课程教学大纲

<table>
<tr><td colspan="6">课程基本信息（Course Information）</td></tr>
<tr><td>课程代码
（Course Code）</td><td>PH338</td><td>学时
（Credit Hours）</td><td>48</td><td>学分
（Credits）</td><td>3</td></tr>
<tr><td rowspan="2">课程名称
（Course Name）</td><td colspan="5">（中文）生物物理学</td></tr>
<tr><td colspan="5">（英文）Biophysics</td></tr>
<tr><td>课程属性
(Course Type)</td><td colspan="5">专业选修课</td></tr>
<tr><td>开课院系
（School）</td><td colspan="2">（英文）Department of Physics and Astronomy</td><td>开课学期
（Term）</td><td colspan="2">（英文）Spring</td></tr>
<tr><td>先修课程
（Prerequisite course）</td><td colspan="5">（英文）</td></tr>
<tr><td>授课教师
（Instructors）</td><td colspan="5">（英文）Ulmschneider Jakob</td></tr>
<tr><td>课程简介（Description）
300-500 字</td><td colspan="5">（英文）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.</td></tr>
<tr><td colspan="6">课程教学大纲（course syllabus）</td></tr>
<tr><td>*学习目标(Learning Outcomes)</td><td colspan="5">After completing the course, students should know:
1. Complete overview of physical phenomena of biological systems
2. Basic idea of molecular modeling
3. Simulation methods of biophysical systems</td></tr>
<tr><td>*教学内容、进度安排及要求
(Class Schedule & Requirements)</td><td colspan="5"><table>
<tr><th>教学内容
topics</th><th>学时
Credit hours</th><th>教学方式
Teaching methodology</th><th>作业及要求
tasks</th><th>基本要求
Intended learning outcomes</th><th>考查方式
Assessment methods</th></tr>
<tr><td>Statistical mechanics</td><td>6</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Osmosis</td><td>2</td><td></td><td></td><td></td><td></td></tr>
</table></td></tr>
</table>

	Binding	2				
	VMD tutorial	3				
	pH, AA, water	2				
	Standard state	2				
	Grand canonical ensemble	2				
	Poission-Boltzmann equation	3				
	Diffusion	2				
	DNA looping, bending	3				
	Polymers, Random walks, protein folding	3				
	DNA packing, viruses	3				
	Membrane Curvature, Membrane Potential	3				
	Bioelectriciy	3				
	Rate equations	3				
	（英文）					
考核方式 (Assessment methods and Grading)	Homework and in-class projects 30% 2 Midterms 40% Final 30%					
教材或参考资料 (Textbooks & Other Reading Materials)	***(1) Physical Biology of the Cell (Rob Phillips, Jane Kondev, Julie Theriot)*** ***(2) Biological Physics: Energy, Information, Life (Philip Nelson)***					
备注 （Notes）	（英文）					