

课程编号：1713000670

课程名称：电动力学

学分/学时：3.5/56

先修课程：数学物理方法、电磁学、光学

适用专业：应用物理

课程性质：必修

教材：郭硕鸿 编著. 《电动力学》(第三版). 高等教育出版社, 2008 年

主要参考书：

1. 黄迺本, 方奕忠 编著. 《电动力学》(第三版) 学习辅导书 (第 1 版). 高等教育出版社, 2009 年;
2. 尹真 编著. 《电动力学》(第三版). 科学出版社, 2010 年;

内容简介：(600 字以内)

《电动力学》是在新时空观的基础上发展起来的适用于任何惯性参考系的成熟理论, 应用及其广泛, 已经成为物理学、应用物理学以及依托物理学的各工科专业的重要基础理论课程。该课程在普通物理课程 (包括《电磁学》、《光学》等) 的基础上, 对电磁现象进行系统阐述, 主要内容包括电磁场的基本属性、运动规律以及电磁场和带电物质之间的相互作用, 这些基本的理论知识在生产实践和科学实验中都发挥了及其重要的作用。学习本课程, 可以掌握经典电动力学的基本概念、基本原理以及处理问题的基本方法, 有效提高发现问题、分析问题和解决问题的能力, 提高自主学习能力和知识转化能力, 培养科学的创新思维能力。《电动力学》课程是学习《量子力学》、《固体物理》等后续课程的基础, 也是各物理类专业以及与物理相关的各理工科专业进一步深造的重要理论基础。

Course Description

College of Science

Course Code: 1713000670

Course Name: Electrodynamics

Credit/Hours: 3.5/56

Textbooks: Guo shuohong. Eletrodynamics (Third edition). Higher Education Press, 2008

Reference Books:

1. Huang qiuben, Fang yizhong. Electrodynamics (Assistant) (First Edition). Higher Education Press, 2009
2. Yin zhen. Electrodynamics (Third edition). Science Press, 2010

Course Description:

“Electrodynamics” is a mature theory based on new concept of time and space, which applies to any inertial reference systems. It has become a significant basic theory course for physics, applied physics, and other engineering specialties which are based on physics. This course expounds the electromagnetic phenomena systematically on the basis of “Electromagnetism” and “Optics”. The main part includes the basic characters, the law of motion of electromagnetic phenomena and the interaction between electromagnetic field and charged matter. These theoretical knowledge are essential in productive practice and scientific experiments.

By learning this course, one can not only master fundamental concept, basic principle and main methods to deal with problems of classic electrodynamics, but also enhance the abilities of discovering, analyzing, and solving problems. In addition, it helps to improve abilities of automatic learning, knowledge transformation and to develop scientific creative thinking abilities. “Electrodynamics” is also the foundation of learning “Solid State Physics”, “Quantum Mechanics” and other following courses. On the other hand, it provides important theoretical basis for further studying for students with physics or physics related major in science and engineering.