

# ALTERNATIVE <PATHWAYS>

## for LICENSED ELECTRICAL WORKERS

### LICENSED ELECTRICAL TECHNICIAN

PREPARATORY PROGRAMME (Programme Code: ENO33)

#### LEARNING OUTCOMES

The Licensed Electrical Technician Preparatory Programme will equip participants with the necessary theoretical foundation and practical application skills to carry out the work of a Licensed Electrical Technician.

#### PRE-REQUISITES

Applicants are required to have:

- At least 5 years as a Practicing Licensed Electrician; or
- Diploma in Electrical Power Engineering from Singapore Polytechnic or Ngee Ann Polytechnic, and at least 1 year of relevant practical work experience (only required to complete the practical modules by SIPG)

The programme is optional for applicants with:

- Diploma in Electrical Power Engineering from Singapore Polytechnic or Ngee Ann Polytechnic, and
- At least 2 years of relevant practical work experience

#### PROGRAMME CONTENTS

##### Theoretical Foundation

Conducted by Singapore Polytechnic/Ngee Ann Polytechnic

| No.   | Description  | Hours | Total |
|---|--|-------|-------|
| <b>Module 1: Electrical Circuit Theory and Analysis</b> |  |       |       |
| 1.1   | Basic Circuit Theory                                   | 3     | 28    |
| 1.2   | AC Theory  | 13    |       |
| 1.3   | Three Phase AC Circuits                                | 12    |       |
| 1.4   | Written Assessment 1                                   | 2     | 2     |
| <b>Module 2: Distribution System and Protection</b>     |  |       |       |
| 2.1   | Power Generation, Transmission and Distribution System | 3     | 28    |
| 2.2   | Fault calculation                                      | 5     |       |
| 2.3   | Circuit Switching and Switchgears                      | 3.5   |       |
| 2.4   | Protection   | 7     |       |
| 2.5   | Distribution Transformers                              | 3     |       |
| 2.6   | Cables and Wiring Systems                              | 3     |       |
| 2.7   | Substation Earthing and System Earthing                | 1.5   |       |
| 2.8   | Testing and Commissioning                              | 2     | 2     |
| 2.9   | Written Assessment 2                                   | 2     |       |

| No.  | Description   | Hours        | Total      |
|--|---|--------------|------------|
| <b>Module 3: Electrical System Design</b>        |   |              |            |
| 3.1  | Electricity Distribution System & Related Regulations       | 6            | 56         |
| 3.2  | Characteristics and Selection of Protective Devices         | 9            |            |
| 3.3  | Design of Residential Electrical Installation               | 9            |            |
| 3.4  | Design of Industrial and Commercial Electrical Installation | 6.5          |            |
| 3.5  | Standby Generators  | 3            |            |
| 3.6  | Inspection and Testing                                      | 3            |            |
| 3.7  | Temporary Electrical installation                           | 6            |            |
| 3.8  | Earthing System   | 1.5          |            |
| 3.9  | Grid-connected PV System                                    | 9            |            |
| 3.10   | EV Charging System  | 3            |            |
| 3.11   | Written Assessment 3  | 2            | 2          |
| <b>Module 4: Electrical Machines and Control</b> |   |              |            |
| 4.1  | Single-phase and Three Phase Transformers                   | 2.5          | 21         |
| 4.2  | Induction and DC Motors                                     | 3            |            |
| 4.3  | Synchronous Motors & Generators                             | 3            |            |
| 4.4  | Semiconductor Devices for Motor Control                     | 3            |            |
| 4.5  | DC & AC Drives  | 5            |            |
| 4.6  | Motor Starters  | 4.5          |            |
| 4.7  | Written Assessment 4  | 2            | 2          |
|  |   | <b>Total</b> | <b>141</b> |

