STANDARD KEMAHIRAN PEKERJAAN KEBANGSAAN
(NATIONAL OCCUPATIONAL SKILLS STANDARD)

EE-220-3:2013
FILM & TELEVISION LIGHTING
LEVEL 3

JABATAN PEMBANGUNAN KEMAHIRAN
KEMENTERIAN SUMBER MANUSIA, MALAYSIA

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STANDARD PRACTICE

NATIONAL OCCUPATIONAL SKILLS STANDARD (NOSS)

FOR:

FILM & TELEVISION LIGHTING
LEVEL 3

1. INTRODUCTION

This document outlines the standards and curriculum for Film & Television Lighting (Level 3). Lighting technicians are involved with rigging stage and location sets and controlling artificial, electric lights for art and entertainment venues (theatre or live music venues) or in video, television, or film production. In a theatre production, lighting technicians work under the lighting designer and master electrician. In video, television, and film productions, lighting technicians work under the direction of the Gaffer or Chief Lighting Technician whom takes their direction from the cinematographer. In live music, lighting technicians work under the Lighting Director. All heads of department report to the production manager.

Lighting technicians are responsible for the movement and set up of various pieces of lighting equipment for separation of light and shadow or contrast, depth of field and/or visual effects. Lighting Technicians may also lay electrical cables, wire fixtures, install color effects or image patterns, focus the lights, and assist in creating effects or programming sequences.

The government through FINAS has made necessary efforts to assist the development of the Film & Television industry in Malaysia. Through the formulation of the National Film Policy (NFP), which was endorsed by the Cabinet in 1996, the proposal included the expansion of not only feature films but encompasses the development of the television production segment as it holds huge potential for the film industry to prosper in the future. The government through Khazanah Nasional Berhad made strategic agreement with Pinewood Shepperton in connection with the development of a new film and television studio facility in Iskandar, Malaysia. Heavy investment is pouring into the region, providing necessary funds for infrastructure projects and large business developments.

The early inception of the film & television industry seems to be attributed to the local talent which was passionate about filmmaking. Although very much lacking in terms of resources and formal education in film & television production these people were very much motivated by the desire to produce local films. They made production successful, at least to the local audience.

Pre Requisite

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

i. Minimum entry qualifications are *Sijil Pelajaran Malaysia* (SPM), and
ii. High level of physical fitness, alertness and must not be colour blind.

2. Occupational Structure (OS)

SECTOR	ELEKTRIKAL & ELEKTRONIK, TELEKOMUNIKASI & INDUSTRI PENYIARAN *(ELECTRICAL & ELECTRONIC,TELECOMMUNICATION & BROADCASTING INDUSTRY)*	
SUB-SECTOR	**PENYIARAN & VIDEOGRAFI** ***(BROADCASTING & VIDEOGRAPHY)***	
JOB AREA	**TV – PENCAHAYAAN** ***(TV – LIGHTING)***	**CINEMATOGRAFI– PENCAHAYAAN** ***(CINEMATOGRAPHY – LIGHTING)***
LEVEL 5	*Lighting Designer*	*Gaffer/Rigging Gaffer*
LEVEL 4	*Senior Lighting Technician*	*Gaffer Best Boy/ Rigging Gaffer Best Boy*
LEVEL 3	*Lighting Electrical Technician*	
LEVEL 2	*Lighting Electrical Assistant*	
LEVEL 1	*No Level*	

Figure 1.1 Occupational Framework Matrix for Broadcasting & Videography – Sub-sector of Electrical & Electronic, Telecommunication & Broadcasting Industry

Occupational Area Structure (OAS)

SECTOR	ELEKTRIKAL & ELEKTRONIK, TELEKOMUNIKASI & INDUSTRI PENYIARAN *(ELECTRICAL & ELECTRONIC,TELECOMMUNICATION & BROADCASTING INDUSTRY)*	
SUB-SECTOR	PENYIARAN & VIDEOGRAFI *(BROADCASTING & VIDEOGRAPHY)*	
JOB AREA	TV – PENCAHAYAAN *(TELEVISION – LIGHTING)*	CINEMATOGRAFI– PENCAHAYAAN *(CINEMATOGRAPHY – LIGHTING)*
LEVEL 5	*Film & Television Lighting*	
LEVEL 4	*Film & Television Lighting*	
LEVEL 3	*Film & Television Lighting*	
LEVEL 2	*No Level*	
LEVEL 1	*No Level*	

Figure 1.1 Occupational Framework Matrix for Broadcasting & Videography – Sub-sector of Electrical & Electronic, Telecommunication & Broadcasting Industry

3. DEFINITION 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:	Competent in performing a range of varied work activities, most of which are routine and predictable.
Malaysia Skills Certificate Level 2:	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:	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 control or guidance of others is often required.
Malaysia Skills Diploma Level 4:	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:	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 Film & Television Lighting Level 3.

5. JOB COMPETENCIES

The Film & Television Lighting Level 3 personnel are competent in performing the following core competencies:

- Single Phase Wiring
- Three Phase Wiring
- Lighting Pre-Production
- Rigging/ Set-up Operation
- Lighting Equipment Testing And Troubleshooting
- Lighting System Programming & Rehearsal
- Lighting Equipment Maintenance

6. WORKING CONDITIONS

Generally they work from under normal and also outside normal working hour depending on shooting period. They may be required to work extra hours to fulfil production requirement. Working conditions for lighting technicians vary a great deal from one job to another. Lighting technicians generally spend a lot of time on their feet and the pace of work can become hectic. Last-minute changes are often required and safety precautions must be observed when handling hot lamps, climbing ladders or working on high voltage electrical cables and equipment. Lighting technicians are routinely required to lift and carry the heaviest and more dangerous equipment compared to the other departments and office staff.

7. EMPLOYMENT PROSPECTS

There are excellent prospect in private sectors due to shortage of hands-on expert in lighting industry. This area has a very good job market potential abroad for skilled personnel due to shortage of such highly skilled personnel in this region.

Other related occupation with respect to employment opportunities are:

- Electrical building maintenance
- Trainer

Other related industries with respect to employment opportunities are:

- Training Institution
- Construction
- Factory

- Hotel
- Event provider

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

Candidates are trained in training institution both public and private sector. The basic qualifications for Film & Television Lighting are *Sijil Pelajaran Malaysia* (SPM) with interest to becoming a Lighting Operation. However, they can directly continue to Level 4 upon completion of Level 3. As for career advancement, Lighting Technician can apply Electrical Certificate that is approved by Suruhanjaya Tenaga.

9. SOURCES OF ADDITIONAL INFORMATION

9.1 Local

a. Perbadanan Kemajuan Filem Nasional Malaysia (FINAS)
Kompleks Studio Merdeka
Jalan Hulu Kelang
68000 Ampang
Selangor
Tel : 603-41041300
Fax : 603-41075216
URL : www.finas.gov.my

b. Persatuan Pekerja Profesional Filem Malaysia (PROFIMA)
Lot 2738B, Jalan Changkat Permata
Taman Permata
53300 Kuala Lumpur
Tel :03-41060116
Fax : 03-41070736
URL : www.profima.com.my

c. Suruhanjaya Tenaga (Energy Commission)
No. 12, Jalan Tun Hussein
Precinct 2,
62100, Putrajaya.
Tel : 603-88708500
Fax : 603-88888600
URL : www.st.gov.my

9.2 International

a. Professional Lighting Designers' Association
Haller Str. 209
33334 Gutersloh
German
Tel : +49(0)52419645902
URL : www.pld-a.org

b. American Association of Community Theatre
1300 Gendy St.Fort Worth
TX 76107
Tel : 817-732-3178
URL : www.aact.org

10. ACKNOWLEDGEMENT

The Director General of DSD would like to extend his gratitude to the organisations and individuals who have been involved in developing this standard. This standard has been checked by the Standard Technical Evaluation Committee (STEC). Panel members of STEC are listed below:-

NO	NAME	COMPANY
1.	En. Johar Bin Ibrahim @ Jib Ibrahim	Director Electrovation Sdn. Bhd.
2.	En. Jemy Azmi Amit	Director of Photographer Jemyantie Film Services
3.	En. Mohd Shaufe Bin A. Wahib	Operations Director Film Gear Sdn. Bhd.
4.	En. Mohamad Azla Bin Kamaruddin	Director of Photographer.

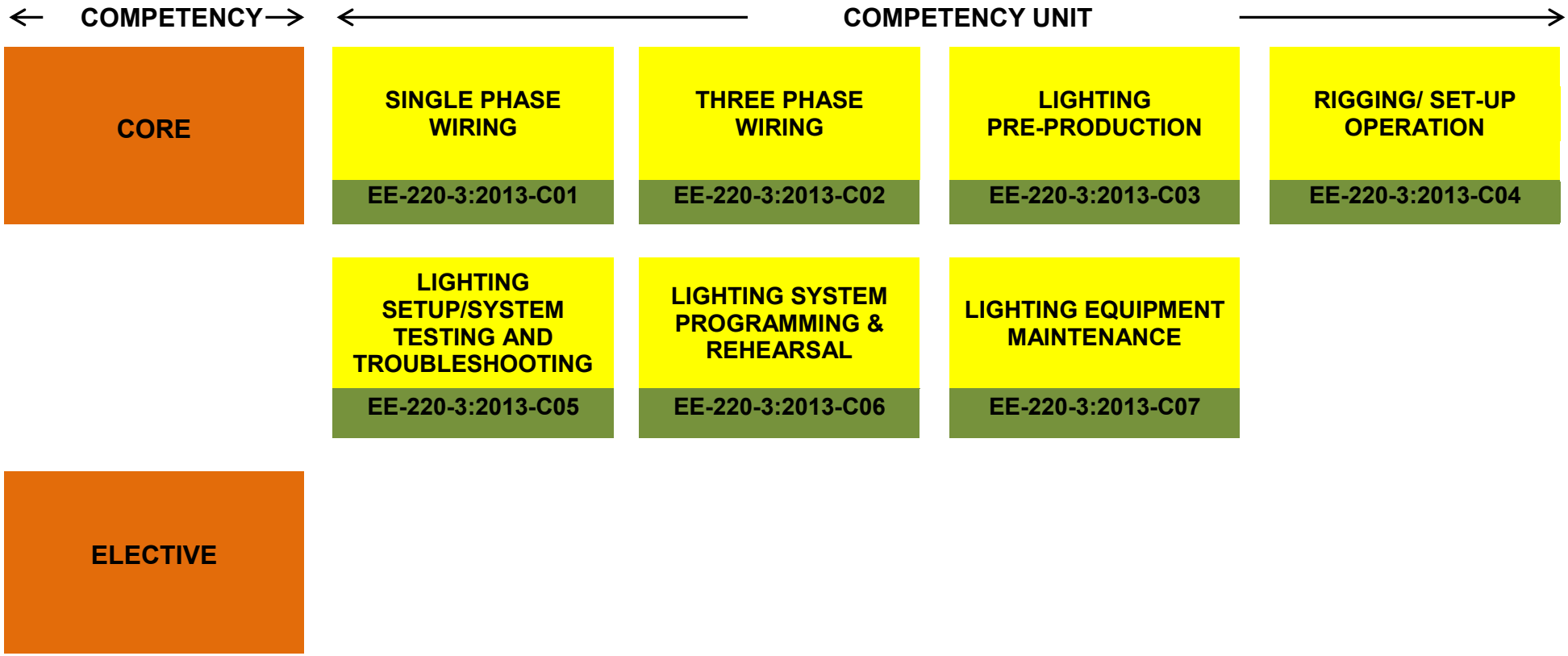
11. COMMITTEE MEMBERS FOR DEVELOPMENT OF STANDARD PRACTICE (SP), COMPETENCY PROFILE CHART (CPC), COMPETENCY PROFILE (CP) AND CURRICULUM OF COMPETENCY UNIT (CoCU)

FILM & TELEVISION LIGHTING LEVEL 3

PANEL EXPERTS		
1.	Mr. Ramlan Bin Mohtar	Senior Lighting Technician Media Prima Berhad
2.	Mr. Weerak A/L Din Riam	Lighting Designer Pactel System Sdn Bhd
3.	Mr. Mohd Azmi Bin Ahmad	Lighting Designer Media Prima Berhad
4.	Mr. Muliadi Bin Abas	Lighting Technician Media Prima Berhad
5.	Mr. Wan Zulkifli B. Wan Ya'acob	Lighting Technician Dreamz Media Sdn Bhd
6.	Mr. Mohd Razi Bin Ramli	Lighting Technician Media Prima Berhad
7.	Mr. Zambere Mohd Haras	Senior Lighting Technician Tarantella Picture Sdn Bhd
8.	Mr. Mohd Khairul Anwar Bin Said	Lighting Technician Framepersecond Sdn. Bhd
9.	Mr. Mohd Nazri Bin Yaacob	Assistant Lighting Director Astro Malaysia Holdings Bhd
10.	Mr. Ibrahim Bin Jamaluddin	Lecturer UiTM
FACILITATORS		
1.	Mr. Khairul Anuar Bin Yahya	Precious Galaxy Sdn Bhd
2.	Mr. Harris Iskandar Bin Nordin	Precious Galaxy Sdn Bhd

