Electrical Engineering Department
Faculty of Engineering
Alexandria University

Third Year: Communications Section

Course: Optical Devices (EE365)

Lecturer: Dr. Mohamed Elshimy
Dr. Mohamed Salah
Assistant: Eng. Esraa Ragab

Project: Optical Wireless Communication System with LEDs and Photodiodes

Introduction:

In this project, you will discover the interesting world of optical wireless communication systems by constructing a simple yet functional setup using infrared (IR) LEDs and photodiodes. This project aims to introduce you to the basic principles of optical communication and Morse code encoding.

Objective

Your objective is to build an optical wireless communication system capable of transmitting messages encoded in Morse code from a transmitter to a receiver using IR LEDs and photodiodes.

Requirements

1. **Transmitter Circuit**: Construct a circuit that encodes messages into Morse code pulses using a push-button to control the IR LED.

2. **Receiver Circuit**: Develop a circuit that can detect the Morse code pulses using a photodiode and convert them into electrical signals.

3. **Output Display**: Utilize a speaker to represent the Morse code as audible clicks, allowing the received message to be observed.

Teams:

- Each group will consist of 3: 4 students max.
- Eash group should submit a report including the transmitter and receiver circuitry, the components used in the circuit, and an explanation of how the circuit works.
- The delivery deadline is Tuesday 14 may, 2024.