

课程详述

COURSE SPECIFICATION

以下课程信息可能根据实际授课需要或在课程检讨之后产生变动。如对课程有任何疑问，请联系授课教师。

The course information as follows may be subject to change, either during the session because of unforeseen circumstances, or following review of the course at the end of the session. Queries about the course should be directed to the course instructor.

1.	课程名称 Course Title	化学原理 B General Chemistry B
2.	授课院系 Originating Department	化学系、材料系 Departments of Chemistry, Materials Science and Engineering
3.	课程编号 Course Code	CH101B
4.	课程学分 Credit Value	3
5.	课程类别 Course Type	通识必修课程 General Education (GE)Required Courses
6.	授课学期 Semester	秋季 Fall
7.	授课语言 Teaching Language	中英双语 English & Chinese
8.	授课教师、所属学系、联系方式（如属团队授课，请列明其他授课教师） Instructor(s), Affiliation & Contact (For team teaching, please list all instructors)	谭斌 教授，化学系； 蒋伟 教授，化学系； 舒伟 副教授，化学系； 段乐乐 副教授，化学系； 贾铁争 助理教授，化学系； 郭旭岗 教授，材料系 Dr. Bin Tan, Professor, tanb@sustech.edu.cn, Dept. of Chem. Dr. Wei Jiang, Professor, jiangw@sustech.edu.cn, Dept. of Chem. Dr. Wei Shu, Associate Professor, shuw@sustech.edu.cn, Dept. of Chem. Dr. Lele Duan, Associate Professor, duanll@sustech.edu.cn, Dept. of Chem. Dr. Tiezheng Jia, Assistant Professor, jiatz@sustech.edu.cn, Dept. of Chem. Dr. Xugang Guo, Professor, guoxg@sustech.edu.cn, Dept. of Materials Science and Engineering.
9.	实验员/助教、所属学系、联系方式 Tutor/TA(s), Contact	待公布 To be announced
10.	选课人数限额(可不填) Maximum Enrolment	

(Optional)					
11. 授课方式 Delivery Method	讲授 Lectures	习题/辅导/讨论 Tutorials	实验/实习 Lab/Practical	其它(请具体注明) Other (Please specify)	总学时 Total
学时数 Credit Hours	48				48
12. 先修课程、其它学习要求 Pre-requisites or Other Academic Requirements	无 NA				
13. 后续课程、其它学习规划 Courses for which this course is a pre-requisite	本课程为通修通识必修课, 适合对化学要求不高的专业的学生(如金融、数学、电子、计算机系等)学习。 This is a compulsory course for general study, and is therefore suitable for non-chemistry majors (Finance, Mathematics, EE and Computer Science).				
14. 其它要求修读本课程的学系 Cross-listing Dept.	金融、数学、电子、计算机等 Finance, Mathematics, EE, Computer Science and etc.				

教学大纲及教学日历 SYLLABUS

15. 教学目标 Course Objectives

General Chemistry is designed to give a general but fundamental understanding of chemical principles to undergraduate students majoring in science and engineering. General Chemistry also aims to attract more undergraduate students to carry out chemical research at their seniors.

The topics of General Chemistry include: atoms and elements, molecular and electronic structures, states of matter, bonding, chemical equilibriums, kinetics and thermodynamics, stoichiometry, aqueous solution chemistry, acids and bases, oxidation and reduction, chemistry in everyday life, chemistry in materials, chemistry in energy, chemistry in environment and so on.

As chemistry is an experimental science, a very special point for teaching General Chemistry for undergraduate students is to emphasize the experimental aspect of a chemical reaction and create every possible condition for students to practice the reactions in a safe chemical laboratory. Also, the students should be educated that chemistry is practically useful and it helps us to understand the world around us at the molecular level and to create every materials and events in our daily life.