COMPETENCY PROFILE CHART (CPC)

SECTOR	ELECTRICAL & ELECTRONIC,TELECOMMUNICATION & BROADCASTING INDUSTRY		
SUB SECTOR	BROADCASTING & VIDEOGRAPHY		
JOB AREA	TV – LIGHTING / CINEMATOGRAPHY – LIGHTING		
NOSS TITLE	FILM & TELEVISION LIGHTING		
JOB LEVEL	THREE (3)	NOSS CODE	EE-220-3:2013



COMPETENCY PROFILE (CP)

Sub Sector	Broadcasting & Videography
Job Area	TV-Lighting /Cinematography - Lighting
NOSS Title	Film & Television Lighting
Level	Three (3)

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
1. Single phase wiring		A single-phase wire has three wires located within the insulation. Two hot wires and one neutral wire provide the power. The neutral is tapped off from the transformer. The single-phase wire has the two hot wires surrounded by black and red insulation, the neutral is always white and there is a green grounding wire. The person who is competent in this CU shall be able to interpret single phase wiring drawing, install single phase surface wiring, conduit wiring, trunking wiring, earthing system and distribution board, inspect single phase wiring functionality and report single phase wiring to superior in accordance with customer specifications and local authority compliance. The outcome of this competency is to ensure that all the installed power cables are properly laid and in a good working condition.	1. Interpret single phase wiring drawing 2. Install single phase surface wiring 3. Install single phase conduit wiring	1.1 Single phase wiring drawing components (electrical symbols, circuit, measurements, schematic drawing, colour coding) determined 2.1 Wiring installation location determined according to the floor plan 3.1 Building structure determined according to the floor plan 4.1 Materials, tools and equipment arranged for single phase wiring 2.1 Types of single phase surface wiring determined 2.2 Single phase surface wiring wired according to specifications 2.3 Electrical safety procedures adhered to in accordance with MS-IEC and IEE regulations 3.1 Types of single phase conduit wiring determined

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
				3.2 Conduit measured and marked according to specifications 3.3 Conduit cut according to specifications 3.4 Conduit bended according to specifications 3.5 Conduit threaded according to specifications 3.6 Conduit junction box and accessories fixed 3.7 Single phase conduit wiring wired 3.8 Sleeve cable applied for finishing work 3.9 Electrical safety procedures adhered to in accordance with MS-IEC and IEE regulations
			4. Install single phase trunking wiring	4.1 Types of single phase trunking wiring determined 4.2 Trunking measured and marked according to specifications 4.3 Trunking cut according to specifications 4.4 Trunking bended according to specifications 4.5 Trunking and accessories fixed 4.6 Single phase trunking wiring wired according to specification 4.7 Electrical safety procedures adhered to in accordance

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
				with MS-IEC and IEE regulations
			5. Install single phase earthing system	5.1 Earthing electrode planted 5.2 Earthing chamber placed 5.3 Earthing lead wired 5.4 Main bonding conductor wired 5.5 Electrical safety procedures adhered to in accordance with MS-IEC and IEE regulations
			6. Install distribution board	6.1 Final sub-circuits determined 6.2 Load of current calculated 6.3 Protection rating determined 6.4 Cable rating/size determined 6.5 Voltage drop calculated 6.6 Distribution board fixed
			7. Inspect single phase wiring functionality	7.1 Continuity and uniformity of wiring accessories and fitting checked 7.2 Tidiness/neatness of accessories and fitting checked 7.3 Firmness of accessories and fitting checked 7.4 Cable terminations checked 7.5 Electrical safety procedures adhered to in accordance with MS-IEC and IEE regulations
			8. Report single phase wiring to superior	8.1 Single phase wiring report format and contents determined

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
				8.2 Single phase wiring report prepared 8.3 Single phase wiring report submitted to superior
2. Three phase wiring		Three-phase systems may have a neutral wire. A neutral wire allows the three-phase system to use a higher voltage while still supporting lower-voltage single-phase loads. In high-voltage distribution situations, it is common not to have a neutral wire as the loads can simply be connected between phases (phase-phase connection). The person who is competent in this CU shall be able to interpret three phase wiring drawing, install three phase surface wiring, conduit wiring, trunking wiring, earthing system and distribution board, inspect three phase wiring functionality and report three phase wiring in accordance with customer specifications and local authority compliance. The outcome of this competency is to ensure that all the installed power cables are properly laid and in a good working condition.	1. Interpret three phase wiring drawing 2. Install three phase surface wiring 3. Install single phase conduit wiring	1.1 Three phase wiring drawing components (electrical symbols, circuit, measurements, schematic drawing, colour coding) determined 1.2 Wiring installation location determined according to the floor plan 1.3 Building structure determined according to the floor plan 1.4 Materials, tools and equipment arranged for single phase wiring 2.1 Types of three phase surface wiring determined 2.2 Three phase surface wiring wired according to specifications 2.3 Electrical safety procedures adhered to in accordance with MS-IEC and IEE regulations 3.1 Types of three phase conduit wiring determined 3.2 Conduit measured and marked according to specifications 3.3 Conduit cut according to

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
				specifications 3.4 Conduit bended according to specifications 3.5 Conduit threaded according to specifications 3.6 Conduit junction box and accessories fixed 3.7 Three phase conduit wiring wired 3.8 Sleeve cable applied for finishing work 3.9 Electrical safety procedures adhered to in accordance with MS-IEC and IEE regulations
			4. Install three phase trunking wiring	4.1 Types of three phase trunking wiring determined 4.2 Trunking measured and marked according to specifications 4.3 Trunking cut according to specifications 4.4 Trunking bended according to specifications 4.5 Trunking and accessories fixed 4.6 Three phase trunking wiring wired according to specification 4.7 Electrical safety procedures adhered to in accordance with MS-IEC and IEE regulations
			5. Install three phase earthing system	5.1 Earthing electrode planted 5.2 Earthing chamber placed

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
				5.3 Earthing lead wired 5.4 Main bonding conductor wired 5.5 Electrical safety procedures adhered to in accordance with MS-IEC and IEE regulations
			6. Install distribution board	6.1 Final sub-circuits determined 6.2 Load of current calculated 6.3 Protection rating determined 6.4 Cable rating/size determined 6.5 Voltage drop calculated 6.6 Distribution board fixed
			7. Inspect three phase wiring functionality	7.1 Continuity and uniformity of wiring accessories and fitting checked 7.2 Tidiness/neatness of accessories and fitting checked 7.3 Firmness of accessories and fitting checked 7.4 Cable terminations checked 7.5 Electrical safety procedures adhered to in accordance with MS-IEC and IEE regulations
			8. Report three phase wiring to superior	8.1 Three phase wiring report format and contents determined 8.2 Three phase wiring report prepared 8.3 Three phase wiring report submitted to superior

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
3. Lighting Pre-Production		Lighting pre-production involves all the activities before installation takes place. The technician conducts site visit to collect installation information. The information should include materials, tools and equipment specification, testing requirements, personnel experience level and assignment, installation methods, identification of potential problem areas and safety issues in accordance with Standard Operating Procedure (SOP). The person whom is competent in lighting pre-production must be able to identify job order requirements, carry out location survey, arrange lighting equipment booking and report lighting pre-production activities in accordance with Standard Operating Procedure (SOP) and company's policy. The outcome of this competency is to ensure appropriate work preparation before actual tv/film production carried out in accordance with Standard Operating Procedure (SOP).	1. Identify job order requirements	1.1 Production concept interpreted according to themes 1.2 Lighting plot interpreted 1.3 Installation time line identified 1.4 Type of film sensitivity to be used confirmed
			2. Carry out location survey	2.1 Power supply availability checked according to lighting plot 2.2 Layout plan (floor plan or building drawing) checked according to lighting plot 2.3 Studio/ stage/ shooting location and lighting equipment position suitability checked according to lighting plot 2.4 Site visit finding recorded and submitted to superior
			3. Arrange lighting equipment booking	3.1 Types and quantity of lighting tools, equipment and material identified 3.2 Lighting tools, equipment and material requested to related department 3.3 Lighting tools, equipment and material checklist produced
			4. Report lighting pre-production activities	4.1 Report format and contents determined 4.2 Lighting pre-production report prepared 4.3 Lighting pre-production report submitted to superior

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
4. Rigging/ Set-up Operation		Lighting equipment may be installed outside or inside using several different installation processes. The installation process will depend on the nature of the installation and the type of equipment being used. Rigging/ set-up operation is a scope of competency to install lighting equipment in accordance with Standard Operating Procedure (SOP) and lighting plot. The person whom is competent in rigging operation/ set-up must be able to check lighting equipment, install general/practical lighting equipment, special effects equipment and install lighting system in accordance with Standard Operating Procedure (SOP). The outcome of this competency is to properly arrange and install lighting equipment in accordance with Standard Operation Procedure (SOP).	1. Check lighting equipment 2. Install general/practical lighting equipment 3. Install special effects equipment	1.1 Lighting equipment availability (quantity) checked according to approved requisition form 2.1 Lighting equipment functionality checked according to SOP 2.1 Types of general lighting equipment determined according to lighting plot 2.2 General lighting equipment installed according to lighting plot 2.3 Types of cable determined according to general lighting equipment specification 2.4 Power cable laid according to cable layout plan 2.5 Signal cable laid according to cable layout plan 2.6 General lighting equipment installation checked according to SOP 3.1 Types of special effects equipment determined according to lighting plot 3.2 Special effects equipment installed according to lighting plot 3.3 Types of cable determined according to special effect equipment 3.4 Power cable laid according to cable layout plan 3.5 Signal cable laid according to

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
				cable layout plan 3.6 Special effects equipment installation checked
			4. Install lighting system	4.1 Power supply source identified (main source) 4.2 Temporary power supply source identified (generator set) 4.3 Dimmer system and lighting console installed according to layout 4.4 Power cable laid according to cable layout plan 4.5 Signal cable laid according to cable layout plan 4.6 Lighting equipment installation checked
5. Lighting Set-up/System Testing And Troubleshooting		Lighting set-up/ system testing and troubleshooting is a crucial step in ensuring that all lighting set-up/ systems are functioning properly. Testing and commissioning lighting set-up/ system involves a series of steps that are taken to prove that the system meets the specified requirements. The person whom is competent in lighting equipment testing and troubleshooting must be able to prepare testing tools and equipment, check power supply availability, carry out cable testing,	1. Prepare testing tools and equipment	1.1 Type of test determined 2.1 Testing tools and equipment set according to technical specifications
			2. Check power supply availability	2.1 Power supply tested according to Standard Operating Procedure (SOP) 2.2 Power consumption confirmed according to lighting equipment specification
			3. Carry out cable testing	3.1 Cable connectivity checked according to SOP 3.2 Cable leakage checked

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
		test lighting equipment and carry out lighting equipment failure troubleshooting in accordance with Standard Operating Procedure (SOP). The outcome of this competency is to properly test and troubleshoot any lighting equipment functionality in accordance with Standard Operation Procedure (SOP).	4. Test lighting equipment 5. Carry out lighting equipment failure troubleshooting	4.1 General lighting functionality tested according to company's Standard Operating Procedure (SOP) 4.2 Lighting dimmer/bulb life time tested 4.3 Lighting console functionality tested 4.4 Special effects equipment functionality tested 5.1 Source of failure identified 5.2 Lighting equipment failure rectified according to company's Standard Operating Procedure (SOP) 5.3 Non lighting equipment failure rectified
6. Lighting System Programming & Rehearsal		Lighting system programming & rehearsal is a scope of competency to program and rehearse lighting system using lighting console in accordance with Standard Operating Procedure (SOP). A lighting control console is an electronic device used in theatrical lighting design to control multiple lights at once. All lighting control consoles can control dimmers which control the intensity of the lights. Many modern consoles can also control intelligent lighting (lights that can move, change colors and gobo patterns), fog machines and	1. Carry out lighting setup adjustment 2. Execute lighting mode programming	1.1 Talent and set position checked according to camera position 1.2 Colour temperature and lux (depth of field) set according to job order requirement 1.3 Light setup adjusted according to lighting plot 2.1 Scene requirement checked according to lighting plot 2.2 Lighting mode programmed according to lighting plot 2.3 Lighting console operated according to SOP

