

**List of Competencies for On-the-Job Training (OJT)****Work-Study Diploma in Automation Engineering**

Applicants applying for this course must be free from colour appreciation deficiency.

A score of 100% from the Colour Blindness Test is mandatory for course admission.

Note:

LOC is subject to changes due to curriculum review/ development

| <b>S/N</b>                                     | <b>List of Competencies (Standard)</b>                                   | <b>Company to indicate '✓' for OJT competencies it can provide</b> |
|--|--|--|
| 1  | Install electro – pneumatic system                                       |  |
| 2  | Install mechanical transmission system                                   |  |
| 3  | Install electrical equipment and wiring                                  |  |
| 4  | Install electronic equipment   |  |
| 5  | Install sensors and transducers  |  |
| 6  | Set up vision system   |  |
| 7  | Perform commissioning on robotics system                                 |  |
| 8  | Program robotics system  |  |
| 9  | Perform equipment automation using programmable logic controller (PLC)   |  |
| 10   | Develop program for automation processes                                 |  |
| 11   | Integrate station / equipment into automated system                      |  |
| 12   | Perform breakdown maintenance of equipment / system                      |  |
| 13   | Perform preventive maintenance of equipment / system                     |  |
| 14   | Perform predictive maintenance of equipment / system                     |  |
| 15   | Implement Industrial Internet of Things (IIoT) application system        |  |
| 16   | Acquire data from IIoT devices   |  |
| 17   | Prepare information for overall equipment effectiveness (OEE) monitoring |  |
| 18   | Develop system performance improvement plan                              |  |
| 19   | Develop proof of concept (POC)   |  |
| 20   | Prepare user requirement specifications (URS)                            |  |
| 21   | Prepare design specifications and costing                                |  |
|  | <b>Sub-total of Competencies (Standard)</b>                              |  |
| <b>List of Competencies (Company-specific)</b> |  |  |
| 1  |  |  |
| 2  |  |  |
| 3  |  |  |
| 4  |  |  |

| S/N | List of Competencies (Standard)                     | Company to indicate '✓' for OJT competencies it can provide |
|-----|---|---|
| 5   |   |   |
|     | <b>Sub-total of Competencies (Company-specific)</b> |   |

**Note:**

- a) Company must be able to provide OJT for at least **75%** of the List of Competencies (Standard).
- b) If company is unable to meet the 75%, please propose alternate **course-related** competencies which are unique to company operations. Alternate competencies are capped at 25%.  
[i.e. 50% of the list of competencies (standard) + 25% alternate competencies (Company-specific)].
- c) All alternate competencies (Company-specific) must be reviewed and endorsed by ITE.
- d) Trainees must receive OJT and be assessed for **All** competencies selected in this List.

|   |  |
|---|--|
| Total no. of competencies selected by company for OJT                       |  |
| Total no. of competencies listed ( <i>standard &amp; company specific</i> ) |  |
| Percentage of selected competencies   |  |

**Completed By:**

\_\_\_\_\_

**Name**

\_\_\_\_\_

**Company**

# MODULE SYNOPSIS – WSDip in Automation Engineering

## Course Objective

This course equips trainees with the skills, knowledge and professional attributes to install, maintain and troubleshoot computer-controlled systems, equipment and robotics in advanced manufacturing facilities.

## Modules Synopsis

### **Mechanical System**

On completion of the module, trainees should be able to set up, install, check, perform periodic servicing and maintenance, as well as troubleshoot faults on electro-pneumatic and mechanical transmission systems.

### **Electrical & Electronic Systems**

On completion of the module, trainees should be able to interpret electrical and electronics circuit diagrams and to setup, install as well as troubleshoot both electrical equipment and electronics system.

### **Sensory System**

On completion of the module, trainees should be able to interpret data sheets, diagrams and drawings of sensors and transducers, integrate with control units and perform alignment and adjustments on sensory system. They should also be able to set up a vision system for inspection, as well as optimise inspection speed and accuracy.

### **Robotics System**

On completion of the module, trainees will gain familiarity with common robotics terminology and concepts. They will develop the competence to interpret data sheets and diagrams, enabling them to confidently undertake commissioning processes and execute functional checks on robotics systems. They should also be able to acquire proficiency in programming robotics systems and command robots for applications like pick-and-place, assembly, and other manipulation tasks.

