

<b>AE-417: Robotics &amp; Automation</b>										
<b>L</b>	<b>T</b>	<b>P</b>	Credit	Area		<b>CWS</b>	<b>PRS</b>	<b>MTE</b>	<b>ETE</b>	<b>PRE</b>
3	0/1	2/0	4	DEC		15/25	25/-	20/25	40/50	-

**Objectives:** To introduce the student with types of robotics, fundamentals of robotics, languages used to program robots, sensing system for a robot and safety of robots

<b>AE-417: Robotics &amp; Automation</b>			<b>Contact Hours</b>
<b>Unit-1</b>	Introduction to Robotics, Classification of Robots, Characteristics of Robots, performance, advantages and disadvantages of a Robot, industrial applications of a Robot		<b>8</b>
<b>Unit-2</b>	Fundamentals of a Robot: Various system, structure and definition, terms relating to industrial Robots, basic terms related to Robot performance and Characteristics, Control volume of a Robot		<b>6</b>
<b>Unit-3</b>	Robot languages and programming		<b>6</b>
<b>Unit-4</b>	Controlling the Robot systems: Introduction to drives, Mechanical, Hydraulic, Pneumatic, electric drives, feed back control		<b>8</b>
<b>Unit-5</b>	Sensing system for a robot: Introduction, types of sensors, machine vision, Artificial intelligence, Control techniques		<b>8</b>
<b>Unit-6</b>	Robot safety: Introduction, potential safety hazards, safety planning check lists, safety guidelines, latest development in safety measurement		<b>6</b>
	<b>Total</b>		<b>42</b>

<b>Reference Books:</b>	
1	John j Craig, "Introduction to Robotics: Mechanics and Control", Publisher-Pearson education (ISBN 9780201543612)
2	Y.Koren "Robotics for Engineers", Publisher-McGraw Hill Publications(ISBN 9780070353992)

**Course Outcomes**

CO1	To study basics of robotics with industrial applications.
CO2	To discuss robot performance and Characteristics.
CO3	To describe robot languages and programing
CO4	To explain robot systems and its control.
CO5	To implement Sensing system for a robot with Artificial intelligence, Control techniques
CO6	To apply robot safety and latest development in safety measurement.

**CO-PO/PSOMatrix**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	2	2	0	0	0	0	0	0	2	2	1	1
CO2	3	3	2	3	1	0	0	0	0	0	0	1	2	1	1
CO3	3	3	3	3	1	0	0	0	0	0	0	2	3	3	2
CO4	3	3	3	3	1	0	0	0	0	0	0	1	3	3	2
CO5	2	2	2	2	2	0	0	0	0	0	0	1	2	2	2