STANDARD KEMAHIRAN PEKERJAAN KEBANGSAAN
(*NATIONAL OCCUPATIONAL SKILLS STANDARD*)

*STANDARD PRACTICE & STANDARD CONTENT*
*FOR*

# BUILDING OPERATION & MAINTENANCE SUPERVISION
# LEVEL 3
## BC-070-3:2014

**JABATAN PEMBANGUNAN KEMAHIRAN**
**KEMENTERIAN SUMBER MANUSIA**
**MALAYSIA**

**CONSTRUCTION INDUSTRY DEVELOPMENT BOARD (CIDB)**

# TABLE OF CONTENTS

**STANDARD PRACTICE**

**NATIONAL OCCUPATIONAL SKILLS STANDARD (NOSS) FOR;**

**BUILDING OPERATION & MAINTENANCE SUPERVISION**
**LEVEL 3**

## 1. INTRODUCTION

Building Operation & Maintenance Supervision encompasses all that broad spectrum of services required to assure the built environment will perform the functions for which a facility was designed and constructed. Operations and maintenance typically includes the day-to-day activities necessary for the building and its systems and equipment to perform their intended function. Providing these services in an effective and efficient manner will ensure the reliability, access and safety of the community buildings and facilities.

The maintenance activities include preventive and predictive (planned) maintenance and corrective (repair) maintenance. Preventive Maintenance (PM) consists of a series of time-based maintenance requirements that provide a basis for planning, scheduling, and executing scheduled (planned versus corrective) maintenance. PM includes adjusting, lubricating, cleaning, and replacing components. Time intensive PM, such as bearing/seal replacement, would typically be scheduled for regular (plant or "line") shutdown periods. Corrective maintenance is a repair necessary to return the equipment to properly functioning condition or service and may be both planned or un-planned. Some equipment, at the end of its service life, may warrant overhaul.

This NOSS document outlines the structured career path and competencies of Building Operation & Maintenance Technician. The NOSS document provides structured sets of activities that enable a person who aspires to achieve competency in this particular occupation. This ultimately enables him or her to embark on a career in the Building Operation Maintenance – Building Industry. Department of skills Development (DSD) and CIDB have taken the responsibility in the development of the NOSS with the collaboration of the industrial experts and practitioners within this industry.

The Standard Practice (SP) and Standard Content (SC) are part of the NOSS document, which is developed together with the Training Manual and Internship Manual to complete the whole NOSS. This session concluded that the NOSS is at level 2 which are currently of priority to the Building Operation Maintenance. The job area requires a significant range of varied work activities, performed in a variety of contexts, most of which are complex and necessary. In order to produce a competent Building Operation & Maintenance Technician in this industry, the need for knowledge and skills training are essential.

The NOSS document comprises of Job Profiles (JP) which consists of Competency Unit (CU) titles, Competency Profile (CP) and Curriculum of Competency Unit (CoCu). The competency profile consists of competency unit titles, descriptor, work activities and performance criteria. The curriculum of competency unit (CoCu) which comprises work activities, related knowledge, applied skills, attitude/safety/environmental, training hours, delivery mode, assessment criteria, employability skills (core abilities & social skills), tools, equipment and materials (TEM) and references. The information in the CoCu can be used by training

centres to conduct training in order for Building Operation & Maintenance Technician in this profession to meet the industry requirements. This NOSS can also be used by the industry to determine the job scope, responsibilities, remuneration, salary, job modification and career enhancement.

Pre-requisites

Based on the workshop findings, it is decided that the minimum requirements for those interested to enrol in this course areas below:

i) SKM 2 in building operation and maintenance services and;
ii) Be able to calculate, read and write in Bahasa Malaysia and / English and;
iii) Full interest in Building Operation & Maintenance Supervision and;
iv) Medically and physically fit to meet the high demands of this particular job scope

## 2. OCCUPATIONAL STRUCTURE

### Existing Occupational Structure (OS)

| SECTOR | BUILDING & CONSTRUCTION |
|---|---|
| SUB SECTOR | BUILDING MAINTENANCE |
| JOB AREA | BUILDING OPERATION AND MAINTENANCE |
| LEVEL 5 | **Building Operation & Maintenance Manager** |
| LEVEL 4 | **Building Operation & Maintenance Executive** |
| LEVEL 3 | **Building Operation & Maintenance Supervisor** |
| LEVEL 2 | **Building Operation & Maintenance Technician** |
| LEVEL 1 | **Building Operation & Maintenance Assistant (Handyman)** |

**Figure 1.1: Existing Occupational Structure Framework Matrix for Building Operation and Maintenance, Sub sector of Building Maintenance in Malaysia**

**Proposed Occupational Area Structure (OAS)**

| SECTOR | BUILDING & CONSTRUCTION |
|---|---|
| SUB SECTOR | BUILDING MAINTENANCE |
| JOB AREA | BUILDING OPERATION AND MAINTENANCE |
| LEVEL 5 | **Building Operation & Maintenance Management** |
| LEVEL 4 | **Building Operation & Maintenance Administrative** |
| LEVEL 3 | **Building Operation & Maintenance Supervision** |
| LEVEL 2 | **Building Operation & Maintenance Supervision** |
| LEVEL 1 | **No Level** |

**Figure 1.1: Proposed Occupational Area Structure Framework Matrix for Building Operation and Maintenance, Sub sector of Building Maintenance in Malaysia**

## 3. DESCRIPTION OF COMPETENCY LEVEL

The NOSS is developed for various occupational areas. Candidates for certification must be assessed and trained at certain levels to substantiate competencies. Below is a guideline of each NOSS Level as defined by the Department of Skills Development, Ministry of Human Resources, Malaysia.

| | |
|---|---|
| Malaysia Skills Certificate Level 1: (Operation and Production Level) | Competent in performing a range of varied work activities, most of which are routine and predictable. |
| Malaysia Skills Certificate Level 2: (Operation and Production Level) | Competent in performing a significant range of varied work activities, performed in a variety of contexts. Some of the activities are non-routine and required individual responsibility and autonomy. |
| Malaysia Skills Certificate Level 3: (Supervisory Level) | Competent in performing a broad range of varied work activities, performed in a variety of contexts, most of which are complex and non-routine. There is considerable responsibility and autonomy and management or guidance of others is often required. |
| Malaysia Skills Diploma Level 4: (Executive Level) | Competent in performing a broad range of complex technical or professional work activities performed in a wide variety of contexts and with a substantial degree of personal responsibility and autonomy. Responsibility for the work of others and allocation of resources is often present. |
| Malaysia Skills Advanced Diploma Level 5: (Managerial Level) | Competent in applying a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts. Very substantial personal autonomy and often significant responsibility for the work of others and for the allocation of substantial resources features strongly, as do personal accountabilities for analysis, diagnosis, planning, execution and evaluation. |

## 4. MALAYSIAN SKILL CERTIFICATION

Candidates after being assessed verified and fulfilled Malaysian Skill Certification requirements shall be awarded with Sijil Kemahiran Malaysia (SKM) for Level 3.

## 5. JOB COMPETENCIES

Building Operation & Maintenance Supervision (Level 3) is competent in performing:

- Building electrical system troubleshooting
- Building air conditioning mechanical ventilation system troubleshooting
- Plumbing system troubleshooting
- Fire protection system troubleshooting
- Building communication system troubleshooting
- Supervisory and administrative function

## 6. WORKING CONDITIONS

They may be required to work extra hours to fulfil internal and external requirement. In Building Operation & Maintenance Supervision, they may be needed to work in shift to accommodate work requirements. They need to use / wear appropriate attire during the commencement of their jobs. They may work in a modular group in a conducive and ventilated environment. The unavoidable, externally imposed conditions under which the work must be performed and which create hardship for the incumbent including the frequency and duration of occurrence of physical demands, environmental conditions, demands on one's senses and metal demands

## 7. EMPLOYMENT PROSPECTS

There are excellent prospect in private sectors due to shortage of hands-on expert in Building Operation & Maintenance Supervision. In public sector there are lacking of professional and well experience of building maintenance technician. This area has a very good job market potential abroad for skilled personnel due to shortage of such highly skilled personnel in this region. Excellent prospects in building maintenance technician related industries such as air-conditioning services, electrical services, plumbing services, furniture industry and training industry

## 8. TRAINING, INDUSTRIAL/PROFESSIONAL RECOGNITION, OTHER QUALIFICATIONS AND ADVANCEMENT

Most competent Building Operation & Maintenance Supervision gain their competency through working experience. Certification may increase their chances of career advancement. Thus with additional formal training/education and certification, this competent Building Operation & Maintenance Supervision can advance become a certified trainer for Building Operation & Maintenance Supervision or can be promoted to an executive level.

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## 9. SOURCES OF ADDITIONAL INFORMATION

- Malaysian Association of Facility Management (MAFM)
  257A, Jalan Bandar 12, Taman Melawati,
  53100 Kuala Lumpur, Malaysia
  Tel : 03-41072250 Fax : 03-41072251
  Email : admin@mafm.org.my

- Lembaga Pembangunan Industri Pembinaan Malaysia
  Tingkat 10, No 45, Menara Dato' Onn,
  Pusat Dagangan Dunia Putra,
  Jalan Tun Ismail
  50480 Kuala Lumpur
  Tel: 03-40477000
  Fax 03 4047 7070
  email: cidb@cidb.gov.my

- Jabatan Bomba dan Penyelamat Malaysia
  Lebuh Wawasan, Presint 7, 62250 Putrajaya PUTRAJAYA
  Telephone: 03-8888 0036/37/38/40
  Fax: 03-8888 0025
  Website: http://www.bomba.gov.my

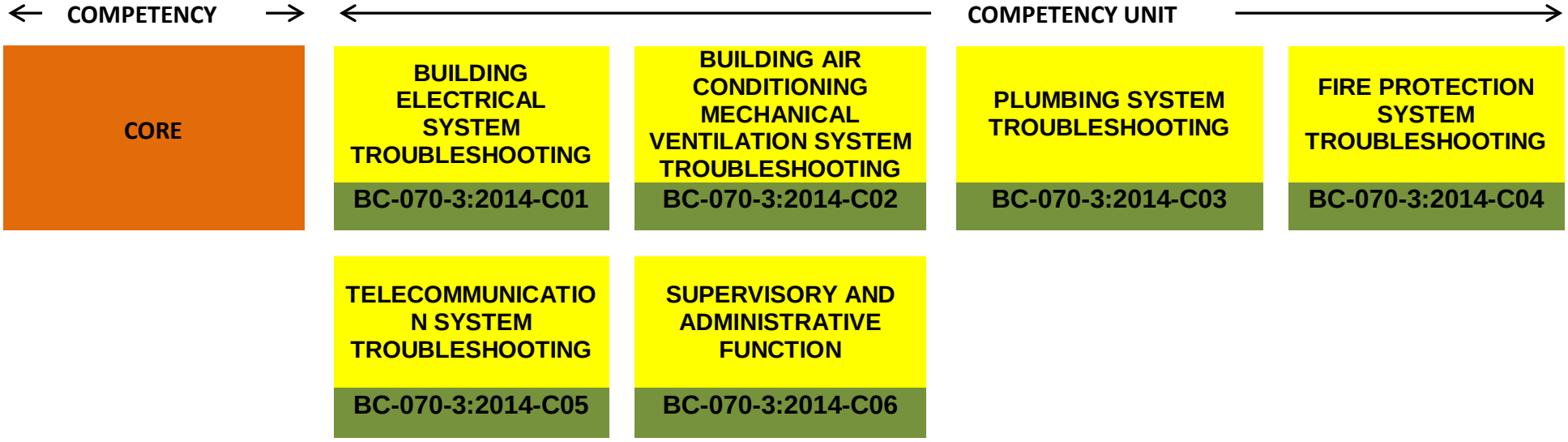
## 10. NOSS DEVELOPMENT COMMITTEE MEMBERS

