KANDULA SRINIVASA REDDY MEMORIAL COLLEGE OF ENGINEERING (AUTONOMOUS)

Kadapa-516003. AP

(Approved by AICTE, Affiliated to JNTUA, Ananthapuramu, Accredited by NAAC)
(An ISO 9001-2008 Certified Institution)

DEPARTMENT OF MECHANICAL ENGINEERING

Certification Course on

"INDUSTRIAL AUTOMATIONS AND ROBOTICS"

Resource Person : Sri S. Mahaboob Khan, Assistant Professor, Dept. of ME, KSRMCE

Course Coordinators: D. Merwin Rajesh, Assistant Professor, Dept. of ME, KSRMCE

Date: 30/12/2019 to 23/01/2020

K.S.R.M. COLLEGE OF ENGINEERING

(UGC-AUTONOMOUS)
Kadapa, Andhra Pradesh, India– 516 003
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Lr./KSRMCE/ME/2019-20/ Date: 28-12-2019

To
The Principal,
KSRMCE,
Kadapa.

Sub: Permission to Conduct Certificate Course on "**Industrial Automation and Robotics**" from 30/12/2019 to 23/01/2020– Reg.

Respected Sir,

The Department of Mechanical Engineering is planning to offer a certification course on "**Industrial Automation and Robotics**" to B. Tech. students. The course will be conducted from 30/12/2019 to 23/01/2020. In this regard, we are requesting you to grant permission to conduct certificate course.

Thanking you

Yours faithfully

(**D. Merwin Rajesh**),
(Asst. Professor)

Forwarded to Principal SIR
D. Merwin

Permitted
V. S. S. Murty
28/12/2019

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Lr./KSRMCE/ME/2019-20/ Date: 28-12-2019

CIRCULAR

The Department of Mechanical Engineering is offering a certification course on "**Industrial Automation and Robotics**" from 30/12/2019 to 23/01/2020 to B.Tech students. In this regard, interested students are required to register for the Certification Course.

Course Coordinator

D. Merwin Rajesh,
Department of Mechanical Engineering

HoD
Professor & Head
Department of Mechnical Engineering
K.S.R.M. College of Engineering
KADAPA - 516 003.

Copy to:
IQAC - KSRMCE

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DEPARTMENT OF MECHANICAL ENGINEERING

Certification Course on INDUSTRIAL AUTOMATION AND ROBOTICS

LIST OF PARTICIPANTS

S. No.	Roll No.	Name of the Student	Email_ID	Signature
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2	169Y1A0304	BHADUR YASEEN AHMED	169Y1A0304@ksrmce.ac.in	B Yaseen Ahmed
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COORDINATOR

HoD

Professor & Head
Department of Mechnical Engineering
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SYLLABUS

INDUSTRIAL AUTOMATION AND ROBOTICS

Chapter-1

INTRODUCTION:

Concept and scope of automation: Socio economic impacts of automation, Types of Automation, Low Cost Automation.

Fluid Power:

Fluid power control elements, Standard graphical symbols, Fluid power generators, Hydraulic and pneumatic Cylinders-construction, design and mounting; Hydraulic and pneumatic Valves for pressure, flow and direction control.

Chapter-2

BASIC HYDRAULIC AND PNEUMATIC CIRCUITS:

Direct and Indirect Control of Signal/Double Acting Cylinders, designing of logic circuits for a given time displacement diagram and sequence of operations, Hydraulic and Pneumatic Circuits using Time Delay Valve and Quick Exhaust Valve, Memory Circuit and Speed Control of a Cylinder, Troubleshooting and Causes and Effect of Malfunctions. Basics of Control Chain, Circuit Layouts, Designation of specific Elements in a Circuit.

Fluidics:

Boolean algebra, Truth Tables, Logic Gates and Coanda effect.

Chapter-3

ELECTRICAL AND ELECTRONIC CONTROLS:

Basics of Programmable Logic Controllers (PLC), Architecture and Components of PLC and Ladder Logic Diagrams.

Chapter-4

TRANSFER DEVICES AND FEEDERS:

Classification, Constructional details and Applications of Transfer devices, Vibratory bowl feeders, Reciprocating tube and Centrifugal hopper feeders.

Chapter-5

ROBOTICS:

Introduction, Classification based on geometry, control and path movement, Robot Specifications, Robot Performance Parameters, Robot Programming, Machine Vision, Teach pendants and Industrial Applications of Robots.

Learning References

1. S. R. Majumdar, Pneumatic Control, McGraw Hill
2. S. R. Deb, Robotic Technology and Flexible Automation, Tata Mc Hill.
3. Saeed B. Niku. Introduction to Robotics, Wiley India.
4. Performance Modeling of Automated Manufacturing Systems, Viswanandham, PHI, 1st edition, 2009.

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SCHEDULE

DEPARTMENT OF MECHANICAL ENGINEERING

Certification course on

"INDUSTRIAL AUTOMATION AND ROBOTICS"

Date	Timing	Resource Person	Topic to be covered
30-12-2019	4 PM to 6 PM	S. Mahaboob Khan	Concept and scope of automation: Socio economic impacts of automation, Types ofAutomation, Low Cost Automation
31-12-2019	4 PM to 6 PM	S. Mahaboob Khan	Fluid power control elements, Standard graphical symbols, Fluid power generators, Hydraulic and pneumatic Cylinders-construction
02-01-2020	4 PM to 6 PM	S. Mahaboob Khan	design and mounting; Hydraulic and pneumatic Valves for pressure, flow and direction control
03-01-2020	4 PM to 6 PM	S. Mahaboob Khan	Direct and Indirect Control of Signal / Double Acting Cylinders,
04-01-2020	4 PM to 6 PM	S. Mahaboob Khan	designing of logic circuits for a given time displacement diagram and sequence of operations
06-01-2020	4 PM to 6 PM	S. Mahaboob Khan	Hydraulic and Pneumatic Circuits using Time Delay Valve and Quick Exhaust Valve, Memory Circuit and Speed Control of a Cylinder
07-01-2020	4 PM to 6 PM	S. Mahaboob Khan	Troubleshooting and Causes and Effect of Malfunctions.
08-01-2020	4 PM to 6 PM	S. Mahaboob Khan	Basics of Control Chain, Circuit Layouts, Designation of specific Elements in a Circuit
09-01-2020	4 PM to 6 PM	S. Mahaboob Khan	Boolean algebra, Truth Tables, Logic Gates and Coanda effect
10-01-2020	4 PM to 6 PM	S. Mahaboob Khan	Basics of Programmable Logic Controllers (PLC),
17-01-2020	4 PM to 6 PM	S. Mahaboob Khan	Architecture and Components of PLC and Ladder Logic Diagrams.
20-01-2020	4 PM to 6 PM	S. Mahaboob Khan	Classification, Constructional details and Applications of Transfer devices, Vibratory bowl feeders, Reciprocating tube and Centrifugal hopper feeders
21-01-2020	4 PM to 6 PM	S. Mahaboob Khan	Introduction, Classification based on

