

课程大纲 COURSE SYLLABUS

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| 1. | 课程代码/名称 Course Code/Title | CHE5010/高等仪器研发 |
| 2. | 课程性质 Compulsory/Elective | 专业课 |
| 3. | 课程学分/学时 Course Credit/Hours | 3.00/48 |
| 4. | 授课语言 Teaching Language | 英文 |
| 5. | 授课教师 Instructor(s) | 刘重阳 |
| 6. | 先修要求 Pre-requisites | 无 |
| 7. | 教学目标 Course Objectives | |
| | <p>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.</p> <p>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 is open to both science and engineering majors and will be graded on the basis of homework and group projects.</p> | |
| 8. | 教学方法 Teaching Methods | |
| | 采用“实战练兵教学法”，将理论授课与实验创新同步进行，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。 | |
| 9. | 教学内容 Course Contents | |
| | Section 1 | 理论学习一个学分 |
| | Section 2 | 实验创新两个学分 |
| | Section 3 | |
| | Section 4 | |
| | Section 5 | |
| | Section 6 | |

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| | Section 7 | |
| | Section 8 | |
| | Section 9 | |
| | Section 10 | |
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| 10. | 课程考核 Course Assessment | |
| | ①考查；②根据平时作业，设计方案及创新成果进行考核。 | |
| 11. | 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 | |