STANDARD KEMAHIRAN PEKERJAAN KEBANGSAAN
(NATIONAL OCCUPATIONAL SKILLS STANDARD)

AUDIO PRODUCTION

LEVEL 2

JPK

JABATAN PEMBANGUNAN KEMAHIRAN

KEMENTERIAN SUMBER MANUSIA, MALAYSIA

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STANDARD PRACTICE

NATIONAL OCCUPATIONAL SKILLS STANDARD (NOSS) FOR

AUDIO PRODUCTION
LEVEL 2

1. INTRODUCTION

Audio or sound is always with us in our daily life. As far as we concerned music is the product of mixed-up various types of sound or audio that can connect the different world all together.

Music is what everyone likes to listen to. To be simplified, sometimes audio and video production are correlated. Hence, there are many people used audio or sound in manipulating and making business via audio production industry.

Most of the video, film and animation makers usually used audio or music to make their products is entertaining and exciting. Therefore, audio production is a creative and versatile work.

In Malaysia, there are numerous companies which are currently active in audio production fieldwork. Audio production personnel usually involves with audio equipment and software in order to produce good quality and variety of music's genre.

Thus, personnel who are interested to enrol into this filed should meet a minimum requirement made the experts; possess SPM certificate, mentally and physically fit and have knowledge in English language would be added as advantage. Further, he or she also must have good sight and hearing senses for this fieldwork purposes.

As technology advances, new equipment emerges to meet audio production needs. The most significant advances in audio visual equipment came during the final two decades of the 20th century, when digital technology enhanced access and versatility of the audio video equipment and audio video production.

Thus, audio production industry also need to cater the changeability of audio equipments and software and the demand for skilful and experience personnel.

In order to generate skilful and experience labour or personnel in audio production industry, the NOSS is being developed. This NOSS document is structured to be used for constructing the competencies needed in the audio production fieldwork as per discussion made by the experts from the audio production industry.

Personnel who enrol this NOSS will have competency in technical skill such as performing and preparing audio cable, microphone, amplifier, speaker, mixture devices and setup. Later, personnel will used this level of skill in order to gain better income based on experience, ability and organization they have been hired itself.

Further, this NOSS has arranged and developed accordingly from the discussion made by the industrial experts and based on what the industry's needs. Thus, we hope this NOSS will be usable to produce the most skilful labour or personnel for the betterment of the audio production industry and country as well.

2. OCCUPATIONAL STRUCTURE

Audio Production personnel come under the Sector Information Communication Technology and Sub-Sector of Digital Creative. Fig. 1.1 shows the structured career path of Audio Production personnel.

<table>
<tr><td colspan="11">SECTOR
INFORMATION TECHNOLOGY & COMMUNICATION (ICT)</td></tr>
<tr><td colspan="11">SUB - SECTOR
DIGITAL CREATIVE</td></tr>
<tr><td rowspan="2">LEVEL</td><td>Pre-Production</td><td colspan="7">Production</td><td>Post production</td><td>Mgmt/ Admin</td></tr>
<tr><td></td><td colspan="3">Creative</td><td>Technical (Camera)</td><td>Technical (Lighting)</td><td>Technical (Audio)</td><td>Creative/ Technical</td><td></td></tr>
<tr><td>L7</td><td colspan="10">Cinematographer</td></tr>
<tr><td>L6</td><td></td><td colspan="4">DOP</td><td></td><td></td><td></td><td></td></tr>
<tr><td>L5</td><td>Producer/ Director</td><td colspan="3">Production Designer</td><td>Technical Producer / Technical Director</td><td>Gaffer</td><td>Senior Audio Engineer</td><td>Director</td><td>Producer</td></tr>
<tr><td>L4</td><td>Script Writer</td><td colspan="3">Art Director</td><td>Cameraman</td><td>Senior Lighting Technician</td><td>Audio Engineer</td><td>Editor</td><td>Production Manager</td></tr>
<tr><td>L3</td><td>No level</td><td colspan="3">Assistant Art designer</td><td>camera operator</td><td>Lighting Technician</td><td>Assistant Audio Engineer</td><td>Asst Editor</td><td>Asst Production manager</td></tr>
<tr><td>L2</td><td>No level</td><td>Make up Artist</td><td>Set Designer</td><td>Prop Man</td><td>Wardrobe</td><td>Camera Assistant / Rigger</td><td>Lighting Assistant</td><td>Audio Technician</td><td>Graphic Artist</td><td>production Coordinator</td></tr>
<tr><td>L1</td><td colspan="10">No level</td></tr>
</table>