			geometry, control and path movement
22-01-2020	4 PM to 6 PM	S. Mahaboob Khan	Robot Specifications, Robot Performance Parameters,
23-01-2020	4 PM to 6 PM	S. Mahaboob Khan	Robot Programming, Machine Vision, Teach pendants and Industrial Applications of Robots

Course Coordinator

HoD

Professor & Head
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Report of
Value Added Course on "INDUSTRIAL AUTOMATION AND ROBOTICS"
From 03rd Dec 2019 to 23rd Jan 2020

Target Group	:	**B.Tech Students**
Details of Participants	:	**73 Students**
Co-coordinator(s)	:	**Sri D.Merwin Rajesh**
Resource Persons	:	**Sri S. Mahaboob Khan**
Organizing Department	:	**Mechanical Engineering**
Venue	:	**Seminar Hall, Mechanical Department**

Description:

The Department of Mechanical Engineering conducted a certification course on "INDUSTRIAL AUTOMATIONS AND ROBOTICS" 03rd Dec 2019 to 23rd Jan 2020. The course duration was 30 hours .The course Resource Persons are Sri S. Mahaboob Khan, Assistant Professor and Sri D.Merwin Rajesh, Assistant Professor Department Mechanical Engineering, KSRMCE.

The main objective of this course is Modern automated systems are developing beyond mechanisation with the addition of artificial and machine learning.

Industrial automation and robotics are the use of computers, control systems and information technology to handle industrial processes and machinery, replacing manual labour and improving efficiency, speed, quality and performance.

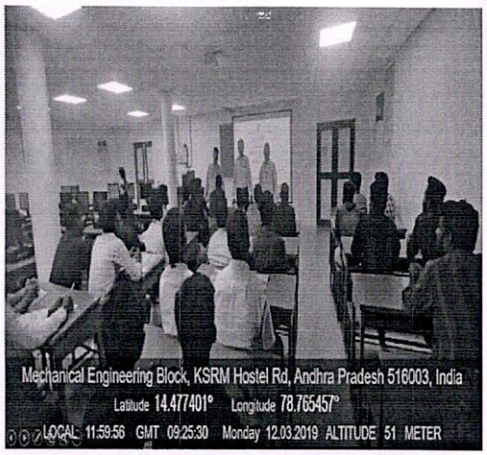
Automation is the use of computer software, machines or other technology to carry out tasks that would otherwise be done by a human. There are several types of automation, which can include both virtual and physical tasks.

This is the automation of tasks usually performed by humans using computer programs. This area includes business process automation (BPA), using software to formalise and streamline business processes, robotic process automation (RPA), which uses 'software robots' to mimic humans using computer programs, and intelligent process automation (IPA), which involves the use of artificial intelligence to learn how people perform tasks using a computer program

On final Day last session Value added course is Ended with oath of thanks and certificate distribution by coordinator & HOD to the Participants. Feedback from participants are collected.

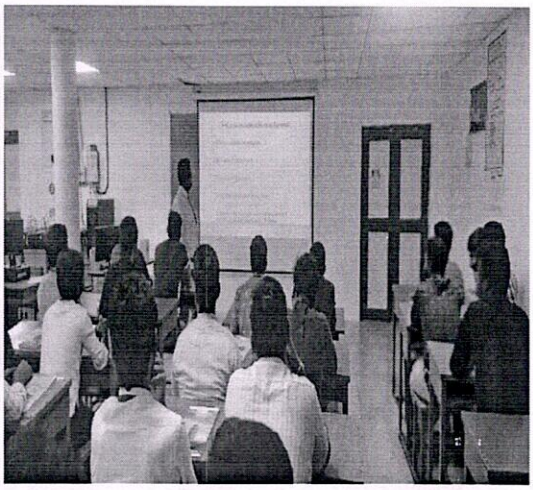
Photos

The pictures taken during the course are given below:



Inaguration of Programme

Students participating on the course



Students listening the course

Certificate distribution to the students

Coordinators

HoD

Professor & Head
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Certification Course on

"INDUSTRIAL AUTOMATIONS AND ROBOTICS"

30/12/2019 to 23/01/2020

ORGANIZED BY

DEPARTMENT OF MECHANICAL ENGINEERING

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DEPARTMENT OF MECHANICAL ENGINEERING

Attendance Sheet of Certification Course on
INDUSTRIAL AUTOMATION AND ROBOTICS
from 30th December 2019 to 23rd January 2020

