

Date: 20/01/2026

## Proposal for Workshop on ESP-Based Robotics Systems

### Workshop Title

Workshop on ESP Boards, Motor Control, Encoders, Mobile App Integration, and Robotic Applications

Proposed By

Makeclouds

Proposed For

Jeppiaar Engineering College

### Workshop Overview

Makeclouds proposes to conduct a hands-on workshop for the students of Jeppiaar Engineering College, focusing on practical learning in ESP-based embedded systems and robotics applications. The workshop is designed to provide real-time exposure to hardware, programming, and application development used in modern robotic and industrial systems.

The program will include theoretical concepts, live demonstrations, and hands-on practice, enabling students to build and understand a complete robotic system.

### Workshop Objectives

- To introduce students of Jeppiaar Engineering College to ESP series boards (ESP32/ESP8266)
- To provide hands-on training in motor control and motor driver interfacing
- To explain the use of encoders for motion tracking and control
- To demonstrate mobile app-based robot control

- To showcase real-world applications such as mapping, monitoring, and industry automation
- To align academic learning with industry requirements

## **Workshop Content & Schedule**

### **Session 1: Introduction to ESP Boards**

- Overview of ESP boards and features
- Pin configuration and hardware architecture
- Programming basics and development setup

### **Session 2: Motor Control & Motor Drivers**

- DC motors and motor driver operation
- Speed and direction control techniques
- Hands-on motor interfacing with ESP boards

### **Session 3: Encoders & Motion Tracking**

- Encoder working principle
- Speed, distance, and position measurement
- Practical encoder interfacing

### **Session 4: Mobile App Integration**

- Mobile app-based robot control concepts
- Wi-Fi / Bluetooth communication using ESP
- Live control of robot through mobile application

### **Session 5: Applications – Mapping & Monitoring**

- Introduction to mapping techniques
- Monitoring applications for industrial and campus environments
- Use cases: industry monitoring, smart systems, autonomous robots

## Session 6: System Integration & Demonstration

- Integrating motors, encoders, and mobile control
- Complete robotic system demonstration
- Interaction, discussion, and Q&A

## Applications Covered

- Autonomous and semi-autonomous robotic systems
- Mapping and navigation technologies
- Industrial monitoring and inspection systems
- Smart campus and smart industry solutions
- Mobile-controlled robotic platforms

## Student Benefits

- Hands-on experience with real-time hardware and software
- Practical understanding of embedded systems and robotics
- Industry-oriented exposure for mini and final-year projects
- Improved technical and problem-solving skills
- Guidance for career development and higher studies

## Internship & Project Collaboration

Makeclouds is interested in exploring internship opportunities, mini-projects, and final-year project collaborations with the students and faculty of Jeppiaar Engineering College. Selected students may be offered internships and project mentorship based on performance and interest.

## Workshop Outcomes

- At the end of the workshop, students of Jeppiaar Engineering College will be able to:
- Understand ESP board architecture and programming
- Control motors and read encoder data
- Operate robotic systems using mobile applications
- Understand real-world robotic and industrial applications