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
		hazer, and other special effects devices. The person whom is competent in lighting system programming & rehearsal must be able to carry out lighting setup adjustment, execute lighting mode programming and carry out lighting rehearsal in accordance with Standard Operating Procedure (SOP). The outcome of this competency is to properly program and rehearse lighting system in accordance with Standard Operation Procedure (SOP).	3. Carry out lighting rehearsal	4.1 Lighting programming tested 4.2 Lighting mode synchronization checked according to running order/scene requirement 4.3 Lighting mode refocused and reprogrammed according to running order/scene requirement
7. Lighting Equipment Maintenance		Lighting equipment maintenance is to avoid or mitigate the consequences of failure of equipment. Corrective maintenance is a maintenance task performed to identify, isolate, and rectify a fault so that the failed equipment, machine, or system can be restored to an operational condition within the tolerances or limits established for in-service operations. The purpose of preventive maintenance in satisfactory operating condition by providing for systematic inspection, detection, and correction of incipient failures either before they occur or before become into	1. Identify lighting equipment maintenance requirement 2. Carry out general lighting equipment repair	1.1 Lighting equipment inventory checked 2.1 Lighting equipment confirmed in good condition 3.1 Types of lighting equipment maintenance determined 2.1 Lighting cable replaced according to SOP 2.2 Bulb replaced according to SOP 2.3 Lighting equipment serviced according to SOP 2.4 Damaged lighting equipment replaced according to SOP

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
		major defects. The person whom is competent in lighting equipment maintenance must be able to identify lighting equipment maintenance requirement, carry out general lighting equipment repair, preventive maintenance and upgrading in accordance with Standard Operating Procedure (SOP). The outcome of this competency is to properly perform maintenance work on lighting equipment in accordance with Standard Operating Procedure (SOP).	3. Carry out lighting equipment upgrading	3.1 Lighting equipment upgraded to new technology 3.2 Lighting console software updated 3.3 Lighting equipment maintenance activities recorded

CURRICULUM of COMPETENCY UNIT (CoCU)

Sub-Sector	BROADCASTING & VIDEOGRAPHY						
NOSS Title	TV – LIGHTING / CINEMATOGRAPHY – LIGHTING						
NOSS Title	FILM & TELEVISION LIGHTING						
Competency Unit Title	SINGLE PHASE WIRING						
Learning Outcome	The person who is competent in this CU shall be able to ensure that all the installed power cables are properly laid and in good working condition. Upon completion of this competency unit, trainees will be able to: - • Interpret single phase wiring drawing • Install single phase surface wiring • Install single phase conduit wiring • Install single phase trunking wiring • Install single phase earthing system • Install distribution board • Inspect single phase wiring functionality • Report single phase wiring to superior						
Competency Unit ID	CU 1	**Level**	3	**Training Duration**	140 Hours	**Credit Hours**	14

Work Activities	**Related Knowledge**	**Related Skills**	**Attitude/Safety/ Environmental**	**Training Hours**	**Delivery Mode**	**Assessment Criteria**
1. Interpret single phase wiring drawing	i. Basic electrical knowledge such as: • Institute of Electrical Engineers (IEE) regulations • Malaysian Standard-International Electro Technical Commission (MS-IEC) • Electrical components and			4	Lecture	i. Electrical components and functions explained ii. Types of single phase wiring differentiated iii. Types of technical drawing drafted iv. Single phase wiring drawing

Work Activities	Related Knowledge	Related Skills	Attitude/Safety/ Environmental	Training Hours	Delivery Mode	Assessment Criteria
	functionality • Power requirements for selected devices ii. Single phase wiring process flow iii. Types of single phase wiring such as: • Surface wiring • Conduit wiring • Trunking wiring • Concealed wiring iv. Single phase wiring drawing components such as: • Electrical symbols • Circuit • Measurements • Schematic diagram • Colour coding v. Types of building structures such as: • Wood • Concrete • Glass • Cement • Ground vi. Types of materials for single phase wiring • Double insulated cable • Wiring lead • Wiring nail • PVC tape • Single insulated					interpreted to determine components, wiring installation location and building structure v. Materials, tools and equipment condition checked and arranged for single phase wiring

Work Activities	Related Knowledge	Related Skills	Attitude/Safety/ Environmental	Training Hours	Delivery Mode	Assessment Criteria
	cable • Trunking accessories • Conduit accessories • Concealed accessories • Galvanised Iron (GI) • Poly Vinyl Chloride (PVC) • Fish wire • Earthing materials • Earth electrode • Earth electrode coupler • Moulded Cases Circuit Breaker (MCCB)/ Miniature Circuit Breaker (MCB) • Residual Current Circuit Breaker (RCCB) • Isolator • Switch • Fuse • Main switch • Distribution board vii. Types of tools for single phase wiring • Measuring tape • Power tool sets • Power meter • Ladder • Spirit level					

Work Activities	Related Knowledge	Related Skills	Attitude/Safety/ Environmental	Training Hours	Delivery Mode	Assessment Criteria
	• Electrical tool sets ▪ Multimeter test pen ▪ Clamp meter ▪ Clamp cable • First aid kit					
		i. Determine single phase wiring drawing components ii. Determine wiring installation location iii. Determine building structure iv. Arrange materials, tools and equipment for single phase wiring	*Attitude:* i. Knowledgeable in interpreting single phase wiring drawing ii. Responsible in arranging materials and tools for single phase wiring	10	Demonstration & Observation	
2. Install single phase surface wiring	i. Types of single phase surface wiring • Open • Clipped direct ii. Single phase surface wiring installation methods			6	Lecture	i. Types of single phase surface wiring listed and explained ii. Single phase surface wiring conducted

Work Activities	Related Knowledge	Related Skills	Attitude/Safety/ Environmental	Training Hours	Delivery Mode	Assessment Criteria
		i. Determine type of single phase surface wiring ii. Measure and mark surface according to specifications iii. Cut cable according to specifications iv. Wire single phase surface wiring according to specifications v. Adhere to electrical safety procedures as per MS-IEC and IEE regulations	*Attitude:* i. Knowledgeable and neat in installing single phase surface wiring *Safety:* i. Adhere to safety precautions and procedures	15	Demonstration & Observation	according to specifications and wiring quality iii. Electrical safety procedures adhered as per MS-IEC and IEE regulations
3. Install single phase conduit wiring	i. Types of single phase conduit wiring • In open air • In thermally insulated wall • In brick work			6	Lecture	i. Types of single phase conduit wiring listed and explained ii. Conduit measured and marked according to

Work Activities	Related Knowledge	Related Skills	Attitude/Safety/ Environmental	Training Hours	Delivery Mode	Assessment Criteria
	ii. Types of conduits • Light gauge • Heavy gauge • Flexible iii. Calculation of conduit space factor iv. Conduit preparation • Measure and mark • Cut • Bend • Thread v. Single phase conduit wiring installation methods					specifications iii. Conduit cut according to specifications iv. Conduit bended according to specifications v. Conduit threaded according to specifications vi. Conduit junction box and accessories fixed vii. Single phase conduit wiring conducted according to specifications and wiring quality viii. Electrical safety procedures adhered as per MS-IEC and IEE regulations
		i. Determine type of single phase conduit wiring ii. Measure and mark conduit according to specifications iii. Cut conduit according to specifications iv. Bend conduit according to specifications v. Thread conduit according to specifications vi. Fix conduit junction box and accessories vii. Wire single phase conduit wiring		15	Demonstration & Observation	

Work Activities	Related Knowledge	Related Skills	Attitude/Safety/ Environmental	Training Hours	Delivery Mode	Assessment Criteria
		viii. Use sleeve cable for finishing work ix. Adhere to electrical safety procedures as per MS-IEC and IEE regulations	*Attitude:* i. Knowledgeable and neat in installing single phase conduit wiring *Safety:* i. Adhere to safety precautions and procedures			
4. Install single phase trunking wiring	i. Types of single phase trunking wiring • On wall • Suspended • Flush floor ii. Size of trunking iii. Trunking preparation • Measure and mark • Cutting • Bending iv. Single phase trunking wiring installation methods			6	Lecture	i. Types of single phase trunking wiring listed and explained ii. Trunking measured and marked according to specifications iii. Trunking cut according to specifications iv. Trunking bended according to specifications v. Trunking and accessories

Work Activities	Related Knowledge	Related Skills	Attitude/Safety/ Environmental	Training Hours	Delivery Mode	Assessment Criteria
		i. Determine type of single phase trunking wiring ii. Measure and mark trunking according to specifications iii. Cut trunking according to specifications iv. Bend trunking according to specifications v. Fix trunking and accessories vi. Wire single phase trunking wiring according to specifications vii. Adhere to electrical safety procedures as per MS-IEC and IEE regulations	*Attitude:* i. Knowledgeable and neat in installing single phase trunking wiring *Safety:* i. Adhere to safety precautions and procedures	15	Demonstration & Observation	fixed vi. Single phase trunking wiring conducted according to specifications and wiring quality vii. Electrical safety procedures adhered as per MS-IEC and IEE regulations

Work Activities	Related Knowledge	Related Skills	Attitude/Safety/ Environmental	Training Hours	Delivery Mode	Assessment Criteria
5. Install single phase earthing system	i. Introduction to earthing system ii. Earthing components • Earthing electrode • Earthing chamber • Earthing lead • Earth continuity conductor • Earth bond iii. Single phase earthing system installation methods			6	Lecture	i. Earthing electrode planted according to drawing requirements ii. Earthing chamber placed according to drawing requirements iii. Earthing lead wired according to wiring quality practices iv. Main bonding conductor wired according to wiring quality practices v. Electrical safety procedures adhered as per MS-IEC and IEE regulations
		i. Plant earthing electrode ii. Place earthing chamber iii. Wire earthing lead iv. Wire main bonding conductor v. Adhere to electrical safety procedures as per MS-IEC and IEE regulations	*Attitude:* i. Knowledgeable and neat in installing single phase earthing system *Safety:* i. Adhere to safety precautions and procedures	15	Demonstration & Observation	

Work Activities	Related Knowledge	Related Skills	Attitude/Safety/ Environmental	Training Hours	Delivery Mode	Assessment Criteria
6. Install distribution board	i. Introduction to final sub-circuits ii. Calculation of load current • Protection rating • Cable rating/size iii. Calculation of voltage drop iv. Final sub-circuit arrangement v. Distribution board installation methods			6	Lecture	i. Final sub-circuit requirements listed and explained ii. Load current calculated according to drawing specifications iii. Protection rating checked according to drawing specifications iv. Cable rating/size confirmed v. Voltage drop calculated vi. Distribution board fixed in accordance with installation quality
		i. Determine final sub-circuits ii. Calculate load of current iii. Determine protection rating iv. Determine cable rating/size v. Calculate voltage drop vi. Fix distribution board	*Attitude:* i. Knowledgeable and neat in installing distribution board *Safety:* i. Adhere to safety precautions and procedures	15	Demonstration & Observation	

Work Activities	Related Knowledge	Related Skills	Attitude/Safety/ Environmental	Training Hours	Delivery Mode	Assessment Criteria
7. Inspect single phase wiring functionality	i. Inspection on wiring accessories and fittings: • Visual ▪ Uniformity ▪ Tidiness/ neatness ▪ Firmness • Instrument ▪ Continuity ii. Cable termination checking			4	Lecture	i. Wiring accessory and fitting continuity and uniformity assessed according to installation standard practices ii. Tidiness of accessory and fitting assessed according to installation standard practices iii. Firmness of accessory and fitting assessed according to installation standard practices iv. Cable termination quality checked according to installation standard practices v. Electrical safety procedures adhered as per MS-IEC and IEE
		i. Check continuity and uniformity of wiring accessories and fittings ii. Check tidiness/neatness of accessories and fittings iii. Check firmness of accessories and fittings iv. Check cable terminations v. Adhere to electrical safety procedures as per MS-IEC and IEE regulations	*<u>Attitude:</u>* i. Knowledgeable and detailed in inspecting single	10	Demonstration & Observation	

Work Activities	Related Knowledge	Related Skills	Attitude/Safety/ Environmental	Training Hours	Delivery Mode	Assessment Criteria
			phase wiring functionality *Safety:* i. Adhere to safety precautions and procedures			regulations
8. Report single phase wiring to superior	i. Report writing skills ii. Single phase wiring report contents such as: • Location • Customer details • Types of single phase wiring • Wiring status • Building Management System (BMS) • Remarks and comments			2	Lecture	i. Single phase wiring report format drafted and compiled according to company format ii. Submit single phase wiring report to superior
		i. Determine single phase wiring report format ii. Prepare single phase wiring report iii. Submit single phase wiring report to superior	*Attitude:* i. Meticulous in writing single phase wiring report	5	Demonstration & Observation	

Work Activities	Related Knowledge	Related Skills	Attitude/Safety/ Environmental	Training Hours	Delivery Mode	Assessment Criteria
			ii. Adhere to report submission deadline			

