



KONGU ENGINEERING COLLEGE
(Autonomous)
PERUNDURAI, ERODE - 638 060

DEPARTMENT OF AUTOMOBILE ENGINEERING



Ref: - KEC/ AUTO/OC-01


Date: 08.10.2021.

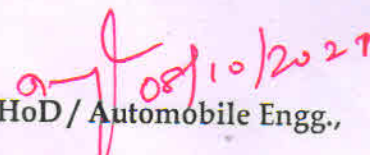
CIRCULAR

This to inform that a one credit course on "18VAC38 - Lean Manufacturing" will be conducted from 22.10.2021 to 12.01.2022 for the benefit of III-year Automobile Engineering Students. The duration of the course is 30 hours. Interested students are asked to enroll their names to Mr. K Nithyanaandhan on or before 15.10.2021. The maximum student strength is limited to 62.

Course Faculty

1. Mr. K Nithyanandhan / Assistant Professor / KEC
2. Mr. V. Sivakumar / Adjunct Faculty / KEC


Faculty - in charge
(Mr. K Nithyanandhan)


HoD / Automobile Engg.,

Copy to:

1. III year Automobile Engineering
2. File



KONGU ENGINEERING COLLEGE
(Autonomous)
PERUNDURAI – 638060
INTERNAL QUALITY ASSURANCE CELL



CERT No.:99-100-20788
ISO 9001 : 2015

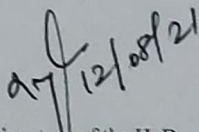
Approval for Value Added Course (One / Two Credits)

Academic Year: 2021-2021 ODD Semester

DEPARTMENT OF AUTOMOBILE ENGINEERING

Date: 12-08-2021

1.	Academic Year	:	2021-2022	Semester : ODD
2.	Course Title	:	Lean Manufacturing	Credit(s): Two
3.	Type of Course	:	Already Offered Course	
	• If “ Already offered course”,	:	Course Code: 18VAC38	Version: 01
4.	Course Coordinator(s)	:	1. Mr. V Sivakumar 2. Mr. K Nithyanandhan	
5.	Course offered by	:	Internal faculty	
6.	Name and designation of external resource persons	:	NIL	
7.	Details about external organizaion	:	NIL	
8.	Course fee for external experts		Max. number of students/Batch	Course fee / student
	-		30	-
9.	No. of days	Period	No. of hours	Venue/ Meet ID
		From To	Lecture Practical Total	Online Class
	30	25.08.2021 27.10.2021	30 - 30	https://meet.google.com/lookup/cvvqnu47hh
10.	Pre-requisites for offering the course	:	NA	
11.	Course offered to	:	Programme	Branch Year/Semester
			B. E	Automobile Engineering III year/V
12.	Course Main Contents	:	Day 1	Lean basics 1 - Overview and scope - objectives
			Day 2	A brief history of lean - the lean enterprises
			Day 3	Waste estimation - value streaming mapping
			Day 4	5S and visual management

			Day 5	Lean Basics 2 - overview and scope - objectives	
			Day 6	The lean enterprises - Heijunka	
			Day 7	Guide to level load - takt time production	
			Day 8	Single piece flow - standard work	
			Day 9	Tools of 3P - pull production	
			Day 10	Kanban system.	
			Day 11	Introduction to lean advance	
			Day 12	Tools and techniques of TQM	
			Day 13	Standard work and cell design	
			Day 14	Pull production system and work load leveling	
			Day 15	golf scoring	
			Day 16	7 ways - lean maturity tracker	
			Day 17	Strategy development	
			Day 18	Implementing PDCA and A3	
			Day 19	Case study.	
			Day 20	Case study	
13.	Course Outcomes	:	After completing the course, the student will be able to: <ul style="list-style-type: none">• Discuss the fundamentals behind the 5S techniques.• Explain the 5S standard and techniques.• Illustrate the step by step to use 5S to organize a workplace.• Understand the scope and breadth of 7 ways in industrial practice.		
14.	Course Assessment (Min. 2)	:	S. No.	Type	Max. Marks
			1.	Assessment Test I	50 Marks
			2.	Assessment Test II	50 Marks
				Total	100 Marks
15.	Verified that the content of this course is not offered to students partially/fully in regular curriculum of respective programme of the student. Certify that the course content, credits and grade are approved in the BOS meeting or approved by internal BOS members and will be ratified in the next BOS meeting				 (Signature of the HoD after verification)
16.	Any other details	:	NIL		