Figure 1.1: Occupational Profile for Audio Production personnel

SECTOR INFORMATION TECHNOLOGY & COMMUNICATION (ICT)	
SUB – SECTOR DIGITAL CREATIVE	
L5	Audio Production
L4	Audio Production
L3	Audio Production
L2	Audio Production
L1	N/A

Figure 1.2: Occupational Area Analysis (OAA) for Audio Production personnel

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

4. MALAYSIAN SKILL CERTIFICATION

Candidates shall be awarded with Malaysia Skills Certificate (SKM) for Level 3 after being assessed, verified and fulfilled the Malaysian Skill Certification requirements.

5. JOB COMPETENCIES

An Audio Production Personnel (Level 2) is competent in performing:

- Audio Cable Setup
- Microphone Setup
- Amplifier Setup
- Speaker Setup
- Mixer Setup
- Audio Devices Recording Setup
- Audio Outboard Setup
- Preventive maintenance
- Audio Production Safety Compliance
- External Hardware Preventive Maintenance

6. WORKING CONDITIONS

Audio Production personnel level 2 works according to recording label, and production house requirement. Personnel may work in recording studio or live concert under the supervision of assistant audio engineer. In this level, personnel will be able to be technically skilful and precise in preparing and setting up the audio cables and equipments. They must also bear with the safety and precaution whenever handling the audio cables and equipments. Personnel who are in this level should have capabilities in multitasking, be conceptualize, good communication, interpersonal skill, self-discipline and good working in group.

7. EMPLOYMENT PROSPECTS

Based on recognition towards creative industry by Malaysia government and other related agencies the need for skilled personnel from the creative industry especially for Audio Production is in highly demand.

Our audio production is recognised globally as a huge growth area and there is a need for well trained personnel at all levels. Having a suitably skilled workforce will place Malaysia as the same level with other excellent audio makers internationally. Generally, this industry is estimated as another contributor's to burst the Malaysia's economy. Hence, the demand for qualified and experienced Audio Production personnel is important as of now and may increase in the future.

The Audio Production personnel have a high employment prospect whether locally or internationally. This is because the local expertise workforce is recognised by other countries as being highly knowledgeable and skilled in Audio industry. This in turn increases the demand for skilled personnel in this field to be employed locally or internationally.

As Malaysia had identified in the 3rd Industrial Master Plan and stated in the Tenth Malaysian Plan, Multimedia through ICT will be an important enabler for Malaysia to position itself at the international level. Employment growth in the ICT industry is significant and in current demand. Personnel may have various employment opportunities working in production house, advertising agency, broadcasting agency (TV Station), Multimedia department (Large Corporation), training centre, Multinational Corporation, international airports and personal business.

8. SOURCES OF ADDITIONAL INFORMATION

Local

- **Suruhanjaya Komunikasi Dan Multimedia Malaysia (SKMM)**
  Malaysian Communications and Multimedia Commission
  Off Persiaran Multimedia,
  63000 Cyberjaya, Selangor, Malaysia
  Tel: (603) 8688 8000
  Fax: (603) 8688 1000
  Email: ccd@cmc.gov.my
  Website: www.skmm.gov.my

- **Perbadanan Kemajuan Filem Nasional Malaysia (FINAS)**
  Kompleks Studio Merdeka, Jalan Hulu Kelang,
  68000 Ampang, Selangor, Malaysia.
  Tel: (603) 41041300
  Fax: (603) 41075216
  Email: am@finas.gov.my

- **Radio Televisyen Malaysia (RTM)**
  Wisma TV, Angkasapuri, 50614, Kuala Lumpur.
  Tel: (03) 2282 5333
  Fax: (03) 2282 7146

International

- **International Music Council (UNESCO)**
  1 rue Miollis,
  75732 Paris cedex 15,
  France
  Tel: +33 1 45 68 48 50
  Fax: +33 1 45 68 48 66
  Website: http://www.imc-cim.org

9. APPROVAL DATE

The National Skills Development Board (MPKK), Ministry of Human Resources has agreed and endorsed this Standard on ……..