Employability Skills

Core Abilities	Social Skills
01.01 Identify and gather information. 01.02 Document information procedures or processes. 01.03 Utilise basic IT applications. 01.04 Analyse information. 01.05 Utilise the Internet to locate and gather information. 01.06 Utilise word processor to process information. 01.07 Utilise database applications to locate a process information. 01.08 Utilise spread sheets applications to locate and process information. 01.09 Utilise business graphic application to process information. 01.10 Apply a variety of mathematical techniques. 01.11 Apply thinking skills and creativity. 02.01 Interpret and follow manuals, instructions and SOP's. 02.02 Follow telephone/telecommunication procedures. 02.03 Communicate clearly. 02.04 Prepare brief reports and checklist using standard forms. 02.05 Read/Interpret flowcharts and pictorial information. 02.06 Write memos and letters. 02.07 Utilise Local Area Network (LAN)/Intranet to exchange information. 02.08 Prepare pictorial and graphic information. 02.09 Prepare flowcharts. 02.10 Prepare reports and instructions. 02.11 Convey information and ideas to people. 03.02 Demonstrate integrity and apply practical practices. 03.03 Accept responsibility for own work and work area. 03.04 Seek and act constructively upon feedback about work performance. 03.05 Demonstrate safety skills. 03.06 Respond appropriately to people and situations.	1. Communication skills 2. Conceptual skills 3. Interpersonal skills 4. Multitasking and prioritising 5. Self-discipline 6. Teamwork 7. Learning skills 8. Leadership skills

03.08 Develop and maintain a cooperation within work group. 03.09 Manage and improve performance of individuals. 03.10 Provide consultations and counselling. 03.13 Develop and maintain team harmony and resolve conflicts. 03.14 Facilitate and coordinate teams and ideas. 03.15 Liaise to achieve identified outcomes. 03.16 Identify and assess client/customer needs. 04.01 Organise own work activities. 04.03 Organise and maintain own workplace. 04.04 Apply problem solving strategies. 04.05 Demonstrate initiative and flexibility. 04.06 Allocate work. 04.07 Negotiate acceptance and support for objectives and strategies. 05.01 Implement project/work plans. 06.01 Understand systems. 06.02 Comply with and follow chain of command. 06.03 Identify and highlight problems. 06.04 Adapt competencies to new situations/systems. 06.05 Analyse technical systems. 06.07 Develop and maintain networks.	

Tools, Equipment and Materials (TEM)

ITEMS	RATIO (TEM : Trainees)
1. Stationery	1:1
2. Single phase wiring drawing	1:1
3. Technical drawing tools	1:1
4. Wiring bay(plywood, concrete)	1:1
5. Electrical circuit trainer kit	1:5
6. Double insulated cable	1:1
7. Wiring lead	1:1
8. Wiring neil	1:1
9. PVC tape	1:1
10. Single insulated cabl	1:1
11. Trunking accessories	1:1
12. Conduit accessories	1:1
13. Concealed accessories	1:5
14. Galvanized Iron (GI)	1:1
15. Poly Vinyl Chloride (PVC)	1:1
16. Fish wire	1:1
17. Earthing materials	1:5
18. Earth electrode	1:5
19. Earth electrode coupler	1:5
20. Moulded Cases Circuit Breaker (MCCB)	1:5
21. Miniature Circuit Breaker (MCB)	1:5
22. Residual Current Circuit Breaker (RCCB)	1:5
23. Isolator	1:5
24. Switch	1:5
25. Fuse	1:1
26. Main switch	1:5
27. Distribution board	1:5
28. GI bending machine	1:10
29. Measuring tape	1:1
30. Power tool sets	1:5
31. Power meter	1:5
32. Ladder	1:5
33. Spirit level	1:5

34. Electrical tools sets	1:1
35. First aid kit	1:5
36. Single phase wiring report	1:1
37. Occupational Safety and Health Act (OSHA)	1:1
38. Single phase wiring Standard Operating Procedures (SOP)	1:1

References

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2. MDC Publishers Sdn. Bhd., Akta Bekalan Elektrik (Peraturan-Peraturan Elektrik & Syarikat Pengganti), Akta 447 & 448, ISBN 967-70-0845-5
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6. Trevor Linsley, Linacre House, Jordan Hill Oxford (2008), Basic Electrical Installation Works Fifth Edition, ISBN 978-0-7506-8751-5

CURRICULUM of COMPETENCY UNIT (CoCU)

Sub-Sector	BROADCASTING & VIDEOGRAPHY						
NOSS Title	TV – LIGHTING / CINEMATOGRAPHY – LIGHTING						
NOSS Title	FILM & TELEVISION LIGHTING						
Competency Unit Title	THREE PHASE WIRING						
Learning Outcome	The person who is competent in this CU shall be able to ensure that all the installed power cables are properly laid and in good working condition. Upon completion of this competency unit, trainees will be able to: - • Interpret three phase wiring drawing • Install three phase surface wiring • Install three phase conduit wiring • Install three phase trunking wiring • Install three phase earthing system • Install distribution board • Inspect three phase wiring functionality • Report three phase wiring to superior						
Competency Unit ID	CU 2	**Level**	3	**Training Duration**	140 Hours	**Credit Hours**	14

Work Activities	**Related Knowledge**	**Related Skills**	**Attitude/Safety/ Environmental**	**Training Hours**	**Delivery Mode**	**Assessment Criteria**
1. Interpret three phase wiring drawing	i. Basic electrical knowledge such as: • Institute of Electrical Engineers (IEE) regulations • Malaysian Standard-International Electro Technical Commission (MS-IEC) • Electrical components and			4	Lecture	i. Electrical components and functions explained ii. Types of three phase wiring differentiated iii. Types of technical drawing drafted iv. Three phase wiring drawing

Work Activities	Related Knowledge	Related Skills	Attitude/Safety/ Environmental	Training Hours	Delivery Mode	Assessment Criteria
	functionality • Power requirements for selected devices ii. Three phase wiring process flow iii. Types of three phase wiring such as: • Surface wiring • Conduit wiring • Trunking wiring • Concealed wiring iv. Three phase wiring drawing components such as: • Electrical symbols • Circuit • Measurements • Schematic diagram • Colour coding v. Types of building structures such as: • Wood • Concrete • Glass • Cement • Ground vi. Types of materials for three phase wiring • Double insulated cable • Wiring lead • Wiring nail • PVC tape • Three insulated					interpreted to determine components, wiring installation location and building structure v. Materials, tools and equipment condition checked and arranged for three phase wiring

Work Activities	Related Knowledge	Related Skills	Attitude/Safety/ Environmental	Training Hours	Delivery Mode	Assessment Criteria
	cable • Trunking accessories • Conduit accessories • Concealed accessories • Galvanised Iron (GI) • Poly Vinyl Chloride (PVC) • Fish wire • Earthing materials • Earth electrode • Earth electrode coupler • Moulded Cases Circuit Breaker (MCCB)/ Miniature Circuit Breaker (MCB) • Residual Current Circuit Breaker (RCCB) • Isolator • Switch • Fuse • Main switch • Distribution board vii. Types of tools for three phase wiring • Measuring tape • Power tool sets • Power meter • Ladder • Spirit level					

Work Activities	Related Knowledge	Related Skills	Attitude/Safety/ Environmental	Training Hours	Delivery Mode	Assessment Criteria
	• Electrical tool sets ▪ Multimeter test pen ▪ Clamp meter ▪ Clamp cable • First aid kit					
		i. Determine three phase wiring drawing components ii. Determine wiring installation location iii. Determine building structure iv. Arrange materials, tools and equipment for three phase wiring	*Attitude:* i. Knowledgeable in interpreting three phase wiring drawing ii. Responsible in arranging materials and tools for three phase wiring	10	Demonstration & Observation	
2. Install three phase surface wiring	i. Types of three phase surface wiring • Open • Clipped direct ii. Three phase surface wiring installation methods			6	Lecture	i. Types of three phase surface wiring listed and explained ii. Three phase surface wiring conducted

Work Activities	Related Knowledge	Related Skills	Attitude/Safety/ Environmental	Training Hours	Delivery Mode	Assessment Criteria
		i. Determine type of three phase surface wiring ii. Measure and mark surface according to specifications iii. Cut cable according to specifications iv. Wire three phase surface wiring according to specifications v. Adhere to electrical safety procedures as per MS-IEC and IEE regulations	*Attitude:* i. Knowledgeable and neat in installing three phase surface wiring *Safety:* i. Adhere to safety precautions and procedures	15	Demonstration & Observation	according to specifications and wiring quality iii. Electrical safety procedures adhered as per MS-IEC and IEE regulations
3. Install three phase conduit wiring	i. Types of three phase conduit wiring • In open air • In thermally insulated wall • In brick work ii. Types of conduits • Light gauge • Heavy gauge			6	Lecture	i. Types of three phase conduit wiring listed and explained ii. Conduit measured and marked according to specifications

Work Activities	Related Knowledge	Related Skills	Attitude/Safety/ Environmental	Training Hours	Delivery Mode	Assessment Criteria
	• Flexible iii. Calculation of conduit space factor iv. Conduit preparation • Measure and mark • Cut • Bend • Thread v. Three phase conduit wiring installation methods					iii. Conduit cut according to specifications iv. Conduit bended according to specifications v. Conduit threaded according to specifications vi. Conduit junction box and accessories fixed vii. Three phase conduit wiring conducted according to specifications and wiring quality viii. Electrical safety procedures adhered as per MS-IEC and IEE regulations
		i. Determine type of three phase conduit wiring ii. Measure and mark conduit according to specifications iii. Cut conduit according to specifications iv. Bend conduit according to specifications v. Thread conduit according to specifications vi. Fix conduit junction box and accessories vii. Wire three phase conduit wiring viii. Use sleeve cable for finishing work ix. Adhere to electrical safety procedures as		15	Demonstration & Observation	

Work Activities	Related Knowledge	Related Skills	Attitude/Safety/ Environmental	Training Hours	Delivery Mode	Assessment Criteria
		per MS-IEC and IEE regulations	*Attitude:* i. Knowledgeable and neat in installing three phase conduit wiring *Safety:* i. Adhere to safety precautions and procedures			
4. Install three phase trunking wiring	i. Types of three phase trunking wiring • On wall • Suspended • Flush floor ii. Size of trunking iii. Trunking preparation • Measure and mark • Cutting • Bending iv. Three phase trunking wiring installation methods			6	Lecture	i. Types of three phase trunking wiring listed and explained ii. Trunking measured and marked according to specifications iii. Trunking cut according to specifications iv. Trunking bended according to specifications v. Trunking and accessories fixed vi. Three phase trunking wiring
		i. Determine type of three phase trunking wiring ii. Measure and mark trunking according to specifications		15	Demonstration & Observation	

Work Activities	Related Knowledge	Related Skills	Attitude/Safety/ Environmental	Training Hours	Delivery Mode	Assessment Criteria
		iii. Cut trunking according to specifications iv. Bend trunking according to specifications v. Fix trunking and accessories vi. Wire three phase trunking wiring according to specifications vii. Adhere to electrical safety procedures as per MS-IEC and IEE regulations	*Attitude:* i. Knowledgeable and neat in installing three phase trunking wiring *Safety:* i. Adhere to safety precautions and procedures			conducted according to specifications and wiring quality vii. Electrical safety procedures adhered as per MS-IEC and IEE regulations
5. Install three phase earthing system	i. Introduction to earthing system ii. Earthing components • Earthing electrode • Earthing chamber • Earthing lead			6	Lecture	i. Earthing electrode planted according to drawing requirements

Work Activities	Related Knowledge	Related Skills	Attitude/Safety/ Environmental	Training Hours	Delivery Mode	Assessment Criteria
	• Earth continuity conductor • Earth bond iii. Three phase earthing system installation methods					ii. Earthing chamber placed according to drawing requirements iii. Earthing lead wired according to wiring quality practices iv. Main bonding conductor wired according to wiring quality practices v. Electrical safety procedures adhered as per MS-IEC and IEE regulations
		i. Plant earthing electrode ii. Place earthing chamber iii. Wire earthing lead iv. Wire main bonding conductor v. Adhere to electrical safety procedures as per MS-IEC and IEE regulations	*Attitude:* i. Knowledgeable and neat in installing three phase earthing system *Safety:* i. Adhere to safety precautions and procedures	15	Demonstration & Observation	
6. Install distribution board	i. Introduction to final sub-circuits ii. Calculation of load current • Protection rating			6	Lecture	i. Final sub-circuit requirements listed and explained ii. Load current

Work Activities	Related Knowledge	Related Skills	Attitude/Safety/ Environmental	Training Hours	Delivery Mode	Assessment Criteria
	• Cable rating/size iii. Calculation of voltage drop iv. Final sub-circuit arrangement v. Distribution board installation methods					calculated according to drawing specifications iii. Protection rating checked according to drawing specifications iv. Cable rating/size confirmed v. Voltage drop calculated vi. Distribution board fixed in accordance with installation quality
		i. Determine final sub-circuits ii. Calculate load of current iii. Determine protection rating iv. Determine cable rating/size v. Calculate voltage drop vi. Fix distribution board	*Attitude:* i. Knowledgeable and neat in installing distribution board *Safety:* i. Adhere to safety precautions and procedures	15	Demonstration & Observation	
7. Inspect three phase wiring functionality	i. Inspection on wiring accessories and fittings: • Visual ▪ Uniformity			4	Lecture	i. Wiring accessory and fitting continuity and uniformity

