

College Chemistry Course Syllabus

大学化学课程教学大纲

课程基本信息 (Course Information)					
课程代码 (Course Code)	CA001	*学时 (Course Hours)	32	*学分 (Credits)	2
*课程名称 (Course Title)	大学化学				
	College Chemistry				
课程性质 (Course Type)	必修课 Required course				
授课对象 (Audience)	生物医学工程学院 School of Biomedical Engineering				
授课语言 (Language of Instruction)	中文/英文 Chinese/English				
*开课院系 (School)	生物医学工程学院 School of Biomedical Engineering				
先修课程 (Prerequisite)	无 None				
授课教师 (Instructors)	钱昆		课程网址 (Course Webpage)	http://bme.sjtu.edu.cn/CN/Default.aspx	
*课程简介 (Description)	<p>本课程为生物医学工程学院学生开设的化学课，课程阐明化学变化的宏观规律，着重介绍化学热力学、化学动力学基本知识，论述化学反应的方向、限度及其与能量的关系；从分子原子角度揭示物质微观结构本质及其与性质的内在联系；介绍自然界中最广泛存在的水溶液体系的通性；介绍存在于水溶液中的各类化学平衡，如：水中弱电解质的平衡、沉淀平衡、配位平衡；并注意结合工科特点，跟踪化学学科的最前沿发展及其与其他学科之间的相互交叉和渗透，充分体现现代化学与现代科技发展的息息相关，展现化学基本知识和原理在新技术新材料新能源等方面的广泛应用前景，让学生学会从化学的角度看待、理解和解决生活和实践中的问题，拓宽知识面，提高基本科学素质，并为学生将来继续深造和提升自己奠定坚实的化学和基本科学素养基础。</p>				
*课程简介 (Description)	<p>This course is designed for the engineering majors. It is presented within the general aim at basic chemical principles and with a particular emphasis on the basic knowledge of chemical thermodynamics, chemical kinetics, chemical equilibriums which include all aqueous equilibriums, such as the acids-bases equilibrium, solubility equilibrium and coordination equilibrium. At the same time, the course aims to educate student about how to understand the various substances in our world from the view of atoms or molecules by presenting the structures of atoms and molecules in details and</p>				

	indicating the close relationship between the structures and properties of substances. On the other hand, the course aims at preparation of student for their further education, employment and future home life by presenting the applications of chemical principles and basic knowledge in the development of new materials, new energy resources and new techniques. (英文需 300-500 字)
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课程教学大纲 (Course Syllabus)

*学习目标(Learning Outcomes)	<ol style="list-style-type: none"> 1. 在化学的基础知识和前沿知识学习中，强调这些知识与社会和个人生活的紧密联系，通过学习帮助学生提高科学素养和工程意识。(A3) 2. 使学生初步掌握化学知识，理解化学学科认识世界的基本思路和方法，正确认识化学作为现代生活物质基础学科和在未来新材料、新能源和新技术发展中的重要性。(A5.2) 3. 培养学生发现、分析和解决问题的能力(B2)，并培养学生终生学习的能力(B7)。 4. 培养学生具有科学精神，掌握科学的思想和方法，坚持实事求是、勤于学习、勇于创新，富有合作精神。(C2) 5. 初步培养本学科和交叉学科的综合素养.(C7) <ol style="list-style-type: none"> 1. The basic chemical knowledge and new developments: To help students improve their understanding about the basic chemical knowledge and engineering by emphasizing the basic chemical principles involved in our everyday lives. 2. To understand the basic methods about how to comprehend the structures and properties of substances in our actual world from the view of atoms and molecules. To help students realize the importance of chemistry in our everyday life and the development of new materials, sustainable energy and new techniques. 3. To help students develop their abilities to find problems, then analyze the key point and further deal with the problem. To foster students' lifelong leaning ability. 4. To cultivate students' scientific spirit by doing thing or seeking truth from the facts; to emphasize and advocate the innovation and cooperation. 5. To develop students' comprehensive quality and ability to deal with the problems involved in chemistry and other interdisciplinary subjects.
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*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
	绪论	1	面授	习题	了解	阅读
	化学反应的基本原理	2-5	面授	习题	理解并应用	书面作业及考试
	原子和分子的结构	2	面授	习题	理解并应用	书面作业及考试
	稀溶液依数性 水溶液中酸碱平衡和离子平衡	6	面授	习题	理解并应用	书面作业及考试

