GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. SEMESTER: VI

Instrumentation and Control Engineering

Subject Name: **Practices in Instrumentation and Controls**
Subject Code: **161706**

Teaching Scheme				Evaluation Scheme		
Theory	**Tutorial**	**Practical**	**Total**	**University Exam (Theory) (E)**	**Mid Sem Exam (Theory) (M)**	**Practical (I)**
0	0	4	4	0	0	100

This is a laboratory course aimed at to acquaint students about the application areas of instrumentation and control engineering, industrial environment, and industrial practices. To achieve this goal following tasks must be performed during the term.

Task – I Industrial Visit:

Sr. No	Course Content
1.	Department is supposed to arrange minimum two visits to industries/institutions. It is recommended to consider the following types of industries/institutions – **a.** Process industries **b.** System integration house **c.** Equipment manufacturers **d.** Sophisticated instrument facility available in various research/academic institutions.
2.	**Deliverables:** The deliverables for the above task for submission are as below – **1.** Visit report (In group of four students)

Part – II Self Study Tutorial:

Sr. No	Course Content
1.	Students are required to study following materials and solve the assignments based on it.

	a. SI units, conversion of unit from one system of unit to other b. Standards used in instrumentation and control, for examples as below – (i). Packaging standards such as NEMA, IP (ii). Electrical, electrical equipment, and electrical classification standards such as UL/FM, NEC, NEMA) (iii). Safety Instrumented System (ISA S84.01, NFPA72, IEC61508) and various part of Code of Federal Regulation (CFR) etc. c. Understand the use of charts, tables, Nomographs, Typical Calculation, and Typical electrical hardware & installation details (Ch.- 3,4,5, 8, and 10 Applied Instrumentation in the Process Industries – Vol. 3 by W. G. Andrews) d. Control Valve Terminology, Sizing (Chapter – 2, 6 from Control Valve by Guy Borden Jr. and Paul G. Friedman, ISA Publication) e. Tender specification study (Power, Pharma, and Refinery)

Part – III Mini Project:

Sr. No	Course Content
1.	Students in group of two (no single student or students more than two) have to carry out in - house mini – project. The scope of project should be decided based on, but not necessary limited to, courses offered up to Semester – 6 and infrastructure available in institute.

Deliverables:

The deliverables for the above task for submission are as below –

1. Project report
2. Presentation and Demonstration to faculty and peer class students.