Certified Workshop on Introduction to Robotics

5 Day Certified Workshop 3 Jan- 7 Jan, 2022

ORGANIZED BY
MECHANICAL DEPARTMENT
UNDER IQAC INITIATIVE



VISHWATMAK OM GURUDEV COLLEGE OF ENGINNERING

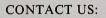
[Affilliated to MSBTE, Mumbai ,
Approved by AICTE, New Delhi & DTE,
M.S.]

At: Mohili, Post: Aghai, Via Kalyan, Dist.: Thane, 421301

RESOURCE PERSON: MR. ANWESH VIRKUNWAR

COURSE OBJECTIVES:

- TO PROVIDE AN INTRODUCTION TO ROBOTICS AND AUTOMATION INCLUDING ROBOT CLASSIFICATION, DESIGN AND SELECTION, ANALYSIS AND APPLICATIONS IN INDUSTRY.
- TO PROVIDE INFORMATION ON VARIOUS TYPES OF END EFFECTORS, THEIR DESIGN, INTERFACING AND SELECTION.
- TO PROVIDE THE DETAILS OF OPERATIONS
 FOR A VARIETY OF SENSORY DEVICES
 THAT ARE USED ON ROBOT, THE MEANING
 OF SENSING, CLASSIFICATION OF SENSOR,
 THAT MEASURE POSITION, VELOCITY &
 ACCELERATION OF ROBOT JOINT.
- TO FAMILIARIZE THE BASIC CONCEPTS OF TRANSFORMATIONS PERFORMED BY ROBOT.
- TO PERFORM KINEMATICS AND TO GAIN KNOWLEDGE ON PROGRAMMING OF ROBOTS.



EMAIL ID:

KKMANIAYRVOGCE@GMAIL.COM

MOBILE: 9689187722

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COURSE OUTCOMES:

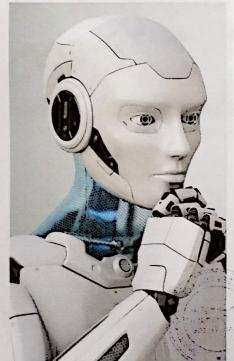
- · THE STUDENTS ARE ABLE TO:
- UNDERSTAND BASIC COMPONENTS OF ROBOTICS, CLASSIFICATION OF ROBOTS AND THEIR APPLICATIONS.
- KNOW ABOUT TYPES OF ROBOT GRIPPERS, THEIR USAGE AND DESIGN CONSIDERATIONS.
- UNDERSTAND ABOUT VARIOUS TYPES OF SENSORY DEVICES, THEIR WORKING AND ARPLICATIONS.

RELATED TO THE MOVEMENT OF THE

Shaharu A KOBOT MECHANISM TO MEET
KINEMATICS REQUIREMENTS AND TO
WRITE SIMPLE PROGRAMS.

COURSE PREREQUISITES

- TO GET FULL BENEFIT OF THIS COURSE, STUDENTS NEED TO HAVE BASIC IDEA PROGRAMMING AND MATHEMATICS.
- BASIC IDEA ABOUT SENSORS AND ACTUATORS AND MICROCONTROLLERS.



COURSE CONTENTS

- INTRODUCTION TO ROBOTICS
- BASICS OF ROBOTICS
- MECHANICAL WORKING
- INTRODUCTION TO MICROCONTROLLERS
- BASIC PROGRAMMING
- INTRODUCTION TO SENSORS



THE FIELD OF ROBOTICS HAS A VERY BRIGHT FUTURE AHEAD, AND SOON THERE WILL BE A GREAT THE USE **INCREASE** IN OF SOPHISTICATED ROBOTS THAT WILL WORK IN COLLABORATION WITH HUMANS. ROBOTS WILL INCREASE GROWTH AND **ECONOMIC** PRODUCTIVITY AND CREATE NEW CAREER OPPORTUNITIES FOR MANY PEOPLE WORLDWIDE. THE BEST THING ABOUT ROBOTS IS THAT THEY WILL NOT REPLACE HUMAN WORKERS, BUT WILL HELP THEM IN THEIR WORK. THEREFORE IF YOU AIM TO HAVE A GREAT CAREER IN ROBOTICS THIS COURSE WILL BE OF





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Vishwatmak Om Gurudev College of Engineering

Name of Course		Introduction to Robotics								
Duration		30 Hrs.	Modules	:	6					

Course Objectives:

- To provide an introduction to Robotics and Automation including robot classification, design and selection, analysis and applications in industry.
- To provide information on various types of end effectors, their design, interfacing and selection.
- To provide the details of operations for a variety of sensory devices that are used on robot, the meaning of sensing, classification of sensor, that measure position, velocity & acceleration of robot joint.
- To familiarize the basic concepts of transformations performed by robot.
- To perform kinematics and to gain knowledge on programming of robots.

Course Outcomes:

• The students are able to:

- Understand basic components of robotics, classification of robots and their applications.
- ☐ Know about types of robot grippers, their usage and design considerations.
- Understand about various types of sensory devices, their working and applications.
- ☐ Apply basic transformations related to the movement of the manipulator.
- Design a robot mechanism to meet kinematics requirements and to write simple programs.

Course Prerequisites:

- To get full benefit of this course, students need to have basic idea Programming and Mathematics.
- Basic idea about Sensors and Actuators and Microcontrollers.

