



# Bharath

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

## Requisition Letter

Date: 12.10.2021

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 manual Testing and Automation” on 01-11-2021. In this regard we kindly request you to grant permission for the same.

Thanking You

**HOD/MECH**

**Dean Engineering**

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



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Date: 14.10.2021

## Department of Mechanical Engineering

### Circular

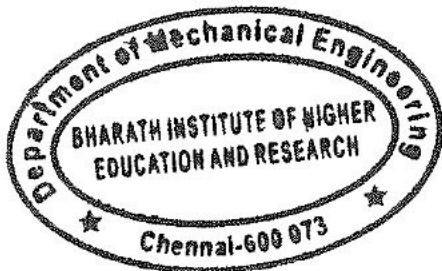
The of Department of Mechanical Engineering, BIHER glad to conduct on five days value added program on “*Course on Manual Testing and Automation*” from 01.11.2021 for 30 hours. Those who are interested to participate do register your name to the program coordinator.

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.

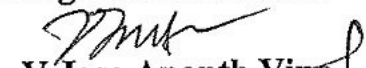
**Resource person: Mrs.C.M.Meenakshi and Mrs. G.Sucharitha**

Maximum no. of registration Allowed – 60.

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



Program coordinator

  
Mr.V. Jose Ananth Vino

  
Mr.N. Lenin Rakesh



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## Department of Mechanical Engineering

### Course on Manual Testing and Automation

#### OBJECTIVE:

- The aim of the subject is to provide make the students to understand the strength of materials.
- To get a basic understanding of microstructures of specimens of different materials
- To impart the necessary basic concepts of industrial automation, robotics, and control methods and to apply them to various manufacturing problems
- To emphasize the knowledge on the quality improvement, automation, and advanced manufacturing techniques to create the highest-caliber products quickly, efficiently, inexpensively, and in synchronization with the marketing, sales, and customer service of the company.

#### MODULE 1

#### Manual Testing

(10Hrs)

#### [DAY: 1]

**Stress- Strain and Deformation of Solids:** Properties of material, Concept of Stress and Strain, Hook's Law, Stress Strain Diagram for structural steel and Non-ferrous materials. Poisson's Ratio & principles of superposition, Total elongation of tapering bars of circular and rectangular cross-sections. Elongation due to self-weight, volumetric strain. Expression for Volumetric strain, Elastic constants, relationship among elastic constants, compound bars Rigid and Deformable bodies – Strength- Stiffness and Stability – Stresses; Tensile- Compressive and Shear – Elastic constants – Strain energy and unit strain energy – Strain energy in uniaxial loads.

- **Determination of Tensile strength and Compression strength on a given specimen.**
- **Determination of shear strength of Mild steel and Aluminium rods**

#### [DAY: 2]

- **Determination of Torsional strength of mild steel rod**
- **Determination of Impact strength**
- **Conduct of Hardness test on metals - Brinell and Rockwell Hardness.**
- **Conduct of Deflection test on beams**

[DAY: 3]

- Measurement of delicate parts in a Tool Makers Microscope.
- Fundamental dimension measurement of a gear using a contour projector.
- Straightness measurement using an autocollimator

**MODULE II Industrial Tribology**

**(5 Hrs)**

[DAY: 4]

**Surfaces and Friction, Wear**

**Surfaces and Friction :** Topography of Engineering surfaces- Contact between surfaces - Sources of sliding friction – Adhesion Ploughing- Energy dissipation mechanisms Friction Characteristics of metals - Friction of non metals. Friction of lamellar solids - friction of Ceramic materials and polymers - Rolling Friction - Source of Rolling Friction – Stick slip motion - Measurement of Friction.

**Wear:** Types of wear - Simple theory of Sliding Wear Mechanism of sliding wear of metals - Abrasive wear – Materials for Adhesive and Abrasive wear situations - Corrosive wear - Surface Fatigue wear situations - Brittle Fracture - wear - Wear of Ceramics and Polymers - Wear Measurements.

[DAY: 5] Automation

**(10 Hrs)**

**Introduction** Production System Facilities, Manufacturing Support systems, Automation in Production systems, Automation principles & Strategies

**Fundamentals of Industrial Robots:** 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: 6]

**(5 Hrs)**

**Automated Manufacturing Systems** Components of a Manufacturing system, Classification of Manufacturing Systems, overview of Classification Scheme, Single Station Manned Workstations and Single Station Automated Cells.

**Assembly Automation:** Types and configurations, Parts delivery at workstations- Various vibratory and non-vibratory devices for feeding and orientation, Calculations of feeding rates, Cycle time for single station assembly machines and partially automated systems; Product design for automated assembly.

