

GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

**COURSE CURRICULUM
COURSE TITLE:PROJECT-I
(COURSE CODE: 3352004)**

Diploma Programme in which this course is offered	Semester in which offered
Mechatronics Engineering	5th Semester

1. RATIONALE.

This course enables the students to apply their knowledge on real Industrial problem or to develop a real working model. This course includes a planning of the project which is to be completed within the time allocated, the maintenance of a log book and the preparation of a report. The report contains the reasons for all decisions taken. This course also aims to develop the managerial skills such as leadership, coordination, team work, planning the resources, etc. Thus by going through this course, abilities like innovativeness, creativity, imitativeness, performance qualities, etc. are developed in students.

2. COMPETENCY.

- Apply innovative, creative and logical approach for problem identification.
- Plan resources optimally and economically.

3. COURSE OUTCOMES.

- i. Perform various tasks like market survey, industrial visits, creative and innovative techniques, etc to identify project.
- ii. Draw wiring diagram and production drawings.
- iii. Plan material and processes optimally and economically.
- iv. Develop sense of environmental responsibility.

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	
0	0	4	4	0	0	40	60	100

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

5. COURSE DETAILS

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
Unit – I. Introduction.	1a. Appreciate objectives of learning this course.	1.1 Introduction. 1.2 Need, importance and objectives. 1.3 Examples of projects. 1.4 Expected benefits.
Unit– II Basic techniques and project problem identification.	2a. Develop the positive attitude suitable for industrial environment. 2b. Apply basic techniques to identify and to define problems/projects. 2c. Identify the problem/project. 2d. Prepare details and assembly production drawings for manufacturing type projects. 2e. Define live problems at industry place. Also prepare necessary drawings for live problem solution at industry place. 2f. Develop generic and managerial skills. 2g. Plan time and material optimally and economically.	2.1 Attitude-Dos and Don'ts in context of industrial environment. 2.2 Need-the mother of invention. 2.3 Basic techniques. (It is expected that student also uses these basic techniques to develop their engineering and innovative thinking pattern, i.e. student uses these techniques as their thought drivers/techniques to identify/define problems/projects.) i. Productivity. ii. Quality. iii. Creativity and innovativeness. iv. Cost/waste reduction. v. Safety/security. vi. Pollution reduction/removal. vii. Humanity. viii. Market survey. ix. Optimum Cycle time x. Other/s included by concerned teacher. 2.4 Identification of problem/ project.(Each student will suggest one problems/ projects. Emphasis for project selection should be given to the area of elective group selected.).The project can be of: i. Manufacturing type at institute place. For critical processes/ operations, help of industries can be taken. ii. Convert manual machine to Automatic machine. iii. U.D.P. type. iv. Live problem solution at industry place. v. Combination of above Four.

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
		<p>The project should also be:</p> <ol style="list-style-type: none"> i. Preferably innovative in nature. ii. Feasible using the infrastructure of the institute. iii. To give practice for drawing/drafting using software. iv. To give practice for wiring diagram to control various motors. v. Incorporating major manufacturing processes if possible. vi. Non repetitive in nature. vii. To develop the generic as well as technology related skills. viii. Having measurable and analytical end results. <p>2.5 Prepare details and assembly production drawings for manufacturing type projects.</p> <p style="text-align: center;">OR</p> <p>2.5 Define live problems at industry place. Also prepare necessary drawings for live problem solution at industry place.</p> <p>2.6 Prepare bill of material.</p> <p>2.7 Cost estimation of parts and complete project.</p>
<p>Unit– III</p> <p>Draft project report.</p>	<p>3a. Prepare draft project report.</p>	<p>3.1 Prepare draft project report.</p> <p>3.2 Present the draft project report.</p>

6. SUGGESTED LIST OF EXERCISES/PRACTICALS.

The practical/exercises should be properly designed and implemented with an attempt to develop different types of skills (**outcomes in psychomotor and affective domain**) so that students are able to acquire the competencies/programme outcomes. Following is the list of practical exercises for guidance.