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 stand

11. COMMITTEE MEMBERS FOR DEVELOPMENT OF STANDARD PRACTICE (SP), JOB PROFILE CHART (JPC), COMPETENCY PROFILE (CP)

AUDIO PRODUCTION – LEVEL 2

EXPERT PANEL		
1.	Azriddin Bin Hamzah	Engineer FINAS
2.	Mohd Khirin Bin Omar	Production Director Luncai Emas Sdn Bhd
3.	Haron Bin Omar	Audio Director ASTRO
4.	Hussin Bin Omar	Juruteknik Audio Anugerah Media Network
5.	Mohd Kharizul Bin Yaakup	Producer Head Room Music
6.	Syed Rahiman Bin Syed Ghazali	Sound Coordinator Quest Animation Sdn Bhd
7.	Retnaguru Sandrakasan	Audio Video Consultant As'ad Entertainment Network Sdn Bhd
8.	Muhammad Faisal Bin Ghazali	Audio Mastering Pro-DG Projects Sdn Bhd
9.	Lee Yoke Nam	Senior Sound Recordist LeeYam Production
FACILITATOR		
1.	Saiful Anwar bin Abu Hasan	Training Consultant International Islamic Research Academy (I-IRA) Sdn Bhd
CO-FACILITATOR		
1.	Mohd Khairullah bin Ab. Manaf	Managing Director International Islamic Research Academy (I-IRA) Sdn Bhd
2.	Rosnani binti Arbai	Training Executive International Islamic Research Academy (I-IRA) Sdn Bhd

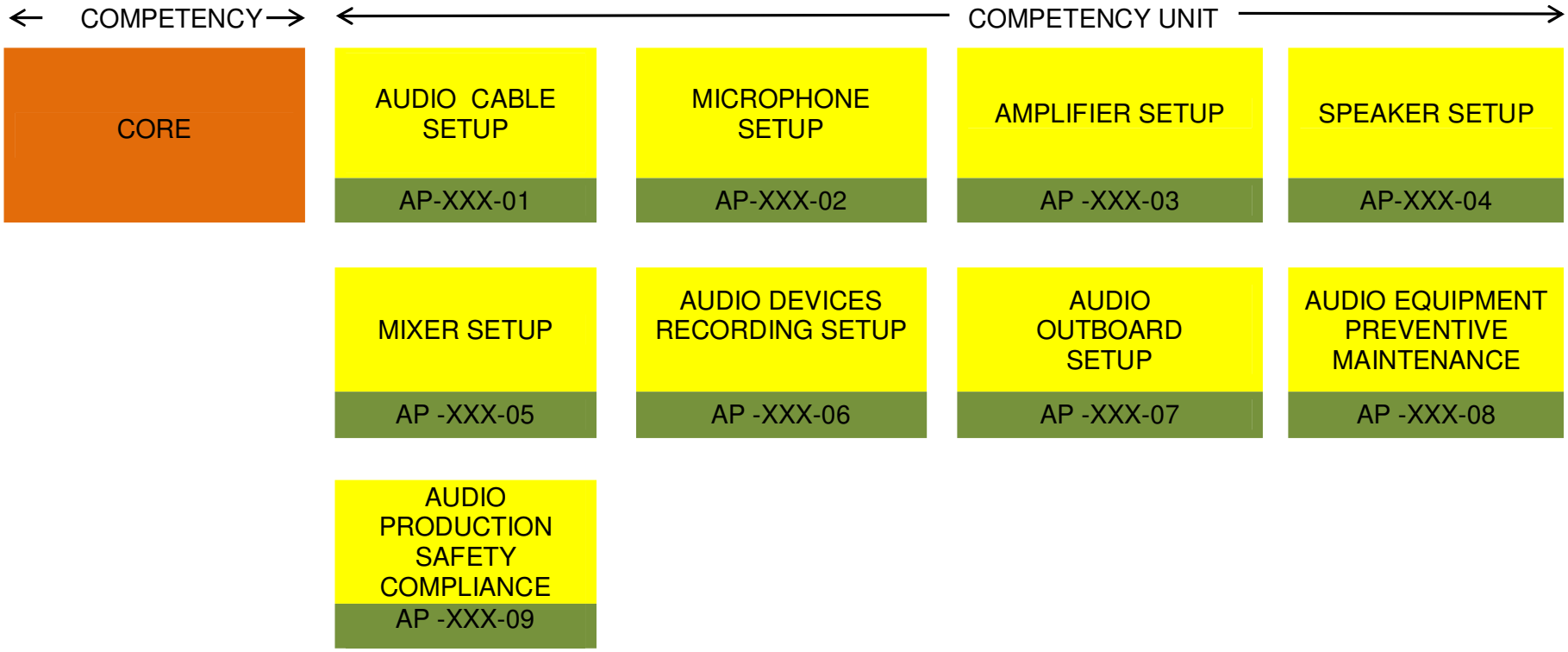
12. COMMITTEE MEMBERS FOR DEVELOPMENT OF CURRICULUM OF COMPETENCY UNIT (Cocu)

