

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	高级仪器系统的研发 II Advanced Instrumentation Systems II
2.	授课院系 Originating Department	化学系 Department of Chemistry
3.	课程编号 Course Code	CH307-13
4.	课程学分 Credit Value	2
5.	课程类别 Course Type	专业选修课 Major Elective Courses
6.	授课学期 Semester	秋季 Fall
7.	授课语言 Teaching Language	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) Instructor(s), Affiliation & Contact (For team teaching, please list all instructors)	刘重阳, 化学系, 办公室: 第一科研楼 432; 办公电话: 88018313; 电子邮件: liu.cy@sustech.edu.cn Chongyang Liu Department of Chemistry Phone: 88018313; Email: liucy@sustech.edu.cn
9.	实验员/助教、所属学系、联系方式 Tutor/TA(s), Contact	无 NA
10.	选课人数限额(可不填) Maximum Enrolment (Optional)	

11. 授课方式 Delivery Method	讲授	习题/辅导/讨论	实验/实习	其它(请具体注明)	总学时
	Lectures	Tutorials	Lab/Practical	Other (Please specify)	Total
学时数 Credit Hours			64		64

12. 先修课程、其它学习要求 Pre-requisites or Other Academic Requirements	高级仪器系统的研发 I (CH212-16)
13. 后续课程、其它学习规划 Courses for which this course is a pre-requisite	无 NA
14. 其它要求修读本课程的学系 Cross-listing Dept.	无 NA

教学大纲及教学日历 SYLLABUS

15. 教学目标 Course Objectives

培养学生独立设计和搭建从事前沿科学研究所需的仪器测试系统。

Instrumentation is the art and science of measurement and control of process variables. A system is a set of devices that are connected to act as one complete unit. Advanced instrumentation systems use a programming language (LabVIEW in this course) to integrate multiple systems in order to bring information from the outside world into a computer, make decisions based on the acquired data, and send computed results back into the world to regulate the way an instrument operates. LabVIEW is an easy-to-use graphical programming language; its intuitive user interface makes writing and using programs simple, exciting, and fun.

Success in frontier research often requires advanced instrumentation systems that may not be commercially available. Elaborately designed and assembled instrumentation systems can offer great flexibility, precise synchronization, and sophisticated control in the operation. In this course, students will learn some instrumentation skills including LabVIEW programming, computer interfacing, data acquisition, and instrument control. This course will be graded on the basis of homework and group projects.

16. 预达学习成果 Learning Outcomes

能够用计算机控制仪器。

Students will gain basic instrumentation skills including LabVIEW programming, computer interfacing, data acquisition, and instrument control.

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.)

课题研究

在深入理解工作原理和基本性能的基础上，将若干零部件进行组合搭配，编写程序对各个部件进行控制，最后通过电脑将所有零部件整合到一起，形成一个完整的自动测量系统。

Work on research project (14 weeks)

Build a computer controlled instrument with a number of electronic devices.

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

1. LabVIEW for Everyone: Graphical Programming Made Easy and Fun, Third Edition, by Jeffrey Travis, Jim Kring
2. LabVIEW based Advanced Instrumentation Systems by S. Sumathi , P. Surekha
3. LabVIEW for Engineers by Ronald W. Larsen
4. Instrumentation and Control Systems by W. Bolton
5. Instrumentation Reference Book, Fourth Edition, Edited by Walt Boyes

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				
小测验 Quiz				
课程项目 Projects		100		
平时作业 Assignments				
期中考试 Mid-Term Test				
期末考试 Final Exam				
期末报告 Final				

Presentation

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