جامعة الملك عبدالله
للعلوم والتقنية
King Abdullah University of
Science and Technology

Course Syllabus: Contemporary Topics in Bioscience - B 294B

Division	Biological and Environmental Sciences & Engineering Division
Course Number	B 294B
Course Title	Contemporary Topics in Bioscience
Academic Semester	Fall
Academic Year	2018/2019
Semester Start Date	08/26/2018
Semester End Date	12/11/2018
Class Schedule (Days & Time)	05:30 PM - 07:00 PM | Mon Thu

Instructor(s)

Name	Email	Phone	Office Location	Office Hours
Satoshi Habuchi	Satoshi.Habuchi@kaust.edu.sa	+966128082483	4277, 2, Ibn Al-Haytham (bldg. 2)	

Teaching Assistant(s)

Name	Email

Course Information

Comprehensive Course Description	The course covers fundamental physics theories that are often used in biology researches. The course aims to guide students with physics background to a broad biology field. The course contents include thermodynamics, statistical mechanics, macromolecular random walks, biological membranes, fluid dynamics, diffusive dynamics, biological dynamics, and their applications. The course will also introduce recent developments in biophysics and imaging field, including biomechanics of motor proteins, enzymatics, and protein conformational dynamics.
Course Description from Program Guide	
Goals and Objectives	The course aims to guide students with physics background to a broad biology field. Students will learn how physics theories can be used to address important biological issues. Students will also learn some recent topics in biophysics and imaging.
Required Knowledge	Knowledge in undergraduate level physics.
Reference Texts	Physical Biology of the Cell (R. Phillips, J. Kondev, J. Theriot, H.G. Garcia)
Method of evaluation	**30.00**% - Final exam **70.00**% - Homework /Assignments
Nature of the assignments	written assignments
Course Policies	In accordance with the University policy and professional standards, the highest levels of academic integrity are expected in this class. The code of student conduct is strictly enforced. Academic dishonesty will result in reductions in grades and/or expulsions from this class and/or the University.
Additional Information	

Tentative Course Schedule *(Time, topic/emphasis & resources)*		
Week	**Lectures**	**Topic**
1	Mon 08/27/2018 Thu 08/30/2018	Length and time scales and forces in biology
2	Mon 09/03/2018 Thu 09/06/2018	Thermodynamics: mechanical and chemical equilibrium
3	Mon 09/10/2018 Thu 09/13/2018	Statistical mechanics and its application
4	Mon 09/17/2018 Thu 09/20/2018	Macromolecules and random walks
5	Mon 09/24/2018 Thu 09/27/2018	Biological membranes
6	Mon 10/01/2018 Thu 10/04/2018	Fluid dynamics
7	Mon 10/08/2018 Thu 10/11/2018	Diffusive dynamics
8	Mon 10/15/2018 Thu 10/18/2018	Biological dynamics
9	Mon 10/22/2018 Thu 10/25/2018	Summary of the first part
10	Mon 10/29/2018 Thu 11/01/2018	Biomechanics of motor proteins
11	Mon 11/05/2018 Thu 11/08/2018	Single-molecule enzymatics
12	Mon 11/12/2018 Thu 11/15/2018	Single-molecule fluorescence resonance energy transfer
13	Mon 11/19/2018 Thu 11/22/2018	protein conformational dynamics
14	Mon 11/26/2018 Thu 11/29/2018	Reserved
15	Mon 12/03/2018 Thu 12/06/2018	Final exam
16	Mon 12/10/2018	

Note

The instructor reserves the right to make changes to this syllabus as necessary.