

Alanya Alaaddin Keykubat University | Rafet Kayış Faculty of Engineering  
**Genetic and Bioengineering Department**  
2023-2024 Spring Semester

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**Syllabus**

<b>Code/Name</b>	GBM 202 / BIOMATERIALS
<b>Type</b>	Required
<b>Credit/ECTS</b>	3/3
<b>Hour per Week</b>	3
<b>Level/Year</b>	Undergraduate/2
<b>Semester</b>	Spring
<b>Classroom</b>	FFF   D305
<b>Content</b>	This course includes examination of metallic, ceramic and polymer materials used as biomaterials; physical and mechanical testing; corrosion and wear in the body; learning the physical and mechanical properties of tissue in relation to microstructure and understanding the use of these properties in material selection, implant design and manufacturing and how materials are tested for biocompatibility.
<b>Prerequisites</b>	
<b>Textbooks</b>	<b>Primary</b> Biomaterials Science, Third Edition: An Introduction to Materials in Medicine Buddy D. Ratner (Author), Allan S. Hoffman (Author), Frederick J. Schoen (Author), Jack E. Lemons. <b>Supplementary</b> Research article published in such library as PUBMED, ELSEVIER
<b>Objectives</b>	<ul style="list-style-type: none"><li>• To introduce biomaterials and their properties, basic principles of materials science and engineering</li><li>• To evaluate biomedical uses and applications of engineering materials, and investigation of the properties of biological materials.</li><li>• To make a presentation article with high impact related to biomaterials and their application areas.</li></ul>
<b>Course Outcomes</b>	In this course students should able: CO1. To explain biomaterials and describe their structure and properties. CO2. To list specific application areas of biomaterials. CO3. To access engineering and medical literature and databases for research. CO4. To learn how biomaterials can be used <i>in vivo</i> , how they can be fabricated and interpret biocompatibility.

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**Weekly Schedule of Topics**

W	Topic
1	Introduction to biomaterials
2	Biocompatibility and properties
3	Metallic biomaterials
4	Ceramic biomaterials
5	Polymeric biomaterials I
6	Polymeric biomaterials I
7	Composites
8	Application of biomaterials
9	Characterization of biomaterials
10	Body interaction
11	Student Presentation
12	Student Presentation
13	Student Presentation
14	<i>General review</i>

**Professional Contribution**

Be able to get knowledge about biomaterials and their application areas.

**Contribution to Program Outcomes\***

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	4	0	0	0	0	0	3	4	0	0	0
CO2	3	0	0	4	0	0	4	4	0	0	0
CO3	2	0	0	4	4	4	4	5	4	0	0
CO4	2	0	0	4	3	3	3	4	3	0	3

\* Contribution Level | 0: None | 1: Very Low | 2: Low | 3: Medium | 4: High | 5: Very High

**Special Conditions**

- Students work in groups.
- Presentation will be conducted in class and selected original articles for presentation will be sent to the responsible lecturer.

**Requirements**

**Course Policy**

- Students should be in the class on time.
- Both student and responsible lecturer should communicate in English
- Students should prepare themselves by reading course presentation, book and articles sent.

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	<ul style="list-style-type: none"><li>• At least <b>80%</b> attendance is required, otherwise a grade of <b>DZ</b> will be assigned.</li><li>• Students must be present in class for the presentations, otherwise students will not be graded for the presentation.</li></ul>								
<b>Cheating &amp; Plagiarism</b>	<ul style="list-style-type: none"><li>• Copying or letting someone copy anyone work on exams, assignments, or reports is cheating.</li><li>• Cutting and pasting text, figures and tables from web sources, chatGPT or any other electronic source is plagiarism.</li><li>• The consequence of academic dishonesty is to receive a grade of <b>FF</b> for the course.</li></ul>								
<b>Evaluation</b>	<table><tr><td>Midterm Exam</td><td>40%</td></tr><tr><td>Presentation homework</td><td>20%</td></tr><tr><td>Final exam</td><td>40%</td></tr><tr><td>Total</td><td>100%</td></tr></table>	Midterm Exam	40%	Presentation homework	20%	Final exam	40%	Total	100%
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Presentation homework	20%								
Final exam	40%								
Total	100%								
<b>Rubric</b>	A rubric will be announced prior to presentation sessions. The rubric has 2 main parts for the grading: technical assessment and presentation performance for each student in student groups.								
<b>Instructor</b>									
Name/Surname	Sinem Yılmaz	Email	<b>sinem.yilmaz@alanya.edu.tr</b>						
Room	210	Office Hours	Thursday 10:30-12:30 and 13:30-15:00						

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Prepared by Sinem Yılmaz on June 4th, 2024