

BMA 501 - Biomaterials Science of Cell-Surface Phenomena (3.0 credits)
crosslisted as BPH 501 (3.0 credit hours), as BPR 501 (3.0 credit hours)
as ODS 501 (3.0 credit hours), and as MAE 607 (3.0 credit hours)

Course Outline

Course Schedule: Wednesdays – 2:30 to 5:00pm
Location: 104 Parker Hall [South Campus]

Objective: To refine and build upon your prior knowledge of the basic properties of fabricated plastics (polymers), metals, ceramics, and natural substances, by adding a detailed understanding of contact interactions between living and nonliving materials, and their consequences for public and environmental health.

Format: Lecture, with discussion encouraged.

Grading: Will be graded on A-to-F basis. Each assignment (e.g. an exam) will be graded as a flat A, B, C, D, or F if completed on time. Assignments turned in late will be penalized by one partial grade level for each 48 hours that the assignment is delayed [e.g. a written paper that would have been a "B" if handed in on time, will begin at a grade of B- if handed in late; if 96 hours late, a grade of C+ will be assigned]. The +/- scale will be applied when the final course grade is calculated.

Evaluation: Your grade in the course will be based on the following 4 main items:

- (1) Mastery of Fundamental Concepts (in-class exam) - 20% of course grade
- (2) Critical Review of Prior Published Work (biomaterial evaluation paper)
- 20% of course grade
- (3) Expression and Integration of Cumulative Knowledge (final) -
- 40% of course grade
- (4) Attendance/participation - 20% of course grade

Other Requirements: Reading assignments (e.g. journal articles) may be given in advance of some sessions. These assignments will be given in the preceding class or no later than 5 days prior to the class session [e.g. by the preceding Friday for the following Wednesday class]. Reading assignments not given in class will be communicated to you on the "UB Learns" site for this course

Course Director: Robert E. Baier, Ph.D., P.E. (110 Parker Hall - UB/South Campus)
telephone: 829-3560 (110 Parker) 829-2055 (308 Squire - lab)
e-mail: baier@acsu.buffalo.edu

To make an appointment with Dr. Baier, contact him directly. You also are welcome to "drop in" to see if he is available for a meeting. It is best to call first and see whether he is in the office (110 Parker Hall), the lab (308 Squire Hall), or available at a later time.

Alternate Contact: Anne E. Meyer, Ph.D. (Faculty)
e-mail: aemeyer@buffalo.edu

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Topics to be Covered

DATE	TOPIC
02sep2009	proteins as interfaces and proteins at interfaces (perspectives)
09sep2009	solid/liquid, gas/liquid, solid/gas interfaces
16sep2009	"conditioning films", "primary films", and "biofilms"
23sep2009	biocompatibility/hydrophobicity/malpractice
30sep2008	wetting, spreading, and adhesion
07oct2009	cell-cell interactions; adhesion v. aggregation
14oct2009	**in-class examination
21oct2009	**receive research paper assignment biomaterials-centered infections
28oct2009	surface cleaning and modification
04nov2009	osseointegration: dental and orthopedic implants
11nov2009	cell membrane models and analogs
18nov2009	cancer, contact inhibition, contact promotion
25nov2009	NO Class—Fall Recess
02dec2009	**turn in research paper; phagocytosis and Oppenheimer effect
09dec2009	<i>final exam review; make individual appointments for final exam</i>
Semester final examinations: December 14-21, 2009 ** Final exam during this period.	

** course requirement, in addition to class attendance and participation