GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

COURSE CURRICULUM
COURSE TITLE: PROJECT- II (WITH SEMINAR)
(COURSE CODE: 3361707)

Diploma Programme in which this course is offered	Semester in which offered
INSTRUMENTATION AND CONTROL	SIXTH

1. RATIONALE:

For a diploma Instrumentation engineer, student expected to gain capabilities of doing independent and group work by carrying out successful project work. For that purpose student expected to learn, define problems, understand the problem, provide alternative solutions to the problems, design, fabricate, implement, test and installation of necessary circuits/system/software to solve the problem. As well as student expected to develop defined soft skills. So that after doing project work student should be confident enough get their employment.

Above mentioned expected outcome may achieved through Project-I, but to further enhance skills, particularly in interfacing area, students should identify and prepare their projects particularly in interfacing Process Instrumentation or Biomedical Instrumentation with various digital computing devices such as microprocessors, microcontroller, Computers, Programmable Logic Controllers, SCADA, DCS etc.

2. COMPETENCE:

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

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

3. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				
				Theory Marks		Practical Marks		Total Marks
L	T	P	C	ESE	PA	ESE	PA	
0	0	6	6	00	00	60	90	150

4. Course Detail.

Student should carry out one project during the term related to interfacing Process Instrumentation or Biomedical Instrumentation with various digital computing devices such as microprocessors, microcontroller, Computers, Programmable Logic Controllers, SCADA, DCS etc. Project may be pertaining to measurements of process variables and parameters, measurement, control and its interfacing with various Processors.

Guideline to form a group:

Students in group have to identify real life engineering problem 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 instrument India etc.
2. Project volumes published by electronics for you 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:

Sr.No	NAME OF PROJECTS	AREA OF PROJECTS
1.	Home Automation And Security Control Using Microcontroller.	PROCESSOR BASED APPLICATION
2.	Remote controlled Stepper Motor Using Microcontroller	
3.	Ultrasonic Proximity Detector Using Microcontroller	
4.	RFID Based Device Control and Authentication Using PIC Microcontroller	
5.	Beacon Flasher Using Microcontroller	
6.	Line Following Robotic Vehicle Using Microcontroller	
7.	Water Level Controller using 8051 Microcontroller:	

8.	Smart Card For Entry Employee Using Microcontroller	
9.	Password Based Door Lock System Using 8051	
10.	Digital Tachometer Using 8051 Microcontroller	
11.	PLC Based Dc Servo Motor Control System	MEASUREMENTS OF PROCESS VARIABLES AND PARAMETERS AND INTERFACING WITH PLC AND SCADA MISCELLANEOUS
12.	PLC based injection Moulding machine	
13.	PLC based automatic car washing machine	
14.	PLC based Elevator Controller	
15.	PLC based Temperature/Pressure Controller	
16.	Industrial Timer Controller for Multiple Machines using PLC	
17.	Sequential Batch Process using PLC	
18.	Automated Railway Signaling and Monitoring using PLC	
19.	PLC based Coffee Vending Machine	
20.	Automated Door open and close System using PLC	
21.	PLC based automatic bottle filling System	
22.	Water storage and distribution system for pharmaceuticals using PLC and SCADA	
23.	SCADA application of a water steam cycle of a thermal power plant	
24.	Microcontroller-Based Robotics and SCADA Experiments	
25.	SCADA And PLC Based Distribution And Substation Automation	
26.	SCADA System Design And Construction For Real-Time Electrical Parameter Monitoring And Control	
27.	SCADA (Supervisory Control & Data Acquisition) for Remote Industrial Plant	
28.	Simulation approach on step speed control of Induction Motor using Lab View	MEASUREMENTS OF PROCESS VARIABLES AND PARAMETERS AND *INTERFACING WITH COMPUTERS*
29.	Design & Implementation of Smart House Control Using Lab VIEW	
30.	Lab view based instrumentation system for solar-wind hybrid station	
31.	Multi-Device control system using PC	
32.	PC based Temperature Control System	
33.	PC Based Motor Speed Monitoring System	
34.	Ethernet based home/industrial automation	
35.	PC based packing control machine for industrial Application	

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

5. 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

6. 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%

7. SUGGESTED LEARNING RESOURCES:

i **http://www.electronicshub.org/electronics-projects-ideas/**
ii **http://seminarprojects.com/Thread-ece-projects-topics-list-for-final-year-new-ideas**
iii **http://indianengineer.wordpress.com**
iv **http://www.slideshare.net/zettanetworks/final-year-engineering-project**
v **http://www.elprocus.com/final-year-engineering-projects-for-electronics-and-instrumentation-students/**
vi **http://electronicsforu.com/newelectronics/default.asp**
vii **http://www.majesticproject.com/**
viii **http://anedotech.com**
ix **http://www.apexengineeringproject.com**
x **http://1000projects.org**
xi **http://www.ingenstech.com/projects-lists-2013-14/PLC%20SCADA%20Projects%20-%20INPLC.pdf**

8. COURSE CURRICULUM DEVELOPMENT COMMITTEE

Faculty Members from Polytechnics

- Prof. J.T. Patankar I/C HOD, Government Polytechnic, Ahmedabad
- Prof. M. A. Modi Lecturer , Government Polytechnic, Palanpur.

Faculty Members from NITTTR Bhopal