Work Activities	Related Knowledge	Related Skills	Attitude/Safety/ Environmental	Training Hours	Delivery Mode	Assessment Criteria
	▪ Tidiness/ neatness ▪ Firmness • Instrument ▪ Continuity ii. Cable termination checking					assessed according to installation standard practices ii. Tidiness of accessory and fitting assessed according to installation standard practices iii. Firmness of accessory and fitting assessed according to installation standard practices iv. Cable termination quality checked according to installation standard practices v. Electrical safety procedures adhered as per MS-IEC and IEE regulations
		i. Check continuity and uniformity of wiring accessories and fittings ii. Check tidiness/neatness of accessories and fittings iii. Check firmness of accessories and fittings iv. Check cable terminations v. Adhere to electrical safety procedures as per MS-IEC and IEE regulations	*Attitude:* i. Knowledgeable and detailed in inspecting three phase wiring functionality *Safety:* i. Adhere to safety	10	Demonstration & Observation	

Work Activities	Related Knowledge	Related Skills	Attitude/Safety/ Environmental	Training Hours	Delivery Mode	Assessment Criteria
			precautions and procedures			
8. Report three phase wiring to superior	i. Report writing skills ii. Three phase wiring report contents such as: • Location • Customer details • Types of three phase wiring • Wiring status • Building Management System (BMS) • Remarks and comments			2	Lecture	i. Three phase wiring report format drafted and compiled according to company format ii. Submit three phase wiring report to superior
		i. Determine three phase wiring report format ii. Prepare three phase wiring report iii. Submit three phase wiring report to superior	*Attitude:* i. Meticulous in writing three phase wiring report ii. Adhere to report submission deadline	5	Demonstration & Observation	

Work Activities	Related Knowledge	Related Skills	Attitude/Safety/ Environmental	Training Hours	Delivery Mode	Assessment Criteria

Employability Skills

Core Abilities	Social Skills
01.01 Identify and gather information. 01.02 Document information procedures or processes. 01.03 Utilise basic IT applications. 01.04 Analyse information. 01.05 Utilise the Internet to locate and gather information. 01.06 Utilise word processor to process information. 01.07 Utilise database applications to locate a process information. 01.08 Utilise spread sheets applications to locate and process information. 01.09 Utilise business graphic application to process information. 01.10 Apply a variety of mathematical techniques. 01.11 Apply thinking skills and creativity. 02.01 Interpret and follow manuals, instructions and SOP's. 02.02 Follow telephone/telecommunication procedures. 02.03 Communicate clearly. 02.04 Prepare brief reports and checklist using standard forms. 02.05 Read/Interpret flowcharts and pictorial information. 02.06 Write memos and letters. 02.07 Utilise Local Area Network (LAN)/Intranet to exchange information. 02.08 Prepare pictorial and graphic information. 02.09 Prepare flowcharts. 02.10 Prepare reports and instructions. 02.11 Convey information and ideas to people. 03.02 Demonstrate integrity and apply practical practices. 03.03 Accept responsibility for own work and work area. 03.04 Seek and act constructively upon feedback about work performance. 03.05 Demonstrate safety skills. 03.06 Respond appropriately to people and situations.	1. Communication skills 2. Conceptual skills 3. Interpersonal skills 4. Multitasking and prioritising 5. Self-discipline 6. Teamwork 7. Learning skills 8. Leadership skills

03.08 Develop and maintain a cooperation within work group. 03.09 Manage and improve performance of individuals. 03.10 Provide consultations and counselling. 03.13 Develop and maintain team harmony and resolve conflicts. 03.14 Facilitate and coordinate teams and ideas. 03.15 Liaise to achieve identified outcomes. 03.16 Identify and assess client/customer needs. 04.01 Organise own work activities. 04.03 Organise and maintain own workplace. 04.04 Apply problem solving strategies. 04.05 Demonstrate initiative and flexibility. 04.06 Allocate work. 04.07 Negotiate acceptance and support for objectives and strategies. 05.01 Implement project/work plans. 06.01 Understand systems. 06.02 Comply with and follow chain of command. 06.03 Identify and highlight problems. 06.04 Adapt competencies to new situations/systems. 06.05 Analyse technical systems. 06.07 Develop and maintain networks.	

Tools, Equipment and Materials (TEM)

ITEMS	RATIO (TEM : Trainees)
1. Stationery	1:1
2. Three phase wiring drawing	1:1
3. Technical drawing tools	1:1
4. Wiring bay(plywood, concrete)	1:1
5. Electrical circuit trainer kit	1:5
6. Double insulated cable	1:1
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16. Fish wire	1:1
17. Earthing materials	1:5
18. Earth electrode	1:5
19. Earth electrode coupler	1:5
20. Moulded Cases Circuit Breaker (MCCB)	1:5
21. Miniature Circuit Breaker (MCB)	1:5
22. Residual Current Circuit Breaker (RCCB)	1:5
23. Isolator	1:5
24. Switch	1:5
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26. Main switch	1:5
27. Distribution board	1:5
28. GI bending machine	1:10
29. Measuring tape	1:1
30. Power tool sets	1:5
31. Power meter	1:5
32. Ladder	1:5
33. Spirit level	1:5

34. Electrical tools sets 35. First aid kit 36. Three phase wiring report 37. Occupational Safety and Health Act (OSHA) 38. Three phase wiring Standard Operating Procedures (SOP)	1:1 1:5 1:1 1:1 1:1

References

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1. International Law Book Services (1990), Akta Bekalan Elektrik (Akta 447 & 448), ISBN 967-89-1464-6
2. MDC Publishers Sdn. Bhd., Akta Bekalan Elektrik (Peraturan-Peraturan Elektrik & Syarikat Pengganti), Akta 447 & 448, ISBN 967-70-0845-5
3. C Duncan and EG Stocks (2004), Proses Pemasangan, Golden Books Centre SDN. BHD, Petaling Jaya, ISBN 967-9959-31-7
4. Mohd Isa Idris & Ramli Harun, IBS Buku Sdn. Bhd (2002),Asas Pendawaian, ISBN 0-87006-770-2
5. Suruhanjaya Tenaga (2008) Garis Panduan Pendawaian Elektrik di Bangunan Kediaman
6. Trevor Linsley, Linacre House, Jordan Hill Oxford (2008), Basic Electrical Installation Works Fifth Edition, ISBN 978-0-7506-8751-5

CURRICULUM of COMPETENCY UNIT (CoCU)

Sub Sector	BROADCASTING & VIDEOGRAPHY						
Job Area	TV – LIGHTING / CINEMATOGRAPHY – LIGHTING						
NOSS Title	FILM & TELEVISION LIGHTING						
Competency Unit Title	LIGHTING PRE-PRODUCTION						
Learning Outcome	The person who is competent in this CU shall be able to properly arrange work preparation before actual tv/film production carried out in accordance with Standard Operating Procedure (SOP). Upon completion of this competency unit, trainees will be able to: - • Identify job order requirements • Carry out location survey • Arrange lighting equipment booking • Report lighting pre-production activities						
Competency Unit ID	CU 3	**Level**	3	**Training Duration**	70 Hours	**Credit Hours**	7

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
1. Identify job order requirements	i. Production concept such as:- • Fiction ▪ Horror/thriller ▪ Romance ▪ Action ▪ Comedy ▪ Drama • Non-fiction ▪ Documentary ▪ Magazine • Entertainment ▪ Musical/drama dance ▪ Magic show ▪ Award show ▪ Game show			8	Lecture	i. Production concept explained ii. Lighting plot specification described iii. Type of film sensitivity selected

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	▪ Prank show ▪ Cooking show ▪ Reality show • Theatre ▪ Art & culture ▪ Musical theatre ▪ Comedy talk show ▪ Opera • Talk show ▪ News ▪ Sport ▪ Religious talk show ▪ Woman/man talk show ii. Types of lighting plot such as:- • Scaling floor plan plot layout ▪ 3 point lighting • Vertical section plot ▪ 3D lighting plot ▪ Virtual lighting plot iii. Type of film sensitivity such as:- • ASA • ISO • GOST iv. Installation timeline specification such as:- • Working duration • Work flow					

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		i. Interpret production concept ii. Interpret lighting plot specification iii. Confirm type of film sensitivity to be used iv. Acquire installation timeline	*Attitude:* i. Meticulous in interpreting lighting plot ii. Resourceful in gathering data and information	20	Demonstration & Observation	
2. Perform location survey	i. Types of power supply such as:- • Main power source ▪ Single phase ▪ Three phase • Generator set ii. Electrical Act & Regulation and Standard • Energy Commission Act 2001 • Electricity Supply Act 1990 (Act 447) • Electrical Regulation 1994 • MS 1936: 2006 / IEC 60364 • MS 1979: 2007 • Electrical Installation of Buildings – Code			2	Lecture	i. Power supply availability for location shooting identified ii. Power consumption required calculated v. Electrical Act & Regulation and Standard explained

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	of practice (COP) iii. Occupational Safety & Health Act 514 (OSHA) 1994 iv. Power consumption calculation					
		i. Check power supply availability for location shooting ii. Check studio/ stage/ shooting location and lighting equipment position suitability vi. Comply Electrical Act & Regulation and Standard iii. Calculate required power consumption iv. Record site visit finding information and submit to superior	*Attitude:* i. Meticulous in calculating required power consumption ii. Resourceful in gathering Electrical Act & Regulation and Standard *Safety:*	5	Demonstration & Observation	

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
			i. Adhere to safety precaution and procedures			
3. Arrange lighting equipment booking	i. Types and functionality of lighting equipment such as:- • General/practical light ▪ Fresnel light ▪ Profile light ▪ Spot light ▪ Par light ▪ Flood light ▪ Molefay light ▪ Cyclo light ▪ Halogen light – Hydrargyrum Medium-arc Iodide (HMI) – MSR ▪ Follow spot • Special effect (inteligent light) ▪ Moving head light – Profile – Wash – Beam ▪ Light Emitting Diode (LED) light – LED wash – LED moving – LED stribe ii. Types and functionality			8	Lecture	i. Types and functionality of lighting equipment explained ii. Types and functionality of special effect equipment explained iii. Types and functionality of lighting system equipment explained iv. Size of power cable explained v. Type of power cable explained vi. Type of power connector explained vii. Types and functionality of lighting accessories explained

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	of special effect equipment such as:- • Smoke machine • Haze machine • Dry ice machine • Laser • Confetti • Fire work machine iii. Types and functionality of lighting system equipment such as:- • Lighting console • Dimmer • Digital Multiplex (DMX) signal cable • Category 6 network cable (CAT 6) iv. Size of power cable such as:- • 2.5 mm (≤ 2000W) • 4mm (≤ 5000W) v. Type of power cable such as:- • 3 core • 5 core vi. Type of power connector • Socapex connector • CEE connector vii. Types and functionality of filter such as:- • Colour filter • Fog filter • Day light filter					

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	• Evening filter viii. Types and functionality of lighting accessories such as:- • Lighting stand ▪ C stand ▪ Heavy duty lighting stand (wind up stand) ▪ G clamp ▪ C clamp • Cutter ▪ Black flag ▪ Butterfly • Reflector ix. Types of wiring tools • Measuring tape • Power tool sets • Power meter • Ladder • Spirit level • Electrical tool sets ▪ Multimeter test pen ▪ Clamp meter ▪ Clamp cable • First aid kit x. Lighting equipment checklist format					
		i. Identify types and quantity of lighting tools, equipment and material ii. Identify lighting tools, equipment and material		20	Demonstration & Observation	

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		requisition form iii. Request lighting tools, equipment and material to related department iv. Produce lighting equipment checklist	*Attitude:* i. Systematic in arranging lighting equipment booking *Safety:* i. Adhere to safety precaution and procedures			
4. Report lighting pre-production activities	i. Report writing skill ii. Lighting pre-production report format • Survey finding • Lighting tools, equipment and material • Power supply availability			2	Lecture	i. Lighting pre-production report produced
		i. Identify lighting pre-production report format ii. Prepare lighting pre-production report iii. Report lighting pre-production activities to supervisor		5	Demonstration & Observation	

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
			Attitude: i. Timely in preparing lighting pre-production report			

Employability Skills

Core Abilities	Social Skills
01.01 Identify and gather information. 01.02 Document information procedures or processes. 02.01 Interpret and follow manuals, instructions and SOP's. 02.02 Follow telephone/telecommunication procedures. 02.03 Communicate clearly. 02.04 Prepare brief reports and checklist using standard forms. 02.05 Read/Interpret flowcharts and pictorial information. 03.02 Demonstrate integrity and apply practical practices. 03.03 Accept responsibility for own work and work area. 03.04 Seek and act constructively upon feedback about work performance. 03.06 Respond appropriately to people and situations. 03.07 Resolve interpersonal conflicts. 06.01 Understand systems. 06.02 Comply with and follow chain of command. 06.03 Identify and highlight problems. 06.04 Adapt competencies to new situations/systems. 03.08 Develop and maintain a cooperation within work group. 04.01 Organize own work activities. 04.02 Set and revise own objectives and goals. 04.04 Apply problem solving strategies. 04.05 Demonstrate initiative and flexibility. 02.11 Convey information and ideas to people. 03.09 Manage and improve performance of individuals.	1. Communication skills 2. Conceptual skills 3. Interpersonal skills 4. Multitasking and prioritizing 5. Self-discipline 6. Teamwork 7. Leadership skills 8. Learning skills

03.13 Develop and maintain team harmony and mis resolve conflicts. 03.14 Facilitate and coordinate teams and ideas. 03.15 Liase to achieve identified outcomes. 03.16 Identify and assess client/ customer needs. 04.06 Allocate work. 04.07 Negotiate acceptance and support for objectives and strategies. 05.01 Implement project/ work plans. 05.02 Inspect and monitor work done and/or in progress.	

