



Maharashtra State Board of Technical Education, Mumbai
Teaching And Examination Scheme For Post S.S.C. Diploma Courses

Program Name : Diploma in Mechatronics

Program Code : MK

With Effect From Academic Year: 2019 - 20

Duration of Program : 6 Semesters

Duration : 16 Weeks

Semester : Sixth

Scheme - I

Semester : Sixth				Scheme - 1																	Grand Total
S. N.	Course Title	Course Abbreviation	Course Code	Teaching Scheme			Credit (L+T+P)	Examination Scheme													
				L	T	P		Theory						Practical							
								Exam Duration in Hrs.	ESE		PA		Total		ESE		PA		Total		
									Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks	
1	Inplant Training	ITR	22076	--	--	30	30	--	--	--	--	--	--	--	200#	80	200**	80	400	160	400
Total				--	--	30	30	--	--	--	--	--	--	--	200	--	200	--	400	--	400
Instruction: English																					

Medium of Instruction: **English**

Student Contact Hours Per Week: **30 Hrs.**

Total Marks : **400**

Abbreviations: ESE- End Semester Exam, PA- Progressive Assessment, L - Lectures, T - Tutorial, P - Practical

@ Internal Assessment, # External Assessment (**Assessed by Insitute mentor and Industry Mentor/Expert from same industry as an external**),

** **Assessed by industry Mentor and Instt. Mentor as per format no. 5.**

If Candidate not securing minimum marks for passing in the "PA" part of practical of any course of any semester then the candidate shall be declared as "Detained" for that semester.



Program Name : Diploma in Mechatronics
Program Code : ME / PS / MK
Semester : Fifth
Course Title : Implant Training
Course Code : 22076

1. RATIONALE

The Implant Training for students is introduced in this curriculum to know the structure of manufacturing industries, observe safety and discipline practices in industries. This course has been designed for the students to know how to communicate with higher ups, peers and subordinates. They should be able to identify raw materials and manufacturing process and testing methods. The Implant Training also provides an opportunity to get accustomed to the industrial work atmosphere.

2. COMPETENCY

The aim of this course is to help the student to attain the following industry identified competency through various teaching learning experiences:

- Solve simple industrial problems through Implant Training.

3. COURSE OUTCOMES (COs)

The theory, practical experiences and relevant soft skills associated with this course, so that the student demonstrates the following industry-oriented COs associated with the above-mentioned competency:

- Collect information about industry.
- Observe manufacturing process.
- Use relevant testing instruments/gauges.
- Follow ethical industrial practices.
- Analyze simple industrial problems and possible solutions.

4. TEACHING AND EXAMINATION SCHEME

Teaching Scheme			Credit (L+T+P)	Examination Scheme											
L	T	P		Theory						Practical					
				Paper Hrs.	ESE		PA		Total		ESE		PA		Total
Max	Min		Max		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
-	-	30	30	-	-	-	-	-	-	200#	80	200**	80	400	160

Legends: L-Lecture; T – Tutorial/Teacher Guided Theory Practice; P - Practical; C – Credit, ESE - End Semester Examination; PA - Progressive Assessment; # - External Assessment. ** Assessed by industry Mentor and Instt. Mentor as per format no. 5.

5. GENERAL GUIDELINES FOR INPLANT TRAINING:

Students are expected to perform following activities during their Implant Training;

- Follow safety and discipline practices in industries.



- Testing of raw materials as per IS (Indian Standards) specification.
- Testing of raw materials as per company's specification.
- Reading and interpret product data sheet.
- Handling of instruments/gauges.
- Understand the significance of tests results.
- **Recommend solution for the identified problem through project work.**

6. EXPECTATION FROM INDUSTRY:

- Industry shall expose students to industrial environment.
- Demonstrate standard practices followed by industry.
- Explain various raw materials, test and manufacturing methods.
- Support students for developing hands on skills.
- Mentor the students for evaluating their internship work as per prescribed formats.
- Develop different soft skills.
- **Assign task to student as a project work for a solution to simple problems in the industry.**

