GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

COURSE CURRICULUM
COURSE TITLE: PROJECT-II
(COURSE CODE: 3361109)

Diploma Programmes in which this course is offered	Semester in which offered
ELECTRONICS & COMMUNICATION	SIXTH

1. RATIONALE

To Provide an opportunity to the students for applying the knowledge and technical skills acquired by identifying real life problem of the industries /research organization / society as a whole and providing it's innovative solution with implementation , which is economically and technologically viable.

2. COMPETENCY

The Project-II is to be selected by the students and the problem is to be identified for providing solution under the mentoring of the institute Guide/Industry mentor to develop following competencies.

i. Co-creation & Interpersonal abilities
ii analysis Test and Troubleshooting skills
iii Programming/simulation/ debugging skills
iv PCB fabrication/soldering skills
v modeling skill
v Documentation & Presentation skill

3. Course Outcomes

At the end of the course, student will able to
i. Develop ability to create PCB
ii Identify component and check their ratings
iii Develop soldering skills and mounting components on PCB
iv Test Continuity of the wires/tracks and leads
v. Develop software development skill
vi. Simulate, Design and debugging of the circuit
vii. Implementation of the proposed solution
viii. Troubleshooting hardware in final implementation
ix. Observe responses using CRO
x. Work in team cohesively & effectively
xi. Design and fabricate model
xii. Prepare project report having organized documentation.
xiii.Prepare & deliver presentation.
ix. Visualize the roadmap of the further expansion

4. 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	300
0	0	06	06	0	0	200	100	

Legends: L-Lecture; **T** – Tutorial/Teacher Guided Theory Practice; **P** - Practical; **C** – Credit **ESE** - End Semester Examination; **PA** - Progressive Assessment.

5. COURSE DETAILS

Stage	Major Learning Outcomes	Topics and Sub-topics
Stage-I Create PCB/Write Program Codes	1.a. Build actual PCB from the PCB layout design. 1.b. Identify components and assure their ratings 1.c. Write actual code from algorithm	1.1 Physical creation of Printed Circuit Board 1.2 Verification of Component ratings and specifications 1.3 Program development in Assembly/high level language
Stage– II Component Mounting and soldering/rectification of syntax errors	2.a. Check all tracks for continuity 2.b. Mount and solder components on PCB 2.c. Run program modules and check for syntax errors	2.1 Continuity test for PCB tracks 2.2 Mounting and Soldering component on PCB 2.3 Execute program modules and debugging for syntax errors
Stage– III Software Testing and Loading/ Hardware Test	3.a. Unit Testing of software 3.b. Program testing 3.c. Loading program on chip/ on system	3.1 Debug system modules for logical errors 3.2 Test program as a whole after linking modules to main program 3.3 Test program and load on chip/on system 3.4 Test Hardware circuit if software is not there in scope of project
Stage – IV Final Implementation	4.a. Execute program 4.b. Test for various inputs 4.c. Troubleshoot final hardware/software	4.1 Execute loaded program on actual hardware and observe response. 4.2 Test hardware behavior for all possible inputs to the circuit. 4.3 Troubleshoot hardware/software for unexpected/faulty behaviour 4.4 Correct Hardware/software and execute the program until getting desired/expected response.
Stage – V Model design	5.a. Prepare model design 5.b. Create model	5.1 Design model and

Stage	Major Learning Outcomes	Topics and Sub-topics
	5.c. Test Model	5.2 Create list of requirement for implementation of model 5.3 fabricate and construct model 5.4 Connect circuit responses to model and test model for its working.
Stage – VI Documentation & final Presentation	5.a. Prepare project report 5.b. Prepare PPT presentation 5.c. Present final project work	5.1 Prepare project report as per GTU guideline. 5.2 Prepare PPT and present as per schedule. 5.3 Demonstrate with model*

*Note: Model(It is not compulsory but desirable if there is any scope of modeling for effective realization of functioning of project work.)

6. SUGGESTED SPECIFICATION TABLE WITH HOURS & MARKS (THEORY)

Unit No.	Unit Title	Contact Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
I	Create PCB/Write Program Codes	08	05	05	20	30
II	Component Mounting and soldering/rectification of syntax errors	12	05	05	20	30
III	Software Testing and Loading/ Hardware Test	20	05	10	25	30
IV	Final Implementation	20	00	05	25	30
V	Model design	12	00	05	25	30
VI	Documentation & final Presentation	12	00	00	30	50
	Total	**84**	**15**	**35**	**50**	**200**

Legends: R = Remembrance; U = Understanding; A = Application and above levels (Revised Bloom's taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

7. SUGGESTED LIST OF STUDENT ACTIVITIES

Following is the list of proposed student activities like:

i. Create actual PCB in laboratory from layout

ii. Component mounting and soldering practice

iii. Visit industry regularly.

iv. Get help from Innovation council/research organization for implementation methods/strategy

v. Report regarding stage wise progress to institute guide/industry mentor regularly.

vi. Continuous test and debugging of software using various tools for error free compact solution.

vii. Study of intellectual property rights for patenting the project.

viii. Fabrication and construction of models

8. SPECIAL INSTRUCTIONAL STRATEGIES (if any)

i. Seminar/Symposium
ii. Group discussion/Debate
iii. Expert lectures of resource persons from industries/research organizations.
iv. Arranging Industrial visit.
v. Project Exhibition
vi. Mock presentation of project

9. SUGGESTED LEARNING RESOURCES

A) List of Magazines.

i. Planet Analog

ii. Elector electronics.

iii. Electronic design

iv. EDA Tech Forum

iv. Electronics project manuals

B) List of Major Equipment/ Instrument with Broad Specifications

1) Computer
2) Digital storage oscilloscope (DSO).
3) Spectrum analyzer.
4) Universal programmer.
5) Wide band function generator.
6) Soldering station with drill machine
7) PCB formulation kit
8) Clip on meter/ Multimeter / Power Supplies /
9) IC Tester / Continuity Tester /Component Tester
10) LCR Q –meters
11) Other equipments as per the need of project work.
12) Simulation tools
13) Cross compilers

C) List of Software/Learning Websites

http://www.electronicshub.org

http://www.engineersgarrage.org

http://www.electronics-project-design.com

http://www.eleccircuit.com

http://www.circuit-projects.com

http://www.electronicsproject.org

http://www.circuiteasy.com

http://www.electronics-project-design.com

http://www.electronicsschematic.com

(The above list of websites are merely examples for the reference, students should go through many other similar websites .)

11. COURSE CURRICULUM DEVELOPMENT COMMITTEE

Faculty Members from Polytechnics

- Mr. P M Patel, I/C Principal , GGP surat
- Mr.K.N.VAGHELA, Sr. Lecturer, G.P., Ahmedabad
- Mr. D.H.AHIR , Sr. Lecturer G.P.,Rajkot
- Mr. M.S.DAVE , Sr. Lecturer G.P.,Ahmedabad

Coordinator and Faculty Members from NITTTR Bhopal

1. Dr. Anjali Potnis , NITTTR, bhopal