LIST OF PARTICIPANTS

S. No.	Roll No.	Name of the Student	30/12	31/12	2/1	3/1	4/1	6/1	7/1	8/1	9/1	10/1	17/1	20/1	21/1	22/1	23/1
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2	169Y1A0304	BHADUR YASEEN AHMED	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P
3	169Y1A0305	BOMMISETTY CHOWDAIAH	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P
4	169Y1A0306	BOMMU RAMA KRISHNA REDDY	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P
5	169Y1A0307	BOPATHI JAGAN MOHAN REDDY	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P
6	169Y1A0312	DAMODAR ABDAS	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P
7	169Y1A0315	G VISHNUVARDAN REDDY	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P
8	169Y1A0316	GANDAM PRANAY KUMAR	P	P	P	P	P	P	P	P	P	P	P	A	P	P	P
9	169Y1A0317	GONDIPALLE NAVEEN	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P
10	169Y1A0319	KAMMA SUMANTH CHOWDARY	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P
11	169Y1A0320	KANDULA KIRAN REDDY	P	P	P	P	P	P	P	P	P	P	P	P	P	A	P
12	169Y1A0321	KATIKA KHAJA MYNUDDIN	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P
13	169Y1A0322	KODURU NAVEEN	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P
14	169Y1A0323	KODURU SREEDHAR REDDY	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P
15	169Y1A0324	KOROLLU ANANTHA KRISHNA	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P
16	169Y1A0326	KUPPAM SAI MANIKANTA	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P
17	169Y1A0327	MALEPATI SIVAPRASAD REDDY	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P
18	169Y1A0329	MANDLI TRILOKANATH	P	P	P	P	P	P	P	P	P	P	P	P	P	P	A
19	169Y1A0330	MANNEM SREEKANTH	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P
20	169Y1A0331	MARKA NARESH KUMAR REDDY	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P

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23	169Y1A0334	MULINTI PADMANABHA	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
24	169Y1A0335	MUMMADI OBUL REDDY	P	P	P	P	P	P	A	P	P	P	P	A	P	P	P	P
25	169Y1A0337	NANDALURU KARTHIK REDDY	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
26	169Y1A0339	P GANESH REDDY	P	P	P	P	P	P	P	P	P	P	P	P	P	A	P	P
27	169Y1A0340	P ROHITH KUMAR	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
28	169Y1A0341	PAGADALA PAVAN KUMAR	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
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51	179Y5A0319	KUMMARI MAHESH KUMAR	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P
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73	179Y5A0348	YEDDULA SUBBAIAH	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P

COORDINATOR

HoD

Professor & Head
Department of Mechnical Engineering
K.S.R.M. College of Engineering
KADAPA - 516 003.

- Industrial automation and robotics

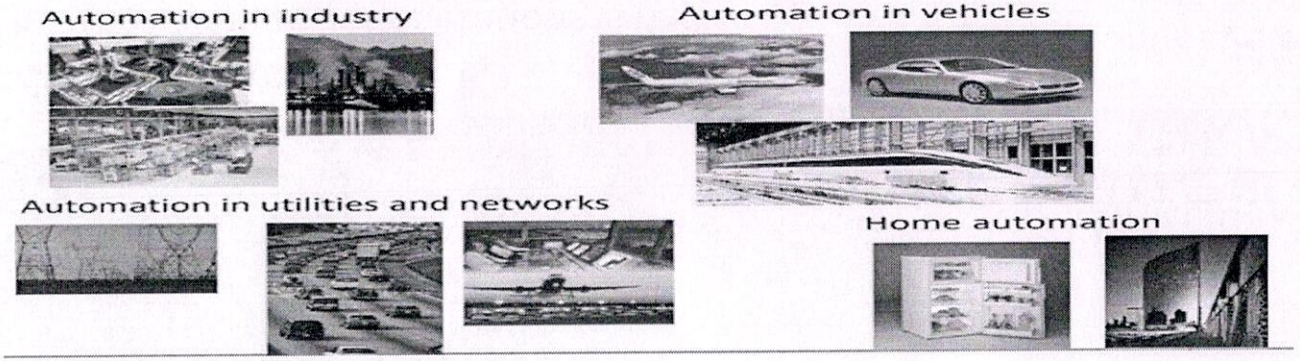
INTRODUCTION TO AUTOMATION

What is automation?

- It is the science and the technology whose aim is to design automatic control
- systems, i.e.:
- CONTROLLERS
- ACTUATORS
- PLANTS &
- SYSTEMS
- SENSORS
- endowed with increasing autonomy
- able to perform tasks which are
- difficult or impossible for humans

- Every time we have a machine or a device performing a task that can be otherwise made by a human we are making automation
- Well, automation systems can also co-exist with humans

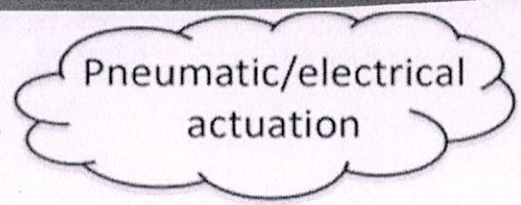
Automation is pervasive :



Automation in industry

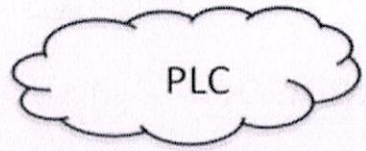
Rigid automation

- The sequence of operations is fixed
- Production process composed of a sequence of simple operations
- Large production with very small variations



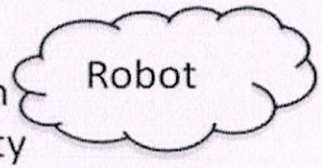
Programmable automation

- The sequence of operations can be changed
- Medium-low production batches
- Between batches the production plant has to be reconfigured

