



**Bharath**  
INSTITUTE OF HIGHER EDUCATION AND RESEARCH  
(Declared as Deemed - to - be - University under section 3 of UGC Act 1956)

**Requisition Letter**

**Date: 27.01.2022**

From

The HOD,  
Department of Mechanical Engineering,  
Bharath Institute of Higher Education and Research,  
Selaiyur, Chennai.

To

The Dean Engineering,  
Bharath Institute of Higher Education and Research,  
Selaiyur, Chennai.

Respected Sir,

Sub: Requisition for conducting Value added course – reg.

School of Mechanical Sciences has planned to conduct Value added course on  
“Course on Industrial Automation Development” on 18-02-2022. In this  
regard we kindly request you to grant permission for the same.

Thanking You

**HOD/MECH**

Head of the Department  
Department of Mechanical Engineering  
Bharath Institute of Higher Education and Research  
(Dec. u/s 3 of UGC Act. 1956)  
Selaiyur, Chennai-600 073

**Dean Engineering**



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Date: 01.02.2022

**Department of Mechanical Engineering**

**Circular**

The of Department of Mechanical Engineering, BIHER glad to conduct on six days value added program on "*Course on Industrial Automation Development*" from **18.02.2022** for 30 hours. Those who are interested to participate do register your name to the program coordinator.

All reregistered students must attend all the classes without fail. The students who are completed the course successfully with good score will get the course completion certificate from the institute/Department.

**Resource person: Mr.S.Nakkeeran and Mr.V.P.Durairaj**

Maximum no. of registration Allowed – 60.

**\*First come first serve basis.**



**Program coordinator**

  
**Mr.Arun V Rejus Kumar**

  
**Mr.R.Hariharan**



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**Department of Mechanical Engineering**

**Course on Industrial Automation Development**

**OBJECTIVE:**

- To impart the necessary basic concepts of industrial automation, Industrial Robotics, Shop Floor Control and control methods and to apply them to various manufacturing problems.

**[DAY: 1]**

**MODULE 1 Automation & Control Technologies (5Hrs)**

Introduction to CAD, CAM, CAD/CAM and CIM – Introduction to Manufacturing Systems – Automation in manufacturing Systems – Types of Automation – Reasons for Automation – Automation Strategies – Manufacturing Models and Metrics – Basic elements of an Automated System – Levels of Automation – Continuous versus Discrete Control – Computer Process Control.

**[DAY: 2]**

**MODULE II Numerical Control & Industrial Robotics (5 Hrs)**

Elements of NC Manufacturing Systems – Computer Numerical Control – Axes and Co-ordinate Systems – Features, Advantages, Disadvantages and Limitations – Manual Part Programming – Robot Anatomy – Robot Control Systems – End Effectors – Sensors – Applications – Robot programming.

**[DAY: 3]**

**MODULE III Manufacturing Support Systems (5Hrs)**

Process Planning – Computer Aided Process Planning – Production planning and Control Systems – Aggregate Planning and Master Production schedule – Material Requirement Planning – Capacity Planning – Shop Floor Control – Overview of Automatic Identification and Data capture – Bar Code Technology and Radio Frequency Identification.

**DAY: 4]**

**MODULE IV Fundamentals of Industrial Robots (5Hrs)**

Specifications and Characteristics, Basic components, configurations, Criteria for selection, various industrial applications. Robotic Control Systems: Drives, Robot Motions, Actuators, Power transmission systems; Robot controllers, Dynamic properties of robots- stability, control resolution, spatial resolution, accuracy, repeatability, compliance.

**[DAY: 5]**

**MODULE V Robotic End Effectors and Sensors**

**(5 Hrs)**

Transducers and sensors- sensors in robotics and their classification, Touch (Tactile) sensors, proximity and range sensors, force and torque sensing, End Effectors- Types, grippers, Various process tools as end effectors; Robot-End effectors interface, Active and passive compliance, Gripper selection and design Robot Programming: Lead through method, Robot program as a path in space, Methods of defining positions in space, Motion interpolation, branching;

**[DAY: 6]**

**MODULE VI Economic factors affecting Design & Value Engineering and Product Design**

**(5 Hrs)**

**Economic factors affecting Design:** product value, Design for safety, Reliability and Environmental considerations, Economic analysis, profit and competitiveness, break-even analysis and economics.

**Value Engineering and Product Design:** Introduction, Historical perspective, Value, Nature and measurement of value, Maximum value, Normal degree of value, Importance of value, The value Analysis Job Plan, Creativity, Steps to problem solving and value analysis, Value Engg. Idea generation check list, Cost reduction, materials and process selection in value engineering.



