GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

COURSE CURRICULUM
COURSE TITLE: PROJECT - II
(COURSE CODE: 3362009)

Diploma Programme in which this course is offered	Semester in which offered
MECHATRONICS ENGINEERING	SIXTH

1. RATIONALE.

This course enables the students to exercise some of the knowledge and/or skills developed during the programme to new situation or problem for which there are number of engineering solutions. This course include planning of the tasks which are to be completed within the time allocated, and in turn, helps to develop ability to plan, , use, monitor and control resources optimally and economically. By studying this course abilities like creativity, imitativeness and performance qualities are also developed in students. Leadership development and supervision skills are also integrated objectives of learning this course.

2. COMPETENCY.

The course content should be taught and implemented with the aim to develop different types of skills so that students are able: to acquire following competencies.

- Plan, use, monitor and control resources optimally and economically.
- Identify the problem and apply innovative, creative and logical approach for problem solving.

3. COURSE OUTCOMES.

The theory should be taught and practical should be carried out in such a manner that students are able to acquire different learning outcomes in cognitive, psychomotor and affective domain to demonstrate following course outcomes.

i. Plan and identify materials, processes and other resources optimally.
ii. Develop innovative and creative ideas.
iii. Develop leadership, interpersonal skill and team work.
iv. Develop sense of environmental responsibility.
v. Purchase raw material/standard parts.
vi. Interpret the drawings, manufacture, assemble, inspect & if necessary modify the parts/unit/assembly of the project work.
vii. Familiar with fast changes in technology.

4. TEACHING AND EXAMINATION SCHEME.

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

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

5. 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.	Practical Exercises (outcomes in Psychomotor Domain)	Approx Hours. required
1	**Preparatory Activity:** a. Keep project report of V semester course Project-I. b. Appreciate the importance of course outcomes. c. Recall and strengthen know-how for engineering drawing fundamentals. d. Recheck and correct (Minor corrections) if necessary selected components for project. (The project components selected in Project –I). e. Evaluate all the projects (Of Project –I) circuit and select feasible project for execution in batch. Attach selected project circuit, programming method and structure drawings.	08
2	**Work allocation matrix:** Prepare work allocation matrix along with provision of follow-up remarks and notes. (Suggested format of work allocation matrix with provision of follow-up is attached herewith in Annexure -I).	04
3	**Project execution:**	64

	Execute project preparation activities as per work allocation matrix. (Option of flexi time based work can also be practiced. For this option, it may not be necessary to exactly follow the time table slots. This can be on continuous base also along with time table slots).	
4	**Documentation and presentation:** Documentation of final project report which includes following in sequence. a. Title page-(Suggested as per Annexure-II.) b. Certificate –As per Annexure-III. c. Index. d. Preface/Acknowledgement. e. Course outcomes. f. Project title. g. Control circuit, Programming method and Structure drawings. h. List of activities (suggested as per Annexure – IV) and work allocation matrix. i. Plant layout with dimensions. j. List and specifications of Selected actuator, electronics component, equipments and tools. k. Bill of material with make or buy decision. l. Specifications of bought out parts. m. Process sheets-As if mechanical parts to be develop, per format given in course Industrial engineering. n. Flow process charts. o. Specification and consumption of consumables. p. Details of inspection / testing carried out. q. Details of rework / rectifications carried out. r. Cost estimation. s. Monitoring and control report/sheet. t. Notes on troubleshooting. u. Notes on individual achievement of skills / experience /problems / solutions. v. References. w. Day to day logbook as per Annexure-V. x. Presentation including moments at work-photographs in action.	8
	TOTAL	84

NOTE:

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

PAGE:	A4 (ON ONE SIDE).
MARGINN:	TOP :15mm.
	BOTTOM :15mm.
	RIGHT :15mm.
	LEFT :30mm.
FONT:	ARIAL.
SIZE:	12-BOLD, CONTENT12,
	SPACING 18 POINTS,
HEADER:	TITLE OF THE PROJECT, PAGE NUMBER ON TOP RIGHT.
FOOTER:	ACADEMIC YEAR, SHORT NAME OF THE INSTITUTE.

b. Term work (hard copy) should also include experience logbook duly certified by workshop instructors (as applicable), Industry/Market/Field personnel (as applicable) and subject teachers.

c. Term work has to be defended (along with term work of V semester and VI semester) by practical / oral examination to be conducted by external and internal examiners. Power point presentation is also to be included.

6. SUGGESTED LIST OF STUDENT ACTIVITIES.

SR.NO.	ACTIVITY
1	Suggest further improvement / research which can be carried out.

7. SUGGESTED LEARNING RESOURCES.

A. **List of Books:**

S. No.	Title of Book	Author	Publication
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			

8. COURSE CURRICULUM DEVELOPMENT COMMITTEE

Faculty Members from Polytechnics.