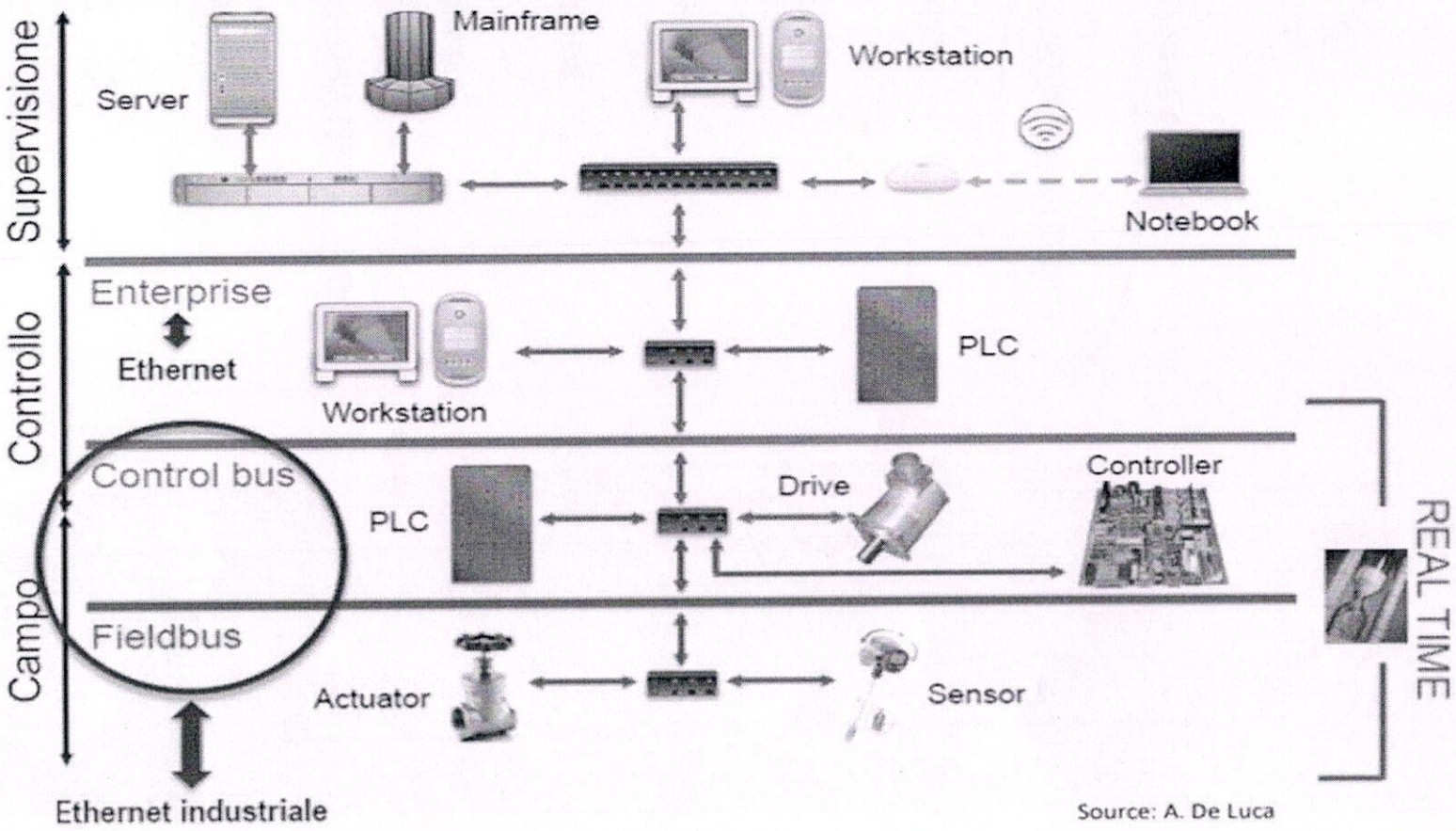


Flexible automation

- Production can be varied without idle times for conversion
- Machine characterized by high flexibility and configurability (**FMS**: Flexible Manufacturing Systems)

