

# **PC503- Programming Lab**

## **Guidelines for mini project for M.Tech. students (Academic Year-2025)**

### **Project Relevance:**

- Select a project that aligns with your M.Tech. specialization (e.g., Data Science, Signal Processing, Embedded Systems, IoT, AI/ML).
- The project should solve a practical problem relevant to your domain.

### **Dataset Requirement:**

- Use a publicly available dataset that fits your project objective.
- For Embedded Systems projects, if real sensor data is collected (e.g., IoT sensors), structure it into CSV/Excel formats for analysis with Pandas.

### **Modular Design:**

- Structure the project into distinct modules, for example:
  - Data Acquisition & Pre-processing
  - Feature Extraction
  - Model Training/Inference
  - Visualization & Reporting
  - Embedded Hardware Control Logic (if applicable)

### **Tools & Libraries:**

- You may demonstrate the use of:
  - **NumPy** → For numerical computations (sensor data arrays, signal processing, etc.)
  - **Pandas** → For data manipulation (CSV reading, DataFrames for sensor logs)
  - **Scikit-learn** → For ML algorithms (classification, regression, clustering)
  - **Matplotlib** → For data visualization (sensor trends, model performance plots)

### **IEEE Conference Paper Format (6 Pages):**

Prepare a project report in IEEE conference paper format consisting of:

- Title & Abstract
- Introduction
- Literature Review
- Methodology / Proposed Work
- Experimental Setup and Results / Observations
- Discussion
- Conclusion & Future Work
- References (IEEE Style)

### **Original Work Disclaimer:**

- All submissions must reflect original work.
- Plagiarism or reuse of existing projects will result in zero marks.
- A maximum of 15% plagiarism will be accepted in the paper, provided that all external references are properly cited.

### **Deliverables (Submission Package):**

- Dataset Files (CSV, Images, Sensor Logs, etc.)
- Code Folder:
  - Organized, well-commented Python scripts.
  - A README file with instructions for running the code.
- Project Report (Word/Latex file in IEEE Format)

### **Submission Deadline:**

**November 20, 2025**