

Task: Designing a Communication Protocol

The design of the communication protocol will include PCB development and interconnection of microcontrollers using standard embedded communication interfaces.

Objective of the Task

The objective of this task is to help students gain practical understanding of:

1. Communication protocols used in embedded systems.
2. PCB design and development using PCB design software.
3. Microcontroller interfacing and hardware implementation.

Instructions for Performing the Task

1. Select and implement any one communication protocol, such as:
 - I2C
 - SPI
 - UART
2. Design a PCB to establish communication between two microcontrollers using PCB design software.
3. The PCB design should include:
 - Proper power connections
 - Communication signal routing
 - Required passive components and headers/connectors
 - Clear schematic representation and PCB layout
4. Recommended PCB design software:
 - KiCad
 - EasyEDA
 - Altium Designer
 - Any other open-source PCB software
5. Microcontroller: ESP32-U

Requirements for Submission

Students must submit the following:

1. Complete schematic design
2. PCB layout/design files
3. Gerber files (optional but recommended)

Note

- The use of open-source software is mandatory.
- The design should be neat, properly labeled, and electrically valid.

Header and PCB library for Esp-u:

https://drive.google.com/drive/folders/1WvWi8UUIOZeOxY95MmE_6U38NOnC_p2Y?usp=sharing