MAHARASHTRA STATE BOARD OF TECHNICAL EDUCATION, MUMBAI

TEACHING AND EXAMINATION SCHEME FOR POST H.S.C. DIPLOMA COURSES.

COURSE NAME : DIPLOMA IN SURFACE COATING TECHNOLOGY

COURSE CODE : SC

DURATION OF COURSE: 6 SEMESTER — **WITH EFFECT FROM 2019-20**

SEMESTER : THIRD — **DURATION : 20 WEEKS**

PATTERN : FULL TIME - SEMESTER — **SCHEME : I**

S. N.	Course Title	Course Abbreviation	Course Code	Teaching Scheme			Credit (L+T+P)	Examination Scheme												Grand Total
								Theory							Practical					
								Exam Duration in Hrs.	ESE		PA		Total		ESE		PA		Total	
				L	T	P			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	Industrial Implant Training-I	ITR	24034	-	-	30	30	--	--	--	--	--	--	--	150#	60	150 **	60	300	120	300
			Total	-	-	**30**	**30**	--	--	--	--	--	--	--	**150**	--	**150**	--	**300**	--	**300**

Student Contact Hours Per Week: **30 Hrs.** Medium of Instruction: **English**

Theory and practical periods of 60 minutes each. Total Marks : **300**

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

@ Internal Assessment, # External Assessment, *# On Line Examination , @$ Internal Online Examination, ^ Computer Based Assessment, ** Assessed by industry personnel and mentor as per format no. 5

* Under the theory PA, Out of 30 marks, 10 marks are for micro-project assessment to facilitate integration of COs and the remaining 20 marks is the average of 2 tests to be taken during the semester for the assessment of the cognitive domain LOs required for the attainment of the COs.

~ For the courses having ONLY Practical Examination, the PA marks Practical Part - with 60% weightage and Micro-Project Part with 40% weightage

- **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 Surface Coating Technology**

Program Code : **SC**

Semester : **Third**

Couse Title : **Industrial Implant Training-I**

Couse Code : **24034**

1. RATIONALE

The Industrial Implant Training-I for students is introduced in this curriculum for;

- Know the structure of manufacturing industries related to surface coating.
- Observe safety and discipline practices in industries.
- Communicate with higher ups, peers and subordinates.
- Identify raw materials and manufacturing process and testing methods.

The 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:

- **Explain various raw materials, test and manufacturing methods.**

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:

a. Collect information about industry.
b. Observe manufacturing process.
c. Use relevant testing instruments/gauges.
d. Test the coating materials.
e. Follow ethical industrial practices.

4. TEACHING AND EXAMINATION SCHEME

Teaching Scheme			Credit (L+T+P)	Examination Scheme													
				Theory							Practical						
L	T	P		Paper Hrs.	ESE		PA		Total		ESE		PA		Total		
					Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	
--	--	30	30	--	--	--	--	--	--	--	150#	60	150**	60	300	120	

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

5. COURSE MAP (with sample COs, PrOs, UOs, ADOs and topics)

This course map illustrates an overview of the flow and linkages of the topics at various levels of outcomes (details in subsequent sections) to be attained by the student by the end of the course, in all domains of learning in terms of the industry/employer identified competency depicted at the center of this map.