Career Prospects:

The field of robotics has a very bright future ahead, and soon there will be a great increase in the use of sophisticated robots that will work in collaboration with humans. Robots will increase economic growth and productivity and create new career opportunities for many people worldwide. The best thing about robots is that they will not replace human workers, but will help them in their work. Therefore if you also to have a great career in Robotics this course will be of great help.



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Course	Contents			
Module-1:	Duration:	5 hours		
Introduction to Robotics:				
Brief history, Existing robotics applications a constituents, Control theory (Kinematic and o	and types of robots, Rollynamic), Cybernetics,	botics as a field and its AI, Sensors.		
Module-2:	Duration:			
Basics of Robotics:		5 hours		
Locomotion, Tyres, Power Supplies, Transmi Basic Electrical Control System, General idea Module-3:	of PCB's and Related	ngineering Practices, Software's.		
Mechanical Working:	Duration:	5 hours		
Differential drive system, Differential drive Dead reckoning, Actuators, Control Of Servo Module-4:	s, and Motor Driver.	ential drive dynamics,		
	Duration:	5 hours		
Introduction To Microcontrollers: Architecture, Functioning, Overview of capabilities will be studied in depth, Function	available microcontring and use of RS-232.	ollers, Features and		
Module-5:	Duration:	5 hours		
Basic Programming: Microcontroller Programming, In System Pr program a microcontroller to generate PW Developing algorithms for Intelligent ROBO	M. LCD Interfacing	ning the chip, How to		

Module-6:

Duration:

5 hours

Introduction To Sensors:

Types And Functioning Of Sensors, Hands- On Assembling The Advanced Obstacle Avoider, Assembling The Advanced Line Follower, Assembling The Wall Follower, Some Applications Of Mobile Robotics.







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VISHWATMAK OM GURUDEY COLLEGE OF ENGINEERING

Department of Mechanical Engineering
ADD ON Program on Introduction to Robotics

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	Program Coordinator								1)		



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Vishwatmak Om Gurudev College of Engineering Department of Mechanical Engineering

One Page Activity Report

- Faculty Name Prof. Saurabh Dhone
- Date -03/01/2022-07/01/2022 Timing 10.00AM-05.00 PM
- Planned Activity ADD On Program on Introduction to Robotics
- Permission from Authorities Dr. D. D. Shinde (Principal)
- Implementation Details The purpose of the workshop is to provide students an introduction to Robotics and Automation including robot classification, design and selection, analysis and applications in industry as well as to provide information on various types of end effectors, their design, interfacing and selection. Through this workshop students are able to understand basic components of robotics, classification of robots and their applications. Students learnt about types of robot grippers, their usage and design considerations. They understand various types of sensory devices, their working and applications. Students applied basic transformations related to the movement of the manipulator.
- Conclusion After completion, this workshop we conclude that students get more benefits from this workshop and they are more familiar with robotic technology. The field of robotics has a very bright future ahead, and soon there will be a great increase in the use of sophisticated robots that will work in collaboration with humans. Robots will increase economic growth and productivity and create new career opportunities for many people worldwide. The best thing about robots is that they will not replace human workers, but will help them in their work. We are very thankful to our Head of Department for giving such good support as well as we are also especially thankful to our President sir and Principal Sir that he was continuously guiding and supporting us.
- Feedback Report- Attached
- Completion Report Workshop Successfully completed on 07/01/2022



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Vishwatmak Om Gurudev College of Engineering

Department of Mechanical Engineering











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CERTIFICATE OF COMPLETION



This is to certify that

Mr./Ms Patil Yash Santosh of Class SE/TE/BE Mechanical Engineering has successfully completed the ADD On Course titled "Introduction to Robotics" organised by Mechanical Engineering Department from 03/01/2022 to 07/01/2022.



COURSE

STRUCTOR

PROGRAM COORDINATOR



"Sabka Malik Atma !! Vishwatmak Jangli Maharaj Ashram Trust's Vishwatmak Om Gurudev College of Engineering

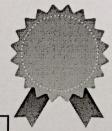


CERTIFICATE OF COMPLETION —



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Mr./Ms Thakare Girish Suresh of Class SE/TE/BE Mechanical Engineering has successfully completed the ADD On Course titled "Introduction to Robotics" organised by Mechanical Engineering Department from 03/01/2022 to 07/01/2022.



COURSE

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PROGRAM COORDINATOR



!! Sabka Malik Atma!! Vishwatmak Jangli Maharaj Ashram Trust's Vishwatmak Om Gurudev College of Engineering



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Mr./Ms Patil Sanket Vijay of Class SE/TE/BE Mechanical Engineering has successfully completed the ADD On Course titled " Introduction to Robotics" organised by Mechanical Engineering Department from 03/01/2022 to 07/01/2022.



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"Sabka Malik Atma !! Vishwatmak Jangli Maharaj Ashram Trust's Vishwatmak Om Gurudev College of Engineering



CERTIFICATE OF COMPLETION —



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Mr./Ms Khanjode Shubham of Class SE/TE/BE Mechanical Engineering has successfully completed the ADD On Course titled "Introduction to Robotics" organised by Mechanical Engineering Department from 03/01/2022 to 07/01/2022.



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CERTIFICATE OF COMPLETION



This is to certify that

Mr./Ms Wakle Pravin Natha of Class SE/TE/BE Mechanical Engineering has successfully completed the ADD On Course titled "Introduction to Robotics" organised by Mechanical Engineering Department from 03/01/2022 to 07/01/2022.



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