The above proposal may kindly be approved.

Course co-ordinator(s)

(K. N. THYANANDHAN)

HOD

Chief Coordinator/Academic

Encl:

1. Copy of the syllabus of the course
2. Financial proposal from the external organization (if any)

18VAC38 - LEAN MANUFACTURING

Programme & Branch	B.E. – Automobile Engineering	L	T	P	Credit
Prerequisites		2	0	0	2

Preamble	This course provide a knowledge on basic lean practice and the advanced lean concepts followed in the reputed organization.				
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Unit - I	LEAN BASICS:	15
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Lean basics 1 – Overview and scope – objectives – A brief history of lean – the lean enterprises – waste estimation – value streaming mapping – 5S and visual management. Lean Basics 2 – overview and scope – objectives – the lean enterprises - Heijunka – guide to level load – takt time production – single piece flow – standard work – tools of 3P – pull production – Kanban system.

Unit - II	ADVANCED LEAN CONCEPTS:	15
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Introduction to lean advance – standard work – cell design – pull production system – work load leveling – golf scoring – 7 ways – lean maturity tracker – strategy development – implementing PDCA and A3 – Case study.

Total:30

REFERENCES:

1.	James P. Womack, Daniel T. Jones, Lean Thinking, Free press business, Simon & Schuster, 2 nd Edition, New York, 2003.
2.	Maharjan S, Implementing the 5S methodology for the graphic communications management at University of Wisconsin-Stout, American Psychological Association, 6 th edition, Menomonie, WI, 2011
3.	Takashi Osada, The 5s's: Five Keys To A Total Quality Environment, Asian Productivity Organization, 2 nd edition, Tokyo 1991.

COURSE OUTCOMES:

On completion of the course, the students will be able to

		BT Mapped (Highest Level)
CO1	Discuss the fundamentals behind the 5S techniques.	Understanding(K2)
CO2	Explain the 5S standard and techniques.	Understanding(K2)
CO3	Illustrate the step by step to use 5S to organize a workplace.	Understanding(K2)
CO4	Understand the scope and breadth of 7 ways in industrial practice.	Understanding(K2)

Mapping of COs with POs and PSOs

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2	1								1		3
CO2	3	3	2	1								1		3
CO3	3	3	2	1								1		3
CO4	3	3	2	1								1		3

1 – Slight, 2 – Moderate, 3 – Substantial, BT- Bloom's Taxonomy

ASSESSMENT PATTERN - THEORY

Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6) %	Total %
CAT1	46	54					100
CAT2	45	55					100



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CERT No. 99-100-20788
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18VAC38 – LEAN MANUFACTURING