### Practical Application

Conducted by Singapore Institute of Power and Gas

| No.   | Description   | Hours        | Total     |
|---|---|--------------|-----------|
| <b>Module 5: Safety and Connection Process</b>                      |   |              |           |
| 5.1   | Safety & Licensing Requirements   | 7            | 11        |
| 5.2   | The Supply Connection Process   | 3.5          |           |
| 5.3   | Assessment  | 0.5          |           |
| <b>Module 6: Commercial and Industrial Low Voltage Installation</b> |   |              |           |
| 6.1   | Design for Commercial and Industrial Low Voltage Installation                               | 14           | 22        |
| 6.2   | Distribution Switchboard Maintenance for Commercial and Industrial Low Voltage Installation | 7            |           |
| 6.3   | Assessment  | 1            |           |
| <b>Module 7: Testing Methods</b>                                    |   |              |           |
| 7.1   | Inspection & Testing of Installations up to 500 kVA   | 14           | 22        |
| 7.2   | Commissioning of Switchboard up to 500kVA   | 7            |           |
| 7.3   | Assessment  | 1            |           |
| <b>Module 8: HV Switching Operations and Procedures</b>             |   |              |           |
| 8.1   | Protection Scheme   | 3.5          | 11        |
| 8.2   | Operation and Maintenance of Distribution Transformer                                       | 3.5          |           |
| 8.3   | Switching Operations and Procedures   | 3.5          |           |
| 8.4   | Assessment  | 0.5          |           |
|   |   | <b>Total</b> | <b>66</b> |

## ASSESSMENT

For modules conducted by SP/NP, a written assessment will be conducted upon completion of each module.  
For modules conducted by SIPG, a practical assessment will be conducted upon completion of each module.

## PROGRAMME TIMING

The programme will be conducted during weekday evenings (6.30pm – 10.00pm) and Saturdays (8.30am – 6.00pm).

## CERTIFICATE

Participants who have successfully pass all theoretical and practical modules will be awarded a Certificate of Achievement jointly issued by SIPG and SP/NP.

## EMA LICENSING COMPETENCY ASSESSMENT

The “Certificate of Achievement” is required by EMA for participants without the relevant educational qualification. Participants are required to ensure that they satisfy the relevant work experience and pass the “EMA Licensing Competency Assessment” to qualify for an Electrical Technician’s License.

Please refer to EMA website for more information on application for Electrical Technician License :

[https://elise.ema.gov.sg/elise/newworkerapplicationservlet?lic\\_type=TE](https://elise.ema.gov.sg/elise/newworkerapplicationservlet?lic_type=TE)

## PROGRAMME FEE

|             | Full Programme Fee | Nett Fee after Subsidy                                   |                                       |                                 |
|-------------|--------------------|--|---------------------------------------|---------------------------------|
|             |                    | Singapore Citizens and Permanent Residents <40 years old | Singapore Citizens ≥40 years old only | Workfare Training Support (WTS) |
| Without GST | \$11,460.00        | \$3,438.00   | \$1,146.00                            | \$573.00                        |
| With GST    | \$12,262.20        | \$3,678.66   | \$1,386.66                            | \$813.66                        |

## PROGRAMME SCHEDULE

Intake: Jan’20 (FULL) / Jul’20 (FULL)

Due to an overwhelming response, your application will be placed on the waiting list upon your submission of completed application form and supporting documents.

Our officers will contact you again when there is an available slot.

**This page is intentionally left blank**

## Registration Form Licensed Electrical Technician Preparatory Programme

| PART A: PERSONAL PARTICULARS   |                   |  |  |   |
|--|-------------------|--|--|---|
| <input type="checkbox"/> Self-Sponsored Applicant  |                   | <input type="checkbox"/> Company-Sponsored Applicant |  |   |
| ** Full Name<br><small>(As in NRIC/FIN)</small>  |                   | Gender<br>M / F                                      | Date of Birth<br><small>(dd/mm/yy)</small>       |   |
| ** NRIC/FIN  |                   | ID Expiry Date<br><small>(dd/mm/yy)</small>          |  | Race:<br>Chinese / Malay / Indian / Others:<br>_____                    |
| ** Nationality   |                   | **Monthly Salary <sup>1</sup>                        | LE License No.<br><small>(if applicable)</small> | Years of Relevant<br>Experience as LE<br><small>(if applicable)</small> |
| ** Contact Number  |                   | Email Address  |  |   |
| Address<br><small>(Residential address for<br/>self-sponsored applicants)</small>  |                   |  |  |   |
| FOR COMPANY-SPONSORED APPLICANTS ONLY  |                   |  |  |   |
| Company Name   |                   |  |  |   |
| Company Address  |                   |  |  |   |
| Contact Person   |                   | Designation  |  |   |
| Contact Number   |                   | Email<br>Address                                     |  |   |
| PART B: PRE-REQUISITES   |                   |  |  |   |
| 1. Please indicate your relevant <b>practical work experience</b> :  |                   |  |  |   |
| Employer Name  | Position Held     | Year of Joining                                      | Year of Leaving                                  |   |
|  |                   |  |  |   |
|  |                   |  |  |   |
|  |                   |  |  |   |
| 2. Please indicate your <b>educational qualifications</b> :  |                   |  |  |   |
| Qualification Title  | Name of Institute | Year Completed                                       |  |   |
|  |                   |  |  |   |
|  |                   |  |  |   |
|  |                   |  |  |   |
| Please attach <b>relevant supporting documents</b> (Testimonial Letter – stating years of related electrical works experience, Licensed Electrician Card, Educational Certificates, Workfare Training Scheme Letter, etc.) |                   |  |  |   |

