

**BEST 200**  
**Special Topics in Bioengineering**  
**Fall, 2017**  
**3 units**

**Professor**                Dr. Kara McCloskey  
Office: SE1 344  
Phone: (209) 228-7885  
E-mail: [kmccloskey@ucmerced.edu](mailto:kmccloskey@ucmerced.edu)

**Lecture**                W/F 1:30-2:45 in SSM 150

**Office Hours**        Dr. Kara McCloskey, Mondays 11am-12pm

**Required Text:**      No text, required readings will be posted on CatCourses (with quizzes)

**Course Overview:** Special Topics in Bioengineering covers background principles of cutting-edge research directions in the field of bioengineering. The course includes three hours of lecture and discussion per week and significant out-of-class readings. The course format also emphasizes student led presentation, analysis and discussion of reading assignments from the current and recent scientific literature.

**Student Learning Outcomes:**

Upon successful completion of this course, students will:

1. *Possess a broad foundation in the fundamentals and current topics in bioengineering.*

Attainment of this learning outcome will be reflected by the students' understanding of the general field and its current topics. The student should be able to read, evaluate, and communicate effectively in all areas of bioengineering.

2. *Be able to identify new, important, and interesting research opportunities, and be able to develop effective strategies, including the experimental plan, for pursuing these opportunities.*

Attainment of this learning outcome will be reflected by the students' ability to come up with a novel research idea and corresponding experimental plan and communicate this in both written and oral presentations.

**Relationship to Program Learning Outcomes:**

BEST 200 maps directly onto 2 of the Program Learning Outcomes for the BEST Ph.D. and M.S. degrees.

**PLO #1** Possess a broad foundation in the fundamentals and current topics in either biological or materials science and engineering, as well as, an in-depth understanding of their chosen research topic area.

**PLO #3** Be able to identify new, important, and interesting research opportunities, and be able to develop effective strategies, including the experimental plan, for pursuing these opportunities.

**Prerequisites by Topic:** MATH 021 and BIO 002 or *Graduate level*

**Grading**

20% Attendance

20% Quiz on Readings

60% Oral Presentations

10% Final Project Paper

<b>Lecture Schedule – Fall, 2017</b>			
	<b>Date</b>	<b>Lecture</b>	<b>Instructor</b>
Week 1	23-Aug	Introductions - Class Format/Oral Presentations	McCloskey
	25-Aug	Regenerative Medicine	McCloskey
Week 2	30-Aug	Regenerative Medicine	McCloskey
	1-Sep	Journal Review	
Week 3	6-Sep	<b>Labor Day - No class</b>	
	8-Sep	Biomaterials Design	McCloskey
Week 4	13-Sep	Composite Materials	McCloskey
	15-Sep	Journal Review	
Week 5	20-Sep	Cardiovascular Tissue Engineering	McCloskey
	22-Sep	Neural Tissue Engineering	McCloskey
Week 6	27-Sep	Journal Review	
	29-Sep	Journal Review	
Week 7	4-Oct	Time Constants/Scale-up	McCloskey
	6-Oct	Biofabrication/Microfluidics	McCloskey
Week 8	11-Oct	Journal Review	
	13-Oct	Computational Modeling for Biological Systems	McCloskey
Week 9	18-Oct	Bioinformatics and Systems Biology	McCloskey
	20-Oct	Journal Review	
Week 10	25-Oct	Biomedical Imaging and Optics	Changqing Li
	27-Oct	Bioprinting	McCloskey
Week 11	1-Nov	Journal Review	
	3-Nov	Gene Editing	Ni
Week 12	8-Nov	Journal Review	
	10-Nov	<b>Veteran's Day - No class</b>	
Week 13	15-Nov	Cancer Technologies	McCloskey

	17-Nov	Journal Review	
Week 14	22-Nov	<b>Thanksgiving Break - No class</b>	
	24-Nov	<b>Thanksgiving Break - No class</b>	
Week 15	29-Nov	Cell Adhesion and Migration	McCloskey
	1-Dec	Journal Review	
Week 16	6-Dec	Biomechanics: Stiffness in Stem Cell Fate	Wong
	8-Dec	Journal Review	
		<b>No final</b>	

### Course Policies:

1. Students are expected to attend each class as scheduled, and to be on time. Attendance may be taken at the beginning of each class.
  2. Students may use during lectures: laptops, notebooks, handhelds, etc. for purposes related to the session content only.
  3. All cell phones turned OFF or in silent mode.
  4. Students are expected to read their e-mails at least once every 12 hours, and are responsible for any class-related announcements or directives from the instructor that might be distributed on UCMCROPS.
- Note:** I am a single mother, and may need to cancel class if my little girl is sick and I cannot make other arrangements. This may happen once per semester, so please check your emails regularly for potential notifications.
5. Students are expected to be attentive and respectful of speakers and fellow students at all times.
  6. For exams and quizzes, no notes allowed. A calculator may be needed.

### Academic honesty:

1. Each student in this course is expected to abide by the University of California, Merced's Academic Honesty Policy. Any work submitted by the student in this course must be the student's own work.
2. However, you are encouraged to study together and to discuss information and concepts in lecture with other students. You can give "consulting" help to or receive "consulting" help from such students. However, this permissible cooperation should never involve one student having possession of a copy of all or part of work done by someone else (THIS INCLUDES ONLINE SOLUTIONS), in the form of an e-mail, and e-mail attachment, a diskette, or a hard copy. Should copying occur, both the student who copied work and the student who gave material to be copied with both automatically receive a zero for the assignment. Penalty for violation of this Policy can also be extended to include failure of the course and University disciplinary action.

**Disability Statement:** Accommodations for Students with Disabilities: The University of California Merced is committed to ensuring equal academic opportunities and inclusion for students with disabilities based on the principles of independent living, accessible universal design and diversity. I am available to discuss appropriate academic accommodations that may be required for student with disabilities. Requests for academic accommodations are to be made during the first three weeks of the semester, except for unusual circumstances. Students are

encouraged to register with Disability Services Center to verify their eligibility for appropriate accommodations.