Consolidate Attendance Sheet

Year: III Year

Semester: V

Sl. No.	Roll No.	Name	Conducted Period	No. of Hour Present	No. of Hour Absent	Percentage
1	19AUL045	Akash R	30	26	4	87
2	19AUL046	Dhanush Athithya K B	30	29	1	97
3	19AUL047	Dinesh Kumar S	30	30	0	100
4	19AUL048	Gobith P	30	30	0	100
5	19AUL049	Gokul V	30	30	0	100
6	19AUL050	Gokulraj C	30	27	3	90
7	19AUL051	Gowtham S	30	30	0	100
8	19AUL052	Hariprasath M	30	28	2	93
9	19AUL053	Kalanithi B	30	28	2	93
10	19AUL054	Logesh S	30	26	4	87
11	19AUL055	Mathan T	30	24	6	80
12	19AUL056	Muthukumar P B	30	30	0	100
13	19AUL057	Praveen S B	30	30	0	100
14	19AUL058	Rajvarma S S	30	30	0	100
15	19AUL059	Saravana Kumar K	30	30	0	100
16	19AUL060	Sivabalarajan P	30	24	6	80
17	19AUL061	Sudhakar S	30	27	3	90
18	19AUL062	Suresh Kumar KMK	30	30	0	100
19	19AUL063	Vigneshwaran S V	30	28	2	93
20	19AUL064	Vijay T	30	30	0	100
21	19AUR001	Adhavan C K	30	27	3	90
22	19AUR002	Arun M.U	30	30	0	100
23	19AUR004	Athithya Muruges P	30	30	0	100
24	19AUR005	Balanithish S	30	26	4	87
25	19AUR006	Bharathiraja.R	30	28	2	93
26	19AUR007	Dhanush Aditya E	30	28	2	93
27	19AUR008	Gangadharan.B	30	30	0	100
28	19AUR009	Harish Kumar R	30	27	3	90
29	19AUR010	Harish S	30	27	3	90
30	19AUR011	Jayakrishnan S	30	30	0	100

31	19AUR012	Kabileshe.R	30	30	0	100
32	19AUR013	Kaja Mohideen N	30	30	0	100
33	19AUR014	Kavin Adhithya.V.P	30	30	0	100
34	19AUR015	Kavin G	30	26	4	87
35	19AUR016	Manoj R	30	29	1	97
36	19AUR017	Mohan Kumar D	30	29	1	97
37	19AUR018	Mohankumar R	30	28	2	93
38	19AUR019	Monisha. M	30	29	1	97
39	19AUR020	Naveen L	30	24	6	80
40	19AUR021	Naveenkumar T	30	30	0	100
41	19AUR022	Navin S R	30	30	0	100
42	19AUR023	Nivethitha K	30	30	0	100
43	19AUR024	Poomani.R	30	27	3	90
44	19AUR025	Prabu Sankar.M	30	26	4	87
45	19AUR026	Prem N	30	29	1	97
46	19AUR027	Rahul T	30	30	0	100
47	19AUR028	Sakthi Ganesh P	30	29	1	97
48	19AUR029	Santhosh K	30	30	0	100
49	19AUR030	Santhosh S	30	26	4	87
50	19AUR031	Saran M	30	29	1	97
51	19AUR032	Saravanan. K	30	30	0	100
52	19AUR033	Siddharthan.T	30	30	0	100
53	19AUR034	Siva Sankar	30	28	2	93
54	19AUR035	Sivanithilan K S	30	24	6	80
55	19AUR036	Subash T	30	30	0	100
56	19AUR038	Thianesh S	30	30	0	100
57	19AUR039	Vasanth.R	30	30	0	100
58	19AUR040	Venugopal.S	30	27	3	90
59	19AUR041	Vignesh P	30	25	5	83
60	19AUR042	Vignesh.V	30	29	1	97
61	19AUR043	Vinothkumar V	30	30	0	100

Course Faculty

HoD/Automobile



KONGU ENGINEERING COLLEGE
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PERUNDURAI – 638060
Department of Automobile Engineering
Attendance for one credit course



CERT No.: 99-100-20788
ISO 9001:2015

Couse Code & Name: 18VAC38 & LEAN MANUFACTURING

Year: III Year

Semester: V

Duration: 22/10/2021 to 12/01/2022

Time: 4.30 pm to 5.30 pm (1 Hour)

[illegible]



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18VAC38 – LEAN MANUFACTURING

