Government of Karnataka
Department of Technical Education
Board of Technical Examinations, Bengaluru

Course Title: Project work on Design of Mechatronics System and industrial visit		**Course Code: 15MC67P**
Mode (PBL) : 06/week	**Credits:3**	**Core/ Elective: Core**
Type of Course :Project based Learning		**Total Contact Hours: 78**
CIE- 25 Marks		**SEE- 50 Marks**

Prerequisites: Knowledge of First to Sixth semester courses of Diploma in Mechatronics Engineering Program

Course Objectives: is to provide the opportunity for the students to think, imagine, and to integrate all the technologies in creating an intelligent system/device/process through **Project based Learning Mode**

Course outcome: At the end of the Course, the students must be able to:

1. Design an intelligent Device/System/Process by Integrating Mechanical, Electrical and Electronics component
2. Build Prototypes of an intelligent Device/System/Process using Adriano or similar development boards
3. Acquire practical Knowledge through industrial visits

Course Outcome		Cognitive Level	Linked with PO	Teaching Hours
CO1	Design an intelligent Device/System/Process by Integrating Mechanical, Electrical and Electronics component	Application/Analyze/Evaluation	1,2,10	30
CO2	Build Prototypes or an intelligent Device/System/Process using Adriano or similar development boards	Application/Analyze/Evaluation/ Create	1,2,3,4,8	48
CO3	Acquire practical Knowledge through industrial visits	Application/Analyze/	2,8	
		Total sessions		**78**

Legend: R; Remember, U: Understand A: Application

Mapping of Course Outcomes with Program Outcomes

Course	Program Outcomes									
	1	2	3	4	5	6	7	8	9	10
Project work on Design of Mechatronics System and industrial visit	**1**	**3**	**2**	**2**	**-**	**-**	**-**	**3**	**-**	**2**

Contents

Suggested List of Projects (Any Similar Projects may be considered)

1. A Mobile Robot
2. A Mechatronics Race Car
3. An Electronic Canon / Catapult
4. An Elevator
5. An Air Boat
6. An Automatic Window Curtain
7. A Crane
8. A Basic Robotic ARM
9. A Stamping Machine
10. An Automated Box/Item Sorter
11. A Goods Transporter
12. An Automated Garage Door
13. A Car Park Barrier
14. A Remote Plant Watering System
15. A Pet Feeder
16. Remote controlled car using Arduino and T.V. remote

You may also visit following links

1. http://www.electronicshub.org/arduino-project-ideas/
2. https://www.elprocus.com/mini-electronics-project-ideas/
3. http://www.circuitstoday.com/arduino-projects-and-circuits-collection
4. http://todayscircuits.blogspot.com/2012/07/arduino-based-project-ideas-top-40.html#.V-r854h94dU

Instructions

1. The project must be selected so as to has to **Integrate Mechanical, Electrical ,Electronics and related technologies** in building up of an intelligent Device/System/Process
2. The Project has to be carried out by the students in a convenient groups of four to six students per batch
3. Project committee in the institution should give the approval for doing the project

4. Maintain the Register in the institution to record all project to avoid the repetition
5. After approval the students list should be displayed in the notice board along with guide at the beginning of Fifth semester
6. Six periods per week should be allotted in the time table and this time should be Utilized by the students to receive the information from the guide, Literature Survey, Computer analysis or field work as required by the project
7. Each batch of students should submit their synopsis at the end of 5th semester
8. The guide should monitor the progress of Project periodically and it should be evaluated for 25 marks at the end of 5 & 6 semester as CIE based on Rubrics
9. The Project Report should consist of Candidate declaration, Certificate, synopsis, Acknowledgments, Table of Contents, List of table & figures, Introduction, Literature Review, principle of working, Methodology, Design, fabrication, Tests, Result, Conclusion and scope for future improvement and References.
10. Project reports should be prepared in Times New Roman with font size 14 for

Titles and 12 for text with 1.5 line spacing on an A4 size paper. The margins should be:

Left – 1.5", Right - 1", Top and Bottom - 0.75"

Industrial Visit

Students should visit industries in their respective domain during 5 semesters and submit the comprehensive report focusing on study of plant layout , product, process, , tooling, jigs and fixtures and quality aspects etc.