### BUILDING OPERATION & MAINTENANCE SUPERVISION - LEVEL 3

| | | |
|---|---|---|
| PANEL | | |
| 1. | Arwin Bin Yac'cob | Lecturer<br>ABM Wilayah Selatan Johor |
| 2. | Ng Wen Bin | Senior Lecturer<br>UniKL MFI |
| 3. | Peter Tan Chin Wah | Managing Director<br>Genesis Prominent Sdn Bhd |
| 4. | Ir.Mazlan Mahmud | Senior Manager<br>Tech Art Sdn Bhd |
| 5. | Suhaimi Bin Satari | Project Supervisor<br>AMS Engineering Sdn Bhd |
| 6. | Rozaimi Bin An | Head Of Business Development<br>UDA Dayaurus Sdn Bhd |
| 7. | Zulramly Bin Baharudin | Manager<br>Houz Deport Sdn Bhd |
| 8. | Mohamed Ali Bin Karim | Manager<br>Farid Ahmad Consulting Engineering Sdn Bhd |
| FACILITATOR | | |
| 9. | Basharudin Bin Mohamed | |
| CO-FACILITATOR | | |
| 10. | Khairul Nizan Bin Yusoff | |

## COMPETENCY PROFILE CHART (CPC)

| | | | |
|---|---|---|---|
| SECTOR | MECHANICAL & ELECTRICAL SERVICE AND MAINTENANCE | | |
| SUB SECTOR | BUILDING MAINTENANCE | | |
| JOB AREA | BUILDING OPERATION & MAINTENANCE | | |
| NOSS TITLE | BUILDING OPERATION & MAINTENANCE SUPERVISION | | |
| JOB LEVEL | THREE (3) | JOB AREA CODE | BC-070-3:2014 |



**COMPETENCY PROFILE (CP)**

| | |
|---|---|
| **Sub Sector** | BUILDING MAINTENANCE |
| **Job Area** | BUILDING OPERATION & MAINTENANCE |
| **NOOS Title** | BUILDING OPERATION & MAINTENANCE SUPERVISION |
| **Level** | THREE (3) |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| 1. Building Electrical system troubleshooting | **BC-070-3:2014 - C01** | The building electrical system troubleshooting is to identify cause of system fault.<br><br>The person who is competent in this building electrical system troubleshooting shall be able to Assess customer complaint/ service report, arrange building electrical system troubleshooting schedule, carry out building electrical system troubleshooting activities, carry out repair/replacement work and building electrical system maintenance report to meet criteria as a building supervisor.<br><br>The outcome of this competency is to be able to schedule, plan, execute and resolve the system fault in accordance to the requirement of building electrical maintenance services and the relevant rules and regulation. | 1. Interpret customer complaint/ service report<br><br>2. Carry out building electrical system troubleshooting preparation | 1.1 Customer complaint/ service report thoroughly studied.<br>1.2 Type of electrical system fault determined according to customer complaint/ service report<br>1.3 Maintenance area/location identified according to customer complaint/ service report<br>1.4 Maintenance work level of urgency and priority determined according to customer requirement<br><br>2.1 Electrical system troubleshooting manpower/team arranged according to maintenance requirement and company SOP<br>2.2 Electrical system troubleshooting tools prepared according to maintenance requirement<br>2.3 Electrical system troubleshooting work flow |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | | | determined according to maintenance standard practice<br>2.4 Electrical system troubleshooting duration and cost estimated according to maintenance requirement. |
| | | | 3. Carry out building electrical system troubleshooting activities | 3.1 Electrical system drawing Assessed and finalised<br>3.2 Building electrical system troubleshooting method selected according to maintenance standard practise<br>3.3 Building electrical system troubleshooting procedure followed according to maintenance standard practise<br>3.4 Electrical system troubleshooting site preparation carried out according to maintenance procedure<br>3.5 Building electrical system troubleshooting technique applied<br>3.6 Building electrical system faulty checked and confirmed<br>3.7 Building electrical system troubleshooting safety regulation adhered according to authority body rules and guidelines |
| | | | 4. Carry out building electrical system repair/replacement work | 4.1 Building electrical system repair/replacement work procedure followed according |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | | | to maintenance standard practice<br>4.2 Faulty of electrical component repaired/replaced according to maintenance requirement<br>4.3 Building electrical system repair/replacement work technique applied according to maintenance standard practice<br>4.4 Electrical component/system functionality tested and confirmed.<br>4.5 Building electrical system repair/replacement work safety regulation adhered according to authority body rules and guideline |
| | | | 5. Prepare building electrical system maintenance report | 5.1 Electrical component/system maintenance report format determined according to company requirement<br>5.2 Electrical component/system report drafted such as cause of fault, replacement component, man hours and cost according to standard format<br>5.3 Electrical component/system maintenance report submitted to superior. |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | | | |
| 2. Building air conditioning mechanical ventilation system troubleshooting | **BC-070-3:2014 - C02** | The building air conditioning mechanical ventilation system troubleshooting is to identify cause of system fault.<br><br>The person who is competent in this building air conditioning mechanical ventilation system troubleshooting shall be able to Assess customer complaint/ service report , arrange building air conditioning mechanical ventilation system troubleshooting schedule, carry out building conditioning mechanical ventilation system troubleshooting, carry out repair/replacement work and prepare building air conditioning mechanical ventilation system maintenance report to meet criteria as a building supervisor.<br><br>The outcome of this competency is to be able to schedule, plan, execute and resolve the system fault in accordance to the requirement of building air conditioning and mechanical ventilation maintenance services and the relevant rules and regulation. | 1. Assess customer complaint/ service report<br><br>2. Carry out building air conditioning and mechanical ventilation system troubleshooting preparation | 2.1 Customer complaint/ service report thoroughly studied.<br>2.2 Building air conditioning and mechanical ventilation component/ equipment operation and specification listed and explained<br>2.3 Type of air conditioning and mechanical ventilation system fault determined according to customer complaint/ service report<br>2.4 Maintenance area/location identified according to customer complaint/ service report<br>2.5 Maintenance work level of urgency and priority determined according to customer requirement<br><br>2.6 Air conditioning and mechanical ventilation system troubleshooting manpower/team arranged according to maintenance requirement and company SOP<br>2.7 Air conditioning and mechanical ventilation system troubleshooting tools prepared according to maintenance requirement<br>2.8 Air conditioning and mechanical ventilation system |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | | | troubleshooting work flow determined according to maintenance standard practice<br>2.9 Air conditioning and mechanical ventilation system troubleshooting duration and cost estimated according to maintenance requirement. |
| | | | 3. Carry out building air conditioning and mechanical ventilation system troubleshooting activities | 3.1 Air conditioning system drawing Assessed and finalised<br>3.2 Air conditioning and mechanical ventilation system troubleshooting method selected according to maintenance standard practise<br>3.3 Air conditioning and mechanical ventilation system troubleshooting procedure followed according to maintenance standard practise<br>3.4 Air conditioning and mechanical ventilation system troubleshooting site preparation carried out according to maintenance procedure<br>3.5 Air conditioning and mechanical ventilation system troubleshooting technique applied<br>3.6 Air conditioning and mechanical ventilation system faulty checked and confirmed |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | | 4. Carry out air conditioning and mechanical ventilation system repair/replacement work | 4.1 Air conditioning and mechanical ventilation system repair/replacement work procedure followed according to maintenance standard practice<br>4.6 Faulty of air conditioning and mechanical ventilation system/component repaired/replaced according to maintenance requirement<br>4.7 Air conditioning and mechanical ventilation system repair/replacement work technique applied according to maintenance standard practice<br>4.8 Air conditioning and mechanical ventilation system functionality tested and confirmed.<br>4.9 Air conditioning and mechanical ventilation system repair/replacement work safety regulation adhered according to authority body rules and guideline |
| | | | 5. Prepare building air conditioning and mechanical ventilation system maintenance report | 5.1 Air conditioning and mechanical ventilation component/system maintenance report format determined according to company requirement<br>5.2 Air conditioning and |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | | | mechanical ventilation component/system maintenance report drafted according to standard format<br>5.3 Air conditioning and mechanical ventilation component/system maintenance report submitted to superior. |
| 3. Plumbing system troubleshooting | **BC-070-3:2014 - C03** | The Plumbing system troubleshooting is to identify cause of system fault.<br><br>The person who is competent in this plumbing system troubleshooting shall be able to Assess customer complaint/ service report, arrange plumbing system troubleshooting schedule, carry out plumbing system, carry out repair/ replacement work and prepare plumbing system maintenance report to meet criteria as a building supervisor.<br><br>The outcome of this competency is to be able to schedule, plan, execute and resolve the system fault in accordance to the requirement of plumbing system maintenance services and the relevant rules and regulation. | 1. Interpret customer complaint/ service report<br><br>2. Carry out plumbing system troubleshooting preparation | 1.1 Customer complaint/ service report thoroughly studied.<br>1.2 Type of plumbing system fault determined according to customer complaint/ service report<br>1.3 Maintenance area/location identified according to customer complaint/ service report<br>1.4 Maintenance work level of urgency and priority determined according to customer requirement<br><br>2.1 Plumbing system troubleshooting manpower/team arranged according to maintenance requirement and company SOP<br>2.2 Plumbing system troubleshooting tools prepared according to maintenance requirement |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | | | 2.3 Plumbing system troubleshooting work flow determined according to maintenance standard practice<br>2.4 Plumbing system troubleshooting duration and cost estimated according to maintenance requirement. |
| | | | 3. Carry out plumbing system troubleshooting activities | 3.1 Plumbing system drawing Assessed and finalised<br>3.2 Plumbing system troubleshooting method selected according to maintenance standard practise<br>3.3 Plumbing system troubleshooting procedure followed according to maintenance standard practise<br>3.4 Plumbing system troubleshooting site preparation carried out according to maintenance procedure<br>3.5 Plumbing system troubleshooting technique applied<br>3.6 Plumbing system faulty checked and confirmed<br>3.7 Plumbing system troubleshooting safety regulation adhered according to authority body rules and guidelines |
| | | | 4. Carry out plumbing system | 4.1 Plumbing system |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | | repair/replacement work | repair/replacement work procedure followed according to maintenance standard practice<br>4.2 Faulty of plumbing system/ component repaired/replaced according to maintenance requirement<br>4.3 Plumbing system repair/replacement work technique applied according to maintenance standard practice<br>4.4 Plumbing component/system functionality tested and confirmed.<br>4.5 Plumbing system repairing/replacement work safety regulation adhered according to authority body rules and guideline |
| | | | 5. Prepare plumbing system maintenance report | 5.4 Plumbing system maintenance report format determined according to company requirement<br>5.5 Plumbing system report drafted such as cause of fault, replacement component, man hours and cost according to standard format<br>5.6 Plumbing system maintenance report submitted to superior. |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | | | |
| 4. Fire protection system troubleshooting | **BC-070-3:2014-C04** | The fire protection system troubleshooting is to identify cause of system fault.<br><br>The person who is competent in this fire protection system troubleshooting shall be able to Assess service report, arrange fire protection system troubleshooting schedule, carry out fire protection system troubleshooting activities, carry out fire protection system troubleshooting repair/replacement work and prepare fire protection system maintenance report.<br><br>The outcome of this competency is to be able to schedule, plan, execute and resolve the system fault in accordance to the requirement of fire protection system maintenance services and the relevant rules and regulation. | 1. Assess fire protection system service report<br><br>2. Carry out fire protection system troubleshooting preparation | 1.1 Fire protection system service report thoroughly studied.<br>1.2 Type of fire protection system fault determined according to customer complaint/ service report<br>1.3 Maintenance area/location identified according to customer complaint/ service report<br>1.4 Maintenance work level of urgency and priority determined according to customer requirement<br><br>2.1 Fire protection system requirement listed and explained<br>2.2 Fire protection system troubleshooting manpower/team arranged according to maintenance requirement and company SOP<br>2.3 Fire protection system troubleshooting tools prepared according to maintenance requirement<br>2.4 Fire protection system troubleshooting work flow determined according to maintenance standard practice<br>2.5 Fire protection system troubleshooting duration and cost estimated according to |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | | | maintenance requirement.<br>2.6 Fire protection system maintenance schedule prepared according to customer requirement |
| | | | 3. Carry out fire protection system troubleshooting activities | 3.1 Fire protection system drawing Assessed and finalised<br>3.2 Fire protection system troubleshooting method selected according to maintenance standard practise<br>3.3 Fire protection system troubleshooting procedure followed according to maintenance standard practise<br>3.4 Fire protection system troubleshooting site preparation carried out according to maintenance procedure<br>3.5 Fire protection system troubleshooting technique applied<br>3.6 Fire protection system faulty checked and confirmed<br>3.7 Fire protection system troubleshooting safety regulation adhered according to authority body rules and guidelines |
| | | | 4. Carry out fire protection system repair/replacement work | 4.1 Fire protection system repair/replacement work procedure followed according to maintenance standard |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | | | practice<br>4.2 Faulty of fire protection system/ component repaired/replaced according to maintenance requirement<br>4.3 Fire protection system repair/replacement work technique applied according to maintenance standard practice<br>4.4 Fire protection component/system functionality tested and confirmed.<br>4.5 Fire protection system repairing/replacement work safety regulation adhered according to authority body rules and guideline |
| | | | 5. Prepare fire protection system maintenance report | 5.1 Fire protection system maintenance report format determined according to company requirement<br>5.2 Fire protection system report drafted such as cause of fault, replacement component, man hours and cost according to standard format<br>5.3 Fire protection system maintenance report submitted to superior. |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | | | |
| 5. Telecommunication system troubleshooting | **BC-070-3:2014 C05** | The telecommunication system troubleshooting is to identify cause of system fault.<br><br>The person who is competent in this Telecommunication system troubleshooting shall be able to Assess customer complaint/ service report, arrange telecommunication system troubleshooting schedule, carry out telecommunication system troubleshooting activities, carry out telecommunication system repair/replacement work and prepare telecommunication system maintenance report.<br><br>The outcome of this competency is to be able to schedule, plan, execute and resolve the system fault in accordance to the requirement of telecommunication system maintenance services and the relevant rules and regulation. | 1. Assess telecommunication system customer complaint/ service report<br><br>2. Carry out telecommunication system troubleshooting preparation | 1.1 Telecommunication system customer complaint/ service report thoroughly studied.<br>1.2 Type of telecommunication system fault determined according to customer complaint/ service report<br>1.3 Maintenance area/location identified according to customer complaint/ service report<br>1.4 Maintenance work level of urgency and priority determined according to customer requirement<br><br>2.1 Telecommunication system requirement listed and explained<br>2.2 Telecommunication system troubleshooting manpower/team arranged according to maintenance requirement and company SOP<br>2.3 Telecommunication system troubleshooting tools prepared according to maintenance requirement<br>2.4 Telecommunication system troubleshooting work flow determined according to maintenance standard practice<br>2.5 Telecommunication system troubleshooting duration and |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | | | cost estimated according to maintenance requirement.<br>2.6 Telecommunication system maintenance schedule prepared according to customer requirement |
| | | | 3. Carry out telecommunication system troubleshooting activities | 3.1 Telecommunication system drawing Assessed and finalised<br>3.2 Telecommunication system troubleshooting method selected according to maintenance standard practise<br>3.3 Telecommunication system troubleshooting procedure followed according to maintenance standard practise<br>3.4 Telecommunication system troubleshooting site preparation carried out according to maintenance procedure<br>3.5 Telecommunication system troubleshooting technique applied<br>3.6 Telecommunication system faulty checked and confirmed<br>3.7 Telecommunication system troubleshooting safety regulation adhered according to authority body rules and guidelines |
| | | | 4. Carry out telecommunication system repair/replacement | 4.1 Telecommunication system repair/replacement work |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | | work | procedure followed according to maintenance standard practice<br>4.2 Faulty of telecommunication system/ component repaired/replaced according to maintenance requirement<br>4.3 Telecommunication system repair/replacement work technique applied according to maintenance standard practice<br>4.4 Telecommunication component/system functionality tested and confirmed.<br>4.5 Telecommunication system repairing/replacement work safety regulation adhered according to authority body rules and guideline |
| | | | 5. Prepare telecommunication system maintenance report | 5.1 Telecommunication system maintenance report format determined according to company requirement<br>5.2 Telecommunication system report drafted such as cause of fault, replacement component, man hours and cost according to standard format<br>5.3 Telecommunication system maintenance report submitted to superior. |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | | | |
| 6. Supervisory and administrative function | **BC-070-3:2014-C06** | The supervisory and administrative function is to supervise the overall building operation and maintenance services.<br><br>The person who is competent in this supervisory and administrative function shall be able to identify supervisory and administrative function requirement, provide input to update service information, carry out operation administrative function activities and produce operation administration report.<br><br>The outcome of this competency is to be able to verify and endorse administrative function works using forms such as works order, job sheet, check list etc in accordance with company's standard operation procedures.<br><br>The outcome of this competency is to verify and endorse administrative function works using forms such as works order, job sheet, check list etc in accordance with company's standard operation procedures. | 1. Identify operations administration function requirements<br><br>2 Provide input to update service information<br><br>3 Carry out operation administrative function activities | 1.1 Type of supervisory function determined such as staff attendance, work briefing, contractor activities monitoring, maintain spare part and consumable stock, monitor subordinate activities, coordinate authority inspection<br>1.2 Type of administrative function determined such as equipment and asset tagging, prepare maintenance schedule, prepare daily maintenance check list, prepare work order, prepare monthly maintenance report, update maintenance work order status, verify daily record, verify maintenance report, appraisal subordinate, conduct training<br><br>2.1 Type of record such as inventory and resources determined<br>2.2 Data keeping method such as manual or computerise determined<br>2.3 Data collection technique determine<br>2.4 Data utilised according to SOP<br><br>3.1 Subordinates attendance recorded<br>3.2 Subordinates over time (OT) |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | | | record and claims handled<br>3.3 Subordinates leave such as medical leave, annual leave and emergency leave handled according to company policy<br>3.4 Subordinates welfare handled<br>3.5 Subordinates uniform and PPE coordinated<br>3.6 Consumable administration activities<br>3.7 Tools and equipment administration activities handled<br>3.8 Contractors administration activities determined |
| | | | 4 Produce operation administration report | 4.1 Format of report determined according to specification and company requirement according to SOP<br>4.2 Administrative function activities reported to superior according to specification and company requirement according to SOP |