<sup>1</sup> Salary range:

a) Unemployed b) Below \$1,000 c) \$1,000 - \$1,499 d) \$1,500 - \$1,999 e) \$2,000 - \$2,499 f) \$2,500 - \$2,999 g) \$3,000 - \$3,499 h) \$3,500 and above

\*\* Mandatory field

**PART C: PAYMENT**

Payment is only required after the course has been scheduled for the applicant and applicant has confirmed his/her availability.

An invoice with the final amount (after funding, if any) will be sent to the applicant. Modes of payment will be advised at the point of issuing the invoice to the applicant.

**PART D: DECLARATION**

**By submitting this registration form:**

- I hereby declare that all information given is true and accurate;
- I acknowledge that SIPG shall not be responsible should EMA rejects my application for licensing; and
- I agree to the terms and conditions stated below.

**(i) For Self-Sponsored Application**

**(ii) For Company-Sponsored Application**

**Name:**

\_\_\_\_\_

**Name of Authorised**

**Personnel:**

\_\_\_\_\_

**Signature:**

\_\_\_\_\_

**Signature:**

\_\_\_\_\_

**Date:**

\_\_\_\_\_

**Date:**

\_\_\_\_\_

Company Stamp

**PART E: PERSONAL DATA PROTECTION ACT**

I/We acknowledge and agree that SIPG may collect, use and disclose to any third party any and all particulars relating to my/our personal information for the purposes of

- (i) providing the requested services in respect of the programme(s),
- (ii) billing and account management (including debt collection or recovery);
- (iii) conducting surveys or obtaining feedback;
- (iv) informing me/us of services and offers by SIPG, its related entities and business affiliates (unless I/we duly inform you otherwise); and
- (v) complying with all applicable laws and regulations, and business requirements.

**Name:**

\_\_\_\_\_

**Signature:**

\_\_\_\_\_

**Date:**

\_\_\_\_\_

**TERMS AND CONDITIONS:**

- 1) The company and individual applicant have read and understood the terms of the programme information and registration form.
- 2) The information collected on this form is used for programme registration, account servicing of programme-related activities and/or for application of programme-related funding to appropriate funding agencies.
- 3) This registration form must be submitted to SIPG at least 4 weeks before programme commencement.
- 4) Payment must be made to SIPG before programme commencement.
- 5) SIPG reserves the right to amend any details relating to the programme without any prior notice.
- 6) Request for withdrawal must be made in writing and are subject to approval by SIPG.
  - >5 working days before programme commencement : 100% refund;
  - Less than 3 working days before programme commencement : no refund.
- 7) Request for transfer/replacement must be made in writing at least 5 working days before programme commencement and is subject to approval by SIPG. SIPG reserves the right to impose an administration fee for such requests.
- 8) Trainee shall be bound by the terms and conditions of any applicable funding scheme as approved by SIPG.
- 9) In the event that the trainee fails to meet any of the requirements set under the funding scheme or has been granted funding for the same programme before, thereby resulting that his/her funding application is rejected, the trainee is liable to pay the balance of the full programme fee to SIPG.
- 10) Photographs of trainees may be taken at the event for SIPG's marketing materials and other publications.