



VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY

LESSON PLAN

Semester >>1 st (M.Tech)		Year >> 2016	Contact Hours per week >>4
Sub: Robotics and Flexible Manufacturing(Elective)		Branch >> Production Engineering	Total Credit >>4
TEACHER		Dr.Pragyan Paramita Mohanty	
Period		July 2016-Dec2016	
Recommended books >>		Text Book(s): 1. Robotics Technology and Flexible Automation: S. R. Deb.Tata Mc Graw Hill. Reference Book(s) 1. Robotics: Lee, Fu, Gonzalez, Mc Graw Hill 2. Industrial Robots: Groover, Mc Graw Hill	
Sl. No.	Lecture No.	Topics to be covered	
1	Lecture-01	Robotics: Historical background, Definitions	
2	Lecture-02	Laws of Robotics, Robotic system	
3	Lecture-03	Robot anatomy, common robot configurations.	
4	Lecture-04	Coordinate system	
5	Lecture-05	work envelop, Elements of robotic system	
6	Lecture-06	End effector, Actuators, controller	
7	Lecture-07	Teach pendant, sensors	
8	Lecture-08	Specification of robots. Applications, safety measures.	
9	Lecture-09	Class Test on Module-I	
10	Lecture-10	Robot Kinematics: Forward Kinematics of 3-DOF and 4-DOF Robot arms.	
11	Lecture-11	Robot Kinematics: Reverse Kinematics of 3-DOF and 4-DOF Robot arms.	
12	Lecture-12	Problems on Forward and reverse Kinematics of 3-DOF	
13	Lecture-13	Problems on Forward and reverse Kinematics of 4-DOF	
14	Lecture-14	Robot Kinematics: Homogeneous Transformations,	
15	Lecture-15	Robot Kinematics: Kinematic Equations using homogeneous transformations.	
16	Lecture-16	Kinematic Equations using homogeneous transformations	
17	Lecture-17	Problems based on homogenous transformation	
18	Lecture-18	Problems based on homogenous transformation	

		Question discussion
19	Lecture-19	Actuators: Hydraulic actuators, Pneumatic actuators, Electrical actuators.
20	Lecture-20	Directional control, servo control, Flow control valves.
21	Lecture-21	End effectors: Classification, Drive systems, Magnetic grippers,
22	Lecture-22	Mechanical, Vacuum and Adhesive grippers,
23	Lecture-23	Force analysis in a gripper.
24	Lecture-24	Question Answer discussion
25	Lecture-25	Class Test on Module-III
26	Lecture-26	Sensors: Need for sensing systems, sensory devices
27	Lecture 27	Types of sensors, robot vision system.
28	Lecture 28	Robot Languages and Programming
29	Lecture 29	Types of programming, Motion programming, Robot language – VAL systems.
30	Lecture 30	Flexible Automation: Technology
31	Lecture 31	FMS
32	Lecture 32	FMS
33	Lecture 33	Function of Robot in FMS,
34	Lecture-34	Flexible manufacturing cell.
35	Lecture-35	Flexible manufacturing cell.
36	Lecture-36	Question discussion
37	Lecture-37	Class Test on Module-IV

Signature of Teacher