



## Course Syllabus

Course: PHO K230 Laser Electronics

Course Detail:

CRN	Cred	Title	Day(s)	Time	Date
12847	3	Laser Electronics	R	05:30 pm-08:15 pm	01/22-05/20
12848	1	LAB, Laser Electronics	R	08:16 pm-09:56 pm	01/22-05/20

Prerequisites: EET K134/5 or PHO K140 and EET K105/6

Instructor: Dan Courtney – dcourtney@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.

### Course Topics:

Course Overview  
Laser Systems Overview  
Power Supplies  
Semiconductor Electronics Review  
LED and Laser Diode Drivers  
Advanced Optoelectronics  
Radiometry  
Power and Energy Measurement  
Beam Delivery  
Controls Systems & Robotics  
Display Devices

### Lab Topics:

Laser Tour  
Laser Projects  
HeNe Laser Characterization  
Transistor Driver Circuits  
LED and Laser Diode Drivers  
Microcontroller DAC  
Projects



Course Format: Classes will consist of topic discussions, classroom exercises and laboratory exercises. Classes will move fluently between these activities.

Course Grading: Class Participation, Homework, Laboratory Skills, Professional Attitude. Grading is heavily based on progress toward LFOT Course Outcomes. Homework will be assigned weekly and graded by technical correctness, quality, and timeliness.

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

Independence of Student Work: Students are encouraged to collaborate and discuss class material and assignments. Assignment submittals should be completed individually without the direct help of others. Students are not allowed to work together on assignment submittals unless specifically directed by the instructor.

All students are required to maintain a learning portfolio in Digication that uses the (Three Rivers) College Template.

Other Required Course Materials: Flash Drive, Scientific Calculator e.g. TI-30 – Calculators should be available at all times during classes.

#### Course Outcomes:

1. Mastery of Laser and Semiconductor concepts as defined in the course syllabus
2. Knowledge of semiconductor analog integrated circuits, optoelectronics and specifications
3. Ability to build, test and troubleshoot electrical circuits and systems
4. Ability to analyze and solve problems relating to laser/optical electrical systems
5. Demonstrate technician level oral and written communication skills
6. 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

#### Disabilities Statement

If you are a student with a disability and believe you will need accommodations for this class, it is your responsibility to contact the Disabilities Counseling Services at 383-5240. To avoid any delay in the receipt of accommodations, you should contact the counselor as soon as possible. Please note that I cannot provide accommodations based upon disability until I have received an accommodation letter from the Disabilities Counselor.