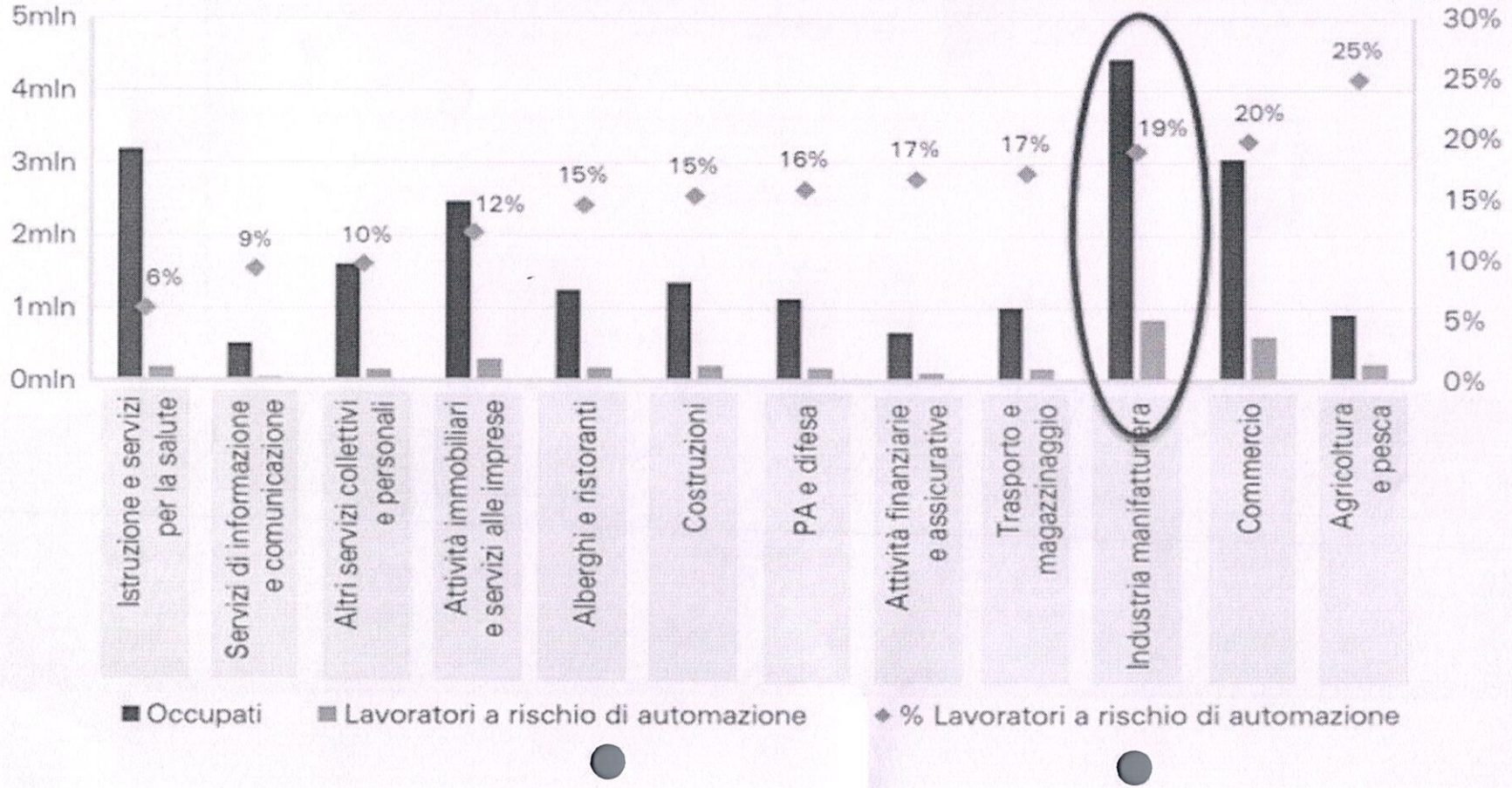


Automation in industry: elements and networks



Source: A. De Luca

Automation in industry: elements and networks



Automation and productivity growth

- Automation of activities can enable businesses to improve performance, by reducing errors and improving quality and speed, in some cases beyond human capabilities.
- Automation also contributes to productivity, as it has done historically.
- This would give a needed boost to economic growth and prosperity and help offset the impact of a declining share of the working-age population in many countries.
- It is estimated that automation could raise productivity growth
- globally by 0.8 to 1.4 percent annually.

Potential of automation of the activities

- Almost half the activities people are paid almost $16 trillion in wages to do in the global economy have the potential to be automated by adapting currently demonstrated technology.
- While less than 5 percent of all occupations can be automated entirely using demonstrated technologies, about 60 percent of all occupations have at least 30 percent of constituent activities that could be automated.

Activities most susceptible to automation

- Activities most susceptible to automation involve physical activities in highly structured and predictable environments, as well as the collection and processing of data.
- In the United States, these activities make up 51 percent of activities in the economy accounting for almost $2.7 trillion in wages.
- They are most prevalent in manufacturing, accommodation and food service, and retail trade, and include some middle-skill jobs.

Factors influencing the growth of automation

- Technical, economic, and social factors will determine the pace and extent of automation. Continued technical progress, for example in areas such as natural language processing, is a key factor.
- Beyond technical feasibility, the cost of technology, competition with labor including skills and supply and demand dynamics, performance benefits including and beyond labor cost savings, and social and regulatory acceptance will affect the pace and scope of automation.
- Half of today's work activities could be automated by 2055, but this could happen up to 20 years earlier or later depending on the various factors

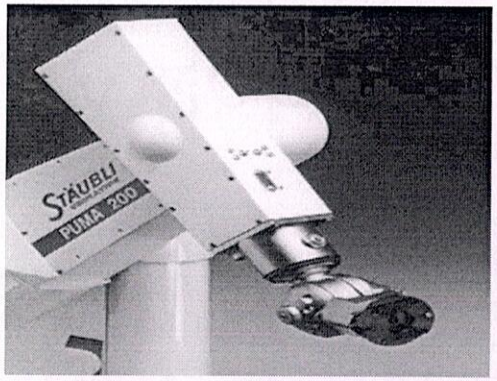
Introduction to ROBOTICS

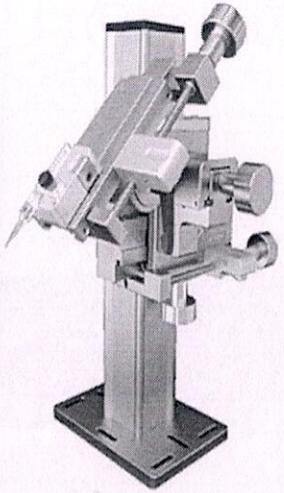
A Robot is:
An electromechanical device that is:

- Reprogrammable
- Multifunctional
- Sensible for environment

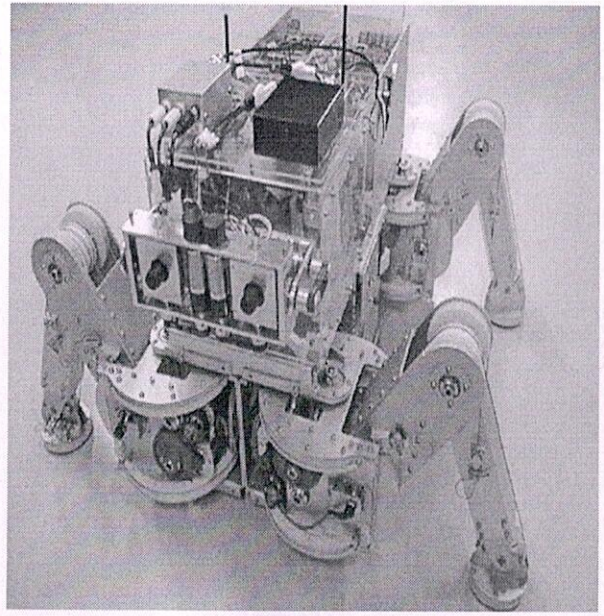
What is a Robot:

