

生物物理课程教学大纲

课程基本信息 (Course Information)						
课程代码 (Course Code)	PH338	学时 (Credit Hours)	48	学分 (Credits)	3	
课程名称 (Course Name)	(中文) 生物物理					
	(英文) Biophysics					
课程性质 (Course Type)	物理学专业和物理学专业 (国际班) 选修课					
授课对象 (Audience)	物理学专业、物理学专业 (国际班) 大学三年级本科生					
授课语言 (Language of Instruction)	英文					
开课院系 (School)	物理与天文学院					
先修课程 (Prerequisite)						
授课教师 (Teacher)			课程网址 (Course Webpage)			
*课程简介 (Description)	Introduction to Biophysics. This course gives a complete overview of physical phenomena of biological systems, with an emphasis on computational biophysics, molecular modeling, and the simulation of biophysical systems.					
课程教学大纲 (course syllabus)						
*学习目标 (Learning Outcomes)	<p>After completing the course, students should know:</p> <ol style="list-style-type: none"> 1. Complete overview of physical phenomena of biological systems 2. Basic idea of molecular modeling 3. Simulation methods of biophysical systems 					
*教学内容、进度安排及要求 (Class Schedule & Requirements)	教学内容	学时	教学方式	作业及要求	基本要求	考查方式
	Statistical mechanics	6				
	Osmosis	2				
	Binding	2				

	VMD tutorial	3				
	pH, AA, water	2				
	Standard state	2				
	Grand canonical ensemble	2				
	Poisson - Boltzmann equations	3				
	Diffusion	2				
	DNA looping, bending	3				
	Polymers, Random walks, protein folding	3				
	DNA packing, viruses	3				
	Membrane Curvature, Membrane Potential	3				
	Bioelectricity	3				
	Rate equations	3				
*考核方式 (Grading)	Homework and in-class projects 30% Midterms 40% Final 30%					
*教材或参考资料 (Textbooks & Other Materials)	1、 Physical Biology of the Cell (Rob Phillips, Jane Kondev, Julie Theriot) 2、 Biological Physics: Energy, Information, Life (Philip Nelson)					
其它 (More)						
备注 (Notes)	考核方式及考核方式中各项比例根据教学实践可能有所调整。					