

# GUJARAT TECHNOLOGICAL UNIVERSITY

## B.E. SEMESTER : VIII

### INSTRUMENTATION AND CONTROL ENGINEERING

Subject Name: **PROJECT – II**

**Objective:** Project in final year of Instrumentation and Control Engineering is aimed at bringing “real world” engineering problems at academic institute and solve it. In process of producing solution students should be able to –

- a. Apply knowledge of mathematics, science, and engineering
- b. Design and conduct experiments, as well as to analyze and interpret data.
- c. Design a system, component, or process to meet desired needs
- d. Function on multi-disciplinary teams
- e. Identify, formulate, and solve engineering problems
- f. Understand professional and ethical responsibility
- g. Communicate effectively
- h. Understand the impact of engineering solutions in a global and societal context
- i. Recognize the need for, and an develop ability to engage in life-long learning
- j. Acquire knowledge of contemporary issues
- k. Use the techniques, skills, and modern engineering tools necessary for engineering practice.

**Project Phases:** The final year project is divided in two parts as Project – I (semester 7) and Project – II (semester 8).

#### **Guideline to form a group:**

- a) Students in group have to identify real life engineering problem from industry, research institutions, academic institutions, or society. It is necessary to work in a group of minimum two students, individual student is not allowed (**Reason: every engineering activity is group activity**). Each group can have maximum four students if project complexity demands.
- b) Students are encouraged to identify interdisciplinary project and such interdisciplinary student group is allowed (**Reason: Every engineering activity are interdisciplinary in nature**). However the group will be approved by the head of the departments of concern discipline.

#### **Guideline for Project Identification:**

Students from Instrumentation and Control Engineering Discipline can work on the following type of projects

- a. Automation solution using for manufacturing units, process industries, research laboratories, or machines
- b. Design of measuring and/or control instruments to meet need of process industries, scientific research institutions, research/clinical/calibration laboratories, or society.
- c. Design components of automation system e.g. actuator, sensor, controller, communication module etc.
- d. Design and develop embedded system for monitoring and control purpose.

- e. Design wireless communication module/network using sensors and actuators.
- f. Any application related to instrumentation and control engineering discipline

*Note: Majority of the projects requires hardware and software to meet the need; however if required only software based project is permitted.*

### **Guidelines for planning and execution of Project**

The project activities are divided in phases as given below:

- I. Pre – study phase (Semester – VII): In this phase students are required to carry out following activities –
  - a. Identify the real world problem.
  - b. Define scope of work
  - c. Define specifications, or measurable outcome of the project
  - d. Define goal of the project
- II. Study phase (Semester – VII): In this phase students are required to carry out following activities –
  - a. Identify alternate solution
  - b. Select optimal solution considering criteria such as cost, time, environmental issues, applicable government regulations, applicable standards, societal issues etc.
  - c. Identify require components and initiate process for procurement
- III. Design phase (Semester – VII and VIII)
  - a. Design components/modules (hardware and software both).
  - b. Test it independently
- IV. Engineering phase (Semester VIII)
  - a. Integrate the modules/components and deliver solution
  - b. Test, install and finally deliver

### **Project Deliverables:**

Students are required to submit the following documents.

- a. Pre-study phase progress report and presentation containing as below
  - a. Problem statement
  - b. Gantt chart indicating the task to be performed and required time duration
- b. Study phase progress report and presentation
- c. Design phase progress report and modular components (hardware/software), presentation and demonstration
- d. Final report and solution (hardware, software) with demonstration

### **Project Evaluation:**

Project progress will be evaluated on regular basis internally as well as there will be a final semester examination.

- a. Project part – 1, in semester – VII, carries 150 marks, out of which internal evaluation carries 50 marks and university exam carries 100 marks.
- b. Project part – 2, in semester – VIII, carries 400 marks, out of which internal evaluation carries 100 marks and university exam carries 300 marks.