Manipulator

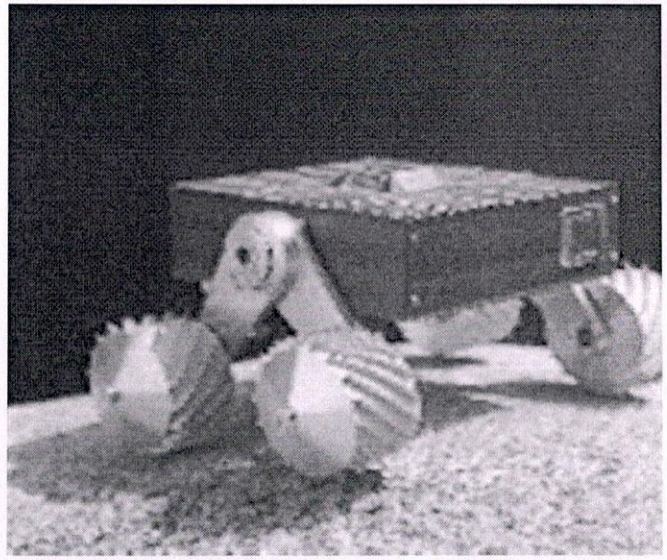




Legged Robot



Wheeled Robot



A Brief History of Robotics

chanical Automata

cient Greece & Egypt

- Water powered for ceremonies

4th – 19th century Europe

- Clockwork driven for entertainment

tor driven Robots

928: First motor driven automata

961: Unimate

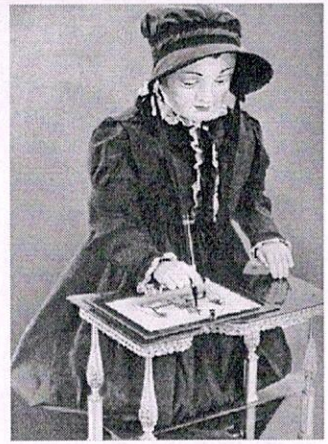
- First industrial robot

967: Shakey

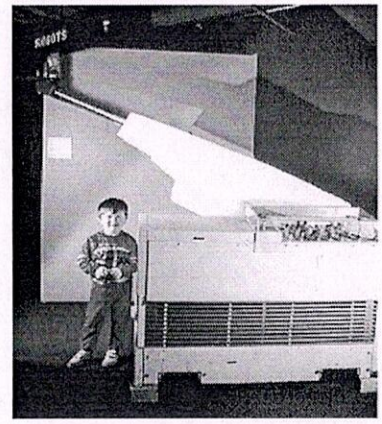
- Autonomous mobile research robot

969: Stanford Arm

- Dextrous, electric motor driven robot arm



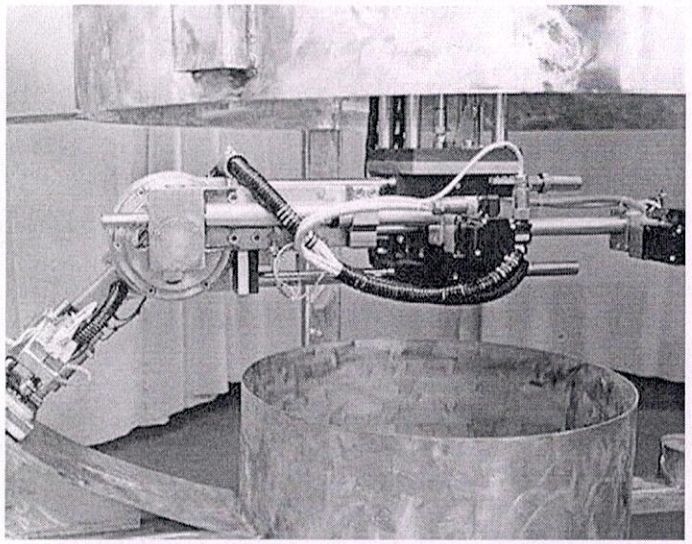
Maillardet's Automaton



Unimate

What Can Robots Do:

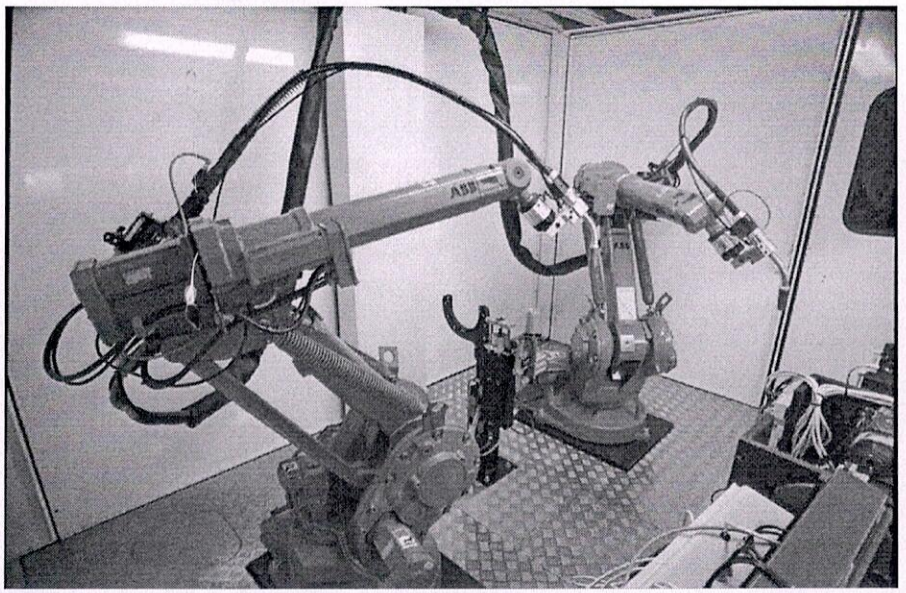
that are dangerous for humans



Decontaminating Robot

ing the main circulating pump housing
nuclear power plant

Repetitive jobs that are boring, stressful, or labor-intensive for humans



Welding Robot

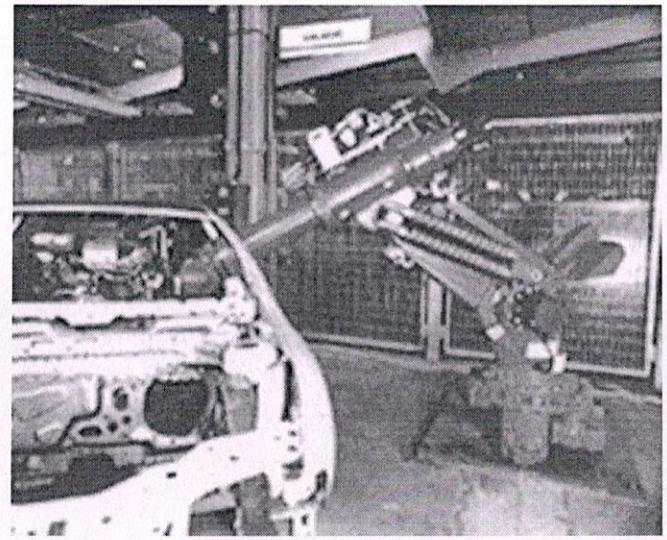
Automation and Robotics in Intelligent Environments

