كاظم الايميل : Ahmed.oudah@uowa.edu.iq	
8. Course Objectives	
Course Objectives	<ol style="list-style-type: none"> 1. Understand the mechanical behavior of metals and alloys and their relevance in biomedical applications. 2. Interpret thermal equilibrium diagrams and analyze their role in alloy design and performance. 3. Explain corrosion and wear mechanisms inside the human body and evaluate their impact on implant longevity. 4. Assess the biocompatibility of materials with the human body, considering physiological and immune responses. 5. Analyze decay processes inside and outside the human body and their implications for biomaterial stability. 6. Compare different types of wear and environmental effects on biomaterials under physiological conditions. 7. Evaluate hard tissue replacement materials with respect to mechanical, biological, and clinical performance. 8. Identify and classify composite biomaterials, understanding their structure-property relationships. 9. Explore the role of nanotechnology in enhancing biomaterial properties and biomedical device performance.

	10. Develop critical thinking skills for selecting, designing, and optimizing biomaterials for safe and effective medical use.
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9. Teaching and Learning Strategies

Strategy	<p>This course offers different teaching and learning strategies. The teaching methodologies are represented by:</p> <ol style="list-style-type: none"> 1- Lectures where the information is presented throughout power point slides. 2- Oral discussions throughout the classes. Students are encouraged to be involved in these discussions. 3- Handouts are given to students on monthly-base. 4- Shore review at the beginning of the classes and short summary at the end of the classes. <p>The learning methodologies include:</p> <ol style="list-style-type: none"> 1- Encouraging students to solve questions in the textbooks. 2- Writing technical reports about different topics.
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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	1	Mechanical behavior of metals	lectures	NA
2	2	1	, alloys and thermal equilibrium diagrams	lectures	Quizzes and HWs
3	2	1	corrosion and wear inside the human body	lectures	Quizzes and HWs
4	2	1	Biocompatibility of materials And human body	lectures	Quizzes and HWs
5	2	1	decay inside and outside the human body	lectures	Quizzes and HWs
6+7	2	1	corrosion and wear inside the human body	lectures	Quizzes and HWs
8+9	2	1	comparison between the various types of wear the environmental effect,	lectures	Quizzes and HWs
9+10	2	1	hard tissue replacements	lectures	Quizzes and HWs
11+12	2	1	composite biomaterials	lectures	Quizzes and HWs
13+14	2	1	nanotechnology	lectures	Quizzes and HWs

11. Course Evaluation

Mid exam	25%
Participation , assignments, presentation,	15%
Final exam	60%
`total	100%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1. Engineering Materials for Biomedical Applications.5th edition.
Main references (sources)	1.JOHN D. ENDERLE.(2012):introduction biomedical .3th edition
Recommended books and references (scientific journals, reports...)	Buddy D. Ratner, Allon S. Hoffman (2004): Introduction to Materials In Medicine
Electronic References, Websites	Internet, electronics books, YouTube