.AUDIO PRODUCTION – LEVEL 2

EXPERT PANEL		
1.	Azriddin Bin Hamzah	Engineer FINAS
2.	Mohd Khirin Bin Omar	Production Director Luncai Emas Sdn Bhd
3.	Haron Bin Omar	Audio Director ASTRO
4.	Syed Rahiman Bin Syed Ghazali	Sound Coordinator Quest Animation Sdn Bhd
5.	Retnaguru Sandrakasan	Audio Video Consultant As'ad Entertainment Network Sdn Bhd
6.	Muhammad Faisal Bin Ghazali	Audio Mastering Pro-DG Projects Sdn Bhd
7.	Lee Yoke Nam	Senior Sound Recordist LeeYam Production
8.	Hamdan Bin Adnan	Lecturer ASWARA
9.	Ahmad Faudzi Musib	Head of Department Music Department
FACILITATOR		
1.	Saiful Anwar bin Abu Hasan	Training Consultant International Islamic Research Academy (I-IRA) Sdn Bhd
CO-FACILITATOR		
1.	Mohd Khairullah bin Ab. Manaf	Managing Director International Islamic Research Academy (I-IRA) Sdn Bhd
2.	Rosnani binti Arbai	Training Executive International Islamic Research Academy (I-IRA) Sdn Bhd

JOB PROFILE CHART (JPC)

SECTOR	**INFORMATION TECHNOLOGY & COMMUNICATION (ICT)**		
SUB SECTOR	**DIGITAL CREATIVE**		
JOB AREA	**AUDIO PRODUCTION**		
JOB LEVEL	**TWO(2)**	**JOB AREA CODE**	




ELECTIVE
EXTERNAL
HARDWARE
PREVENTIVE
MAINTENANCE
AP -XXX-10

COMPETENCY PROFILE

Sub Sector	**DIGITAL CREATIVE**
Job Area	**AUDIO PRODUCTION**
Level	**TWO(2)**

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
1. Audio Cable Setup	AP-XXX-01	Audio cable setup is a process to install audio cable based on events/programme requirement by following the checklist given. The ability to select and match cables and connectors is essential in this process	1. Identify programmes / events cabling setup requirements 2. Prepare necessary cables and connectors according to checklist	1.1 Required cable lengths determined correctly 1.2 Required connectors and cables type determined correctly 2.1 Cables and connectors selected according to checklist 2.2 Cables arranged according to specific usage 2.3 Cables delivered for installation

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
			3. Install necessary cables and connectors according to setup requirement	3.1 Connectors and cables matched correctly 3.2 Connectors and cables connected correctly 3.3 All line connection functionality confirmed 3.4 Audio cable functionality confirmed 3.5 All cables labelled and identified correctly based on checklist 3.6 Signal flow connectivity correctly functioned
			4. Re-pack cables and connectors after use	4.1 Cables and connectors re-packed properly for safekeeping

