

DEPARTMENT OF Production Engineering
NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE PLAN – PART I			
Course Title	FLEXIBLE MANUFACTURING SYSTEMS		
Course Code	PR 606	No. of Credits	3
Course Code of Pre-requisite subject(s)	Nil		
Session	Jan. 2018	Section (if, applicable)	
Name of Faculty	Dr.T.Selvaraj	Department	Production Engineering
Email	tselva@nitt.edu	Telephone No.	9047192219
Name of Course Coordinator(s) (if, applicable)			
E-mail		Telephone No.	
Course Type	<input checked="" type="checkbox"/> Core course <input type="checkbox"/> Elective course		
Syllabus (approved in BoS)			
<p>1. FMS Introduction and Description - Objectives and Benefits of FMS - Basic Components of FMS and their integration in the data processing systems - Types of FMS - FMS Layouts – Types of Flexibility - FMS design criteria- Group Technology – Cellular manufacturing - Differences between FMC and FMS</p> <p>2. FMS workstations - Machining station – CNC/DNC Features – Machine Tool applications - Machining Centers – Automated Features and Capabilities - Wash Stations - Coordinate Measuring Machines – Contact and noncontact inspection principles - Functions of CMM Computer/software</p> <p>3. Material Handling Systems - Introduction to material handling – material transport systems – AGV's - conveyors – storage systems - AS/RS – Automatic data capture - Industrial Robots - Basic Configurations – Sensors in Robotics - robot cell design and control - Applications of Industrial Robots – Robot programming</p> <p>4. FMS Software Structure, Functions and Description - General Structure and Requirements - Activities and Functions to be Performed by FMS Software - Requirements of FMS Software - Types of FMS Software Modules - Computer</p>			

Simulation - Functions of an FMS Host Computer – Distributed systems in FMS – Part program preparation

5. System Hardware and General Functionality - Programmable Logic Controllers - Cell Controllers - Communication Networks - FMS Installation and Implementation - Case Studies - Just-in-Time production – CIM Technology

COURSE OBJECTIVES

1. To introduce and discuss flexible manufacturing concepts.
2. To understand the selection and operation of different components in FMS and their integration
3. To analyze the issues related in planning for successful implementation of FMS

COURSE OUTCOMES (CO)

Course Outcomes	Aligned Programme Outcomes (PO)
After completion of this course the students will be able to	
1. Define the flexibilities in FMS	Knowledge and thinking
2. Apply the components of FMS and their integration	Problem solving, usage of modern tools
3. Analyze the issues related to planning for successful implementation of FMS	Project management and research

COURSE PLAN – PART II

COURSE OVERVIEW

The manufacturing facility in an industry needs to be flexible in the present context. This course aims to understand the planning and implementation issues of flexibility in manufacturing industries by graduate students. This course discusses the state of the art machineries for processing and material handling.

COURSE TEACHING AND LEARNING ACTIVITIES				
S.No.	Week	Topic	Mode of Delivery	
1	1,2	FMS Introduction and Description	Lecture with PPT	
2	3,4	FMS workstations	Lecture with PPT	
3	5,6	Material Handling Systems	Lecture with PPT	
4	7,8	FMS Software Structure, Functions and Description	Lecture with PPT	
5	9,10	System Hardware and General Functionality	Lecture with PPT	
6	11-13	Seminar	PPT	
COURSE ASSESSMENT METHODS (shall range from 4 to 6)				
S.No.	Mode of Assessment	Week	Duration	% Weightage
1	Cycle test-1	6	1 hr.	20
2	Cycle test-2	12	1 hr.	20
3	Seminar	11-13		10
CPA	Compensation Assessment*	14		
5	Final Assessment * End semester exam	15	3hrs.	50
*mandatory; refer to guidelines on page 4				
COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)				
<p>Students will give their feedback after the cycle tests through their representatives.</p> <p>Students will be asked to complete evaluation of their learning experiences at the conclusion of the course.</p>				

COURSE POLICY (preferred mode of correspondence with students, policy on attendance, compensation assessment, , academic honesty and plagiarism etc.)

MODE OF CORRESPONDENCE (email/ phone etc)

phone

ATTENDANCE

The minimum attendance requirement is 75%.

COMPENSATION ASSESSMENT

One retest will be conducted for student absent in cycle tests

ACADEMIC HONESTY & PLAGIARISM

as specified in the M.Tech. Regulations of NITT.

ADDITIONAL INFORMATION

FOR APPROVAL

Course Faculty *Delwanay* 11/11/18 CC-Chairperson *Anto* HOD *U. J...*