- 360 degree pick and place robotic Machine
- Engraving machine
- 3D printing



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## Department of Mechanical Engineering

### One Week Value added Program on "Course on manual Testing and Automation" 1<sup>st</sup> Nov to 6<sup>th</sup> Nov 2021

| Date           | Morning Session (9 AM – 12 PM)   | Afternoon Session (1:30 PM – 3:30 PM)   |
|----------------|--|---|
| 01 – 11 – 2021 | <p>Program Inauguration<br/>Mrs.C.M.Meenakshi , Assistant professor, BIHER<br/>Introduction:Stress- Strain and Deformation of Solids<br/><b>Practical Session:</b></p> <ul style="list-style-type: none"> <li>Determination of Tensile strength and Compression strength on a given specimen.</li> </ul>   | <p>Mrs. G.Sucharitha, Assistant professor, BIHER<br/>Strength- Stiffness and Stability – Stresses; Tensile- Compressive and Shear – Elastic constants – Strain energy and unit strain energy.<br/><b>Practical Session:</b></p> <ul style="list-style-type: none"> <li>Determination of shear strength of Mild steel and Aluminium rods</li> </ul>  |
| 02 – 11 – 2021 | <p><b>Practical Session: Mrs. G.Sucharitha</b></p> <ul style="list-style-type: none"> <li>Determination of Torsional strength of mild steel rod</li> <li>Determination of Impact strength</li> </ul>   | <p><b>Practical Session: Mrs.C.M.Meenakshi</b></p> <ul style="list-style-type: none"> <li>Conduct of Hardness test on metals - Brinell and Rockwell Hardness.</li> <li>Conduct of Deflection test on beams</li> </ul>   |
| 03 – 11 – 2021 | <p><b>Practical Session: Mrs.C.M.Meenakshi</b></p> <ul style="list-style-type: none"> <li>Measurement of delicate parts in a Tool Makers Microscope.</li> <li>Fundamental dimension measurement of a gear using a contour projector.</li> </ul>  | <p><b>Practical Session: Mrs. G.Sucharitha</b></p> <ul style="list-style-type: none"> <li>Straightness measurement using an autocollimator</li> </ul>   |
| 04 – 11 – 2021 | <p><b>Surfaces and Friction: Mrs. G.Sucharitha</b><br/>Topography of Engineering surfaces- Contact between surfaces - Sources of sliding friction – AdhesionPloughing- Energy dissipation mechanisms<br/>Friction Characteristics of metals - Friction of non metals. Friction of lamellar solids - friction of Ceramic materials and polymers - Rolling Friction - Source of Rolling Friction – Stick slip motion - Measurement of Friction.</p>  | <p><b>Wear: Mrs.C.M.Meenakshi</b><br/>Types of wear - Simple theory of Sliding Wear<br/>Mechanism of sliding wear of metals - Abrasive wear – Materials for Adhesive and Abrasive wear situations - Corrosive wear - Surface Fatigue wear situations - Brittle Fracture - wear - Wear of Ceramics and Polymers - Wear Measurements.</p>   |
| 05 – 12 – 2021 | <p><b>Automation: Mrs.C.M.Meenakshi</b><br/>Introduction Production System Facilities, Manufacturing Support systems, Automation in Production systems, Automation principles &amp; Strategies</p>   | <p><b>Fundamentals of Industrial Robots: Mrs. G.Sucharitha</b><br/>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.</p> |
| 06 – 12 – 2021 | <p><b>Assembly Automation: Mrs.C.M.Meenakshi</b><br/>Types and configurations, Parts delivery at workstations- Various vibratory and non-vibratory devices for feeding and orientation, Calculations of feeding rates, Cycle time for single station assembly machines and partially automated systems; Product design for automated assembly.</p> <ul style="list-style-type: none"> <li>360 degree pick and place robotic Machine</li> <li>Engraving machine</li> <li>3D printing</li> </ul> | <p>Quiz/ Feedback / valedictory Session</p>   |

**Program Coordinator:**

Mr.V.Jose Ananth Vino

Mr.N. Lenin Rakesh

Assistant Professor,

**E-Mail:**[joseananth.mech@bharathuniv.ac.in](mailto:joseananth.mech@bharathuniv.ac.in)

[leninrakesh.mech@bharathuniv.ac.in](mailto:leninrakesh.mech@bharathuniv.ac.in)