- Control of the physical environment
  - Automated blinds
  - Thermostats and heating ducts
  - Automatic doors
  - Automatic room partitioning
- Personal service robots
  - House cleaning
  - Lawn mowing
  - Assistance to the elderly and handicapped
  - Office assistants
  - Security services

Traditional Industrial Robots

aditional industrial robot control uses
)bot arms and largely pre-computed
ıotions

- Programming using "teach box"
- Repetitive tasks
- High speed
- Few sensing operations
- High precision movements
- Pre-planned trajectories and task policies
- No interaction with humans



Problems

Traditional programming techniques for industrial robots lack key capabilities necessary in intelligent environments

- Only limited on-line sensing
- No incorporation of uncertainty
- No interaction with humans
- Reliance on perfect task information
- Complete re-programming for new tasks

Requirements for Robots in Intelligent Environments

ɹtonomy

Robots have to be capable of achieving task objectives without human input

Robots have to be able to make and execute their own decisions based on sensor information

'uitive Human-Robot Interfaces

Use of robots in smart homes can not require extensive user training

Commands to robots should be natural for inhabitants

ɗaptation

Robots have to be able to adjust to changes in the environment

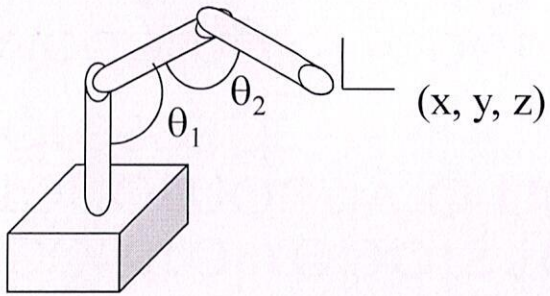
Autonomous Robot Control

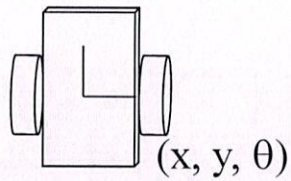
To control robots to perform tasks autonomously a number of tasks have to be addressed:

- Modeling of robot mechanisms
  - Kinematics, Dynamics
- Robot sensor selection
  - Active and passive proximity sensors
- Low-level control of actuators
  - Closed-loop control
- Control architectures
  - Traditional planning architectures
  - Behavior-based control architectures
  - Hybrid architectures

Modeling the Robot Mechanism

Forward kinematics describes how the robots joint angle configurations translate to locations in the world





Inverse kinematics computes the joint angle configuration necessary to reach a particular point in space.

Jacobians calculate how the speed and configuration of the actuators translate into velocity of the robot

Robot Navigation

Path planning addresses the task of computing a trajectory for the robot such that it reaches the desired goal without colliding with obstacles

- Optimal paths are hard to compute in particular for robots that can not move in arbitrary directions (i.e. nonholonomic robots)
- Shortest distance paths can be dangerous since they always graze obstacles
- Paths for robot arms have to take into account the entire robot (not only the endeffector)

Sensor-Driven Robot Control

- To accurately achieve a task in an intelligent environment, a robot has to be able to react dynamically to changes ion its surrounding
  - Robots need sensors to perceive the environment
  - Most robots use a set of different sensors
    - Different sensors serve different purposes
  - Information from sensors has to be integrated into the control of the robot

Uncertainty in Robot Systems

.obot systems in intelligent environments have to
eal with sensor noise and uncertainty

Sensor uncertainty

- Sensor readings are imprecise and unreliable

Non-observability

- Various aspects of the environment can not be observed
- The environment is initially unknown

Action uncertainty

- Actions can fail
- Actions have nondeterministic outcomes

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This to certify that Mr/Mrs. **K.SAI MANIKANTA** Bearing the Roll Number **169Y1A0326** has Successfully Completed Value Added Course on **"INDUSTRIAL AUTOMATION AND ROBOTICS"** from **30/12/2019 to 23/01/2020,** Organized by Department of Mechanical Engineering, KSRMCE, Kadapa.

COORDINATOR **HOD** **PRINCIPAL**

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This to certify that Mr/Mrs. **M.VARUN** Bearing the Roll Number **179Y5A0322** has Successfully Completed Value Added Course on **"INDUSTRIAL AUTOMATION AND ROBOTICS"** from **30/12/2019 to 23/01/2020,**

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DEPARTMENT OF MECHANICAL ENGINEERING

FEEDBACK of
Certification Course on
INDUSTRIAL AUTOMATION AND ROBOTICS
from 30th December 2019 to 23rd January 2020

LIST OF PARTICIPANTS

S. No.	Roll No.	Name of the Student	Is the Course content meet your expectation	Is the lecture sequence well planned	Is the level of course high	Is the course exposed you to the new knowledge and practices	Rate the Knowledge of the Speaker	Rate the value of Course in increasing your skills	Any Issues
1	169Y1A0301	AVINATHA REDDY MARAM	Excellent	Excellent	good	Excellent	Excellent	good	
2	169Y1A0304	BHADUR YASEEN AHMED	Good	Excellent	Satisfactory	Excellent	Excellent	Excellent	
3	169Y1A0305	BOMMISETTY CHOWDAIAH	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
4	169Y1A0306	B RAMA KRISHNA REDDY	Excellent	Satisfactory	Excellent	good	Excellent	good	
5	169Y1A0307	B JAGAN MOHAN REDDY	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
6	169Y1A0312	DAMODAR ABDAS	Excellent	Excellent	good	Excellent	Excellent	Excellent	
7	169Y1A0315	G VISHNUVARDAN REDDY	Satisfactory	Excellent	Excellent	Excellent	good	Excellent	
8	169Y1A0316	GANDAM PRANAY KUMAR	Excellent	Excellent	Satisfactory	Excellent	Excellent	good	
9	169Y1A0317	GONDIPALLE NAVEEN	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
10	169Y1A0319	K SUMANTH CHOWDARY	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
11	169Y1A0320	KANDULA KIRAN REDDY	Excellent	Excellent	Excellent	good	Excellent	Excellent	
12	169Y1A0321	K KHAJA MYNUDDIN	Excellent	Good	Excellent	Excellent	Excellent	Excellent	
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14	169Y1A0323	K SREEDHAR REDDY	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
15	169Y1A0324	K ANANTHA KRISHNA	Excellent	Excellent	Satisfactory	Excellent	Excellent	Excellent	
16	169Y1A0326	KUPPAM SAI MANIKANTA	Excellent	Excellent	Excellent	Excellent	Excellent	Satisfactory	
17	169Y1A0327	M SIVAPRASAD REDDY	Excellent	Excellent	Excellent	good	Excellent	Excellent	
18	169Y1A0329	MANDLI TRILOKANATH	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	