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
2. Microphone Setup	AP-XXX-02	Microphone setup is focusing on events/programme requirement and the used of each individual microphone types such as dynamic, condenser, ribbon, wireless, boom, clip , talk back microphone and microphone accessories	1. Identify programmes / events microphone setup requirements	1.1 Required microphone numbers and types determined correctly 1.2 Microphone and stand selected according to checklist
			2. Prepare required microphone	2.1 Microphone position and placement determined correctly 2.2 All microphone cables labelled and identified correctly
			3. Perform microphone signal testing	3.1 All microphone line connection functionality confirmed 3.2 Microphone connectivity checked
			4. Re-pack microphone	4.1 Microphone and

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
			and accessories after use	accessories re-packed properly for safekeeping
3. Amplifier Setup	AP -XXX-03	Amplifier setup is focusing on events/programme speaker requirement of each individual crossover amplifier and power amplifier according to amplifier requirement	1. Identify programmes / events amplifier setup requirements 2. Prepare required amplifier 3. Perform amplifier signal input checking	1.1 Required amplifier numbers obtained correctly 2.1 Amplifier installed according to setup requirement 2.2 All amplifier connection functionality confirmed 3.1 Power amplifier connectivity checked 3.2 All amplifier cables labelled and identified correctly 3.3 Power amplifier connectivity functioned correctly

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
			4. Re-pack amplifier and accessories after use	4.1 Amplifier and accessories re-packed properly for safekeeping
4. Speaker Setup	AP-XXX-04	Speaker setup is focusing on events/programme requirement and the used of each individual numbers of speaker such as active and passive speaker, monitor and accessories according to speaker requirement	1. Identify programmes / events speaker setup requirements	1.1 Required speaker types and numbers determined correctly 1.2 Speaker setup safety requirement determined
			2. Prepare required speaker	2.1 Speaker positioned according to setup requirement 2.2 Speaker installed according to safety requirement
			3. Perform speaker signal checking	3.1 All speaker connection functionality confirmed

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
				3.2 All speaker cables labelled and identified correctly 3.3 Sound speaker functioned correctly and calibrated
			4. Re-pack speaker and accessories after use	4.1 Speaker and accessories re-packed properly for safekeeping
5. Mixer Setup	AP -XXX-05	Mixer setup is focusing on events/programme requirement and the used of number individual channel on the mixing desk and accessories according to mixer requirement	1. Identify programmes / events mixer setup requirements	1.1 Required mixer types and channel numbers determined correctly 1.2 Mixer setup safety requirement determined
			2. Prepare required mixer	2.1 Mixer positioned according to setup requirement

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
				2.2 Mixer installed according to safety requirement
			3. Perform mixer signal checking	3.1 All mixer connection functionality confirmed 3.2 All input and output mixer cables labelled and identified correctly 3.3 Mixer functioned correctly and calibrated
			4. Re-pack mixer and accessories after use	4.1 Mixer and accessories re-packed properly for safekeeping
6. Audio Devices Recording Setup	AP -XXX-06	Audio devices recording setup is focusing on events/programme requirement and the used of each individual such as	1. Identify programmes / events recording devices setup requirements	1.1 Types of required recording devices determined correctly
			2. Perform recording devices	2.1 Element to be recorded

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
		graphic equalizer, compressor, sampler, effect processor, CD player, audio interface and feedback destroyer according to recording requirement	setup	positioned according to setup requirement 2.2 All recording devices and software checked for input signal
			3. Perform recording devices checking	3.1 All recording devices connection functionality confirmed 3.2 All input and output cables to recording devices labelled and identified correctly 3.3 Recording devices functioned correctly and calibrated
			4. Re-pack recording devices and accessories after use	4.1 Recording devices and accessories re-packed properly for safekeeping

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
7. Audio Outboard Setup	AP -XXX-07	Audio outboard setup is focusing on events/programme requirement and the used of each individual such as graphic equalizer, compressor, sampler, effect processor, CD player, audio interface and feedback destroyer according to performance requirement	1. Identify programmes / events audio outboard devices setup requirements 2. Perform audio outboard devices setup	1.1 Types of required audio outboard devices and channel numbers determined correctly 1.2 Audio outboard devices positioned according to setup requirement 2.1 All audio outboard devices connection functionality confirmed 2.2 Input/output to all audio outboard devices connectivity checked 2.3 All input and output cables to audio outboard devices labelled according to specific usage

