

DEPARTMENT OF PRODUCTION ENGINEERING
NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE PLAN – PART I			
Course Title	MECHATRONICS AND INDUSTRIAL AUTOMATION (Theory & Lab)		
Course Code	PRPC27	No. of Credits	3
Course Code of Pre-requisite subject(s)	Fluid mechanics and Machinery, Engineering mechanics	Session	-
Session	Jan-2018	Specialization	Production Engineering
Name of Faculty	JAFREY DANIEL JAMES D	Department	PRODUCTION ENGG
Email	jafrey@nitt.edu	Telephone No.	9894314390
Name of Course Coordinator(s) (if, applicable)	-		
E-mail		Telephone No.	
Course Type	Core course		
Syllabus (approved in BoS)			
Course Content			
<p>Introduction - overviews, principles and application of hydraulic, pneumatic, electric controls system.</p> <p>Hydraulic system, hydraulic components - pressure-flow-direction controls valves – proportional , servo, cartridge(logic) valves- accumulator, accessories. Hydraulic components symbols- Design and application of hydraulic circuits of machine tool, press, Mobile hydraulic.</p> <p>Pneumatic system, pneumatic components - pressure-flow-direction controls valves - pneumatic components symbols- Design and application of pneumatic circuits of machine tool.</p> <p>Semi automats-automats-transfer lines - automatic assembly - transfer devices and feeders- classifications and applications-job orienting and picking devices- setting of automats and transfer lines.</p> <p>Introduction to mechatronics, mechatronics system, Microprocessors and their applications, Sensors and Principles, PLC system, examples of mechatronics systems.</p>			

COURSE OBJECTIVES	
<ul style="list-style-type: none"> To study about fluid power (Hydraulics and Pneumatics) components and applications related to industries To understand the concepts of fluid power control system for the industrial circuits To understand the concepts and basics of industrial automation for part picking, part orientation and transfer systems. 	
COURSE OUTCOMES (CO)	
Course Outcomes	Aligned Programme Outcomes (PO)
1. To understand hydraulic devices and their applications.	1,3,5,6,11,12
2. Analyze the integrated product design	
3. Generate electro-hydraulic, electro-pneumatic solutions	

COURSE PLAN – PART II			
COURSE TEACHING AND LEARNING ACTIVITIES			
S.No.	Week/Contact Hours	Topic	Mode of Delivery
1	1/3hrs	Introduction - overviews, principles of hydraulics and pneumatics	Lecture C&T/ PPT
2	2/3hrs	Application of hydraulic, pneumatic, electric controls system	Lecture C&T/ PPT
3	3/3hrs	Hydraulic system, hydraulic components - pressure-flow-direction controls valves	Lecture C&T/ PPT
4	4/3hrs	Proportional , servo, cartridge(logic) valves- accumulator, accessories. Hydraulic components symbols-	Lecture C&T/ PPT
5	5/3hrs	Design and application of hydraulic circuits of machine tool, press, Mobile hydraulic.	Lecture C&T/ PPT
6	6/3hrs	Pneumatic system, pneumatic components – pressure control valves	Lecture C&T/ PPT
7	7/3hrs	Direction controls valves - pneumatic components symbols-	Lecture C&T/ PPT

8	8/3hrs	Design and application of pneumatic circuits of machine tool.	Lecture C&T/ PPT
9	9/3hrs	Semi automats-automats-transfer lines - automatic assembly - transfer devices and	Lecture C&T/ PPT
10	10/3hrs	Feeders- classifications and applications-job orienting.	Lecture C&T/ PPT
11	11/3hrs	Job picking devices- setting of automats and transfer lines	Lecture C&T/ PPT
12	12/3hrs	Introduction to mechatronics, mechatronics system, microprocessors and their applications.	Lecture C&T/ PPT
13	13/3hrs	Sensors and Principles, PLC system, examples of mechatronics systems.	Lecture C&T/ PPT

COURSE ASSESSMENT METHODS (shall range from 4 to 6)

	S.No	Mode of Assessment	Week/Date	Duration	Wt. %	Wt.% for final grading
Theory	1	Cycle test-1	6 th week	1hr	15	70
	2	Assignment -I	6 th Week	1hr	10	
	3	Cycle Test -II	11 th week	1hr	15	
	4	Assignment – II	12 th Week	1hr	10	
	5	Compensation Assessment	14 th week	1hr	20	
	6	Final Assessment	15 th week	3 hr	50	
Lab	1	Continous assessment for 10 Lab excercises			100	30
Final Assessment for Grading						100

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

Course Exit survey will be collected at the end of the semester before the start of semester examination through online. Students can log in their MIS account to give the feedback.

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

MODE OF CORRESPONDENCE (email/ phone etc)

ATTENDANCE

- Students should attend the classes regularly and strict disciplines have to be maintained in the class room.
- 75% attendance is mandatory. If student is not able to maintain 75% attendance; he/she is required to write the compensation assessment and obtain a minimum of 50% marks to become eligible to write the final assessment.

COMPENSATION ASSESSMENT

- Students absent for any of the continuous assessments due to genuine reasons are permitted to attend the compensation assessment. If students did not attend both of the assessments (due to genuine reasons and paper proof) then compensation assessments will be held for 40 marks.

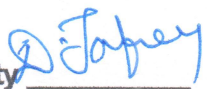
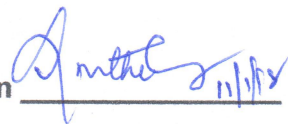
ACADEMIC HONESTY & PLAGIARISM

- All the students are expected to be genuine during the class work. Taking of information by means of copying simulations, assignments, looking or attempting to look at another student's paper or bringing and using study material in any form for copying during any assessments is considered dishonest.
- Tendering of information such as giving one's program, simulation work, assignments to another student to use or copy is also considered dishonest.
- Preventing or hampering other students from pursuing their academic activities are also considered as academic dishonesty.

ADDITIONAL INFORMATION

The course faculty is available for discussion in department after class hours. Students can interact with faculty at jafrey@nitt.edu

FOR APPROVAL

Course Faculty  CC-Chairperson  HOD 