### **Automated System Integration**

On completion of the module, trainees should be able to perform equipment automation using programmable logic controllers (PLC), as well as integrate station / equipment into automated system. They should also be able to interpret the system requirements and develop the application programs.

### **Automated System Maintenance**

On completion of the module, trainees should be able to choose the appropriate maintenance strategy (breakdown, preventive and predictive) to improve equipment performance. They should also be able to collect and interpret data for predictive maintenance, as well as identify and rectify faults for breakdown maintenance.

## MODULE SYNOPSIS – WSDip in Automation Engineering

### Smart Monitoring System

On completion of the module, trainees should be able to apply the concept and capabilities of Industrial Internet of Things (IIoT) to set up a smart monitoring system. They should also be able to select and configure IIoT devices for desired application, acquire data, as well as create visualisations to monitor overall equipment effectiveness (OEE).

### Automated System Improvement

On completion of the module, trainees should be able to collect and interpret system performance data to identify areas for operational improvement. They should also be able to develop and conduct a proof of concept (POC).

### Conceptual Design

On completion of the module, trainees should be able to gather customer requirements and interpret technical specifications to produce a user requirement specification (URS). Trainees should be able to perform simulation on equipment automation. They should also be able to interpret user requirement specifications to produce concept drawings and establish the design costing.

### Company Project

On completion of the module, trainees should have applied their presentation skills and acquired competencies in an authentic project that would value-add to the company.

# TRAINING PATTERN SCHEDULE

## WSDip in **Automation Engineering**

**Block Release - Trainees attend daily lessons at ITE for a continuous period and then resume the next block of OJT at the workplace.**

|   |                          |                                      |                              |                                      |   |                                     |   |                                       |
|---|--------------------------|--------------------------------------|------------------------------|--------------------------------------|---|-------------------------------------|---|---------------------------------------|
| <b>April'26 Intake</b>                  | <b>April – June 2026</b> | ITE<br>Vacation<br>(June)<br>4 weeks | <b>July – September 2026</b> | ITE<br>Vacation<br>(Sept)<br>2 weeks | <b>October – December 2026</b>  | ITE<br>Vacation<br>(Dec)<br>4 weeks | <b>January – March 2027</b>                             | ITE<br>Vacation<br>(March)<br>2 weeks |
| <b>1<sup>st</sup> Year Off-JT @ ITE</b> | <b>2 Weeks Block</b>     |                                      | <b>3 Weeks Block</b>         |                                      | <b>2 Weeks Block</b>  |                                     | <b>3 Weeks Block</b>                                    |                                       |
| <b>April'26 Intake</b>                  | <b>April – June 2027</b> | ITE<br>Vacation<br>(June)<br>4 weeks | <b>July – September 2027</b> | ITE<br>Vacation<br>(Sept)<br>2 weeks | <b>October – December 2027</b>  | ITE<br>Vacation<br>(Dec)<br>4 weeks | <b>October – December 2028</b>                          | ITE<br>Vacation<br>(March)<br>2 weeks |
| <b>2<sup>nd</sup> Year Off-JT @ ITE</b> | <b>2 Weeks Block</b>     |                                      | <b>3 Weeks Block</b>         |                                      | <b>2 Weeks Block</b>  |                                     | <b>3 Weeks Block<br/>(2 weeks OJT)<br/>1 Week Block</b> |                                       |
| <b>April'26 Intake</b>                  | <b>April – June 2028</b> | ITE<br>Vacation<br>(June)<br>4 weeks | <b>July – September 2028</b> | ITE<br>Vacation<br>(Sept)<br>2 weeks | <b>WSDip Programme 2026</b><br><b>Start: 1 April 2026</b><br><b>End: 30 September 2028</b><br><b>Duration: 2.5 years</b><br> <b>Final results release may be later than programme end date</b> |                                     |   |                                       |
| <b>3<sup>rd</sup> Year Off-JT @ ITE</b> | <b>2 Weeks Block</b>     |                                      | <b>2 Weeks Block</b>         |                                      |   |                                     |   |                                       |