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
			3. Perform audio outboard devices checking	3.1 All input and output audio outboard devices cables labelled and identified correctly 3.2 Audio outboard devices functioned correctly and calibrated
			4. Re-pack audio outboard devices and accessories after use	4.1 Audio outboard devices accessories re-packed properly for safekeeping
8. Audio Equipment Preventive Maintenance	AP -XXX-08	Audio Equipment Preventive maintenance is focusing on checking of equipments functionalities according to planned schedule. The personnel shall be able to carry out	1. Check cables continuity	1.1 Cables continuity confirmed
			2. Check connectors continuity	2.1 Connectors continuity confirmed

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
		maintenance activities to ensure the equipments are in good conditions at the required time	3. Perform audio hardware external cleaning	3.1 Audio hardware in good working condition maintained
9. Audio Production Safety Compliance	AP -XXX-09	Audio production safety compliance is identification of the safety precautions to eliminate/control hazards for each expected sequential steps for completion of audio production work	1. Identify expected sequential steps for completion of work	1.1 Sequential steps for completion of work for the specific type of work determined
			2. Identify potential hazard/risk	2.1 Potential hazard/risk determined
			3. Determine risk rating	3.1 Risk rating determined
			4. Identify safety precaution required to eliminate /control hazards	4.1 Precaution required to eliminate risk determined. 4.2 The specific service work is confirmed completed safely

CU Title	CU Code	CU Descriptor	CU Work Activities	Performance Criteria
				according to safety regulations
10. External Hardware Preventive Maintenance	AP -XXX-10	External hardware preventive maintenance is activities to prevent the failure of equipment before it actually occurs.	1. Analyze external hardware preventive maintenance schedule	1.1 External hardware required for maintenance identified
			2. Perform external hardware preventive maintenance	2.1 External hardware performance and functionality confirmed
			3. Prepare external hardware preventive maintenance report	3.1 External hardware preventive maintenance activities report produced according to format

CURRICULUM of COMPETENCY UNIT (CoCU)

Sub Sector	**DIGITAL CREATIVE**						
Job Area	**AUDIO PRODUCTION**						
Competency Unit Title	**AUDIO CABLE SETUP**						
Competency Unit Descriptor	Audio cable setup is a process to install audio cable based on events/programme requirement by following the checklist given. The ability to select and match cables and connectors is essential in this process						
Competency Unit ID	AP-XXX-01	**Level**	2	**Training Duration**	109 hours	**Credit Hours**	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
1. Identify programmes / events cabling setup requirements	i. Types of programmes / events • Live sound • Broadcasting • Recording music • Video • Film • Conference ii. Types of audio cables a) Digital • Optic cables • Cat5 cables • MADI cables • MIDI cables			14 hours	Lecture	• Types of cabling correctly identified according to programme requirements • Types of connectors determined according to equipment used • Various cable connect ion to the appropriate connector

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	• S/PDIF cables • USB cables • Fire wire cables b) Analogue • Multi core snake cables • Speaker cables • Microphone cables • Power cables • Patch cables • Bantam cables • Mini jack cables • BNC cables iii. Types of connector • XLR male/female • RCA male/female • ¼ inch canon • MADI connector • 5Pin DIN MIDI connector iv. Types of adapters • XLR male to male • XLR female to female • XLR to RCA					correctly determined • Connectors matching correctly identified

