



# SWARNANDHRA

## COLLEGE OF ENGINEERING & TECHNOLOGY

(AUTONOMOUS)

Accredited by National Board of Accreditation, AICTE, New Delhi, Accredited by NAAC with "A" Grade – 3.32 CGPA, Recognized under 2(f) & 12(B) of UGC Act 1956, Approved by AICTE, New Delhi, Permanent Affiliation to JNTUK, Kakinada Seetharampuram, W.G.DT., Narsapur-534280, (Andhra Pradesh)

### DEPARTMENT OF ROBOTICS


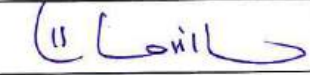

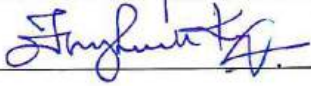
#### TEACHING PLAN

Course Code	Course Title	Semester	Branches	Contact Periods /Week	Academic Year	Date of commencement of Semester
20RB6E03	Automation In Manufacturing	VI	ROBOTICS	5	2024-25	18-11-2024

COURSE OUTCOMES							
1	Explain the process of automation and types (K2)						
2	Interpret the well-defined task or operation is accomplished by an automated machine (K2)						
3	Identify, formulate and solve algorithm related to localization, obstacle avoidance, and mapping. (K3)						
4	Explain the automated material handling systems used in manufacturing establishment. [K2]						
5	Describe the control methods and systems used in automated flow lines (K2)						
UNIT	Out Comes/ BTL	Topic No.	Topics/Activity	Text Book/ Reference	Cont act Hour	Delivery Method	
I	Explain the process of automation and types (K2)	<b>UNIT – I INTRODUCTION</b>					Chalk & Talk, PPT, Tutorials
		1.1	Types and strategies of automation		T1,T 3,R3	3	
		1.2	Pneumatic And Hydraulic Components			2	
		1.3	Circuits			1	
		1.4	Automation in machine tools			2	
		1.5	Mechanical Feeding			1	
		1.6	Tool Changing			1	
		1.7	Machine tool control			2	
<b>Total</b>						<b>12</b>	
II	Interpret the well-defined task or operation is accomplished by an automated machine (K2)	<b>Unit -II AUTOMATED FLOW LINES</b>					Chalk & Talk, PPT, Tutorials
		2.1	Methods of Work Part Transport		T1,T 3,R3	2	
		2.2	Transfer Mechanism			2	
		2.3	Buffer Storage			1	
		2.4	Control Function			1	
		2.5	Design and Fabrication Consideration			1	
		<b>ANALYSIS OF AUTOMATED FLOW LINES</b>					
		2.6	General terminology		T1,T 3,R3	1	
		2.7	Analysis of transfer lines without buffer storage			2	
		2.8	Analysis of transfer lines with buffer storage			2	
2.9	Partial automation		1				
2.10	Implementation of automated flow lines		1				

				<b>Total</b>	<b>14</b>				
<b>Unit –III ASSEMBLY SYSTEM AND LINE BALANCING</b>									
<b>III</b>	Identify, formulate and solve algorithm related to localization, obstacle	3.1	Assembly process	T1,T 3,R3	1	Chalk & Talk, PPT, Tutorials			
		3.2	Systems assembly line		1				
		3.3	Line balancing methods		1				
		3.3.1	Largest Candidate Rule		2				
		3.3.2	Kill Bridge Method		2				
		3.3.3	Ranked Position Weights Method		2				
		3.7	Ways of improving line balance,		1				
		3.8	Flexible assembly lines		1				
				<b>Total</b>	<b>11</b>				
<b>UNIT –IV AUTOMATED MATERIAL HANDLING</b>									
<b>IV</b>	Explain the automated material handling systems used in manufacturing establishment.[K2]	4.1	Types of equipment	T1,T 3,R3	2	Chalk & Talk, PPT, Tutorials			
		4.2	Functions		1				
		4.3	Analysis and design of material handling systems		2				
		4.4	Conveyor systems		2				
		4.5	Automated guided vehicle systems.		2				
		<b>AUTOMATED STORAGE SYSTEMS</b>							
		4.6	Automated storage and retrieval systems		1				
		4.7	Work in process storage		1				
		4.8	Interfacing handling		1				
		4.9	Storage with manufacturing		1				
				<b>Total</b>	<b>13</b>				
<b>Unit –V FUNDAMENTALS OF INDUSTRIAL CONTROLS</b>									
<b>V</b>	Design suitable power transmission system like belt drives, chain drives.	5.1	Review of control theory	T1,T 3,R3	1	Chalk & Talk, PPT, Tutorials			
		5.2	Logic controls		2				
		5.3	Sensors and actuators		1				
		5.4	Data communication and LAN in manufacturing		2				
		5.5	Business process Re-engineering		2				
		5.6	Introduction to BPE logistics		2				
		5.7	ERP		2				
		5.8	Software configuration of BPE		1				
				<b>Total</b>	<b>13</b>				
<b>CUMULATIVE PROPOSED PERIODS</b>				<b>Total</b>	<b>63</b>				

<b>Text Books:</b>	
1	Groover, M. P., Automation, Production Systems, and Computer-integrated Manufacturing, Pearson, 2018.
2	Frank Lamb, Industrial Automation hands on , Mc Graw Hill Education ,2013
3	Yoram Coreom, Computer control of Manufacturing Systems, New Age International Publishers, 2006.
<b>Reference Books:</b>	
1	F. Gardner, R, Introduction to Plant Automation and Controls, 1st Edition, CRC Press, 2020.
2	Tien-Chien Chang, Richard A Wysk and Hsu-Pin Wang, Computer Aided Manufacturing, Pearson, 2009.
3	Radhakrishnan and Subramanian, CAD/CAM/CIM, 4th Edition, New Age Publications, 2018.
<b>Web Details</b>	
1	<a href="https://nptel.ac.in/courses/112104288">https://nptel.ac.in/courses/112104288</a>
2	<a href="https://archive.nptel.ac.in/courses/112/103/112103293/#">https://archive.nptel.ac.in/courses/112/103/112103293/#</a>

		<b>Name</b>	<b>Signature with Date</b>
i.	Faculty	CH HARISH KUMAR	
ii.	Course Coordinator	CH HARISH KUMAR	
iv.	Module Coordinator	Dr R SANJEEV KUMAR	
v.	Programme Coordinator	Dr. Francis Luther King M	



*April*  
PRINCIPAL