16. 预达学习成果 Learning Outcomes

通过学习化学原理, 学生可以了解化学学科最基本的原理(包括微观理论、统计理论和宏观理论)及其在化学和化工中的应用, 融合了无机化学、有机化学、分析化学和物理化学和高分子化学的内容, 增加了化学与生活、化学与材料、化学与环境、化学与能源的相关内容。

Students should understand the fundamental principles of chemistry based on microscopic theory, statistical theory and macroscopic theory and the application in all aspects of chemistry, which includes inorganic chemistry, organic chemistry, analytical chemistry, physical chemistry and polymer, and gain the basic knowledge of chemistry in everyday life, chemistry in materials, chemistry in energy, and chemistry in environment, and etc.

17. 课程内容及教学日历 (如授课语言以英文为主, 则课程内容介绍可以用英文; 如团队教学或模块教学, 教学日历须注明主讲人)

Course Contents (in Parts/Chapters/Sections/Weeks. Please notify name of instructor for course section(s), if this is a team teaching or module course.)

Class Content (<i>Chemistry: The Central Science</i> 12th Ed.)
Chapter 1. Introduction: Matter and Measurement/2 credit hours
Chapter 2. Atoms, Molecules, and Ions/2 credit hours
Chapter 3. Stoichiometry: Calculations with Chemical Formulas and Equations/2 credit hours
Chapter 4. Reactions in Aqueous Solution/2 credit hours
Chapter 5. Thermochemistry/2 credit hours
Chapter 6. Chemistry in Everyday Life/2 credit hours
Chapter 7. Periodic Properties of the Elements/2 credit hours
Chapter 8. Basic Concepts of Chemical Bonding/4 credit hours
Chapter 9. Chemistry in Materials/2 credit hours
Chapter 10. Gases/2 credit hours
Mid-Term Exam/2 credit hours
Chapter 11. Liquids and Intermolecular Forces/4 credit hours
Chapter 13. Properties of Solutions/2 credit hours
Chapter 14. Chemical Kinetics/2 credit hours
Chapter 15. Chemical Equilibrium/2 credit hours
Chapter 16. Acid–Base Equilibria/2 credit hours
Chapter 17. Additional Aspects of Aqueous Equilibria/2 credit hours
Chapter 18. Chemistry of The Environment/2 credit hours
Chapter 19. Chemical Thermodynamics/2 credit hours
Chapter 20. Electrochemistry/2 credit hours
Chapter 21. Chemistry in Energy/2 credit hours
Final exam/2 credit hours

18. **教材及其它参考资料 Textbook and Supplementary Readings**

Chemistry: The Central Science (12th Edition, 2011)

Brown | LeMay Jr. | Bursten | Murphy | Woodward, Pearson Prentice Hall (ISBN 9780321749833)

Online System for Homework Assignment:

www.masteringchemistry.com

Free Web Resources:

- (1) Whatever you want for General Chemistry:
<http://www.chem1.com/chemed/genchem.shtml>
- (2) Chemical Principles (3rd Edition, 1979)

Richard Dickerson, Harry Gray and Gilbert Haight

Downloadable at: <http://caltechbook.library.caltech.edu/178/>

课程评估 ASSESSMENT

19. 评估形式 Type of Assessment	评估时间 Time	占考试总成绩百分比 % of final score	违纪处罚 Penalty	备注 Notes
出勤 Attendance				
课堂表现 Class Performance		5		
小测验 Quiz				
课程项目 Projects				
平时作业 Assignments		30		
期中考试 Mid-Term Test		25		
期末考试 Final Exam		30		
期末报告 Final Presentation		10		
其它（可根据需要 改写以上评估方式） Others (The above may be modified as necessary)				

20. 记分方式 GRADING SYSTEM

- A. 十三级等级制 Letter Grading
 B. 二级记分制（通过/不通过） Pass/Fail Grading

课程审批 REVIEW AND APPROVAL

21. 本课程设置已经过以下责任人/委员会审议通过
 This Course has been approved by the following person or committee of authority

化学系教学指导委员会
 Teaching committee of the chemistry department