## CURRICULUM of COMPETENCY UNIT (CoCU)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Sub Sector** | BUILDING MAINTENANCE | | | | | | |
| **Job Area** | BUILDING OPERATION & MAINTENANCE | | | | | | |
| **NOSS Title** | BUILDING OPERATION & MAINTENANCE SUPERVISION | | | | | | |
| **Competency Unit Title** | BUILDING ELECTRICAL SYSTEM TROUBLESHOOTING | | | | | | |
| **Learning Outcome** | The person who is competent in this competency unit shall be able to schedule, plan, execute and resolve the system fault in accordance to the requirement of building electrical maintenance services and the relevant rules and regulation. Upon completion of this competency unit, trainees will be able to:-<br><br>• Interpret customer complaint/ service report<br>• Carry out building electrical system troubleshooting preparation<br>• Carry out building electrical system troubleshooting activities<br>• Carry ou building electricalt repair/replacement work<br>• Prepare building electrical system maintenance report | | | | | | |
| **Competency Unit ID** | **BC-070-3:2014-C01** | **Level** | 3 | **Training Duration** | 240 Hours | **Credit Hours** | |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| 1. Interpret customer complaint/ service report | i. Customer complaint/ service report format.<br>ii. Electrical component specification<br>• Cabling<br>• Electrical device<br>• Control panel<br>• Protection relay<br>iii. Type of electrical system faulty such as<br>• Tripping<br>• Shorting<br>• Leakage<br>iv. Maintenance location | | | 4 hours | Lecture | i. Customer complaint/ service report information detail listed and explained<br>ii. Type of electrical system faultydetermined and guessed according to customer complaint/ service report information detail |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | background such as<br>• Public area<br>• Tenanted area<br>v. Maintenance work level of urgency and priority such as<br>• Immediate<br>• To be scheduled | | | | | iii. Maintenance work level of urgency and priority determined. |
| | | i. Study customer complaint/ service report<br>ii. Determine type of electrical system faulty<br>iii. Determine maintenance area/location<br>iv. Determine maintenance work level of urgency and priority | *Attitude:*<br>i. Knowledgeable in Assessing customer complaint/ service report | 8 hours | Practical | |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| 2. Carry out building electrical system troubleshooting preparation | i. Electrical system maintenance manpower scope of works<br>• Technician<br>• Supervisor<br>ii. Electrical system troubleshooting tools and parts arrangement such as<br>• Hand tools<br>• Power tools<br>• Testing tools<br>• Measuring tools<br>• Parts<br>iii. Electrical system troubleshooting work flow<br>iv. Electrical system troubleshooting cost estimation. | | | 4 hours | Lecture | i. Electrical system troubleshooting manpower/teamset up and arranged according to maintenance requirement<br>ii. Electrical system troubleshooting tools condition checked<br>iii. Electrical system troubleshooting PPE prepared according to maintenance requirement<br>iv. Electrical system troubleshooting work flow drafted according to maintenance standard practice<br>v. Electrical system troubleshooting working duration and cost estimated according to maintenance requirement. |
| | | i. Arrange electrical system troubleshooting manpower/team<br>ii. Prepare electrical system troubleshooting tools<br>iii. Arrange electrical system troubleshooting PPE<br>iv. Determine electrical system troubleshooting work flow<br>v. Estimate electrical system troubleshooting | | 8 hours | Practical | |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | | working duration<br>vi. Estimate electrical system troubleshooting cost | *Attitude:*<br>i. Responsible in arranging building electrical system troubleshooting manpower<br><br>*Safety:*<br>i. Adhere to safety and precaution procedures | | | |
| 3. Carry out building electrical system troubleshooting activities | i. Building electrical system troubleshooting method<br>• Physical observation<br>• Equipment<br>ii. Building electrical system troubleshooting procedure<br>iii. Building electrical system troubleshooting technique<br>iv. Type of building electrical system faulty such as<br>• Component<br>• Device<br>• Equipment<br>v. Building electrical system troubleshooting | | | 48 hours | Lecture | i. Building electrical system troubleshooting procedure followed according to maintenance standard practice<br>ii. Electrical system troubleshooting site preparation<br>iii. Building electrical system troubleshooting technique applied according to electrical maintenance practices<br>iv. Building electrical |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | safety and regulation<br>vi. Authority body rules and regulation<br>• Suruhanjaya Tenaga (ST)<br>• CIDB (Green card)<br>• DOSH | | | | | system faulty traced and confirmed according to maintenance standard practice<br>v. Building electrical system troubleshooting safety and regulation adhered according to authority body rules guidelines. |
| | | i. Assess electrical system drawing<br>ii. Confirm building electrical system troubleshooting method<br>iii. Follow building electrical system troubleshooting procedure<br>iv. Carry out electrical system troubleshooting site preparation<br>v. Apply building electrical system troubleshooting technique<br>vi. Trace building electrical system faulty<br>vii. Confirm building electrical system faulty<br>viii. Adhere to building electrical system troubleshooting safety regulation<br>ix. Comply to authority body rules and regulation | | 72 hours | Practical | |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | | | *Attitude:*<br>i. Knowledgeable and proactive in executing building electrical system troubleshooting<br>*Safety:*<br>i. Adhere to safety and precaution on electrical troubleshooting activities<br>ii. Adhere to Suruhanjaya Tenaga (ST), CIDB (Green card), DOSH rules and regulation | | | |
| 4. Carry out building electrical system repair/replacement work | i. Building electrical system repair/replacement work method such as<br>• In-house<br>• Out source<br>ii. Building electrical system repair/replacement work procedure<br>iii. Building electrical system repair/replacement work technique | | | 34 hours | Lecture | i. Building electrical system repair/replacement work procedure followed according to maintenance standard practice<br>ii. Faulty electrical component repaired/replaced according to maintenance standard practice<br>iii. Building electrical |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | iv. Electrical component/system functionality testing procedure<br>i. Building electrical system repair/replacement work safety regulation<br>ii. Housekeeping work procedure | | | | | system repair/replacement work technique applied<br>iv. Electrical component/system functionality tested and confirmed in good condition<br>v. Building electrical system repair/replacement work safety regulation adhered according to authority body rules guidelines |
| | | i. Confirm building electrical system/component faulty<br>ii. Follow building electrical system repair/replacement work procedure<br>iii. Turn OFF power supply<br>iv. Repair/replace faulty electrical component<br>v. Apply building electrical system repair/replacement work technique<br>vi. Comply to building electrical system repair/replacement work time duration<br>vii. Turn ON power supply<br>viii. Test electrical component/system functionality | | 50 hours | Practical | |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | | ix. Adhere to building electrical system repair/replacement work safety and regulation<br>x. Comply to authority body rules and regulation<br>xi. Carry out housekeeping work | *Attitude:*<br>i. Meticulous and neat in executing building electrical system repair/replacement work<br>*Safety:*<br>i. Adhere to safety and precaution on electrical troubleshooting activities<br>ii. Adhere to Suruhanjaya Tenaga (ST), CIDB (Green card), DOSH rules and regulation | | | |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| 5. Prepare building electrical system maintenance report | i. Building electrical system maintenance report format<br>• Cause of fault<br>• Repair/replace<br>o Component<br>o Device<br>o Equipment<br>• Man hours<br>• Cost<br>• Personnel involved<br>ii. Building electrical system maintenance submission procedure | | | 4 hours | Lecture | i. Building electrical system maintenance report printed and compiled according to maintenance standard format |
| | | i. Determine building electrical system maintenance report format<br>ii. Draft building electrical system maintenance report<br>iii. Follow building electrical system maintenance submission procedure | *Attitude:*<br>i. Meticulous in preparing building electrical system maintenance report<br>ii. Adhere to report submission dateline | 8 hours | Practical | |

