Course Number and Name

BEE409 & Robotics and Automation

Credits and Contact Hours

3 & 45

Course Coordinator's Name

Mr.Vijayaragavan

Text Books and References

Text Books:

1. Mikell P Groover, "Industrial robotics : technology, programming, and applications" McGraw Hill New Delhi, 1996.
2. Ghosh, "Control in Robotics and Automation: Sensor Based Integration", Allied Publishers, Chennai, 1998

References:

1. Deb.S.R, "Robotics technology and flexible Automation", John Wiley1992.
2. Asfahl. C.R, "Robots and manufacturing Automation", John Wiley, USA ,1992.
3. https://www.youtube.com/watch?v=DaWMvEY3Qgc&list=PLED9EB384E656C007
4. http://www.nptel.ac.in/downloads/112101098/

Course Description

To provide comprehensive knowledge of robotics in the design, analysis and control point of view.

Prerequisites	Co-requisites
Control Systems	Nil

required, elective, or selected elective (as per Table 5-1)

Required

Course Outcomes (COs)

CO1: To study the basic concepts of robotics
CO2: To study about the sensors and transducers involved in robotics.
CO3: To study about the software and programming for robots.
CO4: To study about the robot motion analysis and control manipulation kinematics.
CO5: To study the remote controlled robots for industrial automation.

Student Outcomes (SOs) from Criterion 3 covered by this Course

COs/SOs	a	b	c	d	e	f	g	h	i	j	k	l
CO1	M	H	H		H	M	H	M	H	M	H	H
CO2	M	M	M									H
CO3	M	H	M		M	M	H	M		M		H
CO4	M	H	M						H		H	H
CO5	M	H	M			M	H	M		H		H

List of Topics Covered

UNIT I BASIC CONCEPTS **9**

Robotics – basic components – classification - performance characteristics- drives and control

systems – electric , hydraulic and pneumatic actuators – control loops using current amplifiers and voltage amplifiers**.**

UNIT II SENSORS AND TRANSDUCERS 9

Sensors and vision systems; Transducers and sensors – tactile sensors –Proximity and range sensors –Acoustics sensors- visition systems – image Processing and analysis – image data reduction – segmentation feature

UNIT III ROBOTIC PROGRAMMING AND GRIPPER 9

End effectors –type –mechanical gripper –vacuum cup- magnetic grippers – robot to end effectors interface –software for industrial robots – positive stop program-Point to point program and continuous path program.

UNIT IV KINEMATICS AND PATH PLANNING 9

Robot motion analysis and control manipulation kinematics – homogeneous Transformation and robot dynamics configuration of a robot controller

UNIT V INDUSTRIALROBOT 9

Industrial robots –Robots for welding ,painting and assembling –remote Controlled robots for nuclear ,thermal and chemical plants –industrial Automation – typical examples of automated industries .