Tools, Equipment and Materials (TEM)

ITEMS	**RATIO (TEM : Trainees)**
1. Stationery	1:1
2. Sample of lighting plot	1:1
~~3. Working timeline~~	~~1:1~~
4. General/practical light (Fresnel light, Profile light, Spot light, Par light, Flood light, Molefay light, Cyclo light, Halogen light, Follow spot)	1:25
5. Special effect/inteligent light (Moving head light, Light Emitting Diode (LED) light)	1:25
6. Special effect equipment (Smoke machine, Haze machine, Dry ice machine, Laser, Conffeti, Fire work machine)	1:25
7. Lighting system equipment (Lighting console, Dimmer)	1:25
8. Power cable	As required
9. Signal cable (DMX signal cable, Cat 6 signal cable)	As required
10. Filter (Colour filter, Fog filter, Day light filter, Evening filter)	As required
11. Lighting accessories (Lighting stand, Cutter, Reflector)	As required
12. Hand tools	1:1

References

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1. Jennifer Bringle (2010), Lighting, The Rosen Publishing Group. ISBN: 978-1435852631
2. Kris Malkiewicz (1986), Film Lighting, Prentice Hall Press. ISBN: 978-0671766344
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4. Richard Pilbrow (1997), Stage Lighting Design, Nick Hern Books Limited ISBN: 1-85459-273-4
5. Harry C. Box (2010), Set Lighting Technician's Handbook, Focal Press Publication, ISBN: 978-0240-81705-1
6. Richard Cadena (2010), Automated Lighting, Focal Press Publication, ISBN: 978-0240-81222-9
7. Zettl (2012), Television Production Handbook, Cencage Learning, ISBN: 978-0495-89884-9
8. Blain Brown (2008), Motion Picture and Video Lighting, Eclinor Actipis, ISBN: 978-0-240-80763-8
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CURRICULUM of COMPETENCY UNIT (CoCU)

Sub Sector	BROADCASTING & VIDEOGRAPHY						
Job Area	TV – LIGHTING / CINEMATOGRAPHY – LIGHTING						
NOSS Title	FILM & TELEVISON LIGHTING						
Competency Unit Title	RIGGING/ SET-UP OPERATION						
Learning Outcome	The person who is competent in this CU shall be able to properly arrange and install lighting equipment in accordance with Standard Operating Procedure (SOP). Upon completion of this competency unit, trainees will be able to: - • Check lighting equipment • Install general/practical lighting equipment • Install special effects equipment • Install lighting system						
Competency Unit ID	CU 4	**Level**	3	**Training Duration**	350 Hours	**Credit Hours**	35

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
1. Check lighting equipment	i. Types and functionality of lighting equipment such as:- • General/practical light ▪ Fresnel light ▪ Profile light ▪ Spot light ▪ Par light ▪ Flood light ▪ Molefay light ▪ Cyclo light ▪ Halogen light – Hydrargyrum Medium-arc Iodide (HMI) – MSR			5	Lecture	i. Types and functionality of lighting equipment explained ii. Types and functionality of special effect equipment explained iii. Types and functionality of lighting system equipment explained iv. Size of power

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	▪ Follow spot • Special effect (intelligent light) ▪ Moving head light – Profile – Wash – Beam ▪ Light Emitting Diode (LED) light – LED wash – LED moving – LED stripe – LED Fresnel ii. Types and functionality of special effect equipment such as:- • Smoke machine • Haze machine • Dry ice machine • Laser • Confetti • Fire work machine iii. Types and functionality of lighting system equipment such as:- • Lighting console • Dimmer • DMX signal cable • Cat 6 signal cable iv. Size of power cable v. Types and functionality of filter such as:-					cable explained v. Types and functionality of filter explained vi. Types and functionality of lighting accessories explained

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	• Colour filter • Fog filter • Day light filter • Evening filter vi. Types and functionality of lighting accessories such as:- • Lighting stand ▪ C stand ▪ Heavy duty lighting stand (wind up stand) ▪ G clamp ▪ C clamp • Cutter ▪ Black flag ▪ Butterfly • Reflector vii. Electrical Act & Regulation and Standard • Energy Commission Act 2001 • Electricity Supply Act 1990 (Act 447) • Electrical Regulation 1994 • MS 1936: 2006 / IEC 60364 • MS 1979: 2007 (COP) • Electrical Installation of Buildings – Code of practice (COP)					

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	viii. Occupational Safety & Health Act 514 (OSHA) 1994					
		i. Check lighting equipment availability (quantity) ii. Check lighting equipment functionality iii. Comply Electrical Act & Regulation and Standard	*Attitude:* i. Meticulous in checking lighting equipment *Safety:* i. Adhere to safety precaution and procedures	12	Demonstration & Observation	
2. Install general / practical lighting equipment	i. Lighting equipment layout plan specification such as: • Lighting equipment • Cable route ▪ Power cable ▪ Signal cable • Types of surface • Power source of availability ii. Types of lighting plot such as:- • Scaling floor plan			37	Lecture	i. Types of lighting plot explained ii. Types of cable explained iii. Cable layout plan explained iv. General / practical lighting equipment installation procedure

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	plot layout ▪ 3 point lighting • Vertical section plot ▪ 3D lighting plot ▪ Virtual lighting plot iii. Types of cable such as:- • Water proof cable • Heavy duty cable iv. Types of single and three phase wiring such as: • Surface wiring • Conduit wiring • Trunking wiring v. Single and three phase wiring drawing components such as: • Electrical symbols • Circuit • Measurements • Schematic diagram • Colour coding vi. Types of materials for single phase wiring such as: • Double insulated cable • Wiring lead • Wiring nail • PVC tape • Single insulated cable • Trunking					described v. General lighting equipment installation practiced vi. Power cable lay practiced

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	accessories • Conduit accessories • Concealed accessories • Galvanised Iron (GI) • Poly Vinyl Chloride (PVC) • Fish wire • Earthing materials • Earth electrode • Earth electrode coupler • Moulded Cases Circuit Breaker (MCCB)/ Miniature Circuit Breaker (MCB) • Residual Current Circuit Breaker (RCCB) • Isolator • Switch • Fuse • Main switch • Distribution board vii. Single phase wiring procedure viii. Three phase wiring procedure ix. General/ practical lighting equipment installation procedure					

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		i. Determine types of general lighting equipment ii. Install general lighting equipment according to lighting plot iii. Determine types of cable according to general lighting equipment specification iv. Confirm cable length v. Mark cable route vi. Lay power cable according to cable layout plan vii. Tag laid cable viii. Apply good housekeeping practices	*Attitude:* i. Knowledgeable and neat in installing general / practical lighting equipment *Safety:* i. Adhere to safety precaution and procedures	86	Demonstration & Observation	
3. Install special effects equipment	i. Special effects (intelligent light) patching method ii. Special effects (intelligent light)			37	Lecture	i. Special effects (intelligent light) patching method explained

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	addressing method iii. Data signal specification • DMX data signal ▪ DMX 512 ▪ DMX 513-1024 • CAT 6 data signal iv. Special effects equipment installation procedure					ii. Special effects (intelligent light) addressing method explained iii. Data signal specification explained iv. Special effects equipment installation procedure described v. Types of special effects equipment selected vi. Special effects equipment installation practiced vii. Signal cable lay practiced
		i. Determine types of special effects equipment ii. Install special effects equipment according to lighting plot iii. Determine types of cable according to special effect equipment specification ix. Confirm cable length x. Mark cable route iv. Lay signal cable according to cable layout plan xi. Lay power cable according to cable layout plan xii. Tag laid cable xiii. Apply good housekeeping practices	<u>*Attitude:*</u> i. Knowledgeable and neat in	86	Demonstration & Observation	

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
			installing general / practical lighting equipment *Safety:* i. Adhere to safety precaution and procedures			
4. Install lighting system	i. Power supply source • Main source • Generator set ii. Dimmer system patching method iii. Lighting console installation procedure such as:- • Patching board/dimmer control • Addressing			26	Lecture	i. Dimmer system patching method explained ii. Lighting console installation procedure described iii. Dimmer system and lighting console installation practiced iv. Power cable lay practiced v. Signal cable lay practiced
		i. Identify power supply source ii. Install dimmer system and lighting console according to layout iii. Confirm cable length iv. Mark cable route v. Lay signal cable according to cable layout plan vi. Lay power cable according to cable layout plan		61	Demonstration & Observation	

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		vii. Tag laid cable viii. Apply good housekeeping practices ix. Report rigging operation activities to superior	*Attitude:* i. Meticulous and knowledgeable in installing lighting system *Safety:* i. Adhere to safety precaution and procedures			

Employability Skills

Core Abilities	Social Skills
01.01 Identify and gather information. 01.02 Document information procedures or processes. 02.01 Interpret and follow manuals, instructions and SOP's. 02.02 Follow telephone/telecommunication procedures. 02.03 Communicate clearly. 02.04 Prepare brief reports and checklist using standard forms. 02.05 Read/Interpret flowcharts and pictorial information. 03.02 Demonstrate integrity and apply practical practices. 03.03 Accept responsibility for own work and work area. 03.04 Seek and act constructively upon feedback about work performance. 03.06 Respond appropriately to people and situations. 03.07 Resolve interpersonal conflicts. 06.01 Understand systems. 06.02 Comply with and follow chain of command. 06.03 Identify and highlight problems. 06.04 Adapt competencies to new situations/systems. 01.04 Analyse information. 03.08 Develop and maintain a cooperation within work group. 04.01 Organize own work activities. 04.02 Set and revise own objectives and goals. 04.04 Apply problem solving strategies. 04.05 Demonstrate initiative and flexibility. 01.10 Apply a variety of mathematical techniques. 02.11 Convey information and ideas to people. 03.09 Manage and improve performance of individuals. 03.13 Develop and maintain team harmony and mis resolve conflicts. 03.14 Facilitate and coordinate teams and ideas. 03.15 Liase to achieve identified outcomes. 03.16 Identify and assess client/ customer needs. 04.06 Allocate work. 04.07 Negotiate acceptance and support for objectives and strategies. 05.02 Inspect and monitor work done and/or in progress.	1. Communication skills 2. Conceptual skills 3. Interpersonal skills 4. Multitasking and prioritizing 5. Self-discipline 6. Teamwork 7. Learning skills 8. Leadership skills

Tools, Equipment and Materials (TEM)

ITEMS	RATIO (TEM : Trainees)
1. Stationery	1:1
2. Hand tools	1:1
3. Multimeter	1:1
4. Lighting plot	1:1
5. Working timeline	1:1
6. General/practical light (Fresnel light, Profile light, Spot light, Par light, Flood light, Molefay light, Cyclo light, Halogen light, Follow spot)	1:5
7. Special effect/inteligent light (Moving head light, Light Emitting Diode (LED) light)	1:25
8. Special effect equipment (Smoke machine, Haze machine, Dry ice machine, Laser, Conffeti, Fire work machine)	1:25
9. Lighting system equipment (Lighting console, Dimmer)	1:25
10. Power cable	As required
11. Signal cable (DMX signal cable, Cat 6 signal cable)	As required
12. Filter (Colour filter, Fog filter, Day light filter, Evening filter)	As required
13. Lighting accessories (Lighting stand, Cutter, Reflector)	As required