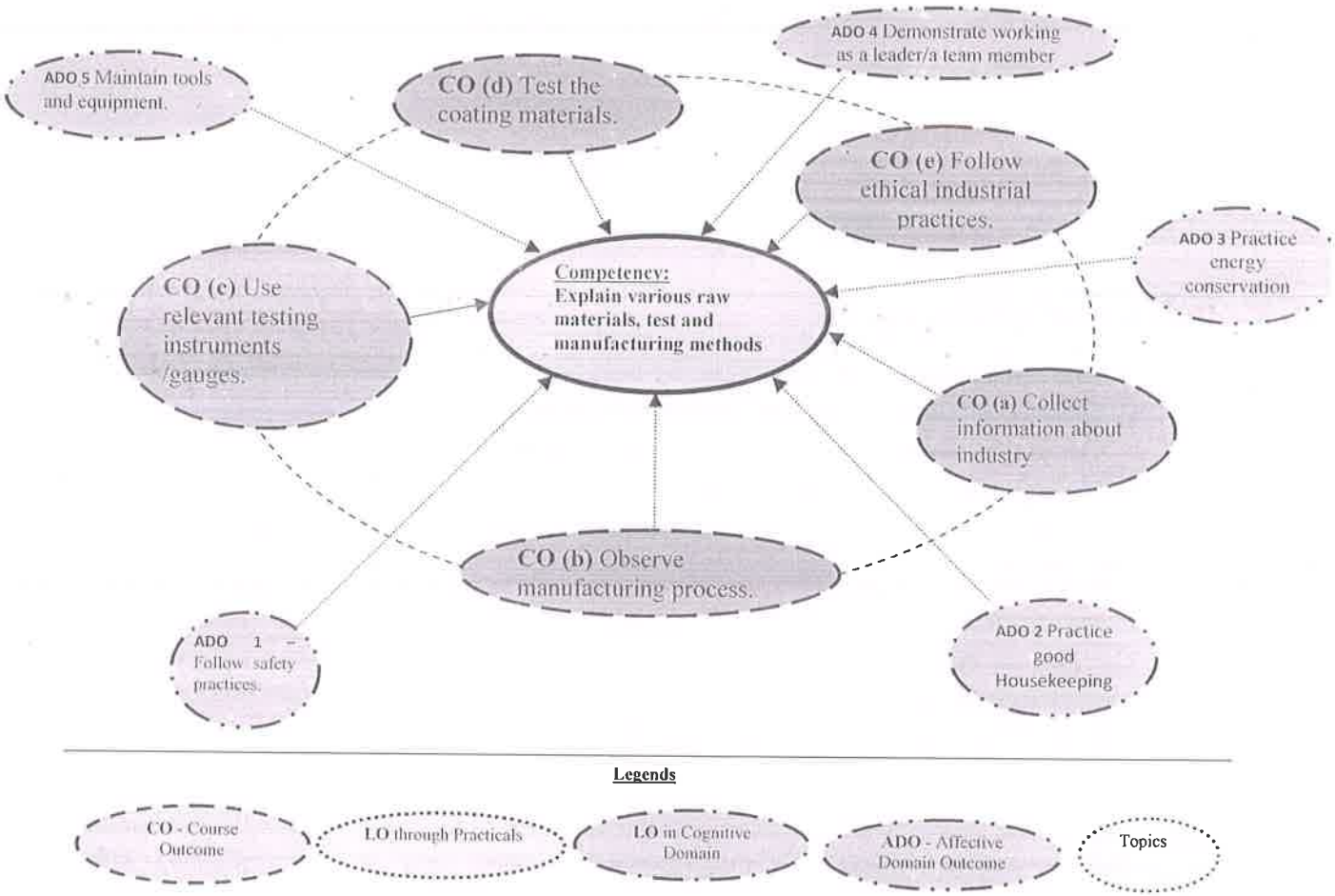

Figure 1 - Course Map

6. SUGGESTED PRACTICALS/ EXERCISES

The practical in this section are PrOs (i.e. sub-components of the COs) to be developed and assessed in the student for the attainment of the competency:

S. No.	Practical Exercises (Learning Outcomes in Psychomotor Domain)	Unit No.	Approx. Hrs. required
	Not Applicable		

GENERAL GUIDELINES FOR INDUSTRIAL IMPLANT TRAINING:

For ***Surface Coating industries*** students are expected to perform following activities during their Industrial Implant Training-I;

- 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.
- Charging and processing of laboratory batches.

7. UNDERPINNING THEORY COMPONENTS

The following topics/subtopics should be taught and assessed in order to develop UOs for achieving the COs to attain the identified competency.

Unit	Unit Outcomes (UOs) (in cognitive domain)	Topics and Sub-topics
Not Applicable		

8. EXPECTATION FROM INDUSTRY:

Helping institute in developing following competencies among the students.

a) Industry shall expose students to industrial environment.
b) Demonstrate standard practices followed by industry.
c) Explain various raw materials, test and manufacturing methods.
d) Support students for developing hands on skills.
e) Mentor the students for evaluating their training work as per prescribed formats.
f) Develop different soft skills.

