NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI – 620015

DEPARTMENT OF PRODUCTION ENGINEERING

COURSE PLAN

COURSE OUTLINE			
Course Title	Lean and Agile Manufacturing		
Course Code	PR 666	**No. of Credits**	3
Department	Production Engineering	**Faculty**	Dr.S.Vinodh
Pre-requisites	None		
Course Co-ordinator	Dr.S.Vinodh		
Faculty Member's Email	vinodh@nitt.edu	**Contact Number**	0431-2503520
Course Type	Elective		

COURSE OVERVIEW

This course would enable the students to understand the manufacturing challenges, transition of manufacturing systems, inculcating knowledge on tools/techniques of lean and agile manufacturing, measurement of lean and agile system performance and recognizing the industrial applications of lean and agile manufacturing.

COURSE OBJECTIVES

1. This course aims at enabling the students to recognize the principles and concepts of lean and agile manufacturing
2. This course provides practical insights to students on the potential applications of lean and agile manufacturing
3. This course provides hands on experience for students on assessment of lean and agile system performance

COURSE OUTCOMES

Course Outcomes	**Aligned Programme Outcomes**
1. Understand the principles of lean and agile manufacturing 2. Recognize the potential applications of lean and agile manufacturing 3. Apply the tools/techniques of lean and agile manufacturing to industrial problems	**1,2,3,4,6,11**

COURSE TEACHING AND LEARNING ACTIVITIES			
S.No.	**Week No.**	**Topic**	**Mode of Lecture**
1	1	Introduction to Lean Manufacturing	Lecture C&T/PPT
2	1	Comparison of Mass manufacturing and Lean manufacturing	
3	2	Lean Principles	
4	2	Types of Wastes – Seven basic categories	
5	2	Types of Activities – Value Added, Non Value Added	
6	3	Necessary but Non value Added activities	
7	3	Tutorial I	Tutorial
8	3	Primary Lean tools – 5S	Lecture C&T/PPT
9	4	Primary Lean tools – 5S (contd)	
10	4	Primary Lean tools - Process Mapping and Value Stream Mapping	
11	4	Primary Lean tools - Process Mapping and Value Stream Mapping (contd)	
12	5	Primary Lean tools – Work Cells	
13	5	Primary Lean tools – Total Productive Maintenance	
14	5	Secondly Lean tools	
15	6	Secondly Lean tools	
16,17	6	Lean rules, Training and Implementation for lean systems	
18	7	How to succeed with lean manufacturing	
19,20	7	Leanness assessment – Indicators and methods with examples	
21	8	Fundamentals of Agile Manufacturing	
22, 23	9	Agile Principles, Conceptual models for Agile Manufacturing	
24	10	Product development strategies for agility	
25, 26	11	Developing the agile enterprise	
27	11	Managing people in agile organizations	
28	11	Strategic approach to agile manufacturing	
29	12	Tutorial II	Tutorial
30	13	IT Applications in Agile Manufacturing	Lecture C&T/PPT
31	14	Assessment of agility	
32	14	Activity Based Costing	
33	14	Application case studies on lean and agile manufacturing	
34	15	Tutorial III	Tutorial

COURSE ASSESSMENT METHODS

S.No.	Mode of Assessment	Week	Duration	Weightage
1	Cycle Test I	End of September	1 Hour	20
2	Cycle Test II	End of October	1 Hour	20
3	Assignment/Tutorial	4^{th} ,12^{th} ,15^{th} Week	1 Hour	10
4	Compensation Assessment	First week of November	1 Hour	Refer Course Policy
5	End Semester Examination	Third week of November	3 Hours	50

Essential Readings

Reference Books

1. Montgomery, J.C and Levine, L. O., "The transition to agile manufacturing – Staying flexible for competitive advantage", ASQC Quality Press, Wisconsin, 1996.
2. Gopalakrishnan "Simplified Lean Manufacture – Elements, Rules, Tools and Implementation", PHI Learning Private Limited, New Delhi, India, 2010.
3. Hobbs, D.P. "Lean Manufacturing Implementation", Narosa Publisher, 2004.
4. Devadasan, S.R., Sivakumar, V., Mohan Murugesh, R., Shalij, P, R. "Lean and Agile Manufacturing: Theoretical, Practical and Research Futurities", Prentice Hall India, 2012.

COURSE EXIT SURVEY

At the end of the semester students will give feedback online (MIS) as well feedback will be gathered during class committee meetings. Also, mid semester feedback will be obtained through questionnaire.

COURSE POLICY

- Students must interact with faculty during class hours.
- Students must attend the classes regularly and strict discipline is to be maintained in the class room
- Students absent for any of the Continuous Assessment due to genuine reasons are permitted to attend the compensation assessment.

ADDITIONAL COURSE INFORMATION

Course faculty is available for discussion in the Department after class hours.

FOR SENATE'S CONSIDERATION

17/8/17

Course faculty **CC-Chairperson** **Head of the Department**