References

REFERENCES

1. Jennifer Bringle (2010), Lighting, The Rosen Publishing Group. ISBN: 978-1435852631
2. Kris Malkiewicz (1986), Film Lighting, Prentice Hall Press. ISBN: 978-0671766344
3. Francis Reid (2001), Stage Lighting Handbook, A & C Black (Publishers) Limited, ISBN: 0-87830-147-X
4. Richard Pilbrow (1997), Stage Lighting Design, Nick Hern Books Limited ISBN: 1-85459-273-4
5. Harry C. Box (2010), Set Lighting Technician's Handbook, Focal Press Publication, ISBN: 978-0240-81705-1
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8. Blain Brown (2008), Motion Picture and Video Lighting, Eclinor Actipis, ISBN: 978-0-240-80763-8

CURRICULUM of COMPETENCY UNIT (CoCU)

Sub Sector	BROADCASTING & VIDEOGRAPHY						
Job Area	TV – LIGHTING / CINEMATOGRAPHY – LIGHTING						
NOSS Title	FILM & TELEVISION LIGHTING						
Competency Unit Title	LIGHTING SET-UP/SYSTEM TESTING AND TROUBLESHOOTING						
Learning Outcome	The person who is competent in this CU shall be able to testing and troubleshoot any lighting equipment functionality in accordance with Standard Operating Procedure (SOP). Upon completion of this competency unit, trainees will be able to: - • Prepare testing tools and equipment • Check power supply availability • Carry out cable testing • Test lighting equipment • Carry out lighting equipment failure troubleshooting						
Competency Unit ID	CU 5	**Level**	3	**Training Duration**	210 Hours	**Credit Hours**	21

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
1. Prepare testing tools and equipment	i. Type of test such as:- • Continuity test • Three phase power supply testing voltage (phase to phase) • Earthing test • Load test ii. Types and functionality of testing tools & equipment • Multimeter • Test pen • Earthing meter • Clamp meter			3	Lecture	i. Type of test explained ii. Types and functionality of testing tools & equipment listed out iii. Testing tools and equipment according to technical specifications set practiced

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	• DMX tester • Earth leakage tester					
		i. Determine type of test ii. Check testing tools and equipment functionality iii. Set testing tools and equipment according to technical specifications	*Attitude:* i. Meticulous and knowledgeable in preparing testing tools and equipment *Safety:* i. Adhere to safety precaution and procedures	7	Demonstration & Observation	
2. Check power supply availability	i. Types of power supply such as:- • Main power source ▪ Single phase ▪ Three phase • Generator set ii. Power consumption calculation • Load calculation (amp)			9	Lecture	i. Types of power supply explained ii. Power consumption calculated

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		i. Utilise testing tools and equipment ii. Test power supply availability iii. Confirm power consumption iv. Follow testing procedure	*Attitude:* i. Knowledgeable in confirming power supply availability *Safety:* i. Adhere to safety precaution and procedures	22	Demonstration & Observation	
3. Carry out cable testing	i. Type of cable such as:- • Power cable ▪ 3 core ▪ 5 core • Signal cable ▪ Digital Multiplex (DMX) ▪ Category 6 network cable (CAT 6) ii. Size of power cable such as:- • 2.5mm (≤ 2000W) • 4mm (≤ 5000W) iii. Type of power connector			16	Lecture	i. Type of cable listed out ii. Size of power cable listed out iii. Type of power connector listed out iv. Cable connectivity testing procedure described v. Cable leakage testing procedure described

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	• Socapex connector • CEE connector iv. Cable connectivity testing procedure v. Cable leakage testing procedure					vi. Cable connectivity test practiced vii. Cable leakage test practiced
		v. Utilise testing tools and equipment vi. Check cable connectivity vii. Check cable leakage viii. Follow cable testing procedure	*Attitude:* i. Meticulous in carrying out cable testing *Safety:* i. Adhere to safety precaution and procedures	37	Demonstration & Observation	
4. Test lighting equipment	i. Types and functionality of lighting equipment such as:- • General/practical light ▪ Fresnel light ▪ Profile light ▪ Spot light ▪ Par light ▪ Flood light ▪ Molefay light			22	Lecture	i. Types and functionality of lighting equipment explained ii. Types and functionality of special effect equipment explained iii. General lighting

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	▪ Cyclo light ▪ Halogen light – Hydrargyrum Medium-arc Iodide (HMI) – MSR ▪ Follow spot • Special effect (intelligent light) ▪ Moving head light – Profile – Wash – Beam ▪ Light Emitting Diode (LED) light – LED wash – LED moving – LED stripe ii. Types and functionality of special effect equipment such as:- • Smoke machine • Haze machine • Dry ice machine • Laser • Confetti • Flame machine iii. General lighting functionality testing procedure • On and off • Visual inspection (intensity)					functionality testing procedure described iv. Lighting dimmer testing procedure described v. Bulb life time testing procedure described vi. Bulb handling procedure described vii. Lighting console functionality testing procedure described viii. Special effects equipment functionality testing procedure described ix. General lighting functionality test practiced x. Lighting dimmer test practiced xi. Lighting console functionality test practiced

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	iv. Lighting dimmer testing procedure • Patching test v. Bulb life time testing procedure • Hours indicator (HMI, MSR) vi. Bulb handling procedure vii. Lighting console functionality testing procedure • Recall channel • Recall fixture address • Dimmer intensity viii. Special effects equipment functionality testing procedure					xii. Special effects equipment functionality test practiced
		i. Utilise testing tools and equipment ii. Check general lighting functionality iii. Check lighting dimmer functionality iv. Check lighting console functionality v. Check special effects equipment functionality vi. Follow lighting equipment testing procedure	*Attitude:* i. Meticulous and knowledgeable in	51	Demonstration & Observation	

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
			testing lighting equipment *Safety:* i. Adhere to safety precaution and procedures			
5. Carry out lighting equipment failure troubleshooting	i. Types of source of failure such as:- • Cable leakage • Cable break • Equipment failure ii. Lighting equipment failure troubleshooting procedure iii. Non-lighting equipment failure troubleshooting procedure			13	Lecture	i. Types of source of failure explained ii. Lighting equipment failure troubleshooting procedure described iii. Non-lighting equipment failure troubleshooting procedure described iv. Source of failure described v. Lighting equipment failure described vi. Non-lighting equipment failure described
		i. Identify source of failure ii. Utilise testing tools and equipment iii. Rectify lighting equipment failure iv. Rectify non-lighting equipment failure v. Follow lighting and non-lighting equipment failure troubleshooting procedure	*Attitude:* i. Meticulous and knowledgeable in	29	Demonstration & Observation	

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
			carrying out lighting equipment failure troubleshooting *Safety:* i. Adhere to safety precaution and procedures			

Employability Skills

Core Abilities	Social Skills
01.01 Identify and gather information. 01.02 Document information procedures or processes. 02.01 Interpret and follow manuals, instructions and SOP's. 02.02 Follow telephone/telecommunication procedures. 02.03 Communicate clearly. 02.04 Prepare brief reports and checklist using standard forms. 02.05 Read/Interpret flowcharts and pictorial information. 03.02 Demonstrate integrity and apply practical practices. 03.03 Accept responsibility for own work and work area. 03.04 Seek and act constructively upon feedback about work performance. 03.06 Respond appropriately to people and situations. 03.07 Resolve interpersonal conflicts. 06.01 Understand systems. 06.02 Comply with and follow chain of command. 06.03 Identify and highlight problems. 06.04 Adapt competencies to new situations/systems. 03.08 Develop and maintain a cooperation within work group. 04.01 Organize own work activities. 04.02 Set and revise own objectives and goals. 04.04 Apply problem solving strategies. 04.05 Demonstrate initiative and flexibility. 01.10 Apply a variety of mathematical techniques. 03.15 Liase to achieve identified outcomes. 04.07 Negotiate acceptance and support for objectives and strategies.	1. Communication skills 2. Conceptual skills 3. Interpersonal skills 4. Multitasking and prioritizing 5. Self-discipline 6. Teamwork 7. Leadership skills 8. Learning skills

Tools, Equipment and Materials (TEM)

ITEMS	RATIO (TEM : Trainees)
1. Stationery	1:1
2. Multimeter	1:1
3. Test pen	1:1
4. Earthing meter	1:10
5. Clamp meter	1:10
6. DMX tester	1:10
7. Earth leakage tester	1:10
8. Working timeline	1:1
9. General/practical light (Fresnel light, Profile light, Spot light, Par light, Flood light, Molefay light, Cyclo light, Halogen light, Follow spot)	1:25
10. Special effect/inteligent light (Moving head light, Light Emitting Diode (LED) light)	1:25
11. Special effect equipment (Smoke machine, Haze machine, Dry ice machine, Laser, Conffeti, Fire work machine)	1:25
12. Lighting system equipment (Lighting console, Dimmer)	1:25
13. Power cable	As required
14. Signal cable (DMX signal cable, Cat 6 signal cable)	As required

References

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CURRICULUM of COMPETENCY UNIT (CoCU)

Sub Sector	BROADCASTING & VIDEOGRAPHY						
Job Area	TV – LIGHTING / CINEMATOGRAPHY – LIGHTING						
NOSS Title	FILM & TELEVISION LIGHTING						
Competency Unit Title	LIGHTING SYSTEM PROGRAMMING & REHEARSAL						
Learning Outcome	The person who is competent in this CU shall be able to program lighting console and rehearse lighting system in accordance with Standard Operation Procedure (SOP). Upon completion of this competency unit, trainees will be able to: - • Carry out lighting setup adjustment • Execute lighting programming • Carry out lighting rehearsal						
Competency Unit ID	CU 6	**Level**	3	**Training Duration**	420 Hours	**Credit Hours**	42

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
1. Carry out lighting setup adjustment	i. Talent and set position such as:- • 3 point lighting • 4 point lighting ii. Camera position and movement iii. Colour temperature (Kelvin degree) iv. Luminance measurement (lux/ foot candle) v. Types of lighting setup such as:- • Focusing adjustment • Intensity adjustment			5	Lecture	i. Talent and set position explained ii. Camera position and movement explained iii. Colour temperature (Kelvin degree) explained iv. Luminance measurement (lux / foot candle) explained v. Types of lighting setup

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		i. Check talent and set position according to camera position ii. Identify colour temperature (Kelvin degree) and lux (depth of field) iii. Carry out lighting setup adjustment iv. Adjust lighting intensity (lux)	*Attitude:* i. Meticulous and knowledgeable in carrying out lighting set up adjustment ii. Creative mindset in carrying out lighting set up adjustment *Safety:* i. Adhere to safety precaution and procedures	13	Demonstration & Observation	explained vi. Colour temperature (Kelvin degree) and lux (depth of field) measure practiced vii. Lighting setup adjustment practiced viii. Lighting intensity (lux) adjustment practiced
2. Execute lighting programming	i. Production concept such as:- • Fiction ▪ Horror/thriller ▪ Romance ▪ Action ▪ Comedy ▪ Drama			11	Lecture	i. Production concept explained ii. Lighting console programming procedure described

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria

	• Non-fiction
	  ▪ Documentary
	  ▪ Magazine
	• Entertainment
	  ▪ Musical/drama dance
	  ▪ Magic show
	  ▪ Award show
	  ▪ Game show
	  ▪ Prank show
	  ▪ Cooking show
	  ▪ Reality show
	• Theatre
	  ▪ Art & culture
	  ▪ Musical theatre
	  ▪ Comedy talk show
	  ▪ Opera
	• Talk show
	  ▪ News
	  ▪ Sport
	  ▪ Religious talk show
	  ▪ Woman/man talk show
	ii. Types of lighting consoles such as:
	• Preset boards
	• Memory consoles
	• Moving light controllers
	• Personal computer-based controllers
	• Remote focus unit
	iii. Lighting console
						iii. Stage / scene requirement explained
						iv. Lighting mode programming practiced

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	programming procedure • Grouping channel • Preset channel • Record channel • Create effect ▪ Cross fade • Playback					
		i. Interpret production concept ii. Interpret lighting plot iii. Interpret stage / scene requirement iv. Programme lighting mode according to lighting plot v. Utilise lighting console	*Attitude:* i. Meticulous and knowledgeable in executing lighting programming ii. Creative mindset in executing lighting programming *Safety:* i. Adhere to safety precaution and procedures	25	Demonstration & Observation	
3. Carry out lighting rehearsal	i. Running order/scene requirement ii. Scene continuity			14	Lecture	i. Running order/scene requirement

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		i. Test lighting programming ii. Operate lighting console iii. Check lighting mode synchronization according to program running order/scene iv. Mark part to be refocus v. Refocus and re-programme lighting mode	*Attitude:* i. Meticulous and knowledgeable in carrying out lighting rehearsal ii. Creative mindset in carrying out lighting rehearsal *Safety:* i. Adhere to safety precaution and procedures	32	Demonstration & Observation	explained ii. Scene continuity explained iii. Lighting programming test practiced iv. Lighting console operate practiced v. Lighting mode synchronization check practiced vi. Part to be refocus mark practiced vii. Lighting refocus and re-programme practiced

