Course Outline

# Course Title: Introduction to Optic-Electrical Engineering

Introduction to Optic-Electrical Engineering is a course designed for 3rd Year Electrical Engineering students who are interested in exploring the intersection of optics and electrical engineering. This course will provide students with a comprehensive understanding of the principles and applications of optic-electrical engineering.  
  
The course will begin with an introduction to the fundamental concepts of optics, including light propagation, reflection, refraction, and diffraction. Students will then learn about the properties of optical materials and devices, such as lenses, mirrors, and prisms, and how they can be used to manipulate light.  
  
Next, the course will cover the basics of electrical engineering, including circuit analysis, signal processing, and power systems. Students will learn how to apply these concepts to the design and analysis of optical-electrical systems, such as fiber optic communication networks, photovoltaic cells, and laser systems.  
  
Throughout the course, students will engage in hands-on activities and projects to reinforce their understanding of the material. They will also have the opportunity to work with state-of-the-art equipment and software, including optical simulators, oscilloscopes, and signal generators.  
  
By the end of the course, students will have a deep understanding of the principles and applications of optic-electrical engineering, and will be well-prepared to pursue advanced studies in this exciting field.

## Instructor:

Jun Albert Pardillo

## Credit Units:

3

## Target Students:

3rd Year Electrical Engineering Students

## Total Hours:

54

## Class Hours per Week:

3

# Course Topics

## Fundamentals of Optics

**Hours: 11**Introduction to light propagation, reflection, refraction, and diffraction. Overview of optical materials and devices.

## Electrical Engineering Basics

**Hours: 11**Circuit analysis, signal processing, and power systems fundamentals.

## Optical-Electrical Systems

**Hours: 11**Application of electrical engineering concepts in optical systems. Includes fiber optic communication and photovoltaic cells.

## Advanced Optical Devices

**Hours: 11**Study of advanced optical materials and devices, including lasers and optical sensors.

## Hands-on Projects and Applications

**Hours: 10**Practical applications and projects. Work with optical simulators, oscilloscopes, and signal generators.