7. ROLE AND RESPONSIBILITIES OF THE STUDENTS:

- a) If students have any contact in industry /organization not listed in group of industries available with parent institute, may try at their level for placement for Implant Training (Through their parents/relative or friends). The same may be utilized for securing placements for themselves and their peers.
- b) Students have to complete the joining formalities along with internship letter and submit it to HR in the industry on the first day of internship. Students should carry with them, the identity card issued by the institute during internship period.
- c) Students will collect all the necessary information from the HR regarding schedule of the internship, rules and regulations of the Industry/ Organization and safety procedures to be followed. Student is expected to observe these rules, regulations, procedures.
- d) If students do not follow any rule or discipline of industry, then industry can terminate the internship.
- e) Maintain confidentiality of data and processes of industry.
- f) **Students will:**
 - i. List out the various raw materials used in deputed industry.
 - ii. Write testing methods for raw materials.
 - iii. Test raw materials wherever possible.
 - iv. Observe manufacturing activities, machines/equipment's
 - v. Observe manufacturing techniques and methodologies
 - vi. Observe major material handling equipment's and procedures.
 - vii. Observe finished goods evaluation and packaging techniques.
 - viii. **Identify simple problem as a project work and give the solution.**
- g) During the internship period students have to keep record of collected information in log book.
- h) **Maintain weekly internship diary as provided and get it signed by Mentor.**



- i) If students face any problem in industry such as an accident or any disciplinary issue then they should immediately report to industry personnel and same to the institute.
- j) Student should prepare final report (40-50 pages) about the internship, get it signed from industry mentor, submit it to department at the time of presentation and viva-voce.

8. FORMAT FOR INPLANT TRAINING REPORT

Following format may be used for internship report. Actual format may differ slightly depending upon the nature of Industry/ Organization.

- Title Page
- Certificate
- Abstract
- Acknowledgement
- Content Page

Chapter No.	Content
1	Organization structure of Industry and general layout.
2	Introduction to Industry / Organization (history, type of products and services, turn over and number of employees etc.)
3	Types of raw materials, test methods, instruments/gauges, Quality Assurance / Quality control activities.
4	Manufacturing activities, machines/equipment's
5	Manufacturing techniques and methodologies
6	Major material handling product (lifts, cranes, slings, pulleys, jacks, conveyor belts etc.) and material handling procedures.
7	Safety procedures followed by industry.
8	Practical Experiences in Industry/Organization if any in Production/Testing
9	Project work report during the Inplant Training.
10	Special/challenging experiences encountered during internship if any (may include students liking & disliking of work places).
11	References / sources of information

9. PROJECT WORK REPORT WRITING GUIDELINES

After the completion of project work in internship industry, the student will prepare a 'Project work Report'.

Suggested Contents of the Project work Report

- Title Page (with name of student, industry mentor and guide teacher)
- Certificate as per MSBTE's Guideline
- Sponsorship certificate / letterhead provided by Internship Industry
- Abstract (in one paragraph not more than 150 words)
- Content Page



Chapters

1. Chapter – 1 : Introduction (Background of industry based problem/task)
2. Chapter – 2 : Literature Survey (to finalize and define the Problem Statement)
3. Chapter – 3 : Scope of the Project work.
4. Chapter – 4 : Methodology
5. Chapter – 5 : Details of designs, working and processes
6. Chapter – 6 : Validation report and Applications
7. Chapter – 7 : Internship Industry Remarks on Project work.
8. Chapter – 8 : Conclusion
9. Chapter – 9 : Project Competition Participation certificates if any

Note:

- i. The report should contain as many diagrams, figures and charts etc. as relevant for the project.
- ii. Originality of the report (written in own word) would be given more importance rather than quality of printing and use of glossy papers or multi-color printing

10. ROLE OF PARENT DEPARTMENT OF THE INSTITUTE:

Sr. No.	Activities	Schedule
1	Collecting information about industries available for internship along with capacity (Format-1)	At the end of 5 th semester
2	Communication with industries/ Organization available for internship along with capacity and its confirmation	During ESE (Theory) of 5 th semester
3	Students and mentor allocation as per seats available for Inplant Training. (Desirable mentor-students ratio is 1:15)	At the end of 5 th semester
4	Student's enrollment for Inplant Training (Format-3)	During ESE (Theory) of 5 th semester
5	Issue deputation letter to the industries/ Organization for the internship along with details of students and mentor (Format-4)	1 week before commencement of Inplant Training.
6	Obtaining consent letter from parents/guardian (Format-2)	Before commencement of Inplant Training.
7	Institute Mentor & Industry Mentor to carry out progressive assessment of the students during the Inplant Training. (Format-5)	During the Inplant Training
8	End semester assessment of Inplant Training is to carry out by institute mentor & Industry mentor/Any other expert from same industry as an external examiner (Format-6)	At the end of Inplant Training



