



THIAGARAJAR COLLEGE OF ENGINEERING - MADURAI 625 015
TCE-III

S.No	One credit course need analysis sheet	
1.	Name of the Course	GIQ – 3D Printing
2.	Name of the Industry	Indian Institute of Technology, Bombay
3.	Name of the SIG associated with	Manufacturing
4.	Motivation for offering the course	New Technology
4.1	Feedback (If yes, Details of the feedback as per the annexure I)	
	From Recruiter	Y/N
	From Employer	Y/N
	From Alumni	Y/N
	From Academic Council members	Y/N
	From Board of Studies members	Y
	From Senior students	Y/N
	From current students	Y(Ref: Annexure I)
	From Performance Assessment Committee	Y/N
	From Department Advisory committee	Y/N
4.2	Faculty participation in Seminar/FDP (If yes, details)	
	At higher learning institutes	
	At Industry	
5.	Outcomes expected	
	Technology transfer	Yes, Additive manufacturing is introduced among students
	Student Internship	
	Placement	
	Organizing FDP/seminar at TCE	
	Collaborative research/consultancy projects	
	Faculty as Trainee/Trainer in the Industry	
	Joint publications	
	Setting up of Lab/Infrastructure	



THIAGARAJAR COLLEGE OF ENGINEERING - MADURAI 625 015
TCE-III

Attendance sheet for the one credit

Name of the Course : G1Q – 3D Printing
 Name of the Industry : Indian Institute of Technology, Bombay
 Name of the Expert : Dr. K. P. Karunakaran
 Number of Students enrolled : 79
 Name of the Faculty : Dr. K. Chockalingam, Associate professor
 Mr. T. Prakash, Assistant Professor
 Department of Mechanical Engineering,
 TCE, Madurai
 Date : 29th and 30th August, 2015 (2 days)
 Time : 9.00 AM to 4.30 PM
 Venue : Seminar hall, Mechanical Engineering,
 TCE, Madurai

S.No	Reg.No	Name	Department	Signature
Attached Ref: Annexure II				


 Signature of the Faculty Coordinator



THIAGARAJAR COLLEGE OF ENGINEERING - MADURAI 625 015

TCE-III

Course Schedule

Name of the Course : G1Q – 3D Printing

Name of the Industry : Indian Institute of Technology, Bombay

Name of the Expert : Dr. K. P. Karunakaran

Number of Students enrolled : 79

Name of the Faculty : Dr. K. Chockalingam, Associate professor
Mr. T. Prakash, Assistant Professor
Department of Mechanical Engineering,
TCE, Madurai

Date : 29th and 30th August, 2015 (2 days)

Time : 9.00 AM to 4.30 PM

Venue : Seminar hall, Mechanical Engineering,
TCE, Madurai

Date	Time	Topics	Remarks
Day 1 (29.08.2015)	9.00 AM – 11.00 AM	Introduction to 3D Printing Popular 3D Printing Process	Attached Ref: Annexure III
	11.15AM – 01.15 PM	Selective laser sintering Multi Jet 3D Printing Laminated Object Manufacturing	
	2.15PM – 4.15 PM	Introduction to Reverse engineering	
	4.30 PM to 6.30 PM	An Overview of Rapid Manufacturing	
Day 2 (30.08.2015)	9.00 AM – 11.00 AM	Rapid Manufacturing of Polymeric Objects	
	11.15AM – 01.15 PM	Rapid Manufacturing of Metallic & Ceramic Objects	
	2.15PM – 4.15 PM	CAD modeling and processing of STL files	
	4.30 PM to 6.30 PM	Fused deposition modeling	

Signature of the Faculty coordinator



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Course Instructor Feedback for One/Two credit course

TCE-III

Name of the Course : G1Q – 3D Printing
 Name of the Industry : Indian Institute of Technology, Bombay
 Name of the Expert : Dr. K. P. Karunakaran
 Date : 29th and 30th August, 2015 (2 days)
 Time : 9.00 AM to 4.30 PM
 Venue : Seminar hall, Mechanical Engineering,
 TCE, Madurai

	Comments
Student attendance	Very good (79 students were participated in this course)
Level of the students in understanding the concepts	Students are very interesting to learn new concepts especially 3D Printing field.
Any suggestions regarding new content to be included as Prerequisites/Special electives	3D Printing Subjects could be included in the core subjects.
Hall/Lab arrangements	Very Nice
Hospitality	Very Nice