**Employability Skills**

| Core Abilities | Social Skills |
|---|---|
| 01.01 Identify and gather information.<br>01.02 Document information procedures or processes.<br>01.03 Utilize basic IT applications.<br>02.01 Interpret and follow manuals, instructions and SOP's.<br>02.02 Follow telephone/telecommunication procedures.<br>02.03 Communicate clearly.<br>02.04 Prepare brief reports and checklist using standard forms.<br>02.05 Read/Interpret flowcharts and pictorial information.<br>03.01 Apply cultural requirement to the workplace.<br>03.02 Demonstrate integrity and apply practical practices.<br>03.03 Accept responsibility for own work and work area.<br>03.04 Seek and act constructively upon feedback about work performance.<br>03.05 Demonstrate safety skills.<br>03.06 Respond appropriately to people and situations.<br>03.07 Resolve interpersonal conflicts.<br>06.01 Understand systems.<br>06.02 Comply with and follow chain of command.<br>06.03 Identify and highlight problems.<br>06.04 Adapt competencies to new situations/systems.<br>01.04 Analyse information.<br>01.05 Utilize the Internet to locate and gather information.<br>01.06 Utilize word processor to process information.<br>02.06 Write memos and letters.<br>02.07 Utilize Local Area Network (LAN)/Intranet to exchange information.<br>02.08 Prepare pictorial and graphic information.<br>03.08 Develop and maintain a cooperation within work group.<br>04.01 Organize own work activities.<br>04.02 Set and revise own objectives and goals.<br>04.03 Organize and maintain own workplace.<br>04.04 Apply problem solving strategies.<br>04.05 Demonstrate initiative and flexibility.<br>06.05 Analyse technical systems.<br>06.06 Monitor and correct performance of systems. | 1. Communication skills<br>2. Conceptual skills<br>3. Interpersonal skills<br>4. Learning skills<br>5. Leadership skills<br>6. Multitasking and prioritising<br>7. Self-discipline<br>8. Teamwork |

| | |
|---|---|
| 01.07 Utilize database applications to locate a process information.<br>01.08 Utilize spreadsheets applications to locate and process information.<br>01.11 Apply thinking skills and creativity.<br>02.09 Prepare flowcharts.<br>02.10 Prepare reports and instructions.<br>02.11 Convey information and ideas to people.<br>03.09 Manage and improve performance of individuals.<br>03.11 Monitor and evaluate performance of human resources.<br>03.12 Provide coaching/on-the-job training.<br>03.13 Develop and maintain team harmony and resolve conflicts.<br>03.14 Facilitate and coordinate teams and ideas.<br>03.15 Liase to achieve identified outcomes.<br>03.16 Identify and assess client/customer needs.<br>03.17 Identify staff training needs and facilitate access to training.<br>04.06 Allocate work.<br>04.07 Negotiate acceptance and support for objectives and strategies.<br>05.01 Implement project/work plans.<br>05.02 Inspect and monitor work done and/or in progress.<br>06.07 Develop and maintain networks. | |

**Tools, Equipment and Materials (TEM)**

| **ITEMS** | **RATIO (TEM : Trainees)** |
|---|---|
| 1. Cabling<br>2. Electrical device<br>3. Control panel<br>4. Hand tools<br>5. Power tools<br>6. Testing tools<br>7. Measuring tools<br>8. Consumable material<br>9. PPE | as per required<br>1:5<br>1:5<br>1:1<br>1:5<br>1:5<br>1:5<br>as per required<br>1:1 |

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|---|---|
| **Sub Sector** | BUILDING MAINTENANCE |
| **Job Area** | BUILDING OPERATION & MAINTENANCE |
| **NOSS Title** | BUILDING OPERATION & MAINTENANCE SUPERVISION |
| **Competency Unit Title** | BUILDING AIR CONDITIONING AND MECHANICAL VENTILATION SYSTEM TROUBLESHOOTING |
| **Learning Outcome** | The person who is competent in this competency unit shall be able to schedule, plan, execute and resolve the system fault in accordance to the requirement of building air conditioning and mechanical ventilation maintenance services and the relevant rules and regulation. . Upon completion of this competency unit, trainees will be able to:-<br><br>• Assess customer complaint/ service report<br>• Carry out building air conditioning and mechanical ventilation system troubleshooting preparation<br>• Carry out building air conditioning and mechanical ventilation system troubleshooting activities<br>• Carry out air conditioning and mechanical ventilation system repair/replacement work<br>• Prepare building air conditioning and mechanical ventilation system maintenance report |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Competency Unit ID** | **BC-070-3:2014-C02** | **Level** | 3 | **Training Duration** | 300Hours | **Credit Hours** | |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| 1. Assess customer complaint/ service report | i. Customer complaint/ service report format.<br>ii. Building air conditioning and mechanical ventilation system component/ equipment operation and specification such as<br>• Cooling tower<br>• Chillers<br>• Split unit<br>• Package unit<br>• Air handling unit<br>• Fan coil unit | | | 6 hours | Lecture | i. Customer complaint/ service report information detail listed and explained<br>ii. Type of air conditioning and mechanical ventilation system fault determined and guessed according to customer complaint/ service |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | • Air condition pump system<br>▪ Condenser water pump<br>▪ Chills water pump<br>▪ Multi split unit<br>▪ Variable Refrigerant Volume (VRV) air conditioner<br>▪ Precision air conditioner<br>▪ Mechanical ventilation fan<br>▪ Variable Air Volume (VAV) box<br>▪ Recovery wheel<br>iii. Type of air conditioning and mechanical ventilation system component/ equipment fault such as<br>• Tripping<br>- High amp<br>- High pressure<br>- Low pressure<br>• Leakage<br>• Condensation<br>• Faulty supply<br>iv. Maintenance location background such as<br>• Public area<br>• Tenanted area | | | | | report information detail<br>iii. Maintenance work level of urgency and priority determined. |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | v. Maintenance work level of urgency and priority such as<br>• Immediate<br>• To be scheduled | | | | | |
| | | i. Study customer complaint/ service report<br>ii. Determine type of air conditioning and mechanical ventilation system fault<br>iii. Determine maintenance are/location<br>iv. Determine maintenance work level of urgency and priority | *Attitude:*<br>i. Knowledgeable in Assessing customer complaint/ service report | 9 hours | Practical | |
| 2. Carry out building air conditioning and mechanical ventilation system troubleshooting preparation | i. Building air conditioning and mechanical ventilation system troubleshooting manpower scope of works<br>ii. Building air conditioning and mechanical | | | 6 hours | Lecture | i. Building air conditioning and mechanical ventilation system troubleshooting manpower/team set up and arranged |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | ventilation system troubleshooting tools arrangement such as<br>• Hand tools<br>• Power tools<br>• Manifold gauge<br>• Airflow meter<br>• Clamp meter<br>• Humidity meter<br>iii. Building air conditioning and mechanical ventilation system troubleshooting material arrangement such as<br>• Refrigerant<br>▪ R22<br>▪ R134a<br>▪ R410A<br>▪ R506<br>• Copper tube<br>▪ Hard drawn<br>• Insulation material<br>▪ PU foam<br>▪ Armaflex<br>▪ Chemical/ Detergent<br>iv. Building air conditioning and mechanical ventilation system troubleshooting equipment arrangement such as<br>• Vacuum pump<br>• Recovery machine | | | | | according to maintenance requirement<br>ii. Building air conditioning and mechanical ventilation system troubleshooting material, tools and equipment condition checked and arranged according to maintenance requirement<br>iii. Building air conditioning and mechanical ventilation system troubleshooting work flow drafted according to maintenance standard practice<br>iv. Building air conditioning and mechanical ventilation system troubleshooting duration and cost estimated according to maintenance requirement. |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | • Water pressure jet<br>v. Building air conditioning and mechanical ventilation system troubleshooting work flow<br>vi. Building air conditioning and mechanical ventilation system troubleshooting cost estimation | | | | | |
| | | i. Arrange building air conditioning and mechanical ventilation system troubleshooting manpower/team<br>ii. Prepare building air conditioning and mechanical ventilation system troubleshooting tools<br>iii. Prepare building air conditioning and mechanical ventilation system troubleshooting material<br>iv. Prepare building air conditioning and mechanical ventilation system troubleshooting equipment | | 9 hours | Practical | |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | | v. Arrange building air conditioning and mechanical ventilation system troubleshooting PPE<br>vi. Determine building air conditioning and mechanical ventilation system troubleshooting work flow<br>vii. Estimate building air conditioning and mechanical ventilation system troubleshooting working duration<br>viii. Estimate building air conditioning and mechanical ventilation system troubleshooting cost | *Attitude:*<br>i. Responsible in arranging building air conditioning and mechanical ventilation system troubleshooting schedule<br>*Safety:*<br>i. Adhere to safety and precaution procedures | | | |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| 3. Carry out building air conditioning and mechanical ventilation system troubleshooting activities | i. Building air conditioning and mechanical ventilation system troubleshooting method<br>ii. Building air conditioning and mechanical ventilation system troubleshooting procedure<br>iii. Type of building faulty air conditioning and mechanical ventilation system faulty such as<br>• Component<br>• Device<br>• Equipment<br>iv. Type of air conditioning and mechanical ventilation faulty<br>• Component<br>• Device<br>• Equipment<br>v. Building air conditioning and mechanical ventilation system troubleshooting safety regulation<br>vi. Authority body rules and regulation<br>• CIDB (Green card)<br>• DOSH<br>• DOE | | | 60 hours | Lecture | i. Building air conditioning and mechanical ventilation system troubleshooting procedure followed according to maintenance standard practice<br>ii. Building air conditioning and mechanical ventilation system troubleshooting site preparation carried out according to electrical maintenance practices<br>iii. Building air conditioning and mechanical ventilation system faulty traced and confirmed according to maintenance standard practice<br>iv. Building air conditioning and mechanical |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | | i. Assess air conditioning electrical drawing<br>ii. Confirm building air conditioning and mechanical ventilation system troubleshooting method<br>iii. Follow building air conditioning and mechanical ventilation system troubleshooting procedure<br>iv. Carry out building air conditioning and mechanical ventilation system troubleshooting site preparation<br>v. Trace building air conditioning and mechanical ventilation system faulty<br>vi. Confirm air conditioning and mechanical ventilation faulty<br>vii. Adhere to building air conditioning and mechanical ventilation system troubleshooting safety regulation<br>viii. Comply to authority body rules and regulation | | 90 hours | Practical | ventilation system troubleshooting safety and regulation adhered according to authority body rules guidelines. |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | | | *Attitude:*<br>i. Knowledgeable and neat in executing building air conditioning and mechanical ventilation system troubleshooting activities<br><br>*Safety:*<br>i. Adhere to safety and precaution procedures<br><br>*Environment:*<br>i. Adhere to CIDB (Green card), DOSH and DOE rules and regulation | | | |
| 4. Carry out air conditioning and mechanical ventilation system repair/replacement work | i. Building air conditioning and mechanical ventilation system repair/replacement work method such as<br>• In-house<br>• Out source<br>ii. Building air conditioning and mechanical ventilation system repair/replacement work | | | 42 hours | Lecture | i. Building air conditioning and mechanical ventilation system repair/replacement work procedure followed according to maintenance standard practice<br>ii. Faulty air |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | procedure<br>iii. Faulty air conditioning and mechanical ventilation component repairing/replacing procedure<br>iv. Building air conditioning and mechanical ventilation system repair/replacement work time duration<br>v. Building air conditioning and mechanical ventilation system repair/replacement work technique<br>vi. Air conditioning and mechanical ventilation system/ component functionality testing procedure<br>vii. Air conditioning and mechanical ventilation system/ component functionality<br>viii. Authority body rules and regulation<br>• Department Of Environmental<br>ix. Housekeeping work procedure | | | | | conditioning and mechanical ventilation component repaired/replaced according to maintenance standard practice<br>iii. Building air conditioning and mechanical ventilation system repair/replacement technique applied<br>iv. Air conditioning and mechanical ventilation system/ component functionality tested and confirmed in good condition<br>v. Air conditioning and mechanical ventilation system repair/replacement work safety regulation adhered according to authority body rules guidelines |
| | | i. Confirm building air conditioning and mechanical ventilation | | 63 hours | Practical | |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | | system/components faulty<br>ii. Follow building air conditioning and mechanical ventilation system repair/replacement work procedure<br>iii. Turn OFF power/water supply<br>iv. Repair/replace faulty air conditioning and mechanical ventilation component<br>v. Apply building air conditioning and mechanical ventilation system repair/replacement technique<br>vi. Turn ON power supply<br>vii. Test air conditioning and mechanical ventilation system/ component functionality<br>viii. Adhere to repair/replacement work safety and regulation<br>ix. Comply to authority body rules and regulation<br>x. Carry out housekeeping work | | | | |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | | | *Attitude:*<br>i. Knowledgeable and neat in executing repair/replacement work<br><br>*Safety:*<br>i. Adhere to safety and precaution procedures<br>ii. Adhere to Suruhanjaya Tenaga (ST), CIDB (Green card), DOSH rules and regulation | | | |
| 5. Prepare building air conditioning and mechanical ventilation system maintenance report | i. Building air conditioning and mechanical ventilation system maintenance report format<br>• Cause of fault<br>• Repair/replace<br>▪ Component<br>▪ Device<br>▪ Equipment<br>• Man hours | | | 6 hours | Lecture | i. Building air conditioning and mechanical ventilation system maintenance report printed and compiled according to maintenance standard format |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | • Cost<br>• Personnel involved<br>ii. Building air conditioning and mechanical ventilation system maintenance submission procedure | | | | | |
| | | i. Determine building air conditioning and mechanical ventilation system maintenance report format<br>ii. Draft building air conditioning and mechanical ventilation system maintenance report<br>iii. Follow building air conditioning and mechanical ventilation system maintenance submission procedure | *Attitude:*<br>i. Meticulous in preparing building air conditioning and mechanical ventilation system maintenance report<br>ii. Adhere to report submission dateline | 9 hours | Practical | |

