课程编号：1713000790

课程名称：液晶显示原理与应用

学分/学时：3/48

先修课程：光电子技术

适用专业：应用物理学

课程性质：（选项：必修、限选、全校选修）限选

教 材：黄子强 编著. 液晶显示原理（第 2 版）. 国防工业出版社, 2008 年

主要参考书 ：戴亚翔 编著. TFTLCD 面板驱动与设计（第 1 版）. 清华大学出版社,2008 年

内容简介：（600 字以内）

《液晶显示原理与应用》是应用物理专业本科三年级的一门特色专业课，其先修课程为《物理光学》与《电动力学》。本课程意在培养学生对液晶显示的基本理论、基本方法及基本技能的掌握与应用能力，亦为进一步学习与从事相关工作奠定理论基础。本课程内容含括液晶显示物理基础、液晶光学与显示原理、液晶显示器件工艺技术、液晶显示驱动与应用技术四部分。液晶显示物理基础包括液晶的物理特性、连续弹性体理论、液晶指向矢分布的数值分析；液晶光学与显示原理包括液晶的双折射、胆甾液晶的光学特性，广义扭曲型液晶显示原理、宾主与相变显示原理、MVA 与 IPS 液晶显示、其它液晶显示和液晶显示彩色化技术；液晶显示器件工艺技术包括净化与微细加工基础、TFT 工艺技术、彩膜与制屏工艺技术、模组工艺技术、关键参数检测技术；液晶显示驱动与应用技术包括液晶驱动原理、无源矩阵 LCD 驱动原理、TFT-LCD 驱动原理、液晶模组应用基础。

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Course Description

College of Science

Course Code：1713000790

Course Name：Principle and Application of LCD

Credit/Hours：3/48

Textbooks： Huang Ziqiang. Principle of Liquid Crystal Display. National Defence Industry Press, 2008

Reference Books：Dai Yaxiang. Driving and Design of TFTLCD. Tsinghua University press, 2008

Course Description：……

Principle and Application of LCD is a technical foundational and simplified course for the second-year undergraduates with a good background in physics optics and electronic machinum whose specialties applied physics group. The course is aiming to improve the related students understanding to the LCD engineering & technology. The course covers a wide range of the basic theories and foundational knowledge including LCD Physics, LCD Optics and Display principle, Process Thechnology of LCD, Driving Method and Applied Method of LCD. Mainly, LCD Physics involved the physics characters of liquid crystal, continuum elastic theory, the mathetical ananlysisi of liquid crystal directors. Mostly, LCD optics and Display principle involves the briefinger of the LC, optics characters of cholester LC, principle of Twist Nematic display, principle of Host-Geust and transimation LCD, MAV and IPS LCD, others type LCD and colour method of the LCD. LCD process thechnology includes the introduction of clean room and fine process, TFT array process , colour filter and panel process , mudule process , testing technology of key parameter. Driving and applied thechnology of LCD includes principle of driving LCD, passitive matrix LCD driving technology, TFT-LCD driving principle, the fundermental knowledge of appling LCD mudule.