	化学热力学基础	4	面授	习题	理解并应用	书面作业及考试																																				
	金属非金属元素化学	2	面授	习题	理解并应用	书面作业及考试																																				
	谱学导论	2	面授	习题	理解并应用	书面作业及考试																																				
	配合物结构和平衡	2	面授	习题	理解并应用	书面作业及考试																																				
	氧化还原反应及电化学	4	面授	习题	理解并应用	书面作业及考试																																				
	高分子概述	2	面授	习题	理解并应用	书面作业及考试																																				
	化学与其他学科的交叉及生物医学工程应用实例	2	面授	习题	理解并应用	书面作业及考试																																				
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	<table border="1"> <thead> <tr> <th>No.</th> <th>Course hours</th> <th>Subjects</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1</td> <td>Course orientation</td> </tr> <tr> <td>2</td> <td>2-5</td> <td>Chemical reactions and the spontaneity of reactions</td> </tr> <tr> <td>3</td> <td>2</td> <td>Structures of atoms and molecules</td> </tr> <tr> <td>4</td> <td>6</td> <td>Colligative properties of dilute solutions Acid-base and ion equilibriums in aqueous solutions</td> </tr> <tr> <td>5</td> <td>4</td> <td>Chemical thermodynamics</td> </tr> <tr> <td>6</td> <td>2</td> <td>Element chemistry</td> </tr> <tr> <td>7</td> <td>2</td> <td>Introduction to spectroscopy</td> </tr> <tr> <td>8</td> <td>2</td> <td>Complex equilibrium and complexes</td> </tr> <tr> <td>9</td> <td>4</td> <td>Redox reactions and electrochemistry</td> </tr> <tr> <td>10</td> <td>2</td> <td>Introduction of polymers</td> </tr> <tr> <td>11</td> <td>2</td> <td>Chemistry with biology, medicine, and engineering</td> </tr> </tbody> </table>						No.	Course hours	Subjects	1	1	Course orientation	2	2-5	Chemical reactions and the spontaneity of reactions	3	2	Structures of atoms and molecules	4	6	Colligative properties of dilute solutions Acid-base and ion equilibriums in aqueous solutions	5	4	Chemical thermodynamics	6	2	Element chemistry	7	2	Introduction to spectroscopy	8	2	Complex equilibrium and complexes	9	4	Redox reactions and electrochemistry	10	2	Introduction of polymers	11	2	Chemistry with biology, medicine, and engineering
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*考核方式(Grading)	平时/论文 20%+期中考试 40%+期末考试 40% Grading policy: Homework assignments, class performance, and course thesis 20% +Midterm Exam 40% +Final Exam 40%																																									
*教材或参考资料 (Textbooks & Other Materials)	普通化学, 李梅、韩莉主编, 上海交通大学出版社, 2015, 第1版, ISBN:9787313130990/O 现代化学原理, 金若水、王韵华、芮承国主编, 高等教育出版社, 2011, 第1版, ISBN:9787040119763 "General Chemistry" (Chinese) by Li Mei, Han Li, 1 st E, Shanghai Jiao Tong University Press, ISBN:9787313130990/O "Principles of Modern Chemistry" (Chinese) by Jin Ruoshui et al, 1 st E, Higher Education Press, ISBN:9787040119763 需按以下格式填写: 教材信息一条 (按字段填写, 并且可按字段选择性导出):																																									

	教材名称、主编、第一主编是否为我校教师、出版社、出版年月、版次、ISBN号、课程使用该教材届数、是否外文教材、是否国家级规划教材 参考资料可列 3-5 条，文本框自由填写
其它 (More)	
备注 (Notes)	

备注说明：

1. 带*内容为必填项。
2. 课程简介字数为 300-500 字；课程大纲以表述清楚教学安排为宜，字数不限。