Scheme of Valuation

A- CIE ASSESSMENT FOR FINAL REVIEW-(During VI semester)

Sl No.	Particulars	Marks
1	Principle of working	05
2	Literature Review	05
3	Methodology, Plan and schedule, Data collection,	05
4	Demonstration of the project	10
Total		**25**

SEE- ASSESSMENT -(During VI semester)

Sl No.	Particulars	Marks
1	Principle of working	10
2	Integration of Mechanical, Electrical ,Electronics and related Technologies	10
3	Demonstration of the model	20
4	Viva	10
Total		**50**

Sample Rubrics

Dimension	**Exemplary**	**Accomplished**	**Developing**	**Beginning**	**Roll No. of the Student**				
	5/4	**3**	**2**	**1**	**1**	**2**	**3**	**4**	**5**
Organization	Information presented in logical, interesting sequence	Information in logical sequence	Difficult to follow presentation--student jumps around	Cannot understand presentation--no sequence of information	Ex: 2				
Subject Knowledge	Demonstrates full knowledge by answering all class questions with explanations and elaborations	At ease with expected answers to questions but does not elaborate	Uncomfortable with information and is able to answer only rudimentary questions	Does not have a grasp of the information. Cannot answer questions about subject	4				
Graphics	Explain and reinforce screen text and presentation	Relate to text and presentation	Occasionally uses graphics that rarely support text and presentation	Uses superfluous graphics or no graphics	5				
Oral Presentation/ Demonstration	Maintains eye contact and pronounces all terms precisely. All audience members can hear	Maintains eye contact most of the time and pronounces most words correctly. Most audience members can hear presentation	Occasionally uses eye contact, mostly reading presentation, and incorrectly pronounces terms. Audience members have difficulty hearing	Reads with no eye contact and incorrectly pronounces terms. Speaks too quietly	3				
Total Score=2+3+4+5=14/4=3.5=4									

(Specimen Copy)

DEPARTMENT OF TECHNICAL EDUCATION
BENGALURU-560001

(Font Style Times New Roman – size -18)

CERTIFICATE

(Font Style Times New Roman – size -16)

Certified that the project report on**"…….TITLE OF THE PROJECT……..**"is the bonafide work of "**……..NAME OF THE CANDIDATE(S)……**"who carried out the project work under my supervision.

(Font Style Times New Roman – size -14)

SIGNATURE

PROJECT CORDINATOR

(With Seal)

SIGNATURE

HEAD OF THE DEPARTMENT

(With Seal)

Examiners

1) .....

Signature, Name, Designation & Address.

2) .....

Signature, Name, Designation& Address,

Date:

Place:

(Specimen Copy)

CANDIDATE'S DECLARATION

I, ---------- a student of Diploma in ---------- Department bearing Reg No----------of ---------- hereby declare that I own full responsibility for the information, results and conclusions provided in this project work titled **"----------** "submitted to **State Board of Technical Examinations, Government of Karnataka** for the award of Diploma in Mechatronics Engineering.

To the best of my knowledge, this project work has not been submitted in part or full elsewhere in any other institution/organization for the award of any certificate/diploma/degree. I have completely taken care in acknowledging the contribution of others in this academic work. I further declare that in case of any violation of intellectual property rights and particulars declared, found at any stage, I, as the candidate will be solely responsible for the same.

Date:

Place:

Signature of candidate

Name: ----------

Reg No----------

(Specimen Copy)

Certificate issued by guide

DEPARTMENT OF TECHNICAL EDUCATION

NAME OF THE INSTITUTION

Address with pin code

Department of .....

CERTIFICATE

Certified that this project report entitled ----------

---- ----------"which is being submitted by Mr./Ms. ……., Reg. No…..……, a bonafide student of ……in partial fulfilment for the award of **Diploma in Mechatronics Engineering** during the year ……... is record of students own work carried out under my/our guidance. It is certified that all corrections/suggestions indicated for internal Assessment have been incorporated in the Report and one copy of it being deposited in the polytechnic library.

The project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the said diploma.

It is further understood that by this certificate the undersigned do not endorse or approve any statement made, opinion expressed or conclusion drawn there in but approve the project only for the purpose for which it is submitted.

Signature of the Guide	Signature of the HOD
Name and Designation	Name with Seal
Date:	
Place:	