Course Syllabus

Fall 2012

Course: **PHO K230 Laser Electronics**

Course Detail:

31465	PHO*	K230	T1	4	Laser Electronics	W	05:00 pm-07:45 pm	08/27-12/19	KTRCC B213
31466	PHO*	K230	T1A	0	LAB, Laser Electronics	W	08:00 pm-09:40 pm	08/27-12/19	KTRCC B213

Prerequisites: **EET K134/5 or PHO K140 and EET K105/6**
Instructor: **John Forella – jforella@trcc.commnet.edu**
Office Hours: **As Posted**
Text: **The Science of Electronics – Analog, David M. Buchla & Thomas L. Floyd**

Course Description:

This course will focus on the design and analysis of electronic circuits and devices of particular interest to the field of photonics. Laser Systems will be used basic for exploring circuits used in Photonics application. The course will explore basic multistage amplifiers, power amplifiers, operational amplifiers and applications. Applications include signal processing, power supply and control systems for popular laser systems. Diode, gas, fiber, and other laser systems may be used for investigating specific applications of electronic circuits and systems. The lab portion of the course includes experiments and simulations to parallel the lecture.

Grading: Class Participation, Course Portfolio, Homework, Tests

Attendance/Timeliness: Attendance is mandatory at all class and lab sessions. Tardiness of attendance and/or assignments can have a significant negative impact on grading.

Course Topics:

Course Overview
Laser Circuits & Systems Overview
Multistage, RF and Power Amplifiers
Operational Amplifiers
Op Amp Applications
Power Supplies
Active Filters
Laser Circuits & Systems Examples

Lab Topics:

Class Project
Multistage Amplifiers
Power Amplifiers
Op Amp Introduction & Applications
Active Filters
Timer Circuits
Voltage Multipliers
Switching Regulators

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ABET Student Outcomes – Associate Degree Programs

a. an ability to apply the knowledge, techniques, skills, and modern tools of the discipline to narrowly defined engineering technology activities;
b. an ability to apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require limited application of principles but extensive practical knowledge;
c. an ability to conduct standard tests and measurements, and to conduct, analyze, and interpret experiments;
d. an ability to function effectively as a member of a technical team;
e. an ability to identify, analyze, and solve narrowly defined engineering technology problems;
f. an ability to apply written, oral, and graphical communication in both technical and nontechnical environments; and an ability to identify and use appropriate technical literature;
g. an understanding of the need for and an ability to engage in self-directed continuing professional development;
h. an understanding of and a commitment to address professional and ethical responsibilities, including a respect for diversity; and
i. a commitment to quality, timeliness, and continuous improvement.

Course Outcomes:

1. Mastery of Laser and Semiconductor concepts as defined in the course syllabus
2. Knowledge of semiconductor analog integrated circuits and specifications
3. Demonstrate an ability to build, test and troubleshoot electrical circuits and systems
4. Demonstrate an ability to analyze and solve problems relating to laser electrical systems
5. Demonstrate technician level oral and written communication skills
6. Demonstrate an ability to engage in self-directed professional development
7. Demonstrate proper professional and ethical behavior
8. Demonstrate a commitment to quality, timeliness and continuous improvement