*Note: Here only outcomes in psychomotor domain are listed as practical/exercises. However, if these practical/exercises are completed appropriately, they would also lead to development of certain outcomes in affective domain which would in turn lead to development of **Course Outcomes** related to affective domain. Thus over all development of **Programme Outcomes** (as given in a common list at the beginning of curriculum document for this programme) would be assured.*

Faculty should refer to that common list and should ensure that students also acquire outcomes in affective domain which are required for overall achievement of Programme Outcomes/Course Outcomes.

Sr. No.	Unit No.	Practical Exercises (outcomes in Psychomotor Domain)	Practice Hours
1	I	Preparatory activities: a. Objectives of learning this subject. b. List attitude dos and don'ts.	3
2	II	Basic techniques. a. Explain all basic techniques as per Unit II. b. Identify at least five needs which require product development/modification. Each student will identify separately. c. Given the live product/case (to be assigned by teacher), generate at least ten questions for each following basic techniques leading to identify project/problem: i. Productivity. ii. Quality. iii. Cost/waste reduction. iv. Value analysis. d. Carry out market survey for given product. (Teacher will assign the required data). e. Visit an industry and prepare the report on project which can be undertaken for manufacturing at institute place and/or live problems which can be solved at industry place. f. Carry out literature survey for basic techniques.	12
3	II	Identification of problem/project. Student will practice and will identify at least one problem/project and will prepare following. i. Production drawings.(For manufacturing type project). ii. Electrical wiring diagram if Automation based. OR i. Define live problems at industry place. Also prepare necessary drawings for live problem solution at industry place. iii. Bill of material. iv. Cost estimation of parts and complete project.	9
5	III	Draft project report: Prepare draft project report and include following. i. Activities performed at sr.no.2 from b to I. (Questions generated, market survey carried out,). ii. Title of project. iii. Prepared Electrical wiring diagram and production drawings with use of software.(Workbench/AutoCAD/ProE, CREO, etc.	18

		OR	
		iii. Description of live problem to be solved at industry place.	
		iv. Bill of material.	
		v. Cost estimation of parts and complete project.	
Total Hours			42

NOTE:

- a. Prepare project report with MS Office with following guidelines.

PAGE	:	A4 (ON ONE SIDE)
MARGIN	:	TOP 15mm
	:	BOTTOM 15mm
	:	RIGHT 15mm
	:	LEFT 30mm
FONT	:	ARIAL
SIZE	:	TITLE :12 BOLD
	:	CONTENT :12
	:	SPACING :18 points.
HEADER	:	TITLE OF THE PROJECT, PAGE NUMBER ON TOP RIGHT.
FOOTER	:	ACADEMIC YEAR, SHORT NAME OF THE INSTITUTE.

- b. It is compulsory to prepare log book of exercises. It is also required to get each exercise recorded in logbook, checked and duly dated signed by teacher. PA component of practical marks is dependent on continuous and timely evaluation of exercises.
- c. For practical ESE part, students are to be assessed for competencies achieved.

7. SUGGESTED LEARNING RESOURCES.**A) References:**

- a. Use of Library.
- b. Reference books.
- c. Hand books.
- d. Encyclopaedia.
- e. Magazines.
- f. Periodicals.
- g. Journals.
- h. Visits of industry, organizations related as per the requirement.
- i. Internet.

11. COURSE CURRICULUM DEVELOPMENT COMMITTEE**Faculty Members from Polytechnics**

- P.A.Solanki, Sr. Lecturer, Mechatronics Engineering Department, B.S.Patel Polytechnic, Ganpat Vidyanagar, Kherva.
- V.K.Patel, H.O.D, Mechatronics Engineering Department, B.S.Patel Polytechnic, Ganpat Vidyanagar, Kherva.

Coordinator and Faculty Members from NITTTR Bhopal

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