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01-11-2021

## Course on Manual Testing and Automation

### Attendance sheet

| S.No | Reg.No   | Name                   | Department             |
|------|----------|------------------------|------------------------|
| 1.   | U16ME014 | RAVIRAJAN              | Mechanical Engineering |
| 2.   | U16ME023 | ARAVINDAN              | Mechanical Engineering |
| 3.   | U16ME029 | DINESH KUMAR           | Mechanical Engineering |
| 4.   | U16ME031 | ZHAKIRHUSSAIN          | Mechanical Engineering |
| 5.   | U16ME033 | SHERIN T               | Mechanical Engineering |
| 6.   | U16ME035 | PARTHAN                | Mechanical Engineering |
| 7.   | U16ME041 | SUVODEEP               | Mechanical Engineering |
| 8.   | U16ME049 | MOHAMED ABDULLAH       | Mechanical Engineering |
| 9.   | U16ME055 | DEEPAK                 | Mechanical Engineering |
| 10.  | U16ME056 | YOGESH                 | Mechanical Engineering |
| 11.  | U15MT008 | OVIAN NICHOLA          | Mechatronics           |
| 12.  | U15MT010 | TADIKONDA SAI TEJA     | Mechatronics           |
| 13.  | U15MT011 | VIJAY                  | Mechatronics           |
| 14.  | U15MT012 | MOHAMMED MOIDEEN RIYAZ | Mechatronics           |
| 15.  | U15AM013 | MARIA SUBITCHAM VINITH | Automobile Engineering |
| 16.  | U15AM014 | MATHAN KUMAR           | Automobile Engineering |
| 17.  | U15AM015 | MOHAMED ASHIF          | Automobile Engineering |

|     |          |                          |                        |
|-----|----------|--------------------------|------------------------|
| 18. | U15AM017 | MUTUM NAOBA SINGH        | Automobile Engineering |
| 19. | U15AM018 | NELLUBALLI CHAITANYA     | Automobile Engineering |
| 20. | U15AM019 | PERIMIREDDY NAVEEN KUMAR | Automobile Engineering |
| 21. | U15AM020 | PIHE                     | Automobile Engineering |
| 22. | U15AM021 | PREM                     | Automobile Engineering |
| 23. | U15AM022 | RAJU                     | Automobile Engineering |
| 24. | U16ME135 | KRISHNAKANTH             | Mechanical Engineering |
| 25. | U16ME136 | MOHAMMED THAUFEEQ        | Mechanical Engineering |
| 26. | U16ME137 | DINESHKUMAR              | Mechanical Engineering |
| 27. | U16ME141 | DEJOEL HAROLD RAYMOND    | Mechanical Engineering |
| 28. | U16ME142 | JARUPULA REVANTH         | Mechanical Engineering |
| 29. | U16ME502 | JULIAN NIRMAL            | Mechanical Engineering |
| 30. | U16ME503 | ARAVIND                  | Mechanical Engineering |
| 31. | U16MT005 | DHANASEKAR               | Mechatronics           |
| 32. | U16MT006 | GOUTHAM                  | Mechatronics           |
| 33. | U16MT007 | SATHIYASEELAN            | Mechatronics           |
| 34. | U16MT008 | RAKESH                   | Mechatronics           |
| 35. | U16MT009 | ABDUL FAHEEM             | Mechatronics           |
| 36. | U16MT010 | SAKTHI                   | Mechatronics           |
| 37. | U16MT011 | MELVINE ROHAN            | Mechatronics           |
| 38. | U16MT014 | SARATHKUMAR              | Mechatronics           |
| 39. | U16MT015 | SOMENDRAN                | Mechatronics           |
| 40. | U16MT018 | RATHISH KRISHNAN         | Mechatronics           |



|     |          |                                     |                        |
|-----|----------|-------------------------------------|------------------------|
| 41. | U15AM504 | BONDALAPATI LEELA<br>KRISHNA PRASAD | Automobile Engineering |
| 42. | U15AM702 | BONDALAPATI LEELA<br>KRISHNA PRASAD | Automobile Engineering |
| 43. | U15ME705 | DIVINO                              | Mechanical Engineering |
| 44. | U15ME706 | GOKUL                               | Mechanical Engineering |
| 45. | U15ME707 | KAMESH                              | Mechanical Engineering |
| 46. | U15AM008 | GANNI VINEETH                       | Automobile Engineering |
| 47. | U15AM009 | GOKULPRASHANTH                      | Automobile Engineering |

# Certificate

**Bharath Institute of Higher Education and  
Research**

**DEPARTMENT OF MECHANICAL ENGINEERING**

*Certificate of Participation*

This is to certify that

**DEEPAK**

of

*Bharath Institute of Higher Education and Research*

has attended the value added program on "Course on manual Testing and Automation"  
organized by the Department of Mechanical Engineering, Bharath Institute of Higher Education  
and Research, Chennai on November (1-6), 2021.

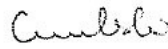


Mr. S. Basu  
Coordinator

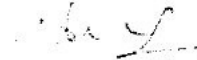


Mr. S. Lenin Rakesh

**Coordinators**



Mrs. M. Meeraakshi



Mrs. G. Sucharitha

**Resource Persons**

# Feedback Form

Course Name: *Course on Manual testing and Automation*

## COURSE FEEDBACK FORM

Name: *Sherin T*  
 Reg.No: *U16ME033*

Date: *01/11/2021*

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

Course Name *Course on Manual testing and automation.*

About the Instructor: Information on the Respondent: (Tick (s) 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. Other (please specify)          | <i>Very Good Presentation.</i> |         |                 |         |   |
| A: Excellent                       | B: Very Good                   | C: Good | D: Satisfactory | E: Poor |   |

## Course on Manual Testing and Automation – Image