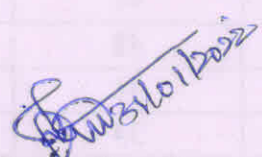
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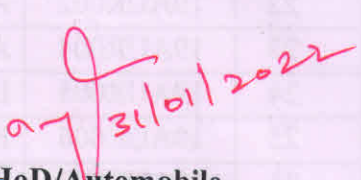
Year: III Year

Semester: V

Sl. No.	Roll No.	Name	Assessment 1 out of 50	Assessment 2 out of 50	Total out of 100
1	19AUL045	Akash R	45	44	89
2	19AUL046	Dhanush Athithya K B	46	46	92
3	19AUL047	Dinesh Kumar S	48	20	68
4	19AUL048	Gobith P	32	47	79
5	19AUL049	Gokul V	50	48	98
6	19AUL050	Gokulraj C	42	45	87
7	19AUL051	Gowtham S	38	44	82
8	19AUL052	Hariprasath M	48	46	94
9	19AUL053	Kalanithi B	39	8	47
10	19AUL054	Logesh S	47	35	82
11	19AUL055	Mathan T	48	46	94
12	19AUL056	Muthukumar P B	41	46	87
13	19AUL057	Praveen S B	48	47	95
14	19AUL058	Rajvarma S S	47	35	82
15	19AUL059	Saravana Kumar K	46	46	92
16	19AUL060	Sivabalarajan P	43	47	90
17	19AUL061	Sudhakar S	29	47	76
18	19AUL062	Suresh Kumar KMK	48	30	78
19	19AUL063	Vigneshwaran S V	48	47	95
20	19AUL064	Vijay T	48	47	95
21	19AUR001	Adhavan C K	50	46	96
22	19AUR002	Arun M.U	48	48	96
23	19AUR004	Athithya Muruges P	48	48	96
24	19AUR005	Balanithish S	44	31	75
25	19AUR006	Bharathiraja.R	37	34	71
26	19AUR007	Dhanush Aditya E	38	42	80
27	19AUR008	Gangadharan.B	47	46	93
28	19AUR009	Harish Kumar R	45	42	87
29	19AUR010	Harish S	50	47	97
30	19AUR011	Jayakrishnan S	48	47	95
31	19AUR012	Kabilesh.R	28	33	61

32	19AUR013	Kaja Mohideen N	27	35	62
33	19AUR014	Kavin Adhithya.V.P	36	48	84
34	19AUR015	Kavin G	44	43	87
35	19AUR016	Manoj R	43	39	82
36	19AUR017	Mohan Kumar D	44	40	84
37	19AUR018	Mohankumar R	49	44	93
38	19AUR019	Monisha. M	46	42	88
39	19AUR020	Naveen L	48	48	96
40	19AUR021	Naveenkumar T	39	47	86
41	19AUR022	Navin S R	46	48	94
42	19AUR023	Nivethitha K	48	48	96
43	19AUR024	Poomani.R	41	40	81
44	19AUR025	Prabu Sankar.M	50	47	97
45	19AUR026	Prem N	48	45	93
46	19AUR027	Rahul T	48	46	94
47	19AUR028	Sakthi Ganesh P	46	46	92
48	19AUR029	Santhosh K	48	46	94
49	19AUR030	Santhosh S	46	40	86
50	19AUR031	Saran M	46	47	93
51	19AUR032	Saravanan. K	47	34	81
52	19AUR033	Siddharthan.T	42	20	62
53	19AUR034	Siva Sankar	46	44	90
54	19AUR035	Sivanithilan K S	44	44	88
55	19AUR036	Subash T	48	48	96
56	19AUR038	Thianesh S	47	47	94
57	19AUR039	Vasanth.R	48	48	96
58	19AUR040	Venugopal.S	30	10	40
59	19AUR041	Vignesh P	45	46	91
60	19AUR042	Vignesh.V	45	47	92
61	19AUR043	Vinothkumar V	49	48	97


Course Faculty
(N. NITHYANANDHAN)


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