

课程编号：1713000810

课程名称：物理试验优化设计方法

学分/学时：2/32

先修课程：无

适用专业：应用物理学

课程性质：限选（选项：必修、限选、全校选修）

教材：任露泉 主编.试验设计及其优化(第1版). 科学出版社,2013 年

主要参考书：何为 编著. 优化试验设计方法及数据分析.化学工业出版社, 2012 年

内容简介：（600 字以内）

本课程是应用物理学专业限选课程之一，是一项通用技术，是当代科学技术人员和工程技术人员必须掌握的科研技术方法。通过本课程的学习，让学生熟悉并掌握近代最常用、最有效的几种科研设计优化方法的基本原理及其应用，培养学生理论联系实际和创新精神，为提高学生后续科研能力奠定坚实的基础。

1. 学习并掌握正交试验设计的理论及方法，具备对科研课题研究实施正交试验设计的能力；
2. 学习并掌握均匀试验设计的理论及方法，具备对科研课题研究实施均匀试验设计能力；
3. 掌握极差分析方法，可对正交试验设计的试验结果进行正确分析；
4. 学习方差分析方法，可对正交试验设计的试验结果和均匀试验设计的试验结果进行正确分析。
5. 学习回归优化，建立最优回归方程，并利用其进行连续优化、全局寻优，寻求试验空间的最优点。最优化思想则始终贯穿于其方案设计、试验实施和数据处理全过程。

Course Description

College of Science

Course Code: 1713000810

Course Name: Optimum Design of Physical Experiments

Credit/Hours: 2/32

Textbooks: Luquan Ren. Experimental Design and Optimization (1st edition). Science Press, 2013

Reference Books : Wei He .Optimization of experimental design methods and data analysis. Chemical Industry Press, 2012

Course Description : This course is one of the limited courses in applied physics, is a general technology, is the contemporary scientific and technical personnel and engineering and technical personnel must master the scientific research and technology methods. Through the study of this course, students are familiar with and grasp the basic principles and applications of the most commonly used and effective methods of scientific research in modern times, and cultivate students 'theory and practical spirit and make a solid foundation for improving students' follow-up scientific research ability The

1. To learn and master the theory and method of orthogonal experiment design, with the research project to carry out the ability to design orthogonal design;
2. To learn and master the theory and method of uniform experimental design, with the research project research and implementation of uniform test design capabilities;
3. Master the range analysis method, the orthogonal test design of the test results for the correct analysis;
4. Learning variance analysis method, the orthogonal test design of the test results and uniform test design of the test results for the correct analysis.
5. Study the regression optimization, establish the optimal regression equation, and use it for continuous optimization, global optimization, to find the optimal point of the test space. Optimization of ideas is always throughout its program design, test implementation and data processing of the whole process.