

Emphasis in Biomaterials and Biomechanics

The curriculum for this emphasis will provide the student with the required scientific background for further study of physical, chemical, and engineering sciences related to dentistry.

RECOMMENDED COURSES

minor in Biomedical Engineering, emphasizing biomaterials:

BMEN 5001	Advanced Biomaterials	3 credits
BMEN 5041	Tissue Engineering	3 credits
BMEN 5401	Advanced Biomedical Imaging	3 credits
BMEN 8602	Biomedical Engineering Seminar	1 credit
BMEN 8001	Polymeric Biomaterials	3 credits
BMEN 8431	Controlled Release: Materials, Mechanisms, Models	3 credits
GCD 8136	Techniques of Biological Electron Microscopy	4 credits
MATS 5221	Introduction to Polymer Chemistry	3 credits
MATS 5517	Electron Microscopy	3 credits
ME 5427	Stress Analysis, Sensing, and Transducers	3 credits
OBIO 8023*	Physical Biology of the Oral Cavity	2 credits
OBIO 8027*	Structural and Biological Aspects of Dental Biomaterials	2 credits
PUBH 6450	Biostatistics I	4 credits

minor in Biomedical Engineering, emphasizing biomechanics:

BMEN 5201	Advanced Biomechanics	3 credits
BMEN 5151	Introduction to BioMEMS & Medical Microdevices	2 credits
BMEN 5041	Tissue Engineering	3 credits
BMEN 5401	Advanced Biomedical Imaging	3 credits
BMEN 8602	Biomedical Engineering Seminar	1 credit
MATS 8004	Mechanical Properties	3 credits
MATS 8216	Contact and Fracture Mechanics	3 credits
ME 5427	Stress Analysis, Sensing, and Transducers	3 credits
OBIO 8023*	Physical Biology of the Oral Cavity	2 credits
OBIO 8027*	Structural and Biological Aspects of Dental Biomaterials	2 credits
PUBH 6450	Biostatistics I	4 credits

For engineers desiring additional biological sciences coursework:

BMEN 5501	Biology for Biomedical Engineers	3 credits
BIOC 5001	Biochemistry, Molecular, and Cellular Biology	5 credits
PHSL 5061	Principles of Physiology for Biomedical Engineering	4 credits

For clinicians/biologists desiring additional background for engineering courses:

MATH 1281	Calculus with Biological Emphasis I	4 credits
MATH 1282	Calculus with Biological Emphasis II	4 credits

*All PhD students in the Oral Biology graduate program, regardless of track, must satisfactorily complete 8 credits of oral biology topics courses (OBIO 8012, 8018, 8020-8028, 8371), and register and participate in the oral biology student seminar series (OBIO 8030) each.

CONTACTS

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BIOMATERIALS & BIOMECHANICS FACULTY

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CALENDAR**Year 1**

Fall	<i>Months 1-4</i>	Spring	<i>Months 5-9</i>	Summer	<i>Months 10-12</i>
BMEN 5001	3 cr	BMEN 8001	3 cr	Summer enrollment is optional.	
BMEN 8601	1 cr	BMEN 8602	1 cr		
OBIO 802x	2 cr	OBIO 802x	2 cr		
OBIO 8030	1 cr	OBIO 8030	1 cr		
<i>Total credits:</i>	7	<i>Total credits:</i>	7		

Year 2

Fall	<i>Months 13-16</i>	Spring	<i>Months 17-21</i>	Summer	<i>Months 22-24</i>
BMEN 5041	3 cr	BMEN 8602	1 cr	Summer enrollment is optional.	
BMEN 5401	3 cr	OBIO 802X	2 cr		
BMEN 8601	1 cr	OBIO 8030	1 cr		
OBIO 802X	2 cr	PUBH 6450	4 cr		
OBIO 8030	1 cr	Oral prelim. exam (by month 18)			
Written prelim. exam				<i>Total credits:</i>	0
<i>Total credits:</i>	9	<i>Total credits:</i>	8		

Year 3

Fall	<i>Months 25-28</i>	Spring	<i>Months 29-33</i>	Summer	<i>Months 34-36</i>
OBIO 8030	1 cr	OBIO 8030	1 cr	Summer enrollment is optional.	
OBIO 8888	8 cr	OBIO 8888	8 cr		
<i>Total credits:</i>	9	<i>Total credits:</i>	9		

Year 4

Fall	<i>Months 37-40</i>	Spring	<i>Months 41-45</i>	Summer	<i>Months 46-48</i>
OBIO 8030	1 cr	OBIO 8030	1 cr	Dissertation writing Final oral examination	
OBIO 8888	8 cr	Month 43: 6 month seminar			
Research		Month 45: Begin writing dissertation			
<i>Total credits:</i>	9	<i>Total credits:</i>	1		

All students, regardless of emphasis, must satisfy the following course requirements:

- Complete a major core curriculum of at least 24 credits.
- Complete 8 credits of oral biology topics courses (OBIO 8012, 8018, 8021-8028, 8371).
- Complete one statistics course (STAT 5021, PUBH 6450, PUBH 7445, or equivalent).
- Register and participate in the oral biology student seminar series (OBIO 8030) each semester for 10 semesters or until graduation, whichever comes first.
- Complete a designated minor (minimum 12 credits) in a nonclinical discipline.
- Register for 24 thesis credits (OBIO 8888) after passing the preliminary written and oral exams.