Employability Skills

Core Abilities	Social Skills
01.01 Identify and gather information. 01.02 Document information procedures or processes. 02.01 Interpret and follow manuals, instructions and SOP's. 02.02 Follow telephone/telecommunication procedures. 02.03 Communicate clearly. 02.04 Prepare brief reports and checklist using standard forms. 02.05 Read/Interpret flowcharts and pictorial information. 03.02 Demonstrate integrity and apply practical practices. 03.03 Accept responsibility for own work and work area. 03.04 Seek and act constructively upon feedback about work performance. 03.06 Respond appropriately to people and situations. 03.07 Resolve interpersonal conflicts. 06.01 Understand systems. 06.02 Comply with and follow chain of command. 06.03 Identify and highlight problems. 06.04 Adapt competencies to new situations/systems. 01.04 Analyse information. 03.08 Develop and maintain a cooperation within work group. 04.01 Organize own work activities. 04.02 Set and revise own objectives and goals. 04.04 Apply problem solving strategies. 04.05 Demonstrate initiative and flexibility. 01.10 Apply a variety of mathematical techniques. 02.11 Convey information and ideas to people. 03.09 Manage and improve performance of individuals. 03.13 Develop and maintain team harmony and mis resolve conflicts. 03.14 Facilitate and coordinate teams and ideas. 03.15 Liase to achieve identified outcomes. 03.16 Identify and assess client/ customer needs. 04.06 Allocate work. 04.07 Negotiate acceptance and support for objectives and strategies. 05.02 Inspect and monitor work done and/or in progress.	1. Communication skills 2. Conceptual skills 3. Interpersonal skills 4. Multitasking and prioritizing 5. Self-discipline 6. Teamwork 7. Leadership skills 8. Learning skills

Tools, Equipment and Materials (TEM)

ITEMS	RATIO (TEM : Trainees)
1. Stage	1:25
2. Studio	1:25
3. Generator set	1:25
4. Stationery	1:1
5. Running order / scene plotting	1:1
6. General/practical light (Fresnel light, Profile light, Spot light, Par light, Flood light, Molefay light, Cyclo light, Halogen light, Follow spot)	1:25
7. Special effect/inteligent light (Moving head light, Light Emitting Diode (LED) light)	1:25
8. Special effect equipment (Smoke machine, Haze machine, Dry ice machine, Laser, Conffeti, Fire work machine)	1:25
9. Lighting system equipment (Lighting console, Dimmer)	1:25
10. Power cable	As required
11. Signal cable (DMX signal cable, Cat 6 signal cable)	As required

References

REFERENCES

1. Jennifer Bringle (2010), Lighting, The Rosen Publishing Group. ISBN: 978-1435852631
2. Kris Malkiewicz (1986), Film Lighting, Prentice Hall Press. ISBN: 978-0671766344
3. Francis Reid (2001), Stage Lighting Handbook, A & C Black (Publishers) Limited, ISBN: 0-87830-147-X
4. Richard Pilbrow (1997), Stage Lighting Design, Nick Hern Books Limited ISBN: 1-85459-273-4
5. Harry C. Box (2010), Set Lighting Technician's Handbook, Focal Press Publication, ISBN: 978-0240-81705-1
6. Richard Cadena (2010), Automated Lighting, Focal Press Publication, ISBN: 978-0240-81222-9
7. Zettl (2012), Television Production Handbook, Cencage Learning, ISBN: 978-0495-89884-9
8. Blain Brown (2008), Motion Picture and Video Lighting, Eclinor Actipis, ISBN: 978-0-240-80763-8

CURRICULUM of COMPETENCY UNIT (CoCU)

Sub Sector	BROADCASTING & VIDEOGRAPHY						
Job Area	TV – LIGHTING / CINEMATOGRAPHY – LIGHTING						
NOSS Title	FILM & TELEVISION LIGHTING						
Competency Unit Title	LIGHTING EQUIPMENT MAINTENANCE						
Learning Outcome	The person who is competent in this CU shall be able to provide maintenance work on lighting equipment in accordance with Standard Operation Procedure (SOP).Upon completion of this competency unit, trainees will be able to: - • Identify lighting equipment maintenance requirement • Carry out general/practical lighting equipment repair • Carry out lighting equipment upgrading						
Competency Unit ID	CU 7	**Level**	3	**Training Duration**	70 Hours	**Credit Hours**	7

Work Activities	**Related Knowledge**	**Related Skills**	**Attitude / Safety / Environmental**	**Training Hours**	**Delivery Mode**	**Assessment Criteria**
1. Identify lighting equipment maintenance requirement	i. Lighting equipment storage system such as:- • Tagging • Labelling • Inventory ii. Types of lighting equipment maintenance: • Preventive maintenance • Corrective maintenance iii. Types of faultiness such as: • Lighting equipment • Cable • Lighting accessories			4	Lecture	i. Lighting equipment storage system explained ii. Lighting equipment arranged practiced

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	iv. Types of maintenance resources • Manpower • Materials • Tools ▪ Cleaning tools ▪ Testing tools ▪ Hand tools					
		i. Check lighting equipment inventory ii. Confirm lighting equipment in good condition iii. Determine type of lighting equipment maintenance iv. Determine type of faultiness v. Identify types of maintenance resources according to the maintenance job order and faultiness	*Attitude:* i. Meticulous in checking lighting equipment inventory *Safety:* i. Adhere to safety precaution and procedures	10	Demonstration & Observation	

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
2. Carry out general / practical lighting equipment repair	i. Lighting cable repair procedure ii. Bulb replacement procedure iii. Damaged lighting equipment replacement procedure			8	Lecture	i. Lighting cable repair procedure described ii. Bulb replacement procedure described iii. Lighting equipment service procedure described iv. Damaged lighting equipment replacement procedure described v. Lighting cable replace practiced vi. Cable connector repair practiced vii. Lighting equipment service practiced viii. Damaged lighting equipment replace practiced
		i. Replace lighting cable ii. Repair cable connector iii. Replace bulb iv. Replace damaged lighting equipment v. Test lighting equipment functionality vi. Apply good housekeeping practices	*Attitude:* i. Meticulous in checking inventory checklist *Safety:* i. Adhere to safety precaution and procedures	20	Demonstration & Observation	

Work Activities	Related Knowledge	Related Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
3. Carry out lighting equipment upgrading	i. Lighting equipment new technology such as:- • Conventional light to LED • Upgrade “goes before optics” (Gobo) • Lighting console software			8	Lecture	i. Lighting equipment new technology explained ii. Lighting equipment to new technology upgrade practiced iii. Lighting console software upgrade practiced iv. Lighting equipment maintenance record assessed
		i. Upgrade lighting equipment to new technology ii. Update lighting console software iii. Record lighting equipment maintenance activities	*Attitude:* i. Alert and knowledgeable in lighting equipment new technology *Safety:* i. Adhere to safety precaution and procedures	20	Demonstration & Observation	

Employability Skills

Core Abilities	Social Skills
01.01 Identify and gather information. 01.02 Document information procedures or processes. 02.01 Interpret and follow manuals, instructions and SOP's. 02.03 Communicate clearly. 02.04 Prepare brief reports and checklist using standard forms. 02.05 Read/Interpret flowcharts and pictorial information. 03.02 Demonstrate integrity and apply practical practices. 03.03 Accept responsibility for own work and work area. 03.04 Seek and act constructively upon feedback about work performance. 03.06 Respond appropriately to people and situations. 03.07 Resolve interpersonal conflicts. 06.01 Understand systems. 06.02 Comply with and follow chain of command. 06.03 Identify and highlight problems. 06.04 Adapt competencies to new situations/systems. 01.04 Analyse information. 03.08 Develop and maintain a cooperation within work group. 04.01 Organize own work activities. 04.02 Set and revise own objectives and goals. 04.04 Apply problem solving strategies. 04.05 Demonstrate initiative and flexibility. 01.10 Apply a variety of mathematical techniques. 01.11 Apply thinking skills and creativity. 02.11 Convey information and ideas to people. 03.09 Manage and improve performance of individuals. 03.13 Develop and maintain team harmony and mis resolve conflicts. 03.14 Facilitate and coordinate teams and ideas. 03.15 Liase to achieve identified outcomes. 03.16 Identify and assess client/ customer needs. 04.06 Allocate work. 04.07 Negotiate acceptance and support for objectives and strategies. 05.01 Implement project/ work plans. 05.02 Inspect and monitor work done and/or in progress.	1. Communication skills 2. Conceptual skills 3. Interpersonal skills 4. Multitasking and prioritizing 5. Self-discipline 6. Teamwork 7. Leadership skills 8. Learning skills

Tools, Equipment and Materials (TEM)

ITEMS	RATIO (TEM : Trainees)
1. Stationery	1:1
2. Multimeter	1:1
3. Test pen	1:1
4. Earthing meter	1:10
5. DMX tester	1:10
6. Earth leakage tester	1:10
7. General/practical light (Fresnel light, Profile light, Spot light, Par light, Flood light, Molefay light, Cyclo light, Halogen light, Follow spot)	1:25
8. Special effect/inteligent light (Moving head light, Light Emitting Diode (LED) light)	1:25
9. Special effect equipment (Smoke machine, Haze machine, Dry ice machine, Laser, Conffeti, Fire work machine)	1:25
10. Lighting system equipment (Lighting console, Dimmer)	1:25
11. Power cable	As required
12. Signal cable (DMX signal cable, Cat 6 signal cable)	As required

References

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1. Jennifer Bringle (2010), Lighting, The Rosen Publishing Group. ISBN: 978-1435852631
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Abbreviations

ASA	American Standards Association
BMS	Building Management System
CAT 6	Category 6
DMX	Digital Multiplex
IEE	Institute of Electrical Engineers
ISO	International Organisation for Standardization
LED	Light Emitting Diode
MCB	Miniature Circuit Breaker
MCCB	Moulded Cases Circuit Breaker
MS-IEC	Malaysian Standard-International Electro Technical Commission
PVC	Poly Vinyl Chloride
RCCB	Residual Current Circuit Breaker
SOP	Standard Operating Procedure

SUMMARY OF TRAINING DURATION FOR FILM & TELEVISION LIGHTING LEVEL 3

CU CODE	COPETENCY UNIT TITLE	WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	HOURS	TOTAL
			(A)	(B)	(A+B)	(HOURS)
EE-220-3:2013-C01	SINGLE PHASE WIRING	Interpret single phase wiring drawing	4	10	14	140
		Install single phase surface wiring	6	15	21	
		Install single phase conduit wiring	6	15	21	
		Install single phase trunking wiring	6	15	21	
		Install single phase earthing system	6	15	21	
		Install distribution board	6	15	21	
		Inspect single phase wiring functionality	4	10	14	
		Report single phase wiring to superior	2	5	7	
EE-220-3:2013-C02	THREE PHASE WIRING	Interpret three phase wiring drawing	4	10	14	140
		Install three phase surface wiring	6	15	21	
		Install three phase conduit wiring	6	15	21	
		Install three phase trunking wiring	6	15	21	
		Install three phase earthing system	6	15	21	
		Install distribution board	6	15	21	
		Inspect three phase wiring functionality	4	10	14	
		Report three phase wiring to superior	2	5	7	

CU CODE	COPETENCY UNIT TITLE	WORK ACTIVITIES	RELATED KNOWLEDGE	RELATED SKILLS	HOURS	TOTAL
			(A)	(B)	(A+B)	(HOURS)
EE-220-3:2013-C03	LIGHTING PRE-PRODUCTION	Identify job order requirements	8	20	28	70
		Carry out location survey	2	5	7	
		Arrange lighting equipment booking	8	20	28	
		Report lighting pre-production activities	2	5	7	
EE-220-3:2013-C04	RIGGING/ SET-UP OPERATION	Check lighting equipment	5	12	17	350
		Install general/practical lighting equipment	37	86	123	
		Install special effects equipment	37	86	123	
		Install lighting system	26	61	87	
EE-220-3:2013-C05	LIGHTING SETUP/SYSTEM TESTING AND TROUBLESHOOTING	Prepare testing tools and equipment	3	7	10	210
		Check power supply availability	9	22	31	
		Carry out cable testing	16	37	53	
		Test lighting equipment	22	51	73	
		Carry out lighting equipment failure troubleshooting	13	30	43	
EE-220-3:2013-C06	LIGHTING SYSTEM PROGRAMMING & REHEARSAL	Carry out lighting setup adjustment	5	13	18	100
		Execute lighting programming	11	25	36	
		Carry out lighting rehearsal	14	32	46	
EE-220-3:2013-C07	LIGHTING EQUIPMENT MAINTENANCE	Identify lighting equipment maintenance requirement	4	10	14	70
		Carry out general/practical lighting equipment repair	8	20	28	
		Carry out lighting equipment upgrading	8	20	28	
		TOTAL HOURS (Elective Competencies)	20	50	70	1080