

NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE PLAN			
Course Title	INDUSTRIAL ROBOTICS		
Course Code	MEPE25	No. of Credits	03
Department	MECH – A & B Section	Faculty	N. PRAVIN KUMAR
Pre-requisites Course Code	MEPC13		
Course Coordinator(s) (if, applicable)	None		
Other Course Teacher(s)/Tutor(s) E-mail	pravin@nitt.edu	Telephone No.	9488515181
Course Type	Programme Elective		
COURSE OVERVIEW			
<p>Students get exposure to Brief history and application of robotics, Automation using robotics in industries. Students will study the Design of End Effectors, various sensors and their application in robots. Students get familiarised with the kinematics of robots, Robot Programming methods & Languages of robot.</p>			
COURSE OBJECTIVES			
<ol style="list-style-type: none"> 1. To introduce the basic concepts, parts of robots and types of robots 2. To make the students familiar with the various drive systems for robot, sensors and their applications in robots, programming of robots 3. To discuss about the various applications of robots, justification, implementation and safety of robot. 			

COURSE OUTCOMES (CO)				
Course Outcomes		Aligned Programme Outcomes (PO)		
1. Classify and characterize the robots based on the configuration and work volume.		1,2,3,6		
2. Explain and solve the problems related to robot design and control.		1,2,3,4,5,6		
3. Illustrate the working of the transmission system in a robot.		1,2,3,5,7		
4. Discuss the concept of vision system and image processing.		1,2,3,7		
5. Write programs for automatic functioning of a robot.		1,2,3,7		
6. Design a working model of a robot using the concepts and principles learnt.		1,2,3,4,5,6,7,8,10,12		
COURSE TEACHING AND LEARNING ACTIVITIES				
S.No.	Week	Topic	Mode of delivery	
1.	1-2	Robot definition, Anatomy, Coordinate systems, Work envelope, Classification, Specifications, Applications and Robot Design	Lecture C&T/ PPT or any suitable mode	
2.	3-6	Drives for Robots, End Effectors, Selection and Design considerations.		
3.	7-10	Sensor – Types and requirements, Image processing, algorithms for image processing		
4.	11-14	Kinematics of robots		
5.	15-16	Programming, Implementation, safety considerations and Economic analysis of robots.		
COURSE ASSESSMENT METHODS				
S.no	Mode of Assessment	Week/ Date	Duration	% Weightage
1.	Assessment – 1 (Descriptive Type)	6 th Week	60 Minutes	20%
2.	Assessment – 2 (Conceptual and Logical Test)	11 th Week	60 Minutes	20%

3.	Assessment – 3 (Group Task) Mini Project / Assignment	13 th Week	-----	25%
4.	Compensation Assessment (CPA)	Before End Semester	60 Minutes	Corresponding Weightage
5.	Assessment – 4 (Descriptive)	End Semester	90 Minutes	35%
ESSENTIAL READINGS : Textbooks, reference books Website addresses, journals, etc				
Text Books:				
Reference Books:				
<ol style="list-style-type: none"> 1. <i>Mair, G.M., Industrial Robotics, Prentice-Hall, 1988.</i> 2. <i>Considine, D.M. and Considine, G.D., Standard Hand Book of industrial Automation, Chapman and Hall, 1986.</i> 3. <i>Groover, M.P., Weiss, M., Nagel, R.N., and Odrey, N.G., Industrial Robotics, Technology, Programming, and Applications, McGraw-Hill, 1995.</i> 				

COURSE EXIT SURVEY (mention the ways in which the feedback about the course is assessed and indicate the attainment also)

- Feedback from the students during class committee meetings.
- Anonymous feedback through questionnaire and unknown formats.

COURSE POLICY (including plagiarism, academic honesty, attendance, etc.)

CORRESPONDENCE

All the students are advised to come to the class regularly. All the correspondence (schedule of classes/ schedule of assessment/ course material/any other information regarding this course) will be intimated in the Class only.

ATTENDANCE

1. Attendance will be taken by the faculty in all the contact hours. Every student should maintain minimum of 75 % physical attendance in these contact hours along with assessment criteria to attend the end semester examination.
2. Any student, who fails to maintain 75% attendance need to appear for the compensation assessment (CPA). Student who scores more than 60 % marks in the CPA along with assessment criteria will be eligible for attending the end semester examination.
3. Those students who have attendance lag and also missed any of the continuous assessments (CAs) can appear for CPA to get eligibility for writing the end semester examination as quoted in Pt. 2. Their scores in the CPA WILL NOT be taken into account for computing marks for CA.
4. Students not having 75% minimum attendance at the end of the semester and also fail in CPA (scoring less than 60%) will have to RE DO the course.

ASSESSMENT

5. Attending all the assessments are MANDATORY for every student.
6. If any student is not able to attend any of the Assessments due to genuine reason, student is permitted to attend the Repeat assessment (RA) with Corresponding weightage.
7. Student who fails to score 60% in RA will take up additional assignments to get eligibility for writing End Semester examination.

Finally, every student is expected to score minimum 1/3rd of the top rank holder of the class (Including all the assessments) to pass the course. Otherwise the student would be declared fail and 'F' grade will be awarded. Further he can take up only FORMATIVE ASSESSMENT.

8. Please refer B.Tech Regulations 2015(B.12.1) for the letter grades and the corresponding grades

ACADEMIC HONESTY & PLAGIARISM

1. All the students are expected to be genuine during the course 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 as dishonest.
2. Tendering of information such as giving one's program, assignments to another student to use or copy is also considered as dishonest.
3. Preventing or hampering other students from pursuing their academic activities is also considered as academic dishonesty.
4. Any evidence of such academic dishonesty will result in the loss of marks on that assessment. Additionally, the names of those students so penalized will be reported to the class committee chairperson and HoD of the concerned department.
5. Students who honestly producing ORIGINAL and OUTSTANDING WORK will be REWARDED.

ADDITIONAL COURSE INFORMATION

1. The faculty is available for consultation at times as per the intimation given by the faculty.
2. Queries (if required) to the course teacher shall only be emailed to the email id specified by the teacher (pravin@nitt.edu)

FOR SENATE'S CONSIDERATION

Course Faculty Pravin Choudhary CC-Chairperson Chinnu HOD Shankar H. S. 21/8/2018

Course Co-ordinator _____