**Employability Skills**

| Core Abilities | Social Skills |
|---|---|
| 01.01 Identify and gather information.<br>01.02 Document information procedures or processes.<br>01.03 Utilize basic IT applications.<br>02.01 Assess and follow manuals, instructions and SOP's.<br>02.02 Follow telephone/telecommunication procedures.<br>02.03 Communicate clearly.<br>02.04 Prepare brief reports and checklist using standard forms.<br>02.05 Read/Assess flowcharts and pictorial information.<br>03.01 Apply cultural requirement to the workplace.<br>03.02 Demonstrate integrity and apply practical practices.<br>03.03 Accept responsibility for own work and work area.<br>03.04 Seek and act constructively upon feedback about work performance.<br>03.05 Demonstrate safety skills.<br>03.06 Respond appropriately to people and situations.<br>03.07 Resolve interpersonal conflicts.<br>06.01 Understand systems.<br>06.02 Comply with and follow chain of command.<br>06.03 Identify and highlight problems.<br>06.04 Adapt competencies to new situations/systems.<br>01.04 Analyse information.<br>01.05 Utilize the Internet to locate and gather information.<br>01.06 Utilize word processor to process information.<br>02.06 Write memos and letters.<br>02.07 Utilize Local Area Network (LAN)/Intranet to exchange information.<br>02.08 Prepare pictorial and graphic information.<br>03.08 Develop and maintain a cooperation within work group.<br>04.01 Organize own work activities.<br>04.02 Set and revise own objectives and goals.<br>04.03 Organize and maintain own workplace.<br>04.04 Apply problem solving strategies.<br>04.05 Demonstrate initiative and flexibility.<br>06.05 Analyse technical systems.<br>06.06 Monitor and correct performance of systems. | 1. Communication skills<br>2. Conceptual skills<br>3. Interpersonal skills<br>4. Learning skills<br>5. Leadership skills<br>6. Multitasking and prioritising<br>7. Self-discipline<br>8. Teamwork |

| | |
|---|---|
| 01.07 Utilize database applications to locate a process information.<br>01.08 Utilize spreadsheets applications to locate and process information.<br>01.11 Apply thinking skills and creativity.<br>02.09 Prepare flowcharts.<br>02.10 Prepare reports and instructions.<br>02.11 Convey information and ideas to people.<br>03.09 Manage and improve performance of individuals.<br>03.11 Monitor and evaluate performance of human resources.<br>03.12 Provide coaching/on-the-job training.<br>03.13 Develop and maintain team harmony and resolve conflicts.<br>03.14 Facilitate and coordinate teams and ideas.<br>03.15 Liase to achieve identified outcomes.<br>03.16 Identify and assess client/customer needs.<br>03.17 Identify staff training needs and facilitate access to training.<br>04.06 Allocate work.<br>04.07 Negotiate acceptance and support for objectives and strategies.<br>05.01 Implement project/work plans.<br>05.02 Inspect and monitor work done and/or in progress.<br>06.07 Develop and maintain networks. | |

**Tools, Equipment and Materials (TEM)**

| ITEMS | RATIO (TEM : Trainees) |
|---|---|
| 1. Cooling tower | 1:25 |
| 2. Chillers | 1:25 |
| 3. Split unit | 1:5 |
| 4. Package unit | 1:25 |
| 5. Air handling unit | 1:25 |
| 6. Fan coil unit | 1:5 |
| 7. Air condition pump system | 1:25 |
| 8. Hand tools | 1:1 |
| 9. Power tools | 1:5 |
| 10. Manifold gauge | 1:5 |
| 11. Airflow meter | 1:10 |
| 12. Clamp meter | 1:10 |
| 13. Humidity meter | 1:10 |
| 14. Refrigerant | as per required |
| 15. Copper tube | as per required |
| 16. Vacuum pump | 1:5 |
| 17. Recovery machine | 1:25 |
| 18. Water pressure jet | 1:25 |
| 19. PPE | 1:1 |

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|---|---|---|---|---|---|---|---|
| **Sub Sector** | BUILDING MAINTENANCE | | | | | | |
| **Job Area** | BUILDING OPERATION & MAINTENANCE | | | | | | |
| **NOSS Title** | BUILDING OPERATION & MAINTENANCE SUPERVISION | | | | | | |
| **Competency Unit Title** | PLUMBING SYSTEM TROUBLESHOOTING | | | | | | |
| **Learning Outcome** | The person who is competent in this competency unit shall be able to schedule, plan, execute and resolve the system fault in accordance to the requirement of plumbing system maintenance services and the relevant rules and regulation. Upon completion of this competency unit, trainees will be able to:-<br><br>• Interpret customer complaint/ service report<br>• Carry out plumbing system troubleshooting preparation<br>• Carry out plumbing system troubleshooting activities<br>• Carry out plumbing system repair/replacement work<br>• Prepare plumbing system maintenance report | | | | | | |
| **Competency Unit ID** | **BC-070-3:2014-C03** | **Level** | 3 | **Training Duration** | 240 Hours | **Credit Hours** | |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| 1. Interpret customer complaint/ service report | i. Customer complaint/ service report format.<br>ii. Plumbing system component specification<br>• Sanitary fitting/accessories<br>▪ Gauge<br>▪ Meter<br>• Water filter<br>• Grease trap<br>• Floor trap<br>• Water tank<br>• Water pump | | | 4 hours | Lecture | i. Customer complaint/ service report information detail listed and explained<br>ii. Type of plumbing system fault determined and guessed according to customer |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | • Swimming pool /fountain water retention structure<br>• Plumbing valve<br>• Water heater<br>▪ Solar panel<br>• Plumbing pumping system<br>• Pressure vessel<br>• Motorised valve<br>• Sensor rod<br>iii. Type of plumbing system faulty such as<br>• Pipe air lock<br>• Pipe clogged<br>• Pipe leak<br>• Motor tripping<br>iv. Plumbing system troubleshooting location<br>• Public area<br>• Tenanted area<br>v. Maintenance work level of urgency and priority<br>• Immediate<br>• To be scheduled | | | | | complaint/ service report information detail<br>iii. Maintenance work level of urgency and priority determined. |
| | | i. Study customer complaint/ service report<br>ii. Determine type of plumbing system faulty<br>iii. Determine plumbing system troubleshooting area/location<br>iv. Determine | | 8 hours | Practical | |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | | maintenance work level of urgency and priority | *Attitude:*<br>i. Knowledgeable in Assessing customer complaint/ service report | | | |
| 2. Carry out plumbing system troubleshooting preparation | i. Plumbing system maintenance manpower scope of works<br>ii. Plumbing system troubleshooting tools arrangement such as<br>• Hand tools<br>• Power tools<br>• Measuring tools<br>iii. Plumbing system troubleshooting work flow<br>iv. Plumbing system troubleshooting cost estimation | | | 4 hours | Lecture | i. Plumbing system troubleshooting manpower/team set up and arranged according to maintenance requirement<br>ii. Plumbing system troubleshooting tools condition checked<br>iii. Plumbing system troubleshooting PPE prepared according to maintenance requirement<br>iv. Plumbing system troubleshooting work flow |
| | | i. Arrange plumbing system troubleshooting manpower/team<br>ii. Prepare plumbing system troubleshooting tools<br>iii. Arrange plumbing system troubleshooting PPE | | 8 hours | Practical | |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | | iv. Determine plumbing system troubleshooting work flow<br>v. Estimate plumbing system troubleshooting working duration<br>vi. Estimate plumbing system troubleshooting cost | *Attitude:*<br>i. Responsible in arranging plumbing system troubleshooting manpower<br><br>*Safety:*<br>i. Adhere to safety and precaution procedures | | | drafted according to maintenance standard practice<br>v. Plumbing system troubleshooting working duration and cost estimated according to maintenance requirement. |
| 3. Carry out plumbing system troubleshooting activities | i. Plumbing system troubleshooting method<br>ii. Plumbing system troubleshooting procedure<br>iii. Plumbing system troubleshooting technique<br>iv. Faulty plumbing system such as<br>• Component<br>• Device<br>• Equipment | | | 48 hours | Lecture | i. Plumbing system troubleshooting procedure followed according to maintenance standard practice<br>ii. Plumbing systemtroubleshooting site preparation |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | v. Plumbing system troubleshooting safety regulation<br>vi. Authority body rules and regulation such as<br>• CIDB (Green card)<br>• DOSH<br>• SPAN<br>• IWK | | | | | carried out according to electrical maintenance practices<br>iii. Plumbing system troubleshooting technique according to electrical maintenance practices<br>iv. Plumbing system faulty traced and confirmed according to maintenance standard practice<br>v. Plumbing system troubleshooting safety and regulation adhered according to authority body rules guidelines. |
| | | i. Assess plumbing system drawing<br>ii. Confirm plumbing system troubleshooting method<br>iii. Follow plumbing system troubleshooting procedure<br>iv. Carry out plumbing system troubleshooting site preparation<br>v. Apply plumbing system troubleshooting technique<br>vi. Trace plumbing system faulty<br>vii. Confirm plumbing system faulty<br>viii. Adhere to plumbing system troubleshooting safety regulation<br>ix. Comply to authority body rules and regulation | | 72 hours | Practical | |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | | | *Attitude:*<br>i. Knowledgeable and meticulous in executing plumbing system troubleshooting<br><br>*Safety:*<br>i. Adhere to safety and precaution procedures<br><br>*Environment:*<br>i. Adhere to CIDB (Green card), DOSH, SPAN and IWK rules and regulation | | | |
| 4. Carry out plumbing system repair/replacement work | i. Plumbing system repair/replacement work method such as<br>• In-house<br>• Out source<br>ii. Plumbing system repair/replacement work procedure<br>iii. Plumbing system repair/replacement technique<br>iv. Plumbing component, fitting and accessories functionality testing procedure<br>vi. Plumbing system repair/replacement | | | 34 hours | Lecture | i. Plumbing system repair/replacement work procedure followed according to maintenance standard practice<br>ii. Faulty plumbing system component repaired/ replaced according to maintenance |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | safety regulation<br>vii. Authority body rules and regulation such as<br>• CIDB (Green card)<br>• DOSH<br>• SPAN<br>• IWK | | | | | standard practice<br>iii. Plumbing system repair/replacement work technique applied<br>iv. Plumbing systemfunctionality tested and confirmed in good condition<br>v. Plumbing system repairing/replacement work safety regulation adhered according to authority body rules guidelines |
| | | i. Confirm plumbing system/components fitting/accessories faulty<br>ii. Follow plumbing system repair/replacement work procedure<br>iii. Turn OFF power/water supply<br>iv. Repair/replace faulty plumbing system component, fitting and accessories<br>v. Apply plumbing system repair/replacement technique<br>vi. Turn ON power/water supply<br>vii. Test plumbing component, fitting and accessories functionality<br>viii. Confirm plumbing component, fitting and accessories functionality | | 50 hours | Practical | |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | | ix. Adhere to plumbing system repair/replacement safety regulation<br>x. Comply to authority body rules and regulation<br>xi. Carry out housekeeping work | *Attitude:*<br>i. Knowledgeable and meticulous in executing plumbing system repair/ replacement work<br><br>*Safety:*<br>i. Adhere to safety and precaution procedures<br><br>*Environment:*<br>i. Adhere to CIDB (Green card), DOSH, SPAN and IWK rules and regulation | | | |
| 5. Prepare plumbing system maintenance report | i. Plumbing system maintenance report format<br>• Cause of fault<br>• Repair/replace | | | 4 hours | Lecture | i. Plumbing systemmaintenance report printed and compiled |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | ▪ Component<br>▪ Device<br>▪ Equipment<br>• Man hours<br>• Cost<br>• Personnel involved<br>ii. Plumbing system component, fitting and accessories submission procedure | | | | | according to maintenance standard format |
| | | i. Determine plumbing system maintenance report format<br>ii. Draft plumbing system maintenance report<br>iii. Follow plumbing system maintenance submission procedure | *Attitude:*<br>i. Meticulous in preparing plumbing system maintenance report<br>ii. Adhere to report submission dateline | 8 hours | Practical | |