THIAGARAJAR COLLEGE OF ENGINEERING, MADURAI -625 015

Annexure II

Department of Mechanical Engineering

TEQIP sponsored One Credit Course on "G1Q - 3D Printing"
during 29th and 30th August, 2015

30-08-2015

Feedback Form

Name of the Resource Person	Dr. K. P. Karunakaran, Professor, Dept. of Mech. Engg. IIT, Bombay
Name of the Coordinators	Dr. K. Chockalingam, TCE, Chennai
Date of Workshop	29 th and 30 th August, 2015

Please rate the following parameters in a scale of 1 to 4, where

1. Poor

2. Average

3. Good

4. Excellent

(Please ROUND the appropriate rating)

Sl. No.	Parameters	Rating
1	Content delivery	3
2	Live examples	2
3	Case studies	3
4	Topic coverage	3
5	Presentation	2
6	Interaction with participation	2
7	Hall Arrangements	3
8	Time Management	2
9	Motivation to do further work	2
10	Overall arrangements	2
Any other suggestions for the improvement		
Rated By: E. Nishan Kumar		
Signature: E. Nishan Kumar		
This Course Should be Academic Subject.		

Department of Mechanical Engineering
 TEQIP sponsored One Credit Course on "G1Q - 3D Printing"
 during 29th and 30th August, 2015

30-08-2015

Feedback Form

Name of the Resource Person	Dr. K. P. Karunakaran, Professor, Dept. of Mech. Engg. IIT, Bombay
Name of the Coordinators	Dr. K. Chockalingam, TCE, Chennai
Date of Workshop	29 th and 30 th August, 2015

Please rate the following parameters in a scale of 1 to 4, where

1. Poor 2. Average
 (Please ROUND the appropriate rating)

3. Good

4. Excellent

Sl. No.	Parameters	Rating			
1	Content delivery	1	2	3	4
2	Live examples	1	2	3	4
3	Case studies	1	2	3	4
4	Topic coverage	1	2	3	4
5	Presentation	1	2	3	4
6	Interaction with participation	1	2	3	4
7	Hall Arrangements	1	2	3	4
8	Time Management	1	2	3	4
9	Motivation to do further work	1	2	3	4
10	Overall arrangements	1	2	3	4

Any other suggestions for the improvement

Rated By: **S. NAVIN KUMAR**

Signature: 
 30/8/15

T4) **AGARAJAR COLLEGE OF ENGINEERING, MADURAI - 625**
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Department Of Mechanical Engineering
One credit Course on G1Q - 3D Printing during 29th and 30th August 2015

Eligible Students

S. No	Reg. No	Name	Signature
1	13G03	Abhisheck E	<i>[Signature]</i>
2	13G07	Adhithyan S	<i>[Signature]</i>
3	13G11	Animesh PANDEY	<i>[Signature]</i>
4	13G12	Arasumuthukumar R	<i>[Signature]</i>
5	13G17	Aswin B	<i>[Signature]</i>
6	13G18	Balaji M	<i>[Signature]</i> not aff
7	13G19	Balaji P	<i>[Signature]</i>
8	13G20	Balamurugan RA	<i>[Signature]</i>
9	13G26	Gokul Srinivasan S	<i>[Signature]</i> not aff
10	13G29	Isakki Muthu M	<i>[Signature]</i>
11	13G31	Jegannath S	<i>[Signature]</i>
12	13G32	Kannan B	<i>[Signature]</i>
13	13G33	Karthikeyan R	<i>[Signature]</i>
14	13G35	Logesh Kumar S	<i>[Signature]</i>
15	13G36	Mahendhiran S	<i>[Signature]</i>
16	13G37	Mallikarjun S	<i>[Signature]</i>
17	13G43	Muthu Karthik M	<i>[Signature]</i>
18	13G44	Muthu M	<i>[Signature]</i>
19	13G45	Muthukrishnan K	<i>[Signature]</i>
20	13G46	Muthukumaran M	<i>[Signature]</i>
21	13G48	Muthunagappan PL	<i>[Signature]</i>
22	13G50	Nandhini AN	<i>[Signature]</i>
23	13G52	Niranjana Kumar E	<i>[Signature]</i>
24	13G54	Patrick Winston A	<i>[Signature]</i>
25	13G55	Periyasamy D	<i>[Signature]</i>
26	13G58	Prakash R	<i>[Signature]</i>
27	13G589	Prasanna Venkatesh, K	<i>[Signature]</i>
28	13G60	Prasath G	<i>[Signature]</i>
29	13G61	Praveen Babu	<i>[Signature]</i>
30	13G69	Ramesh C	<i>[Signature]</i>
31	13G70	Rathinavel T	<i>[Signature]</i>
32	13G75	Saravanan R	<i>[Signature]</i>
33	13G77	Selva Chander SR	<i>[Signature]</i>