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## Department of Mechanical Engineering

### One Week Value added Program on "Course on Industrial Automation Development" 18<sup>th</sup> Feb to 24<sup>th</sup> Feb 2022

Date	Morning Session (9 AM – 12 PM)	Afternoon Session (1:30 PM – 3:30 PM)
18 – 02 – 2022	Program Inauguration Mr.S.Nakkeeran , Assistant professor, BIHER <i>Introduction: CAD, CAM, CAD/CAM and CIM – Introduction to Manufacturing Systems – Automation in manufacturing Systems – Types of Automation – Reasons for Automation – Automation Strategies – Manufacturing Models and Metrics</i>	Mr.V.P.Durairaj , Assistant professor, BIHER <i>Basic elements of an Automated System – Levels of Automation – Continuous versus Discrete Control – Computer Process Control.</i>
20 – 02 – 2022	Numerical Control & Industrial Robotics Mr.V.P.Durairaj <i>Elements of NC Manufacturing Systems – Computer Numerical Control – Axes and Co-ordinate Systems – Features, Advantages, Disadvantages and Limitations</i>	Numerical Control & Industrial Robotics Mr.S.Nakkeeran <i>Manual Part Programming – Robot Anatomy – Robot Control Systems – End Effectors – Sensors – Applications – Robot programming.</i>
21 – 02 – 2022	Manufacturing Support Systems: Mr.S.Nakkeeran <i>Process Planning – Computer Aided Process Planning – Production planning and Control Systems – Aggregate Planning and Master Production schedule</i>	Manufacturing Support Systems: Mr.V.P.Durairaj <i>Material Requirement Planning – Capacity Planning – Shop Floor Control – Overview of Automatic Identification and Data capture – Bar Code Technology and Radio Frequency Identification.</i>
22 – 02 – 2022	Fundamentals of Industrial Robots: Mr.V.P.Durairaj <i>Specifications and Characteristics, Basic components, configurations, Criteria for selection, various industrial applications. Robotic Control Systems: Drives, Robot Motions, Actuators, Power transmission systems;</i>	Industrial Robots: Mr.S.Nakkeeran <i>Robot controllers, Dynamic properties of robots-stability, control resolution, spatial resolution, accuracy, repeatability, compliance.</i>
23 – 02 – 2022	Sensors :Mr.S.Nakkeeran <i>Transducers and sensors- sensors in robotics and their classification, Touch (Tactile) sensors, proximity and range sensors, force and torque sensing, End Effectors-Types, grippers, Various process tools as end effectors</i>	Robotic End Effectors :Mr.V.P.Durairaj <i>Robot-End effectors interface, Active and passive compliance, Gripper selection and design Robot Programming: Lead through method, Robot program as a path in space, Methods of defining positions in space, Motion interpolation, branching</i>
24 – 02 – 2022	Value Engineering and Product Design: Mr.V.P.Durairaj <i>Historical perspective, Value, Nature and measurement of value, Maximum value, Normal degree of value, Importance of value, The value Analysis Job Plan.</i>	Economic factors affecting Design: Mr.S.Nakkeeran <i>product value, Design for safety, Reliability and Environmental considerations, Economic analysis, profit and competitiveness, break-even analysis and economics.</i> <i>Quiz/ Feedback / valedictory Session</i>

#### Program Coordinator:

Mr.Arun V Rejus Kumar

Mr.R.Hariharan

Assistant Professor,

E-Mail:rejus10.mech@gmail.com

hariharan.mech@bharathuniv.ac.in



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18-02-2022

## Course on Industrial Automation Development

### Attendance sheet

S.No	Reg.No	Name	Department
1.	U16ME101	VIJAY	Mechanical Engineering
2.	U16ME104	MULLAGURA BHARATH KUMAR	Mechanical Engineering
3.	U16ME105	CHALLA CHARANKUMAR	Mechanical Engineering
4.	U16ME106	RAJEEV KUMAR	Mechanical Engineering
5.	U16ME107	MANOJ	Mechanical Engineering
6.	U16ME113	PYNKHLAINBORLANG	Mechanical Engineering
7.	U16ME115	GUNA	Mechanical Engineering
8.	U16ME119	PALAPALA	Mechanical Engineering
9.	U16ME120	MADDIKARA	Mechanical Engineering
10.	U16ME121	MUKESH	Mechanical Engineering
11.	U16ME037	THAMIN ANSARI	Mechanical Engineering
12.	U16ME038	VIGNESH	Mechanical Engineering
13.	U16ME039	PRADHIP	Mechanical Engineering
14.	U16ME040	RAGUL KUMAR	Mechanical Engineering
15.	U16ME043	AAKASH KAVIN	Mechanical Engineering
16.	U15ME006	ADHITHYAN	Mechanical Engineering

