COURSE SYLLABUS & SCHEDULE

Course	**BE 527; BE/ME/MS 727 Principles and Applications of Tissue Engineering**
Semester	**Spring 2022**
Lectures	**Tuesdays and Thursdays, 3:30 pm – 5:15 pm** (class will run to 5 PM with no breaks)
Location	**ERB 203 (44 Cummington Mall)**
Website	https://learn.bu.edu

Course Communication: **Please check your email for any last-minute changes in lecture due to COVID**

Instructor	**Prof. Joyce Wong, Professor, BME**
Email	jywong@bu.edu
Office Hours	Mondays 9 – 10 AM (zoom)
Lab	**Dr. Xin Brown, Lecturer, BME**
Email	xinq@bu.edu
Office Hours	By appointment
Teaching Fellow	**Samantha Fletcher, Graduate Research Assistant, BME**
Email	sjfletch@bu.edu
Office Hours	Wednesdays, 9-10 AM and by appointment (zoom)

Course Description: This course focuses on key aspects of how biomaterials are used to develop physiologically relevant tissue-engineered platforms for applications ranging from *in vitro* drug screening to *in vivo* tissue and organ replacement. By the end of the course, students will become familiar with diverse vocabulary required to understand challenging problems at the interface of biology, biochemistry, chemistry, biomaterials science and engineering, physiology, and other disciplines, and will gain a fundamental understanding of scientific and engineering principles underlying state-of-the-art tissue engineering technologies.

This course is structured to cover topic areas to provide a framework for the student to approach outstanding questions and emerging challenges in the field of tissue engineering. Each topic area opens with a background lecture introducing basic concepts, and the first part of the second lecture focuses on applications and implementation. The second part of the second lecture (~45 min – 1 hour) is in the form of a journal club forum in which assigned groups critically review primary literature. For the team project, self-assembled groups will present and defend a team proposal and final presentation.

Course prerequisites and expectations: It is expected that students are familiar with the content presented in BE 526/726. Students must have taken BE 526 if they are enrolled in BE 527. Students enrolled in BE/ME/MS 727 must take the laboratory section.

Assessment: Student understanding of the material will be evaluated through homework assignments in the form of literature review in a journal club forum and a team project. Papers for journal club will be assigned two weeks before they are due. One group will present the paper (indicated as ***JC#*** in schedule) and will lead class discussion for ~45 min – 1 hour. In addition to the assigned paper, the group presenting will present papers (within past 5 years) that cited the assigned paper. All students will submit an **individual** table in which they will log key elements of the assigned paper, cited references, and papers they have read for their project. The team project will be on an approved topic based on material introduced during the course.

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Syllabus and Schedule

Week	Date	Topic
1	1/20/22	*Introduction: Course Overview / Logistics*
2	1/25/22	*Proposal and Journal Club Tutorial (Expectations)*
	1/27/22	*Biomaterials and Regenerative Medicine Overview I*
3	2/1/22	*Biomaterials and Regenerative Medicine Overview II;* ***JC0***
	2/3/22	*Controlling Cell Phenotype I*
4	2/8/22	*Controlling Cell Phenotype II;* ***JC1; Team Project HW1 due***
	2/10/22	*Controlled Release Strategies I*
5	2/15/22	*Controlled Release Strategies II;* ***JC2***
	2/17/22	*Stimuli-Responsive Materials I*
6	2/22/22	***No class – Monday Schedule***
	2/24/22	*Stimuli-Responsive Materials II;* ***JC3***
7	3/1/22	*Stem Cells I;* ***Team Project HW2 due***
	3/3/22	*Stem Cells II;* ***JC4***
8	3/5-3/13	***Spring Recess***
9	3/15/22	*Team Project Proposal presentations: value proposition*
	3/17/22	*Team Project Proposal presentations: value proposition*
10	3/22/22	*Organoids I*
	3/24/22	*Organoids II;* ***JC5***
11	3/29/22	*Organ-on-a-Chip I*
	3/31/22	*Organ-on-a-Chip II;* ***JC6***
12	4/5/22	*Bioreactors I;* ***Team Project HW3 due***
	4/7/22	*Bioreactors II;* ***JC7***
13	4/12/22	*Manufacturing I*
	4/14/22	*Manufacturing II;* ***JC8***
14	4/19/22	*Global Health / Accessibility;* ***Team Project HW4 due***
	4/21/22	*In-class work on final presentations; open office hours*
15	4/26/22	*Final Presentations*
	4/28/22	*Final Presentations*
16	5/3/22	*Wrap-up and Final Remarks*

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Assignments and Grading

BE 727		**BE 527**	
Journal club presentation (1)	10%	Journal club presentation (1)	10%
Journal club table log (7)	15%	Journal club table log (7)	15%
Team Project Proposal value proposition/killer experiment presentation	10%	Team Project Proposal value proposition/killer experiment presentation	10%
Team Project value prop/killer expt write-up	10%	Team Project value prop/killer expt write-up	10%
Final Written Project	15%	Final Written Project.	25%
Final Project Presentation	15%	Final Project Presentation	25%
Lab Grade	20%	Class participation	5%
Class participation	5%		

- All assignments are posted on blackboard (learn.bu.edu).
- **Journal Club articles will be posted at the end of class two weeks before they are to be presented**.
- All assignments must be submitted onto blackboard by the posted due date. Please check blackboard for announcements. In addition, announcements will be made at the beginning or end of class.
    - Late assignments will be subject to a penalty
        - 1 day late: 10% off
        - 2 days late: 25% off
        - 3 or more days late: will not be graded
    - Extensions will be granted only under exceptional circumstances. Requests must be submitted in writing to Prof. Wong.
- Any re-grade requests for assignments must be submitted within one week of receiving the grade. The entire assignment will be re-examined and regraded.

Accommodations for Students with Documented Disabilities:

If you are a student with a disability or believe you might have a disability that requires accommodations, please contact the Office for Disability Services (ODS) at (617) 353-3658 or access@bu.edu to coordinate any reasonable accommodation requests. ODS is located at 19 Buick St.

Academic Conduct Statement:

Students are expected to adhere to Boston University's academic conduct code. Cheating and plagiarism are not tolerated; cases will be sent to the College of Engineering's academic conduct committee. Because parts of BE 527 / MS/BE 727 are team-based, collaboration is allowed. For all assignments, individual contributions from each team member must be documented and agreed upon by the team members.

Attendance Policy:

Students who miss class or who are taking the course asynchronously are expected to reach out to Prof. Wong or GTF Samantha Fletcher if they have any questions.