9. ROLE AND RESPONSIBILITIES OF THE STUDENTS:

a) Students would interact the mentor to suggest choices for suitable industry /organization, 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 Industrial 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 fill the forms asked by industry authorities along with training letter and submit it to training officer in the industry on the first day of training. Students should carry with him/her, the identity card issued by the institute during training period.
c) He / She will collect all the necessary information from the training officer regarding schedule of the training, rules and regulations of the Industry/ Organization and safety procedures to be followed. Student is expected to observe these rules, regulations, procedures.
d) Students should know that if they do not follow any rule or discipline of industry, then industry can terminate the training.
e) **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. Identify selection criteria for raw material and paint formulating principles.
    v. Observe various stages of paint manufacturing and its raw materials.
    vi. Observe storage and handling methodologies and policies of various paint raw materials.
    vii. Observe finished goods evaluation and packaging techniques.
f) During the training period students have to keep record of collected information in log book.
g) Maintain weekly diary as provided and get it signed from industry expert.
h) In case they 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.

i) Student should prepare final report (40-50 pages) about the training, get it signed from industry personnel and mentor, submit it to department at the time of presentation and viva-voce.

10. FORMAT FOR TRAINING REPORT

Following format may be used for training 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 employee etc.)
3	Types of raw materials, test methods, instruments/gauges, Quality Assurance / Quality control activities.
4	Manufacturing activities, machines/equipments
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	Short report/description of the project (if any done during the training).
10	Special/challenging experiences encountered during training if any (may include students liking & disliking of work places).
11	References / sources of information

11. ROLE OF PARENT DEPARTMENT OF THE INSTITUTE:

Sr. No.	Activities	Schedule
1	Collecting information about industries available for training along with capacity (Format-1)	At the end of 2nd semester
2	Communication with industries/ Organization available for training along with capacity and its confirmation	During ESE (Theory) of 2nd semester
3	Students and mentor allocation as per seats available for Industrial Implant Training-I (Desirable mentor-students ratio is 1:15)	At the end of 2nd semester
4	Students enrollment for Industrial Implant training (Format-3)	During ESE (Theory) of 2nd semester

5	Issue deputation letter to the industries/ Organization for the training along with details of students and mentor (Format-4)	! week before commencement of Industrial Implant training.
6	Obtaining consent letter from parents/guardian (Format-2)	Before commencement of Industrial Implant training-I
7	Students enrollment for Industrial Implant training (Format-3)	Before commencement of Industrial Implant training-I
8	Mentor to carry out progressive assessment of the students during the Industrial Implant training (Format-5)	During the Industrial Implant training-I
9	End of training assessment by mentor along with industries /organization expert as external examiner (Format-6)	At the end of Industrial Implant Training-I

Suggestions:

a) 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.

b) 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 training and placement in some companies with the help of their parents/relatives etc. then they may be given preference for placement in those companies.

c) Principal/HOD/faculties should address students about industrial safety norms, rules and discipline to be maintained in the industry/organization during the training before relieving students for training.

d) The faculty member during visit to the industry/organization will check the progress of the student in the training, his/her attendance, discipline and project report preparation.

12. SUGGESTED LEARNING STRATEGIES-

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

a) Collect information about products, processes, capacity, number of employees, turnover etc.

b) Refer handbooks/catalogues of the major machines and operation, testing, quality control used in the industry.

c) Visit website related to other industries wherein similar products being manufactured as their learning resource.

13. TENTATIVE WEEK-WISE SCHEDULE OF INDUSTRIAL TRAINING-

The Industrial Implant Training-I is designed for third semester students of Diploma in Surface Coating Technology. The training activity may vary according to nature and size of industry / Organization. The following table gives suggestive schedule for industrial Industrial Implant Training-I

