

GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

COURSE CURRICULUM COURSE TITLE: PROJECT-I(WITH SEMINAR) (COURSE CODE: 3351706)

Diploma Programme in which this course is offered	Semester in which offered
INSTRUMENTATION AND CONTROL ENGINEERING	5 th Semester

1. RATIONALE:

For a diploma instrumentation engineer, students are expected to gain capabilities of doing independent and group work by carrying out successful project work. For that purpose students are expected to define problem, understand the problem, provide alternative solutions to the problem, design, fabricate, implement and test necessary circuits/systems/software to solve the problem. Through project students are also expected to develop vital soft skills so that students become confident to gain meaningful employment and get job satisfaction.

2. COMPETENCY:

The course should be facilitated and implemented,
with the aim to develop following competency Communicate and lead effectively as well as able to work independently but also collaboratively in multi-disciplinary teams.

3. COURSE OUTCOMES

The students are expected to develop the following skills through the course.

- 1) Hard Skills: Planning, Interpret Technical Specifications, Designing, Fabrication, Implementation, Testing, Installation.
- 2) Soft Skills: Report writing, presentation.
- 3) Interpersonal Skills: Team work, Communication, Coordination, awareness of market scenario such as costing of components/services.

4. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE	PA	ESE	PA	150
0	0	6	6	0	0	60	90	

5. Course Detail.

Student should carry out one project during the term related to instrumentation and control engineering field. Project may pertain to measurement of process variables and parameters, measurement and control, Processor based applications and any application related to instrumentation and control engineering discipline.

Guideline to form a group:

Students in group have to identify real life engineering problems from industry, 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.

Guideline for selecting the project idea:

1. Student should read well known technical magazines such as electronics for you, elector-electronics, automate magazine, automation world, and instrumentIndia etc.
2. Project volumes published by electronicsforyou magazine.
3. Student should refer resource web link given at last.
4. Refer link <http://www.techpedia.in/> collaborated by GTU innovation council cell.

Following list of projects are suggested for the guidance of faculties and students:

+	NAME OF PROJECTS	AREA OF PROJECTS
1.	Air Flow Detector Circuit	MEASUREMENTS OF PROCESS VARIABLES AND PARAMETERS
2.	Thermistor Temperature Sensing Alarm	
3.	Water Level Indicator	
4.	Ultrasonic Level And Distance Measurement	
5.	Real-time Heartbeat Monitoring system with LCD display	
6.	Digital Speedometer	
7.	Automatic Street Light Controller Circuit Using Relay	MEASUREMENTS AND CONTROL
8.	PLC Based Dc Servo Motor Control System	
9.	PLC based level control of tank	
10.	PLC based batch process control	
11.	PLC based temperature monitoring system	
12.	PLC based multi tank level control	
13.	PLC based bottle filling plant	
14.	PLC based pouch packaging unit	
15.	PLC based fuel consumption control system	
16.	SCADA System Design And Construction For Real-Time Electrical Parameter Monitoring And Control	
17.	Auto Intensity Control of Street Lights	
18.	Precise Digital Temperature Control	
19.	SCADA (Supervisory Control & Data Acquisition)	

	for Remote Industrial Plant	
20.	Satellite receiver (Dish antenna) Positioning Control using IR Remote	
21.	Sun Tracking Solar Panel	
22.	Temperature Control System Using Thermocouple	
23.	Home Automation And Security Control	PROCESSOR/MICROTRLLER BASED APPLICATION
24.	Remote controlled Stepper Motor	
25.	Ultrasonic Proximity Detector	
26.	Smart Card For Entry Employee	
27.	Password Based Door Lock System Using 8051	
28.	Digital Tachometer Using 8051 Microcontroller	
29.	Finger Print Based Security System	MISCELLANEOUS
30.	Bidirectional Visitor Counter	
31.	Automatic Door Bell With Object Detection	
32.	Luggage Security Alarm	
33.	Exam Paper Leakage Protection System	

Guideline for Report Writing: Every student has to submit their project work detail in project report both in hard copy as well as softcopy (preferable in CD media). Project report should be as per guideline given in the following table.

Chapter No.	Title	Remarks
-	Front page	Compulsory
-	Certificate	Compulsory
-	Acknowledgement	Compulsory
-	Table Of Content	Compulsory
1.	Brief description of project idea	Compulsory
2.	Literature survey	Optional
3.	Block diagram with description	Compulsory
4.	Circuit diagram with description	Compulsory
5.	Programming flow chart and its programme/coding	Optional
6.	PCB layout	Optional
7.	Implementation, Testing and Results	Compulsory
8.	Conclusion	Compulsory
9.	Future scope of work/ Extension of project idea	Optional
10.	Bibliography/ References	Compulsory
11.	Annexure-I (Datasheets of used components)	Compulsory

Note: Suggested guideline for formatting the project report.

- 1 All pages should have page numbers at center bottom of the page.
- 2 All text should be in Arial/Times New Roman fonts.
 - 2.1 Main Title size should be 16

- 2.2 Sub Title size should be 14
- 2.3 General Text size should be 12
- 2.4 Report should contain Auto numbering for content, sub-content, table and figure to generate auto table of content.

6. SUGGESTED SPECIFICATION TABLE WITH WEEKS.

Phase No.	Phase Title	Working Weeks
I	Literature Survey, Project Identification	2
II	Design	6
III	Implementation	4
IV	Testing and Installation	1
V	Report writing and Presentation	1
Total		14

7. PROJECT EVALUATION SCHEME:

Evaluation of project should be made as per following guidelines

SR. No.	EVALUATION	WEIGHTAGE
I	Literature Survey, Project Identification	05%
II	Design	35%
III	Implementation	35%
IV	Testing and Installation	10%
V	Project Report	10%
VI	Presentation	05%
Total		100%

Note: student has to maintain individual log book and be weekly get duly signed by concerned faculty.

8.SUGGESTED LEARNING RESOURCES:

<http://www.electronicshub.org/electronics-projects-ideas/>

<http://seminarprojects.com/Thread-ece-projects-topics-list-for-final-year-new-ideas>

<http://indianengineer.wordpress.com>

<http://www.slideshare.net/zettanetworks/final-year-engineering-project>

<http://www.elprocus.com/final-year-engineering-projects-for-electronics-and-instrumentation-students/>

<http://electronicsforu.com/newelectronics/default.asp>