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Coordinator and Faculty Members from NITTTR Bhopal.

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ANNEXURE-I

WORK ALLOCATION MATRIX (SUGGESTED)

ENROLLMENT NO. OF STUDENT: **NAME OF STUDENT:** **BATCH:**

ACTIVITY NO.	SHORT DESCRIPTION OF ACTIVITY	WHO WILL PERFORM?	PLANNED DATES		ACTUAL DATES	WHO HAS / HAVE PERFORMED?		REASON/S FOR ANY DELAY / DEVIATION FROM PLANNING	
			STARTING	ENDING	STARTING	ENDING			
1	Preparing and maintaining logbook as per Annexure-V.								
2	Finalization of assembly and detail drawings (This must be electronics drawings with suitable symbol, material , quantity per assembly for components drawings ,etc.								
3	Preparing master schedule and work allocation matrix in group.								
4	Preparation of bill of material.								
5	Collecting data and specifications of available resources-mainly material and machineries / equipment/facilities and tools.								
6	Make or Buy decision.								
7	Preparing specifications of bought-out parts.								
8	Preparation of process planning (sheets) for all components in standard format.								
9	List, quantities and specifications of consumables.								

10	Preparation of list of required electronics components ,Programming kit if required,Actuator,measuring instruments and other tools along with necessary specifications and sketches if required.								
11	Identifying and locating required resources like material, machineries/equipments / facilities and tools.								
12	Preparing Circuit drawing.								
13	Programming and control method description.								
	a)								
	b)								
	c)								
	d)								
14	Details of inspection carried out.								
15	PCB design and Soldering of electronics components.								
16	Details of testing carried out.								
17	Rework / rectification activities if required.								
18	1) Project monitoring and control, record keeping.								
19	Costing.								
20	Preparation of notes on troubleshooting.								

21	Preparation of notes individually on : 1. Extent to which he/she has achieved learning outcomes. 2. Own experience in executing project. 3. He/ She has faced technical problems during execution of project and solutions found.								
22	Preparation of list of references.								
23	Preparation of project report.								
24	Presentation.								

ANNEXURE-II
TITLE PAGE

INSTITUTE LOGO

< NAME AND ADDRESS OF INSTITUTE>

TERM WORK REPORT

SUBJECT : PROJECT – II

SUBJECT CODE :

DISCIPLINE : MECHANICAL ENGINEERING

ENROLMENT NUMBER :

NAME OF STUDENT :

DIVISION / BATCH :

SUBMISSION

SUBMITTED - V SEM. : <DATE>

SUBMITTED-VI SEM. : <DATE>

ANNEXURE-III

CERTIFICATE

THIS IS TO CERTIFY THAT

SHRI / KUM.....

HAS SATISFACTORILY COMPLETED HIS / HER

TERMWORK IN THE SUBJECT

PROJECT – II (<SUBJECT CODE >)

WITHIN THE PRESCRIBED TIME LIMIT AND PRESCRIBED BOUNDARY.

DATE : *STUDENT*

DATE : *INSTITUTE GUIDE*

DATE: *HEAD OF DEPTT.*

DATE: *PRINCIPAL*

ANNEXURE-IV

SUGGESTED LIST OF ACTIVITIES.

1) Preparing and maintaining logbook as per Annexure-V.
2) Finalization of assembly and detail drawings (This must be electronics drawings with suitable symbol, material , quantity per assembly for components drawings ,etc.
3) Preparing master schedule and work allocation matrix in group.
4) Preparation of bill of material.
5) Collecting data and specifications of available resources-mainly material and machinery / equipment/facilities and tools.
6) Make or Buy decision.
7) Preparing specifications of bought-out parts.
8) Preparation of process planning (sheets) for all components in standard format.
9) List, quantities and specifications of consumables.
10) Preparation of list of required electronics components ,Programming kit if required,Actuator,measuring instruments and other tools along with necessary specifications and sketches if required.
11) Identifying and locating required resources like material, machinery/equipments / facilities and tools.
12) Preparing Circuit diagram.
13) Programming and control method description.
14) Details of inspection carried out.
15) PCB design and Soldering of electronics components.
16) Details of testing carried out.
17) Rework / rectification activities if required.
18) Project monitoring and control, record keeping.
19) Costing.
20) Preparation of notes on troubleshooting.
21) Preparation of notes individually on :
    a. Extent to which he/she has achieved learning outcomes.
    b. Own experience in executing project.
    c. He/ She has faced technical problems during execution of project and solutions found.
22) Preparation of list of references.
23) Preparation of project report.
24) Presentation.

ANNEXURE-V

FORMAT FOR DAY TO DAY LOG BOOK

ENROLLMENT NUMBER OF THE STUDENT :	
NAME OF THE STUDENT :	

DATE:	DETAILS OF WORK CARRIED OUT.