课程编号：1713602630

课程名称：漫步光世界

学分/学时：1/16

先修课程：无

适用专业：全校本科生

课程性质：全校选修

教 材：吴强编著. 光学（第 1 版）. 科学出版社, 2016 年

主要参考书 ：

1. 阎吉祥 编著. 激光原理与技术（第 1 版）. 高等教育出版社, 2004 年

2. 吴德明 编著. 光纤通信原理与技术（第 2 版）. 科学出版社, 2010 年

3. 靳瑞敏 编著. 太阳能电池原理与应用（第 1 版）. 北京大学出版社, 2011 年

4. 龚勇清 编著. 激光原理与全息技术（第 1 版）.国防工业出版社, 2010 年

内容简介：

《漫步光世界》是高等学校本科生的一门任选课。通过本课程学习，可以使学生了解人类在光学发展过程中具有里程碑意义的重大光学事件、光学理论和光学技术的形成及其演变过程。本课程内容含括光学发展概述、光彩夺目的新光源、激光在军事领域的应用、太阳能电池、光盘与全息照相术、光纤与光缆、光纤通信七部分。光学发展概述主要包括什么是光、光学研究对象、光学发展简史；光彩夺目的新光源主要包括激光产生原理、激光器的基本结构、激光的特性、激光的种类、激光器的制作技术；激光在军事领域的应用主要包括激光测距、激光雷达、激光制导、 激光武器、激光对抗与防护；太阳能电池部分包括太阳能电池原理、太阳能电池的分类及研究现状、太阳能电池的发展方向；光盘与全息照相术主要包括光盘存储与读取原理，全息照相原理；光纤与光缆主要包括光纤的结构与类型、光纤的射线理论分析、光纤的传输特性、光纤的制造、光纤连接器、光缆；光纤通信主要包括光纤通信发展的历史和现状、光纤通信的优点和应用、光纤通信系统的基本组成。

****

Course Description

Course Code：1713602630

Course Name：Optical Science and Technology

Credit/Hours：1/16

Textbooks：Qiang Wu. Optics（1st Edition). Science Press. 2016

Reference Books：

1. Jixiang Yan. Laser principle and Technology (1st Edition). Higher Education Press. 2004

2. Deming Wu. Principles and Technologies of Optical Fiber Communication (2nd

Editon).Science Press. 2010

3. Ruimin Jin. Principles and applications of Solar cells (1st Edition). Peking University Press. 2011

4. Yongqing Gong. Laser principle and holography (1st Edition). Defence Industry Press. 2010

Course Description：

Optical Science and Technology is an optional course for all the undergraduates. The purpose of the course is to know the significative event during the process of optical development, optical theory and the formation and evolution of optical technique. The main content is consisting of seven parts: summary and description of optical development, new source, application of laser in military field, solar cells, optical disk and holography, optical fiber and optical fiber cable, and fiber communication technique. For one part, it inckudes what is light, optical subject investigated and concrete history of development. For two part, it includes principle of laser generated, basic structure and manufacturing technology of laser, character and type of laser. For the application of laser in military field, the main content includes laser ranging, laser radar, laser guidance, laser guidance, laser thermal weapon, laser countermeasure and laser protection. The solar cell includes the principle, classification, resrarch status and development direction of the solar cell; Optical disk and holography mainly include principle of storing and fetching for optical disk and hologram. For optical fiber and optical fiber cable, the main content includes, for optical fiber, structure, type, ray theoretical analysis, character of transmission and manufacturing; In this part, it also includes fiber connector and optical fiber cable. Fiber communication includes the history of development, present state, application and value of fiber communication, ingredient of fiber communication system.