**Employability Skills**

| Core Abilities | Social Skills |
|---|---|
| 01.01 Identify and gather information.<br>01.02 Document information procedures or processes.<br>01.03 Utilize basic IT applications.<br>02.01 Interpret and follow manuals, instructions and SOP's.<br>02.02 Follow telephone/telecommunication procedures.<br>02.03 Communicate clearly.<br>02.04 Prepare brief reports and checklist using standard forms.<br>02.05 Read/Interpret flowcharts and pictorial information.<br>03.01 Apply cultural requirement to the workplace.<br>03.02 Demonstrate integrity and apply practical practices.<br>03.03 Accept responsibility for own work and work area.<br>03.04 Seek and act constructively upon feedback about work performance.<br>03.05 Demonstrate safety skills.<br>03.06 Respond appropriately to people and situations.<br>03.07 Resolve interpersonal conflicts.<br>06.01 Understand systems.<br>06.02 Comply with and follow chain of command.<br>06.03 Identify and highlight problems.<br>06.04 Adapt competencies to new situations/systems.<br>01.04 Analyse information.<br>01.05 Utilize the Internet to locate and gather information.<br>01.06 Utilize word processor to process information.<br>02.06 Write memos and letters.<br>02.07 Utilize Local Area Network (LAN)/Intranet toexchange information.<br>02.08 Prepare pictorial and graphic information.<br>03.08 Develop and maintain a cooperation within work group.<br>04.01 Organize own work activities.<br>04.02 Set and revise own objectives and goals.<br>04.03 Organize and maintain own workplace.<br>04.04 Apply problem solving strategies.<br>04.05 Demonstrate initiative and flexibility.<br>06.05 Analyse technical systems.<br>06.06 Monitor and correct performance of systems.<br>01.07 Utilize database applications to locate a process information. | 1. Communication skills<br>2. Conceptual skills<br>3. Interpersonal skills<br>4. Learning skills<br>5. Leadership skills<br>6. Multitasking and prioritising<br>7. Self-discipline<br>8. Teamwork |

| | |
|---|---|
| 01.08 Utilize spreadsheets applications to locate and process information.<br>01.11 Apply thinking skills and creativity.<br>02.09 Prepare flowcharts.<br>02.10 Prepare reports and instructions.<br>02.11 Convey information and ideas to people.<br>03.09 Manage and improve performance of individuals.<br>03.11 Monitor and evaluate performance of human resources.<br>03.12 Provide coaching/on-the-job training.<br>03.13 Develop and maintain team harmony and resolve conflicts.<br>03.14 Facilitate and coordinate teams and ideas.<br>03.15 Liase to achieve identified outcomes.<br>03.16 Identify and assess client/customer needs.<br>03.17 Identify staff training needs and facilitate access to training.<br>04.06 Allocate work.<br>04.07 Negotiate acceptance and support for objectives and strategies.<br>05.01 Implement project/work plans.<br>05.02 Inspect and monitor work done and/or in progress.<br>06.07 Develop and maintain networks. | |

**Tools, Equipment and Materials (TEM)**

| ITEMS | RATIO (TEM : Trainees) |
|---|---|
| 1. Sanitary fitting/accessories | As per required |
| 2. Water filter | As per required |
| 3. Grease trap | As per required |
| 4. Floor trap | As per required |
| 5. Water tank | 1:25 |
| 6. Water pump | 1:10 |
| 7. Fountain water retention structure | 1:25 |
| 8. Plumbing valve | As per required |
| 9. Water heater | 1: 5 |
| 10. Plumbing system | 1:25 |
| 11. Sensor rod | As per required |
| 12. Hand tools | 1:1 |
| 13. Power tools | 1:5 |
| 14. Measuring tools | 1:5 |
| 15. PPE | 1:1 |

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|---|---|---|---|---|---|---|---|
| **Sub Sector** | BUILDING MAINTENANCE | | | | | | |
| **Job Area** | BUILDING OPERATION & MAINTENANCE | | | | | | |
| **NOSS Title** | BUILDING OPERATION & MAINTENANCE SUPERVISION | | | | | | |
| **Competency Unit Title** | FIRE PROTECTION SYSTEM TROUBLESHOOTING | | | | | | |
| **Learning Outcome** | The person who is competent in this competency unit shall be able to develop competent manpower in accordance with established Standard Operating Procedures (SOP) and job description. Upon completion of this competency unit, trainees will be able to:-<br>• Assess fire protection system service report<br>• Carry out fire protection system troubleshooting preparation<br>• Carry out fire protection system troubleshooting activities<br>• Carry out fire protection system repair/replacement work<br>• Prepare fire protection system maintenance report | | | | | | |
| **Competency Unit ID** | **BC-070-3:2014-C04** | **Level** | 3 | **Training Duration** | 120 Hours | **Credit Hours** | |

| **Work Activities** | **Related Knowledge** | **Related Skills** | **Attitude / Safety / Environmental** | **Training Hours** | **Delivery Mode** | **Assessment Criteria** |
|---|---|---|---|---|---|---|
| 1. Assess fire protection system service report | i. Fire protection system service report format<br>ii. Fire protection system component specification such as<br>• Fire alarm panel<br>• Fire pump<br>▪ Jockey pump<br>▪ Duty pump<br>▪ Standby pump (Gen-set)<br>• Public Address system (PA)<br>• Fire system cabling<br>• Smoke detector | | | 2 hours | Lecture | i. Fire protection system service report information listed and explained<br>ii. Type of fire protection system faulty determined and guessed according to service report information detail |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | • Heat detector<br>• Hose reel system<br>• Fixed fire extinguisher<br>iii. Type of fire protection systemfaulty such as<br>• Leaking<br>• Tripping<br>• Alarm triggering<br>iv. Fire protection system maintenance location<br>• Public area<br>• Tenanted area<br>v. Maintenance works level of urgency and priority<br>• Immediate<br>• To be scheduled | | | | | iii. Maintenance works level of urgency and priority determined. |
| | | i. Study fire protection system service report<br>ii. Determine type of fire protection system faulty<br>iii. Determine fire protection system area/location<br>iv. Determine maintenance works level of urgency and priority | *Attitude:*<br>i. Knowledgeable in Assessing fire protection system service report | 4 hours | Practical | |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| 2. Carry out fire protection system troubleshooting preparation | i. Fire protection system maintenance manpower<br>ii. Fire protection system troubleshooting tools such as<br>• Hand tools<br>• Power tools<br>• PPE<br>iii. Fire protection system troubleshooting work flow<br>iv. Fire protection system troubleshooting working duration<br>v. Fire protection system troubleshooting cost<br>vi. Fire protection system maintenance schedule format | | | 2 hours | Lecture | i. Fire protection system maintenance requirement listed and explained<br>ii. Fire protection system maintenance manpower set up and arranged according to maintenance requirement<br>iii. Fire protection system troubleshooting tools, material and PPE prepared according to maintenance requirement<br>iv. Fire protection system troubleshooting work flow drafted according to maintenance standard practice<br>v. Fire protection system |
| | | i. Study fire protection system maintenance requirement<br>ii. Determine fire protection system maintenance manpower<br>iii. Determine fire protection system troubleshooting tools, material and PPE requirement<br>iv. Determine fire protection system | | 4 hours | Practical | |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | | troubleshooting work flow<br>v. Estimate fire protection system troubleshooting working duration<br>vi. Estimate fire protection system troubleshooting cost<br>vii. Prepare fire protection system maintenance schedule | *Attitude:*<br>i. Responsible in arranging building electrical system troubleshooting schedule<br><br>*Safety:*<br>i. Adhere to safety and precaution procedures | | | troubleshooting duration and cost estimated according to maintenance requirement.<br>vi. Fire protection system maintenance schedule drafted |
| 3. Carry out fire protection system troubleshooting activities | i. Fire protection system troubleshooting method<br>ii. Fire protection system troubleshooting procedure<br>iii. Fire protection system troubleshooting technique<br>iv. Type of fire protection | | | 24 hours | Lecture | i. Fire protection system troubleshooting procedure followed according to maintenance standard practice |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | system faulty such as<br>• Component<br>• Device<br>• Equipment<br>v. Fire protection system troubleshooting safety and regulation<br>vi. Authority body rules and regulation such as<br>• CIDB (Green card)<br>• DOSH<br>• BOMBA | | | | | ii. Fire protection system troubleshooting site preparation carried out according to electrical maintenance practices<br>iii. Fire protection system troubleshooting technique applied according to electrical maintenance practices<br>iv. Fire protection system faulty traced and confirmed according to maintenance standard practice<br>v. Fire protection system troubleshooting safety and regulation adhered according to authority body rules |
| | | i. Assess fire protection system drawing<br>ii. Confirm fire protection system troubleshooting method<br>iii. Follow fire protection system troubleshooting procedure<br>iv. Carry out fire protection system troubleshooting site preparation<br>v. Apply fire protection system troubleshooting technique<br>vi. Assess fire protection system faulty<br>vii. Confirm fire protection system faulty<br>viii. Adhere to fire protection system troubleshooting safety regulation | | 36 hours | Practical | |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | | ix. Comply to authority body rules and regulation | *Attitude:*<br>i. Knowledgeable and neat in executing fire protection system troubleshooting activities<br><br>*Safety:*<br>i. Adhere to safety and precaution procedures<br>*Environment:*<br>i. Adhere to Suruhanjaya Tenaga (ST), CIDB (Green card), DOSH rules and regulation | | | guidelines. |
| 4. Carry out fire protection system repair/replacement work | i. Fire protection system repair/replacement work method such as<br>• In-house<br>• Out source<br>ii. Fire protection system repair/replacement work procedure<br>iii. Fire protection system component, fitting and accessories repair/replacement work | | | 18 hours | Lecture | i. Fire protection system repair/replacement work procedure followed according to maintenance standard practice<br>ii. Faulty fire protection |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | technique<br>iv. Fire protection component, fitting and accessories functionality testing procedure<br>vi. Fire protection system repair/replacement safety and regulation | | | | | system/ component repaired/ replaced according to maintenance standard practice<br>iii. Fire protection system repair/replacement work technique applied<br>iv. Fire protection system/ component functionality tested and confirmed in good condition<br>v. Fire protection system repairing/replacement work safety regulation adhered according to authority body rules guidelines |
| | | i. Confirm fire protection system/component faulty<br>ii. Follow fire protection system repair/replacement work procedure<br>iii. Turn OFF power/water supply<br>iv. Repair/replace faulty fire protection system component, fitting and accessories<br>v. Comply to fire protection system component, fitting and accessories repair/replacement work time duration<br>vi. Turn ON power/water supply<br>vii. Test fire protection component, fitting and accessories functionality<br>viii. Confirm fire protection | | 24 hours | Practical | |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | | component, fitting and accessories functionality<br>vii. Adhere to fire protection system repair/replacement safety regulation<br>viii. Comply to authority body rules and regulation<br>ix. Carry out housekeeping work | *Attitude:*<br>i. Knowledgeable and neat in executing fire protection system repair/replacement work<br><br>*Safety:*<br>i. Adhere to safety and precaution procedures<br>*Environment:*<br>i. Adhere to CIDB (Green card), DOSH and BOMBA rules and regulation | | | |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| 5. Prepare fire protection system maintenance report | i. Determine fire protection system component, fitting and accessories report format<br>• Cause of fault<br>• Repair/Replace<br>▪ Component<br>▪ Device<br>▪ Equipment<br>• Man hours<br>• Cost<br>• Personnel involved<br>ii. Follow fire protection system component, fitting and accessories submission procedure | | | 2 hours | Lecture | i. Fire protection system maintenance report printed and compiled according to maintenance standard format |
| | | i. Determine fire protection system maintenance report format<br>ii. Draft fire protection system maintenance report<br>iii. Follow fire protection system maintenance submission procedure | *Attitude:*<br>i. Meticulous in preparing fire protection system maintenance report<br>ii. Adhere to report submission dateline | 4 hours | Practical | |

