

## 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 <b>Course Title</b>	生物无机化学 <b>Bioinorganic Chemistry</b>				
2.	授课院系 <b>Originating Department</b>	化学系 Department of Chemistry				
3.	课程编号 <b>Course Code</b>	CH316				
4.	课程学分 <b>Credit Value</b>	2				
5.	课程类别 <b>Course Type</b>	专业选修课 Major Elective Courses				
6.	授课学期 <b>Semester</b>	春季 Spring				
7.	授课语言 <b>Teaching Language</b>	英文 English				
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) <b>Instructor(s), Affiliation &amp; Contact</b> (For team teaching, please list all instructors)	钟龙华博士, <a href="mailto:oscarchung@sustc.edu.cn">oscarchung@sustc.edu.cn</a> , 化学系 Dr. Lung Wa Chung, <a href="mailto:oscarchung@sustech.edu.cn">oscarchung@sustech.edu.cn</a> , Dept. of Chem				
9.	实验员/助教、所属学系、联系方式 <b>Tutor/TA(s), Contact</b>	待公布 To be announced				
10.	选课人数限额(可不填) <b>Maximum Enrolment (Optional)</b>	30				
11.	授课方式 <b>Delivery Method</b>	讲授 <b>Lectures</b>	习题/辅导/讨论 <b>Tutorials</b>	实验/实习 <b>Lab/Practical</b>	其它(请具体注明) <b>Other (Please specify)</b>	总学时 <b>Total</b>
	学时数 <b>Credit Hours</b>	32				32

12. 先修课程、其它学习要求 <b>Pre-requisites or Other Academic Requirements</b>	化学原理 A (CH101A)
13. 后续课程、其它学习规划 <b>Courses for which this course is a pre-requisite</b>	
14. 其它要求修读本课程的学系 <b>Cross-listing Dept.</b>	

### 教学大纲及教学日历 SYLLABUS

15. **教学目标 Course Objectives**

Bioinorganic Chemistry is a cross-discipline course, which covers inorganic chemistry, organic chemistry, physical chemistry and biochemistry. This course is targeted to senior undergraduate and junior postgraduate students in chemistry who develop a strong background in inorganic chemistry and has strong interests in biological inorganic systems. This course will cover basic and frontier concepts/knowledge of bioinorganic chemistry, such as molecular mechanisms of life, nitrogen fixation.

16. **预达学习成果 Learning Outcomes**

The students should develop basic or strong concepts/knowledge of bioinorganic chemistry and develop cross-discipline viewpoints.

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.)**

- I. Introduction and Overview: Coordination Chemistry (1 week)
- II. Metal ions and proteins: Binding, stability, folding transport and storage (2 weeks)
- III. Hydrolytic chemistry (2 weeks)
- IV. Electron transfer, respiration and photosynthesis (2 weeks)
- V. Oxygen metabolism (2 weeks)
- VI. Hydrogen, carbon, nitrogen, and sulfur metabolism (2 weeks)
- VII. Metalloenzymes with radical intermediates (2 weeks)
- VIII. Metal ion receptors and signaling (1 week)
- IX. Metals in medicine (1 week)
- X. Student Presentation (1 week)

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

1. "Biological Inorganic Chemistry", Bertini, I.; Gray, H. B.; Stiefel, E. I., Valentine, J. S. Eds. University Science Book, 2007. (reference book)
2. Lippard, S. J.; Berg, J. M., "Principles of Bioinorganic Chemistry", University Science Book, 1994. (reference book)
3. Chem. Rev. 2014, 114, 3367-4620; Chem. Rev. 2005, 105, 1917-2722; Chem. Rev. 2004, 104, 347-1200 (reference papers).

### 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	18 weeks	10		
小测验 Quiz	2-3 weeks	40		
课程项目 Projects	3 weeks	20		Essay
平时作业 Assignments				
期中考试 Mid-Term Test				
期末考试 Final Exam				
期末报告 Final Presentation	1 week	30		
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