Suggestions:

- Department can take help of alumni or preset students (if they or their parents or relatives have some contacts in different industries) for securing placement.
- Students' preference may be considered for placement in Industry. In case more demand for particular industry/organization arises, students would be allocated /placed on basis of their merit. However, if some students have arranged internship and placement in some companies with the help of their parents/relatives etc. then they may be given preference for placement in those companies.
- Principal/HOD/faculties should address students about industrial safety norms, rules and discipline to be maintained in the industry/organization during the internship before relieving students for internship.
- The faculty member during visit to the industry/organization will check the progress of the student in the internship, students' attendance, discipline and project report preparation.

11. SUGGESTED LEARNING STRATEGIES-

Student should visit the website of the industry where they are undergoing internship;

- Collect information about products, processes, capacity, number of employees, turnover etc.
- Refer handbooks/catalogues of the major machines and operation, testing, quality control used in the industry.
- Visit website related to other industries wherein similar products being manufactured as their learning resource.

12. TENTATIVE WEEK-WISE SCHEDULE OF INPLANT TRAINING -

The Inplant Training is designed for sixth semester students of Diploma in Mechatronics. The internship activity may vary according to nature and size of industry / Organization. The following table gives suggestive schedule for Inplant Training.

Table -2: detailed weekly schedule and mark distribution

Sr. No.	Slot	Details of activities to be completed during Inplant Training	Marks distribution
1	Slot-1 (Week 1-3)	<ul style="list-style-type: none"> Induction to industry and its departments. Study of layout and specifications of major machines, instruments and raw materials used. Study safety policy and procedures. 	10
2	Slot-2 (Week 4-6)	<ul style="list-style-type: none"> Study of manufacturing aspects. Testing of raw materials. Study of integrated technical systems. Identify simple problem as a project work. 	20
3	Slot-3 (Week 7-9)	<ul style="list-style-type: none"> Testing of finished product as under <ul style="list-style-type: none"> ✓ Mechanical, ✓ Chemical, ✓ Aesthetic, ✓ Functional. 	30



		<ul style="list-style-type: none"> • Planning of the Project work. 	
4	Slot-4 (Week 10-13)	<ul style="list-style-type: none"> • Execution and validation of project/specific task assigned by industry mentor. 	30
5	Slot-5 (Week 14-16)	<ul style="list-style-type: none"> • Storage and disposal practices. • Report writing of Inplant Training & project work. 	10
PA marks to be given by Industry Mentor			100
PA marks to be given by institute Mentor based on report			100
Total PA marks for Inplant Training			200

Table-3: Assessment scheme for Inplant Training

Internship duration	Progressive assessment (Weekly report of all 16 weeks and attendance)		ESE assessment (Seminar and oral)		Total marks	
	Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks
16 weeks	200 **	80	200 #	80	400	160

** Assessed by industry Mentor and Instt. Mentor as per format no. 5

Assessed by external examiner based on report (100 marks), Oral/Viva voce (100 marks)

Table 4: Distribution of End Semester Examination (ESE) marks of Inplant Training

	Marks for Report	Marks for oral/viva voce	Total ESE marks
Inplant Training	50	100	200
Project work	50		



Format 1**Collecting Information about Industry/Organization available for Internship along with capacity**

- 1) Name of industry/organization:
- 2) Address/communication details with email:
- 3) Contact person details:
 - a) Name:
 - b) Designation:
 - c) Email:
 - d) Contact number/s:
- 4) Type:

Govt / PSU / Pvt.

Large scale / Medium scale / Small scale
- 5) Products/services offered by industry:
- 6)
 - a) Whether willing to offer Inplant Training facility from December/January to May/June for **Diploma in Mechatronics** students: Yes / No
 - b) If yes, whether you offer 16 weeks internship: Yes / No
 - c) Internship capacity possible:

	Diploma in Mechatronics	Total
Male		
Female		
Total		

- 7) Whether accommodation available for interns Yes / No.
If yes capacity: _____
- 8) Tentative stipend offered by industry: _____

Signature of responsible person



Format 2
Consent Letter from parents/guardians
(Undertaking from Parents)

To,
The Principal,

Subject: Consent for Inplant Training.

