NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

DEPARTMENT OF PRODUCTION ENGINEERING

COURSE PLAN – PART I			
Name of the programme and specialization	**M.Tech. Industrial Engineering & Management**		
Course Title	**Lean and Agile Manufacturing**		
Course Code	**PR665**	**No. of Credits**	**3**
Course Code of Pre-requisite subject(s)	-		
Session	**July 2020**	**Section (if, applicable)**	-
Name of Faculty	**Dr S Vinodh**	**Department**	**Production Engg**
Official Email	**vinodh@nitt.edu**	**Telephone No.**	**9952709119**
Name of Course Coordinator(s) (if, applicable)			
Official E-mail		**Telephone No.**	
Course Type (please tick appropriately)	☐ **Core course**	☑ **Elective course**	

Syllabus (approved in BoS)

Introduction to Lean Manufacturing, Comparison of Mass Manufacturing and Lean Manufacturing, Lean Principles, Types of Wastes – Seven basic categories, Types of activities – Value Added, Non Value Added and Necessary but Non Value Added activities, Examples

Primary Tools of Lean Manufacturing- 5S, Process Mapping and Value Stream Mapping, Work Cells, Total Productive Maintenance – Principle, Procedural steps and Advantages- Secondary Lean Tools.

Lean rules, Training and Implementation for lean systems, How to succeed with lean manufacturing, Leanness assessment – Indicators, methods and illustrative example.

Fundamentals of Agile Manufacturing, Agile Principles, Conceptual models of Agile Manufacturing, Product Development Strategies for agility, Developing the agile enterprise, Managing People in agile organizations.

Strategic approach to agile manufacturing, Information Technology applications in Agile Manufacturing, Assessment of agility – Activity Based Costing - Application Case studies and Research issues in Lean and Agile Manufacturing.

COURSE OBJECTIVES
1. To understand the concepts of lean and agile manufacturing 2. To gain competence on tools/techniques of lean and agile manufacturing 3. To explore the industrial applications of tools/techniques of lean and agile manufacturing

MAPPING OF COs with POs	
Course Outcomes	**Programme Outcomes (PO)** (Enter Numbers only)
1. Demonstrate the principles of lean and agile manufacturing	**1,2,3,5,6**
2. Recognize the potential applications of lean and agile manufacturing	**1,2,3,4,5,6,9,10,11**
3. Apply the tools/techniques of lean and agile manufacturing to industrial problems	**1,2,3,4,5,6,7,9,10,11**

COURSE PLAN – PART II

COURSE OVERVIEW

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

COURSE TEACHING AND LEARNING ACTIVITIES (Add more rows)

S.No.	Week/ Contact Hours	Topic	Mode of Delivery
1	1	Introduction to Lean Manufacturing	
2	1	Comparison of Mass manufacturing and Lean manufacturing	

3	1	Lean Principles	Online Teaching Mode
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	Online Teaching Mode
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	
21,22	8	Fundamentals of Agile Manufacturing	
23,24	8,9	Agile Principles, Conceptual models for Agile Manufacturing	
25	9	Product development strategies for agility	
26,27	10	Developing the agile enterprise	
28	11	Managing people in agile organizations	
29	11	Strategic approach to agile manufacturing	

30	12	Tutorial II	Tutorial
31	12	IT Applications in Agile Manufacturing	Online Teaching Mode
32	13	Assessment of agility	
33	13	Activity Based Costing	
34	14	Applications and Research issues in lean and agile manufacturing	
35	14	Case study presentation	Presentation

COURSE ASSESSMENT METHODS (shall range from 4 to 6)

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Cycle Test I	October Fourth Week	1 Hour	20
2	Cycle Test II	November Third Week	1 Hour	20
3	Assignment/Tutorial I and II	Mid October and Mid November	1 Hour Each	10 + 10
4	Case study presentation	November Third week	Time Slot basis	10
CPA	Compensation Assessment	Second week of December	1 Hour	Refer Course Policy
5	End Semester Examination	Third/Fourth week of December	2 Hours	30

***mandatory; refer to guidelines on page 4**

COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)

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 (including compensation assessment to be specified)

MODE OF CORRESPONDENCE (email/ phone etc)

The course faculty is available for discussion based on prior appointment by email - vinodh@nitt.edu

COMPENSATION ASSESSMENT

- Attending online classes regularly and continuously is required for the students to understand the concepts.
- Interaction and participation in the discussions is encouraged during online learning process.
- If any student is not able to attend any of the continuous assessments (1 and 2) due to genuine reason, the student is permitted to attend a compensation assessment with 20% weightage. A candidate may appear for a compensation assessment only once.
- Attending the assignment/tutorials, case presentation and final assessment is mandatory. Final assessment will be on the entire syllabus.

ATTENDANCE POLICY (A uniform attendance policy as specified below shall be followed)

- Attendance for students will be considered as per institute policy.

ACADEMIC DISHONESTY & PLAGIARISM

- As per Institute Policy

ADDITIONAL INFORMATION, IF ANY

FOR APPROVAL

Course Faculty 12.10.2020 Dr. S. Vinodh **CC- Chairperson** 13.10.2020 (J Jerald) **HOD**