**Employability Skills**

| Core Abilities | Social Skills |
|---|---|
| 04.08 Develop and negotiate personneling plans.<br>04.09 Prepare project/work plans.<br>04.10 Utilize science and technology to achieve goals.<br>05.03 Allocate and record usage of financial and physical resources.<br>05.04 Delegate responsibilities and/ or authority.<br>05.05 Coordinate contract and tender activities.<br>06.08 Identify and analyze effect of technology on the environment. | 1. Communication skills<br>2. Conceptual skills<br>3. Interpersonal skills<br>4. Learning skills<br>5. Leadership skills<br>6. Multitasking and prioritising<br>7. Self-discipline<br>8. Teamwork |

**Tools, Equipment and Materials (TEM)**

| ITEMS | RATIO (TEM : Trainees) |
|---|---|
| 1. Fire alarm panel | 1:10 |
| 2. Jockey pump | 1:25 |
| 3. Duty pump | 1:25 |
| 4. Standby pump (Gen-set) | 1: 25 |
| 5. Public Address system (PA) | 1:25 |
| 6. Fire system cabling | As per required |
| 7. Hand tools | 1:1 |
| 8. Power tools | 1: 5 |
| 9. PPE | 1:1 |
| 10. Consumable materials | As per required |
| 11. Smoke detector | 1: 5 |
| 12. Heat detector | 1:5 |
| 13. Hose reel system | 1:5 |
| 14. Fixed fire extinguisher system | 1:25 |

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|---|---|---|---|---|---|---|---|
| **Sub Sector** | BUILDING MAINTENANCE | | | | | | |
| **Job Area** | BUILDING OPERATION & MAINTENANCE | | | | | | |
| **NOSS Title** | BUILDING OPERATION & MAINTENANCE SUPERVISION | | | | | | |
| **Competency Unit Title** | TELECOMMUNICATION SYSTEM TROUBLESHOOTING | | | | | | |
| **Learning Outcome** | The person who is competent in this competency unit shall be able to schedule, plan, execute and resolve the system fault in accordance to the requirement of fire protection system maintenance services and the relevant rules and regulation. Upon completion of this competency unit, trainees will be able to:-<br><br>• Assess telecommunication system customer complaint/ service report<br>• Carry out telecommunication system troubleshooting preparation<br>• Carry out telecommunication system troubleshooting activities<br>• Carry out telecommunication system repair/replacement work<br>• Prepare telecommunication system maintenance report | | | | | | |
| **Competency Unit ID** | **BC-070-3:2014-C05** | **Level** | 3 | **Training Duration** | 120 Hours | **Credit Hours** | |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| 1. Assess telecommunication system customer complaint/ service report | i. Customer complaint/ service report format.<br>ii. Telecommunication system component/ device and equipment specification<br>• Cabling<br>• Telephone server<br>• Arrestor/ grounding<br>• Audio visual system<br>• Booster<br>• Master Antenna TV (MATV)<br>iii. Type of telecommunication | | | 2 hours | Lecture | i. Customer complaint/ service report information detail listed and explained<br>ii. Type of telecommunication system faulty determined and guessed according to customer complaint/ |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | system faulty such as<br>• Loose connection<br>• No signal<br>• Interference<br>• Tripping<br>• Grounding<br>iv. Maintenance location background such as<br>• Public area<br>• Tenanted area<br>v. Level of urgency and priority such as<br>• Immediate<br>• To be scheduled | | | | | service report information detail<br>iii. Maintenance work level of urgency and priority determined. |
| | | i. Study customer complaint/ service report<br>ii. Determine type of telecommunication system faulty<br>iii. Determine maintenance area/location<br>iv. Determine maintenance work level of urgency and priority | *Attitude:*<br>i. Knowledgeable in Assessing customer complaint/ service report | 4 hours | Practical | |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| 2. Carry out telecommunication system troubleshooting preparation | i. Telecommunication system maintenance manpower scope of works<br>ii. Telecommunication system troubleshooting tools and parts arrangement such as<br>• Hand tools<br>• Power tools<br>• Testing instrument tools<br>• Measuring tools<br>iii. Telecommunication system troubleshooting work flow<br>iv. Telecommunication system troubleshooting cost | | | 2 hours | Lecture | i. Telecommunication system troubleshooting manpower/team set up and arranged according to maintenance requirement<br>ii. Telecommunication system troubleshooting tools condition checked<br>iii. Telecommunication system troubleshooting PPE prepared according to maintenance requirement<br>iv. Telecommunication system troubleshooting work flow drafted according to maintenance standard practice<br>v. Telecommunication system troubleshooting working duration and |
| | | i. Arrange telecommunication system troubleshooting manpower/team<br>ii. Prepare telecommunication system troubleshooting tools<br>iii. Arrange telecommunication system troubleshooting PPE<br>iv. Determine telecommunication system troubleshooting | | 4 hours | Practical | |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | | work flow<br>v. Estimate telecommunication system troubleshooting working duration<br>vi. Estimate telecommunication system troubleshooting cost | *Attitude:*<br>i. Responsible in arranging telecommunication system troubleshooting manpower | | | cost estimated according to maintenance requirement. |
| 3. Carry out telecommunication system troubleshooting activities | i. Telecommunication system troubleshooting method<br>ii. Telecommunication system troubleshooting procedure<br>iii. Telecommunication system troubleshooting technique<br>iv. Telecommunication system faulty such as<br>• Component<br>• Device<br>• Equipment<br>v. Telecommunication system troubleshooting safety regulation | | | 24 hours | Lecture | i. Telecommunication system troubleshooting procedure followed according to maintenance standard practice<br>ii. Telecommunication system troubleshooting site preparation<br>iii. Telecommunication system troubleshooting technique |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | vi. Authority body rules and regulation such as<br>• CIDB (Green card)<br>• DOSH<br>• Suruhanjaya Komunikasi Dan Multimedia Malaysia (SKMM) | | | | | applied according to electrical maintenance practices<br>iv. Telecommunication system faulty traced and confirmed according to maintenance standard practice<br>v. Telecommunication system troubleshooting safety and regulation adhered according to authority body rules guidelines. |
| | | i. Assess telecommunication system drawing<br>ii. Confirm telecommunication system troubleshooting method<br>iii. Follow telecommunication system troubleshooting procedure<br>iv. Carry out telecommunication system troubleshooting site preparation<br>v. Apply telecommunication system troubleshooting technique<br>vi. Trace telecommunication system faulty<br>vii. Confirm telecommunication system faulty<br>viii. Adhere to telecommunication | | 36 hours | Practical | |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | | system troubleshooting safety regulation<br>ix. Comply to authority body rules and regulation | *Attitude:*<br>i. Knowledgeable and proactive in executing telecommunication system troubleshooting activities<br><br>*Safety:*<br>i. Adhere to safety and precaution on telecommunication troubleshooting activities<br><br>*Environment:*<br>i. Adhere to Suruhanjaya Komunikasidan Multimedia Malaysia (SKMM), CIDB (Green card), DOSH rules and regulation | | | |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| 4. Carry out telecommunication system repair/replacement work | i. Telecommunication system repair/replacement work method such as<br>• In-house<br>• Out source<br>ii. Telecommunication system repair/replacement work procedure<br>iii. Faulty telecommunication system component, fitting and accessories repairing/replacing procedure<br>iv. Telecommunication system repair/replacement technique<br>v. Telecommunication component, fitting and accessories functionality testing procedure<br>vi. Telecommunication system repair/replacement safety and regulation | | | 18 hours | Lecture | i. Telecommunication system repair/replacement work procedure followed according to maintenance standard practice<br>ii. Faulty telecommunication component repaired/replaced according to maintenance standard practice<br>iii. Telecommunication system repair/replacement work technique applied<br>iv. Telecommunication component/system functionality tested and confirmed in good condition<br>v. Telecommunication system repair/replace |
| | | i. Confirm telecommunication system/component faulty<br>ii. Follow telecommunication | | 24 hours | Practical | |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | | system repair/replacement work procedure<br>iii. Turn OFF power supply<br>iv. Repair/replace faulty telecommunication system component, fitting and accessories<br>v. Comply to telecommunication system repair/replacement work time duration<br>vi. Apply telecommunication system repair/replacement technique<br>vii. Turn ON power supply<br>viii. Test telecommunication component, fitting and accessories functionality<br>ix. Adhere to telecommunication system repair/replacement safety regulation<br>x. Comply to authority body rules and regulation<br>xi. Carry out housekeeping work | | | | ment work safety regulation adhered according to authority body rules guidelines |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | | | *Attitude:*<br>i. Meticulous and neaten executing telecommunication system repair/ replacement work<br><br>*Safety:*<br>i. Adhere to safety and precaution on telecommunication troubleshooting activities<br><br>*Environment:*<br>i. Adhere to Suruhanjaya Komunikasi dan Multimedia Malaysia (SKMM), CIDB (Green card), DOSH rules and regulation | | | |
| 5. Prepare telecommunication system maintenance report | i. Telecommunication system component, fitting and accessories report format<br>• Cause of fault<br>• Repair/replace<br>▪ Component<br>▪ Device<br>▪ Equipment<br>• Man hours<br>• Cost<br>• Personnel involved<br>ii. Telecommunication | | | 2 hours | Lecture | i. Telecommunication system maintenance report printed and compiled according to maintenance standard forma |

| Work Activities | Related Knowledge | Related Skills | Attitude / Safety / Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | system component, fitting and accessories | | | | | |
| | | i. Determine telecommunication system maintenance report format<br>ii. Draft telecommunication system maintenance report<br>iii. Follow telecommunication system maintenance submission procedure | *Attitude:*<br>i. Meticulous in preparing telecommunication system maintenance report<br>ii. Adhere to report submission dateline | 4 hours | Practical | |

