

SRM University

Department of Mechanical Engineering

A Report on

“Surface Engineering” - A One credit Course offered by

Dr.N.Gowrishankar

Resource Persons from IP Rings: **1. Dr.N.Gowrishankar**

2.Mr.U. Jaikrishna

3. Mrs Malathy (1 Hr only)

Brief:

A one credit course on Surface Engineering was organized by Department of Mechanical Engineering in association with Dr.Gowri Shankar and his team from IP Rings on October 2014. The course included both theoretical classes and industrial visit. The industrial visit helped the students to know the processes which they have been taught during the class room lectures. A small project on pack carburizing (which was taught to students during the course) was also done by the students at SRM University which has made the concepts much clearer to the students. The project by the students was also presented which was very much appreciated by the industry personals with valuable inputs. During the course the resource personals also shared their on field experiences to various industrial problems and their solutions. The students were very enthusiastic during the course discussions every day and also recommended to organize such courses henceforth.

• **Details of Classes handled during the Course:**

Day	Topic	Time	Duration	Total Hrs
7th October 2014	Importance of Surface Engineering In Industrial Environment	9am-9:30pm	30mins	3hrs
	Introduction, definition, classifications, principles, scope, surface dependent properties, friction and wear	9:30am-10:30am	60mins	
	Coffee break		10:30am-10:45am	

	Surface engineering to change surface metallurgy-flame hardening, induction hardening, laser beam hardening, laser melting, shot peening	10:45am-11:45am	60mins	
	Discussion	11:45am-12:15pm	30mins	
11th October 2014	Surface Measurement	8:00-9:00am	30mins	4hrs
	Surface engineering to change surface chemistry- Phosphating, Chromate chemical conversion, anodizing, oxidation treatments	9:00am-10:30am	90mins	
	Coffee break		10:30am-10:45am	
	Surface engineering to add surface layer or coating- PVD,CVD,Cladding	10:45- 11-15am	30mins	
	Surface engineering to change surface chemistry-diffusion heat treatment coatings, carburizing, nitriding. carbo-nitriding, nitro-carburising	11-15am-12:45pm	90mins	
	Lunch Break	12:45pm-1:30pm		
	Surface engineering to add surface layer or coating- Electroplating,DLC,Plasma Spraying, HVOF, Carbide nitride coatings	1:30pm-2:30pm	60mins	
	Surface Engineering of cylinder components	2:30pm-4:00pm	90mins	
	Surface Engineering practices at IP Rings Part I	4:00pm-5:00pm	60mins	
13th October 2014	Surface Engineering Processes - demonstrations at IP Rings. and IP PinsLtd	1:30pm-5:30pm	240mins	4hrs
16th October 2014	Students did Carburising a Low C Steel 22 teeth 2module Gear at SRM University-Metallury Lab with the Guidance of SRM faculty			
18th October 2014	Surface Characterization techniques: Scanning Electron Microscopes Images, Atomic Force Microscopes, Tunnelling Electron	9:00am-10:00am	60mins	4hrs

	Microscopes, EDX,X-ray Diffraction			
	Coffee Break and Photo Session	10am-10:30am		
	Surface Engineering practices at IP Rings Part II	10:30am-12:00noon	90mins	
	Total Quality Management in Indian Engineering Industries	12:00noon - 1:30pm	90mins	
	Total number of Hours handled			18hrs 30mins

- **Supporting members:**

The Course was organized by the Department of Mechanical Engineering with the support of the following faculty members:

1. Dr.M.Gopal (Prof/Mech)
2. Dr.G.Murali (HOD/Mechatronics)
3. Mr.Shubrajit Bhaumik (AP/Mech)
4. Mr.A.Thirugnanam (AP/Mech)
5. Mr.R.Murugesan (AP/Mech)
6. Mr.Veeranath (AP /Mech)

- **Selection Procedure:**

First come first serve basis and on the interest of students.

- **No Students selected and participated: 12**

Serial No.	Regd. No.	Name of Student	7/10/2014	11/10/2014	13/10/2014	18/10/2014
1	1021110199	Neillohit Kundu	Attended	Attended	Attended	Attended
2	1021110136	Sandeep G	Attended	Attended	Attended	Attended
3	1021110209	Korah Jacob	Attended	Attended	ABSENT	Attended
4	1021110442	Sachin G	Attended	Attended	Attended	Attended
5	1021110444	Bishak Roy Choudhury	Attended	Attended	Attended	Attended
6	1021110458	Viswa Ratnasri S	Attended	Attended	Attended	Attended
7	1021110364	Oblinarasinharajan. O	Attended	Attended	Attended	Attended
8	1021110365	Aravind S	Attended	Attended	Attended	Attended
9	1021110358	Viswanath G	Attended	Attended	Attended	Attended
10	1021110034	Nunna Sri Charan	Attended	Attended	Attended	Attended
11	1021110229	Naru Mani Candan	Attended	Attended	Attended	Attended
12	1021110353	Dekate Chetan Rajkumar	Attended	Attended	Attended	Attended

- **Pre Session Test :**

A pre session test was conducted to test the knowledge level of the students in Surface Engineering.

Serial No.	Regd. No.	Name of Student	Marks obtained (30)
1	1021110199	Neillohit Kundu	20
2	1021110136	Sandeep G	19
3	1021110209	Korah Jacob	16
4	1021110442	Sachin G	14
5	1021110444	Bishak Roy Choudhury	10
6	1021110458	Viswa Ratnasri S	18
7	1021110364	Oblinarasinharajan. O	13
8	1021110365	Aravind S	10
9	1021110358	Viswanath G	9
10	1021110034	Nunna Sri Charan	14
11	1021110229	Naru Mani Candan	12
12	1021110353	Dekate Chetan Rajkumar	17

- **Project Work on Surface Engineering:**

Out of 12 students who have attended the course 9 of them have shown interest to take industrial project on Surface Engineering. The Project title and guide will be fixed after consultation with Dr Gowrishankar.

Serial No.	Regd. No.	Name of Interested Students
1	1021110199	Neillohit Kundu
2	1021110136	Sandeep G
3	1021110444	Bishak Roy Choudhury
4	1021110458	Viswa Ratnasri S
5	1021110364	Oblinarasinharajan. O
6	1021110365	Aravind S
7	1021110358	Viswanath G
8	1021110034	Nunna Sri Charan
9	1021110353	Dekate Chetan Rajkumar

- **Feedback from students:**

A Feedback was collected from students in standard format. The overall response was Good with constructive suggestions from the students.

Some of the suggestions from the students are listed below:

1. Course would also be beneficial for sixth semester students.
2. Course duration to be increased.
3. Course to be conducted in every semester as many students would be interested.
4. Some topics such as lubrication, alloying materials may be added in depth.

5. Course credit may be increased.



Students interacting with industrial experts during their industrial visit

- **Evaluation of the Course**

Sl No	Objectives of one credit course on Surface Engineering Course	Status
1	Creating Awareness on Surface Engineering	Met
2	Avenue to take industry related problems	Met
3	Students learn industrial practices	Met
4	Improve industry –institute relations	Met
5	To Make students Employable	Under Evaluation

- **Examination :**

Final Examination is scheduled tentatively on 30th October 2014 from 9:00am – 11:00am.

Question Paper Pattern:

Part A : Multiple Choice Questions : 50x1marks = 50 marks.

Part B : Descriptive Questions : 10 x 5marks = 50 marks

Total marks : 100 marks

The marks obtained would be submitted to HOD-Mechanical for necessary actions.

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