

## MATSCI 381/BIOE361: Biomaterials in Regenerative Medicine

Instructors:

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Office Hours: Clark W250A, Friday 11AM-12PM

Course Assistants: Grace Huynh ([ghuynh@stanford.edu](mailto:ghuynh@stanford.edu)) and Sheng Ding ([sding@stanford.edu](mailto:sding@stanford.edu))

Office Hours (tentative): Grace Monday 12-1PM; Sheng Monday 2-3PM Clark W300

### Grading:

In-class presentations and participation: 30%

Written critiques: 40%

Final project: 30%

Note: For students taking the course for CR/NC, a grade of a B is required to receive credit for the course.

Important dates:

Feb 28th, 2008: Final project proposals due

Mar 19th, 2008: Final projects due

### Course schedule:

January	8	T	Lecture 1: Course Introduction Overview of tissue engineering/regenerative medicine- historical and future perspectives.
	10	TR	Lecture 2: Hard materials, bioactive glasses and ceramics, material-tissue interfaces.
	15	T	Discussion 1: Hard materials
	17	TR	Lecture 3: Stem cells- proliferation and differentiation (Dr. Ngan Huang)
	22	T	Discussion 2: Stem cells
	24	TR	Lecture 4: Animal and plant-derived natural materials
	29	T	Discussion 3: Natural materials
	31	TR	Lecture 5: Cell and tissue biomechanics (Dr. Chris Jacobs)
February	5	T	Discussion 4: Biomechanics
	7	TR	Lecture 6: Synthetic (chemical) polymers
	12	T	Discussion 5: Synthetic polymers
	14	TR	Lecture 7: Engineered peptide and protein-based materials
	19	T	Discussion 6: Peptide and protein-based materials
	21	TR	Lecture 8: Biomaterials for growth factor delivery and presentation
	26	T	Discussion 7: Biomaterials for growth factor delivery and presentation
	28	TR	Lecture 9: Translation to animal models and the clinic (Dr. David Myung and Dr. Oscar Abilez)
March	4	T	Discussion 8: Translation to animal models and the clinic
	6	TR	Lecture 10: Host interactions, immune responses, and toxicity in regenerative medicine (Dr. Natalie Wisniewski)
	11	T	Discussion 9: Interactions, immune responses, and toxicity
	13	TR	Discussion 10: TBD      last day of class