

DEPARTMENT OF MOLECULAR BIOTECHNOLOGY  
COURSE SYLLABUS

Course Details					
<b>Code</b>				<b>Academic Year</b>	<b>Semester</b>
NWT310				4	8
<b>Title</b>	<b>T</b>	<b>A</b>	<b>L</b>	<b>ECTS</b>	
Biomaterials	3	2		6	
<b>Language</b>	German				
<b>Level</b>	<b>Undergraduate</b>	X	<b>Graduate</b>		<b>Postgraduate</b>
<b>Department / Program</b>	Molecular Biotechnology				
<b>Forms of Teaching and Learning</b>	Face to face				
<b>Course Type</b>	<b>Compulsory</b>		<b>Elective</b>	X	
<b>Objectives</b>	Knowledge of materials science and the ability to research, develop and innovate in the field of biomaterials				
<b>Content</b>	Biological materials and biomineralization, structure-property relationships of selected biological materials, with particular emphasis on mechanical properties and the influence of hierarchy, bioactive, biodegradable, bioinert materials, acceptance / repulsion of implants, host response / immune response, wound healing, biomaterials, bioceramics, Biopolymers and Biocomposites, Selected Examples of Bioinspired Material Research; Dental and implant materials, drug delivery systems, 3D biomaterials printing				
<b>Prerequisites</b>	Chemistry 1&2, Biology				
<b>Coordinator</b>	Dr. Öğr. Üyesi Duygu Ekinci				
<b>Lecturer(s)</b>					
<b>Assistant(s)</b>					
<b>Work Placement</b>					
Recommended or Required Reading					
<b>Books / Lecture Notes</b>	<ul style="list-style-type: none"> <li>• Schmidt, R., Werkstoffverhalten in biologischen Systemen: Grundlagen, Anwendungen, Schädigungsmechanismen, Werkstoffprüfung, 2. Auflage, Springer.</li> <li>• Epple, M., Biomaterialien und Biomineralisation: Eine Einführung für Naturwissenschaftler, Mediziner und Ingenieure, Vieweg+Teubner.</li> <li>• Wintermantel, E. and H.-W. Ha, Medizintechnik mit biokompatiblen Werkstoffen und Verfahren, Springer.</li> <li>• Temenoff, J. S. und A. G. Mikos, Biomaterials: The Intersection of Biology and Materials Science, Prentice-Hall.</li> <li>• Hench L. L. und J. R. Jones, Biomaterials, Artificial Organs and Tissue Engineering, Woodhead Publishing.</li> <li>• Hench, L. L., J. R. Jones und M. B. Fenn, New Materials and Technologies For Healthcare, Imperial College Press.</li> </ul>				
<b>Other Sources</b>					
Additional Course Material					

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Documents			
Assignments			
Exams			
<b>Course Composition</b>			
Mathematics und Basic Sciences			%
Engineering	100		%
Engineering Design			%
Social Sciences			%
Educational Sciences			%
Natural Sciences			%
Health Sciences			%
Expert Knowledge			%
<b>Assessment</b>			
<b>Activity</b>	<b>Count</b>		<b>Percentage (%)</b>
Midterm Exam	1		40
Quiz			
Assignments			
Attendance			
Recitations			
Projects			
Final Exam	1		60
		<b>Total</b>	<b>100</b>
<b>ECTS Points and Work Load</b>			
<b>Activity</b>	<b>Count</b>	<b>Duration</b>	<b>Work Load (Hours)</b>
Lectures	14	3	42
Self-Study	14	3	42
Assignments	1	10	10
Presentation / Seminar Preparation			
Midterm Exam	1	3	3
Recitations	14	3	42
Laboratory			
Projects			
Final Exam	1	3	3
		<b>Total Work Load</b>	<b>142</b>
		<b>ECTS Points (Total Work Load / Hour)</b>	<b>6</b>

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**Learning Outcomes**

1	The students gain knowledge and skills about biomaterials.
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**Weekly Content**

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15	

**Contribution of Learning Outcomes to Program Objectives (1-5)**

	P1	P2	P3	P4	P5	P6	P7
1		2	3				

**Contribution Level** 1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High

- P01 Working with modern scientific sources.
- P02 Having modern scientific knowledge and scientific analysis abilities and being able to apply them to scientific problems.
- P03 Having theoretical and practical skills in the area of biotechnology.
- P04 Having foreign language skills to follow the worldwide advancements in the field of biotechnology and to be able to discuss them with foreign colleagues.
- P05 Having computational skills for research data analysis purposes.
- P06 Having appropriate skills for academic and industrial jobs, being ready to take responsibility in working life.
- P07 Having knowledge about work occupational work and safety.

**Compiled by:**

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