**Employability Skills**

| Core Abilities | Social Skills |
|---|---|
| 04.08 Develop and negotiate personneling plans.<br>04.09 Prepare project/work plans.<br>04.10 Utilize science and technology to achieve goals.<br>05.03 Allocate and record usage of financial and physical resources.<br>05.04 Delegate responsibilities and/ or authority.<br>05.05 Coordinate contract and tender activities.<br>06.08 Identify and analyze effect of technology on the environment. | 1. Communication skills<br>2. Conceptual skills<br>3. Interpersonal skills<br>4. Learning skills<br>5. Leadership skills<br>6. Multitasking and prioritising<br>7. Self-discipline<br>8. Teamwork |

**Tools, Equipment and Materials (TEM)**

| ITEMS | RATIO (TEM : Trainees) |
|---|---|
| 1. Cabling | As per required |
| 2. Telephone server | 1:25 |
| 3. Arrestor/ grounding | 1:25 |
| 4. Audio visual system | 1:25 |
| 5. Booster | 1:25 |
| 6. Master Antenna TV (MATV) | 1:25 |
| 7. Hand tools | 1:1 |
| 8. Power tools | 1:5 |
| 9. Testing instrument tools | 1:10 |
| 10. Measuring tools | 1:5 |
| 11. PPE | 1:1 |

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# CURRICULUM of COMPETENCY UNIT (CoCU)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Sub Sector** | BUILDING MAINTENANCE | | | | | | |
| **Job Area** | BUILDING OPERATION & MAINTENANCE | | | | | | |
| **NOSS Title** | BUILDING OPERATION & MAINTENANCE SUPERVISION | | | | | | |
| **Competency Unit Title** | SUPERVISORY AND ADMINISTRATIVE FUNCTION | | | | | | |
| **Learning Outcome** | The person who is competent in this competency unit shall be able to verify and endorse administrative function works using forms such as works order, job sheet, check list etc in accordance with company's standard operation procedures. Upon completion of this competency unit, trainees will be able to:-<br><br>• Identify operations administration function requirements<br>• Provide input to update service information<br>• Carry out operations administrative function activities<br>• Produce operation administration report | | | | | | |
| **Competency Unit ID** | **BC-070-3:2014-C06** | **Level** | 3 | **Training Duration** | 180 Hours | **Credit Hours** | |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| 1. Identify operations administration function requirements | i. Subordinates administration activities such as:<br>• Attendance<br>• Discipline issue<br>• Over time (OT)<br>• Leave (medical/annual/emergency)<br>• Welfare<br>• Uniform<br>• PPE<br>• Training<br>• Staff requisition<br>• Staff performance | | | 8 hours | Lecture | i. Subordinates administration activities determined<br>ii. Consumable administration activities determined<br>iii. Tools and equipment administration activities determined<br>iv. Contractors administration |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | appraisal<br>ii. Consumables administration activities such as:<br>• Stock control<br>• Stock requisition<br>• Distribution to subordinates<br>• Proper storage<br>• Update record<br>iii. Tools, equipment and materials administration activities such as:<br>• Utilisation control<br>• Requisition<br>• Distribution to subordinates<br>• Update record<br>• Maintenance schedule<br>• Repair requisition<br>• Proper storage<br>iv. Contractors administration activities such as:<br>• Receiving, verifying and recording schedule from contractors<br>• Receiving, verifying and recording service level compliance report | | | | | activities determined<br>v. Database administration activities determined drafted |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | from contractors<br>• Receiving, verifying and claims from contractors<br>• submit contractors claims to superior<br>• Prepare contractors performance report<br>v. Database administration activities such as<br>• Provide input on Inventory<br>• Resources update<br>▪ Tools,<br>▪ Equipment<br>▪ Material<br>▪ Manpower<br>▪ Transportation<br>▪ Petty cash | | | | | |
| | | i. Determine subordinates administration activities<br>ii. Determine consumable administration activities<br>iii. Determine tools, equipment and materials administration activities | | 12 hours | Practical | |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | | iv. Determine contractors administration activities<br>v. Determine database administration activities | *Attitude:*<br>i. Systematic in carrying out administrative function | | | |
| 2. Provide input to service information | i. Type of record such as:<br>• Inventory<br>▪ building electrical system<br>▪ building air-conditioning and mechanical ventilation system<br>▪ plumbing system<br>▪ fire protection system<br>▪ building finishers<br>▪ telecommunication system<br>• Resources<br>▪ Machine<br>▪ Tools | | | 22 hours | Lecture | i. Type of data required determined<br>ii. Data keeping method determined<br>iii. Data collected<br>iv. Update provided to database personnel |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | ▪ equipment<br>▪ materials<br>▪ transportation<br>▪ manpower<br>ii. Data keeping method<br>• Manual<br>• Computerise<br>iii. Data collection and provide input to person in charge of database<br>iv. Utilisation of database information | | | | | |
| | | i. Determine type of data required<br>ii. Determine data keeping method<br>iii. Collect data<br>iv. Provide update to database personnel<br>v. Database information utilised | *Attitude:*<br>i. Responsible in collecting accurate data relevant to operations such as inventory | 32 hours | Practical | |
| 3. Carry out operation administrative function activities | i. Subordinates administration activities such as:<br>• Record overtime<br>• Record and | | | 22 hours | Lecture | i. Subordinates administration activities performed<br>ii. Consumable |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | recommend leave<br>• Distribute work schedule<br>• Customer complaint report<br>• Safety report<br>ii. Consumable administration activities<br>• Determine quantity<br>• Stock check<br>• Distribution to subordinates<br>iii. Tools and equipment administration activities<br>• Determine quantity<br>• Determine condition<br>iv. Contractors administration activities<br>• Coordinate schedule<br>• Receive, verify and endorse job sheet<br>• Coordinate customer complaint against contractor rectification work | | | | | administration activities handled<br>iii. Tools and equipment administration activities handled<br>iv. Contractors administration activities coordinated<br>v. Data regularly updated and maintained |
| | | i. Perform subordinates | | 32 hours | Practical | |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | | administration activities<br>ii. Handle consumable administration activities<br>iii. Handle tools and equipment administration activities<br>iv. Coordinate contractors administration activities<br>v. Update and maintain data regularly | *Attitude:*<br>i. Committed in identifying resources requirement to carry out public cleansing operation | | | |
| 4.Produce operation administration report | i. Method of reporting such as<br>• Manual<br>• Computerised system<br>ii. Type of report such as<br>• Attendance report<br>• Overtime report<br>• Customer complaint report<br>• Safety report | | | 22 hours | Lecture | i. Method of reporting determined<br>ii. Type of report determined<br>iii. Format of report determined |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | • Contractors performance report<br>• Consumable, tools, equipment and materials report<br>iii. Format of report<br>iv. Report content<br>v. Report dead line | | | | | |
| | | i. Determine method of reporting such as<br>• Manual<br>• Computerised system<br>ii. Determine type of report<br>iii. Determine format of report<br>iv. Generate operation administration report | *Attitude:*<br>i. Responsible in producing administrative function report<br>ii. Timely in submitting administrative function report to superior | 32 hours | Practical | |

**Employability Skills**

| Core Abilities | Social Skills |
|---|---|
| 01.01 Identify and gather information<br>02.01 Interpret and follow manuals, instructions and SOP's<br>02.04 Prepare brief reports and checklist using standard form<br>03.05 Demonstrate safety skills<br>06.02 Comply with and follow chain of command<br>06.01 Understand system<br>06.03 Identify and highlight problems | 1. Communication skills<br>2. Conceptual skills<br>3. Interpersonal skills<br>4. Learning skills<br>5. Leadership skills<br>6. Multitasking and prioritising<br>7. Self-discipline<br>8. Teamwork |

**Tools, Equipment and Materials (TEM)**

| ITEMS | RATIO (TEM : Trainees) |
|---|---|
| 1. First aid kit | 1:1 |
| 2. Training material | 1:1 |
| 3. PPE (mask, ear plug, gloves, goggles, safety shoes, safety helmet) | 1:1 |
| 4. Stationeries | 1:1 |
| 5. Computer | 1:1 |
| 6. Report format | 1:1 |

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**SUMMARY OF TRAINING DURATION FOR BUILDING OPERATION & MAINTENANCE SUPERVISION (LEVEL 3)**

| NO. ID | COMPETENCY UNIT TITLE | WORK ACTIVITIES | RELATED KNOWLEDGE (A) | RELATED SKILLS (B) | HOURS (A) + (B) | TOTAL (HRS) |
|---|---|---|---|---|---|---|
| 1 | BUILDING ELECTRICAL SYSTEM TROUBLESHOOTING | Interpret customer complaint/ service report | 4 | 8 | 12 | **240** |
| | | Carry out building electrical system troubleshooting preparation | 4 | 8 | 12 | |
| | | Carry out building electrical system troubleshooting activities | 48 | 72 | 120 | |
| | | Carry out building electrical system repair/replacement work | 34 | 50 | 84 | |
| | | Prepare building electrical system maintenance report | 4 | 8 | 12 | |
| 2 | BUILDING AIR CONDITIONING MECHANICAL VENTILATION SYSTEM TROUBLESHOOTING | Assess customer complaint/ service report | 6 | 9 | 15 | **300** |
| | | Carry out building air conditioning and mechanical ventilation system troubleshooting preparation | 6 | 9 | 15 | |
| | | Carry out building air conditioning and mechanical ventilation system troubleshooting activities | 60 | 90 | 150 | |
| | | Carry out air conditioning and mechanical ventilation system repair/replacement work | 42 | 63 | 105 | |
| | | Prepare building air conditioning and mechanical ventilation system maintenance report | 6 | 9 | 15 | |
| 3 | PLUMBING SYSTEM TROUBLESHOOTING | Interpret customer complaint/ service report | 4 | 8 | 12 | **240** |
| | | Carry out plumbing system troubleshooting preparation | 4 | 8 | 12 | |
| | | Carry out plumbing system troubleshooting activities | 48 | 72 | 120 | |
| | | Carry out plumbing system repair/replacement work | 34 | 50 | 84 | |
| | | Prepare plumbing system maintenance report | 4 | 8 | 12 | |
| 4 | FIRE PROTECTION SYSTEM TROUBLESHOOTING | Assess fire protection system service report | 2 | 4 | 6 | **120** |
| | | Carry out fire protection system troubleshooting preparation | 2 | 4 | 6 | |
| | | Carry out fire protection system troubleshooting activities | 24 | 36 | 60 | |
| | | Carry out fire protection system repair/replacement work | 18 | 24 | 42 | |
| | | Prepare fire protection system maintenance report | 2 | 4 | 6 | |
| 5 | TELECOMMUNICATION SYSTEM TROUBLESHOOTING | Assess telecommunication system customer complaint/ service report | 2 | 4 | 6 | **120** |
| | | Carry out telecommunication system troubleshooting preparation | 2 | 4 | 6 | |
| | | Carry out telecommunication system troubleshooting activities | 24 | 36 | 60 | |
| | | Carry out telecommunication system repair/replacement work | 18 | 24 | 42 | |
| | | Prepare telecommunication system maintenance report | 2 | 4 | 6 | |
| 6 | SUPERVISORY AND ADMINISTRATIVE FUNCTION | Identify operations administration function requirements | 8 | 12 | 20 | **182** |
| | | Provide input to update service information | 22 | 32 | 54 | |
| | | Carry out operation administrative function activities | 22 | 32 | 54 | |
| | | Produce operation administration report | 22 | 32 | 54 | |
| | | **TOTAL HOURS (Core Competencies)** | 478 | 724 | 1202 | **1202** |