Table -2: detailed weekly schedule and mark distribution

Sr. No.	Slot	Details of activities to be completed during industrial training	Marks distribution
1	Slot-1 (Week 1-4)	• Induction to industry and its departments. • Study of layout and specifications of major machines, instruments and raw materials used. • Study safety policy and procedures.	05
2	Slot-2 (Week 5-8)	• Study of manufacturing aspects. • Testing of raw materials. • Shade matching. • Testing of wet paint samples.	15
3	Slot-3 (Week 9-12)	• Testing of finished product as under ✓ Mechanical, ✓ Chemical, ✓ Aesthetic, ✓ Functional.	15
4	Slot-4 (Week 13-16)	• Execution of project/specific task assigned by industry mentor.	10
5	Slot-5 (Week 17-20)	• Storage and disposal practices. • Report writing.	5
PA marks to be given by Industry supervisor			**50**
PA marks to be given by institute faculty based on report			**50**
		Total PA marks for training	**150**

Table-3: Assessment scheme for industrial training

Training duration	Progressive assessment (Weekly report of all 20 weeks and attendance		ESE assessment (Seminar and oral)		Total marks	
	Max Marks	Min Marks	Max Marks	Min Marks	Max Marks	Min Marks
20 weeks	**150 ****	---	**150#**	**60**	**300**	**120**

**** Assessed by industry personnel and mentor as per format no. 5**
 # assessed by external examiner based on report (50 marks), presentation (50 Marks) Viva voce (50 marks)

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

Marks for industrial training report	Marks for seminar/presentation	Marks for oral/viva voce	Total ESE marks
50	50	50	150

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Format 1

Collecting Information about Industry/Organization available for training 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 Industrial Implant training facility June to November **Diploma in Surface Coating Technology** students: Yes / No
   b) If yes, whether you offer 20 weeks training: Yes / No
   c) Internship capacity possible:

	Diploma in Surface Coating Technology	**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 Industrial Industrial Implant Training.

Sir/Madam,

I am fully aware that -

i) My ward studying in *Third* semester at _____(Name of institute)_____ institute has to undergo 20 weeks of Industrial Industrial Implant training for partial fulfillment towards completion of *Diploma in Surface Coating Technology*

ii) For this fulfillment he/she has been deputed at _____*(name of industry)*_____ industry, located at *(city)*_____ for internship of *20* 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 training at his/her own cost and risk during training 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 training supervisor of the organization and submit it to mentor faculty of institute at the end of training.

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 training tenure. In case of any accident neither industry nor the institute will be held responsible.

Signature:

Name : _____

Address : _____

_____

_____

Contact Number: _____

Format 3
Students Enrollment for Industrial Implant Training
(Semester- Third AY:)

Sr No	Enrollment Number	Name of Student	Name of Industry	Name of Mentor

Format 4:

Letter to the Industry/Organization for the training along with details of students and mentors

To,
The HR Manager,

Subject: Placement for Industrial training of 20 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 Industrial training in your esteemed organization as per the arrangement arrived at.

Diploma in Surface Coating Technology.

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 Industrial training

Academic year: 20 - 20

Name of the industry:

Sr. No	Enrolment Number	Name of student	Marks (10 marks for each slot)						PA Marks by Industry Personnel	PA based on Report by mentor faculty	Total
			slot-1 (Week 1-4)	Slot-2 (Week 5-8)	Slot-3 (Week 9-12)	Slot-4 (Week 13-16)	Slot-5 (Week 17-20)	Total 50 (A)	Out of 50 (B)	Out of 50 (C)	Out of 150 (A) +(B)+(C)

Marks for PA are to be awarded out of 10 for each slot considering the level of completeness of activity observed, from the daily diary maintained and feedback from industry Personnel.

Signature-

Name and designation of the Mentor

Name and designation of Industry Personnel

Format 6
PA for Industrial Training by Mentor and Industry Personnel

Name of Student: .....

Enrollment No......

Name of Programme: Diploma In Surface Coating Technology.

Semester: Third

Course Title : Industrial Implant Training-I

Code:.....

Activities performed during Industrial Implant training-I:

1.

2.

Course Outcomes Achieved :

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Evaluation as per Suggested Rubric for Assessment of Industrial 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 Mentor out of 50 Marks				
4	Skills acquired at Industry			
5	Performance appraisal by Industry			
Evaluation By industry personnel out of 50 Marks				

Industrial Training Evaluation Sheet

(A) Evaluation By Mentor **(50 marks)**	(B) Evaluation By industry personnel **(50 marks)**	**Total Marks 100**

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

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Signature-

Name and designation of Mentor

Name and designation of Industry Personnel