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19	169Y1A0330	MANNEM SREEKANTH	Excellent	Excellent	Excellent	Satisfactory	Excellent	Excellent	
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22	169Y1A0333	MOORA ASHOK KUMAR	Excellent	Satisfactory	Excellent	Excellent	Excellent	Excellent	
23	169Y1A0334	MULINTI PADMANABHA	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
24	169Y1A0335	MUMMADI OBUL REDDY	Excellent	good	Excellent	Excellent	Excellent	Excellent	
25	169Y1A0337	N KARTHIK REDDY	Excellent	Excellent	Excellent	Satisfactory	Excellent	Excellent	
26	169Y1A0339	P GANESH REDDY	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
27	169Y1A0340	P ROHITH KUMAR	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
28	169Y1A0341	P PAVAN KUMAR	Excellent	Excellent	good	Excellent	Excellent	Excellent	
29	169Y1A0342	PALEM MADHUPRASAD	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
30	169Y1A0344	P VIJAYAKUMAR	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
31	169Y1A0345	PENUGONDA VENKATESH	Excellent	Excellent	Excellent	Excellent	Satisfactory	Excellent	
32	169Y1A0360	SHAIK SUHAIL	Excellent	Excellent	good	Excellent	Excellent	Excellent	
33	169Y1A0362	SYED MANSOOR	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
34	169Y1A0363	S MOHAMMED NAYEEM	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
35	169Y1A0364	SYED THAJUDDIN	Excellent	Excellent	Satisfactory	Excellent	Excellent	Excellent	
36	179Y5A0301	AMBATI GURU NAGENDRA	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
37	179Y5A0302	AVULA KRISHNA KANTH	Excellent	Excellent	Excellent	Excellent	good	Excellent	
38	179Y5A0303	BOLLIGALA NARASIMHA	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
39	179Y5A0304	BOYA ANIL KUMAR	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
40	179Y5A0305	C ASHOK KUMAR REDDY	Excellent	Excellent	Excellent	good	Excellent	Excellent	
41	179Y5A0306	C MALLAREDDY	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
42	179Y5A0308	DULAM AKHILESWAR	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
43	179Y5A0309	E JAGADEESWAR REDDY	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
44	179Y5A0310	GANTA KUMARA SWAMY	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
45	179Y5A0311	GOLLA VEERESH	Excellent	Satisfactory	Excellent	Excellent	Excellent	Excellent	
46	179Y5A0313	GUBILIVANDLA ANIL	Excellent	good	Excellent	Excellent	Excellent	Excellent	
47	179Y5A0314	GUDIPATI GIRI	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
48	179Y5A0315	JARIPATI DEVENDRA	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	

K.S.R.M. COLLEGE OF ENGINEERING

(UGC-AUTONOMOUS)

Kadapa, Andhra Pradesh, India– 516 003

Approved by AICTE, New Delhi & Affiliated to JNTUA, Ananthapuramu.

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49	179Y5A0316	KAMMARI GANESH	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
50	179Y5A0318	KOLA YASWANTH KUMAR	Excellent	Excellent	Excellent	good	Excellent	Excellent	
51	179Y5A0319	K MAHESH KUMAR	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
52	179Y5A0320	KURUVA RAJASEKHAR	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
53	179Y5A0321	K SIVACHANDRUDU	Excellent	good	Excellent	Excellent	Excellent	Excellent	
54	179Y5A0322	MADDU VARUN	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
55	179Y5A0323	MALLEM HARI PRANAY	Excellent	Excellent	Excellent	Satisfactory	Excellent	Excellent	
56	179Y5A0324	MANDLA VIJAYA KUMAR	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
57	179Y5A0325	MANGALI NAGARAJU	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
58	179Y5A0328	NADENDLA KULAYAPPA	Excellent	Excellent	Excellent	Excellent	good	Excellent	
59	179Y5A0330	NAKKALA MADHUSUDHAN	good	Excellent	Excellent	Excellent	Excellent	Excellent	
60	179Y5A0331	NEMBI DURGA PRASAD	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
61	179Y5A0332	PALLE REVANTH	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
62	179Y5A0333	PATHAN ASIF KHAN	Excellent	Excellent	Excellent	Excellent	Excellent	good	
63	179Y5A0334	PATNAM SUBAN BASHA	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
64	179Y5A0335	REGATI SRINIVASA REDDY	Excellent	good	Excellent	Excellent	Excellent	Excellent	
65	179Y5A0336	S SREENIVASULU	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
66	179Y5A0338	SANGATI LAKSHMI REDDY	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
67	179Y5A0339	SEELAM DINAKAR BABU	Excellent	Excellent	Excellent	Satisfactory	Excellent	Excellent	
68	179Y5A0340	S MAHAMMAD GOUSE	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
69	179Y5A0341	SHAIK SANDHANI	Excellent	Excellent	Excellent	Satisfactory	Excellent	Excellent	
70	179Y5A0342	SIKHAKOLLI SAI PRAKASH	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	
71	179Y5A0344	THAMMISETTY RAJESH	Excellent	good	Excellent	Excellent	Excellent	Excellent	
72	179Y5A0347	YARRAVANDLA SIVARAJU	Excellent	Excellent	Excellent	Satisfactory	Excellent	Excellent	
73	179Y5A0348	YEDDULA SUBBAIAH	Excellent	Excellent	Excellent	Excellent	Excellent	good	

COORDINATOR

HoD

Professor & Head
Department of Mechnical Engineering
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