THI AGARAJAR COLLEGE OF ENGINEERING, MADURAI - 625

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Department Of Mechanical Engineering

One credit Course on GIQ - 3D Printing during 29th and 30th August 2015

Eligible Students

S. No	Reg. No	Name	Signature
34	13G78	Selvakumar BU	BU Sel
35	13G79	Selvamuthu Thirukumaran M	M. Selva
36	13G80	Senthilkumar K	R. Senthil
37	13G82	Sharan A	Sharan A
38	13G83	SharathSubramanian D	Sharath D.
39	13G84	Shunmugaganesh M	M. Shunmugaganesh
40	13G85	Shyam Sundar S	S. Shyam
41	13G88	Sriram Gokulan N	S. Gokulan
42	13G89	Sriramkumar T	T. Sriramkumar
43	13G90	Subash Shankar M	M. Subash
44	13G98	Thirumalaiappan A	A. Thirumalaiappan
45	13G104	Vignesh N	N. Vignesh
46	13G107	Vijaya Pratap VN	V. Pratap
47	13G111	Vishreth KL	V. Vishreth
48	13G113	Arulmani M	M. Arulmani
49	13G114	Gnanavel R	R. Gnanavel
50	13G117	Jothi Vignesh S	S. Jothi
51	13G120	Karthikeyan C	C. Karthikeyan
52	13G121	Khishor KS	K. Khishor
53	13G122	Kishore Kumar R	R. Kishore
54	13G123	Manikandan S	S. Manikandan
55	13G124	Manojkumar S	S. Manojkumar
56	13G125	Mohamed Ashikh S	S. Ashikh
57	13G128	Naveen KT	K. Naveen
58	13G129	Navin Kumar S	S. Navin Kumar
59	13G130	Nishanth U	U. Nishanth
60	13G134	Ramkumar S	S. Ramkumar
61	13G135	Robinson M	M. Robinson
62	12G08	Ashok Kumar T	T. Ashok Kumar
63	12G17	Dharun Velmani T	T. Dharun Velmani
64	12G37	Karthik Ramasamy R	R. Karthik
65	12G46	Manikandan K	K. Manikandan
66	12G48	Mithun P	P. Mithun

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DEPARTMENT OF MECHANICAL ENGINEERING

One Credit course on GIQ -3-D Printing

Course Instructor: **Dr. K.P. Karunakaran,**
Institute Chair Professor,
Department of Mechanical Engineering
Indian Institute of Technology, Bombay.

Syllabus

Introduction to 3D Printing: Fundamental concepts of slicing and support mechanisms, types of materials, advantages and limitations, applications. Popular 3D Printing Processes: Classification of the processes, Fused Deposition Modeling (FDM), Stereo-Lithography Apparatus (SLA), Selective Laser Sintering (SLS), Multi-jet 3D Printing, Laminated Object Manufacturing (LOM) etc. Introduction to Reverse Engineering. An Overview of Rapid Manufacturing. Rapid Manufacturing of Polymeric Objects: Vacuum Casting, Epoxy Tooling, Spray Metal Tooling etc. Rapid Manufacturing of Metallic & Ceramic Objects - Direct Routes: Laminated Manufacturing, Powder-bed technologies like multi-jet 3D Printing, Selective Laser Sintering/ Melting (SLS / SLM) and Selective Electron beam Melting, Deposition technologies using arc and laser. Rapid Manufacturing of Metallic & Ceramic Objects - Indirect Routes: Rapid Casting, *Demos on* CAD modeling using SolidWorks and Processing of STL files. Fused Deposition Modeling.

Text Books

1. Kenneth G. Cooper “**Rapid prototyping Technology**” Selection and application, Marcel Dekker Inc. 2010
2. D.T.Pham, S.S.Dimov “**Rapid Manufacturing**” The technologies and applications of Rapid Prototyping and Rapid Tooling, Springer Publication, 2001.

Reference Books:

1. I. Gibson, D. W. Rosen, B. Stucker “**Additive Manufacturing Technologies**” Rapid Prototyping to Direct Digital Manufacturing, Springer Publication, 2009.