17.	U15ME007	AGASH RAJ	Mechanical Engineering
18.	U15ME008	AGATHIYAN	Mechanical Engineering
19.	U15ME009	AJAY	Mechanical Engineering
20.	U15ME010	AKASH	Mechanical Engineering
21.	U15MT001	AJITH	Mechatronics
22.	U15MT002	BALAJI	Mechatronics
23.	U15MT003	INAYAT ULLA RABBANI	Mechatronics
24.	U15MT004	INAYATHULLA	Mechatronics
25.	U15MT005	KARTHIGAYAN	Mechatronics
26.	U15MT007	MOHAMMED IDRIS	Mechatronics
27.	U15MT501	NAREN KUMAR	Mechatronics
28.	U15MT503	MUGILVARMA	Mechatronics
29.	U15MT702	NEELAM	Mechatronics
30.	U15MT703	MOHANAKUMARESAN	Mechatronics
31.	U15AM001	ABHIJIT	Automobile Engineering
32.	U15AM002	ABISHEK	Automobile Engineering
33.	U15AM004	ASWIN	Automobile Engineering
34.	U15AM005	BHARANIDHARAN	Automobile Engineering
35.	U15AM006	GIRIDAAR	Automobile Engineering
36.	U15AM007	EDULA VISHNU GOVARDHAN	Automobile Engineering
37.	U15AM008	GANNI VINEETH	Automobile Engineering
38.	U15AM009	GOKULPRASHANTH	Automobile Engineering

39.	U15AM010	HASHIM JAWAD MELEDATH	Automobile Engineering
40.	U15AM011	INNAMULHASAN	Automobile Engineering
41.	U16MT001	PRADEEPAN	Mechatronics
42.	U16MT002	RAAHUL GANESH	Mechatronics
43.	U16MT003	DINESH	Mechatronics
44.	U16MT004	SRINATH	Mechatronics
45.	U16MT703	VIGNESH	Mechatronics



# Certificate

## Bharath Institute of Higher Education and Research

DEPARTMENT OF MECHANICAL ENGINEERING

### *Certificate of Participation*

This is to certify that

**RAJEEV KUMAR**

of

*Bharath Institute of Higher Education and Research*

has attended the value added program on "Course on Industrial Automation Development" organized by the Department of Mechanical Engineering, Bharath Institute of Higher Education and Research, Chennai on February (18-24), 2022.

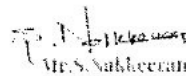


Mr. Arun S. Rajan  
In-charge



Mr. R. Haridharan

Coordinators



Mr. S. Subhasecan

Resource Persons



Mr. A. P. Durairaj

# Feedback Form

Course Name: *Computer and Technology Development*

## COURSE FEEDBACK FORM

Name : *MONALI*

Date: *18/2/2022*

Reg.No: *U16MC167*

I. About the Course Information on the Respondent: (Tick (✓) Appropriately)					
Depth of Coverage					
UG level		Graduate level	✓	Advance level	
Standard of test and assignments					
High	✓	Normal		Easy	
	A	B	C	D	E
Coverage of the syllabus	✓				
Organisation of the Course	✓				
Emphasis on fundamentals	✓				
Emphasis of fundamentals	✓				
Coverage of modern/advanced topics		✓			
Availability of text books/study materials	✓				
Usefulness of tests and assignments	✓				
Overall rating of the Course		✓			
What benefit you derived from the course?	✓				

Course Name: COURSE ON INDUSTRIAL AUTOMATION DEVELOPMENT

About the Instructor: Information on the Respondent: (Tick (✓) Appropriately)											
		A	B	C	D	E					
1.	Pace of the Teaching/lecture	✓									
2.	Content of the Subject	✓									
3.	Clarity of expression	✓									
4.	Level of preparation	✓									
5.	Level of interaction	✓									
6.	Accessibility outside the class	✓									
7.	Others (please specify)	✓									
<table border="1"> <tr> <td>A: Excellent</td> <td>B: Very Good</td> <td>C: Good</td> <td>D: Satisfactory</td> <td>E: Poor</td> </tr> </table>							A: Excellent	B: Very Good	C: Good	D: Satisfactory	E: Poor
A: Excellent	B: Very Good	C: Good	D: Satisfactory	E: Poor							

## Course on Industrial Automation Development – Image