Sir/Madam,

I am fully aware that -

- i) My ward studying in Sixth semester at _____ (Name of institute) _____ institute has to undergo 16 weeks of Inplant Training for partial fulfillment towards completion of Diploma in Mechatronics
- ii) For this fulfillment he/she has been deputed at _____ (name of industry) _____ industry, located at (city) _____ for internship of 16 weeks for the period from _____ to _____.

With respect to above, I give my full consent for my ward to travel to and from the mentioned industry. Further I undertake that –

- a) My ward will undergo the internship at his/her own cost and risk during internship and/or stay.
- b) My ward will be entirely under the discipline of the organization where he/she will be placed and will abide by the rules and regulations in face of the said organization.
- c) My ward will maintain a regular prescribed weekly diary and get countersigned by the industry mentor of the organization and submit it to mentor faculty of institute at the end of internship.

I have explained the contents of the letter to my ward who has also promised to adhere strictly to above requirements. I assure that my ward will be able to take his own care to avoid any accidents/injuries in the industry during his internship tenure. In case of any accident neither industry nor the institute will be held responsible.

Signature:

Name: _____

Address: _____

Contact Number: _____



[illegible]

Format 4:**Letter to the Industry/Organization for the internship along with details of students and mentors**

To,
The HR Manager,

Subject: Placement for Inplant Training of 16 weeks in your organization....

Reference: Your consent letter no:

Sir,

With reference to the above we are honored to place the following students from this institute for Inplant Training in your esteemed organization as per the arrangement arrived at.

Diploma in Mechatronics.

Sr. No.	Enrolment no.	Name of Student	Mentor with Contact number

Kindly do the needful and oblige.

Thanking you in anticipation

Yours sincerely,

(Principal)

Name of the Institute:
with Seal



Format 5
PA of Inplant Training

Academic year: 20 - 20

Name of the industry:

Sr. No	Enrolment Number	Name of student	Marks					PA Marks by Industry Mentor Out of 100 (A)	PA based on Report by instt. Mentor Out of 100 (B)	Total Out of 200 (A+B)
			slot-1 (Week 1-3) (10)	Slot-2 (Week 4-6) (20)	Slot-3 (Week 7-9) (30)	Slot-4 (Week 10-13) (30)	Slot-5 (Week 14-16) (10)			

Marks for PA are to be awarded for each slot (**As per Table 2**) considering the level of completeness of Inplant Training and project work activities, from the daily diary maintained and feedback from industry Mentor

Signature-

Name and designation of Instt. Mentor

Name and designation of Industry Mentor



Format 6

End Semester assessment for Implant Training by Instt. Mentor and Industry
mentor/Expert (as an external examiner)

Name of Student:

Enrollment No.....

Name of Programme: Diploma in Mechatronics.

Semester: Sixth

Course Title: Implant Training

Code:

Activities performed during Implant Training:

1.

2.

Course Outcomes Achieved:

.....
.....
.....

Evaluation as per Suggested Rubric for Assessment of Implant Training

Sr. No.	Characteristic to be assessed	Poor (Marks 1 - 3)	Good (Marks 4- 6)	Excellent (Marks 7- 10)
1	Relevance to the course			
2	Completion of the Target			
3	Report Preparation			
Evaluation by Institute Mentor out of 50 Marks				
4	Skills acquired at Industry			
5	Performance appraisal by Industry			
Evaluation By industry Mentor out of 50 Marks				

Implant Training Evaluation Sheet

(A) Evaluation by Instt. Mentor (100 marks)	(B) Evaluation By industry Mentor/Expert (100 marks)	Total Marks 200

Comments/Suggestions about team work/leadership/inter-personal communication (if any)

.....
.....
.....

Signature-



Name and designation of Instt. Mentor

Name and designation of Industry
Mentor

Annexure- I

Sample Inplant Training & Project Work Diary (WEEKLY)

Week: ____

Project Work Title:

Name of Industry Mentor:

Name of Institute Mentor:

Name of the Student: _____

Details of Activities Performed

1. _____
2. _____
3. _____
4. _____

Sign of the Student

Sign of the Institute Mentor

Sign of the Industry Mentor



Annexure- II**PROJECT WORK METHEDOLOGY**

Project Development Stage	Date	Industry Mentor Remark

Sign of the Student

Sign of the Institute Mentor

Sign of the Industry Mentor