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	• XLR to BNC • RCA to ¼ inch canon • XLR to phono jack • Phono to phono • Mini jack to RCA • Mini jack to ¼ inch					
		i. Differentiate types of programmes / events ii. Identify types of cables for programme / events iii. Match types of connector iv. Identify types of adapters	i. Resourceful of electrical and electronic safety handling procedure	18 hours	Demonstration	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
2. Prepare necessary cables and connectors according to checklist	i. Basic electronic a) Proper cable handling and maintenance • Flow check • Connector check • Roll audio cable b) Cable soldering technique			10 hours	Lecture	• Audio cables selected based on checklist • Connector and audio cables securely fastened • Signal flow met standard rating • Audio cable insulated properly according to standard operating procedure
		i. Select audio cables ii. Solder audio cables to connector iii. Check cables continuity iv. Test audio cable signal flow	i. Adhere to electrical & electronic safety handling procedure ii. Meticulous in audio cable soldering	14 hours	Demonstration	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
3. Install necessary cables and connectors according to setup requirement	i. Audio cable connection technique • Daisy chain • Parallel • Direct ii. Types of audio system component iii. Audio term and abbreviation iv. Audio signal flow v. Outboard gear			8 hours	Lecture	• Audio equipment connection properly terminated according to diagram • Audio line connection functionality confirmed according to audio system design • Proper label attached to cables based on checklist
		i. Connect audio equipment ii. Check audio line connection functionality iii. Label all cables according to specific usage iv. Check signal flow connectivity between all input and output	i. Adhere to electrical & electronic safety handling procedure ii. Meticulous in connecting audio cables	20 hours	Demonstration	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
4. Re pack cables and connectors after use	i. Functionality of cables and connectors ii. Cables winding techniques			10 hours	Lecture	• Cables and connectors condition confirmed according to checklist • Correct packing on cables and connectors confirmed • Safety procedures followed
		i. Check cables and connectors condition ii. Perform cables winding techniques iii. Prepare accurate reports of any loss or damage	i. Re pack cables and connectors promptly to avoid lost ii. Comply to safety of lifting and handling methods iii. Protect equipment when in store or travelling iv. Use suitable packaging materials for protection purposes v. Ensure safe temperature range of storage vi. Avoid from	15 hours	Demonstration	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
			exposure to magnetic field			

Employability Skills

Core Abilities	Social Skills
01.01 Identify and gather information 01.04 Analyse information 02.01 Interpret and follow manuals, instructions and SOP's 02.03 Communicate clearly 03.05 Demonstrate safety skills 06.02 Comply with and follow chain of command 06.01 Understand system 06.03 Identify and highlight problems 06.05 Analyse technical systems	1. Communication skills 2. Conceptual skills 3. Interpersonal skills 4. Learning skills 5. Leadership skills 6. Multitasking 7. Self-discipline 8. Teamwork 9. Self –reliance 10. Meticulous 11. Diligence 12. Compliance

Tools, Equipment and Materials (TEM)

ITEMS	RATIO (TEM : Trainees)
1. Optic cables	1:20
2. Cat5 cables	1:20
3. MADI cables	1:20
4. MIDI cables	1:20
5. S/PDIF cables	1:20
6. USB cables	1:20
7. Fire wire cables	1:20
8. Multi core snake cables	1:20
9. Speaker cables	1:20
10. Microphone cables	1:20
11. Power cables	1:20
12. Patch cables	1:20
13. Bantam cables	1:20
14. Mini jack cables	1:20
15. BNC cables	1:20

References:

1. Stephen H. Lampen (2002), *Audio/Video Cable Installer's Pocket Guide (Pocket Reference).* McGraw-Hill Professional. ISBN-13: 978-0071386210
2. Stephen H. Lampen (1997), *Wire, Cable, and Fiber Optics for Video & Audio Engineers*.
3. John Hechtman and Ken Benshish (2008), *Audio Wiring Guide: How to wire the most popular audio and video connectors*

CURRICULUM of COMPETENCY UNIT (CoCU)

Sub Sector	**DIGITAL CREATIVE**						
Job Area	**AUDIO PRODUCTION**						
Competency Unit Title	**MICROPHONE SETUP**						
Competency Unit Descriptor	Microphone setup is focusing on events/programme requirement and the used of each individual microphone types such as dynamic, condenser, ribbon, wireless, boom, clip , talk back microphone and microphone accessories						
Competency Unit ID	AP-XXX-02	**Level**	2	**Training Duration**	72 hours	**Credit Hours**	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
1. Identify programmes / events microphone setup requirements	i. Types of programmes / events • Live sound • Broadcasting • Recording music • Video • Film • Conference • Trade fair ii. Types of microphone • Dynamic • Condenser • Ribbon			8 hours	Lecture	• Types of microphone selection correctly identified according to programmes / events requirement • Number s of required microphone determined properly • Usage of microphone finalised according

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	iii. Types of microphone powering • Battery • Phantom iv. Types of microphone accessories v. Types of polar pattern • Omni directional • Uni directional (Cardiod, Super cardiod, Hyper cardiod) • Bi-directional (figure of 8) • Hemispherical vi. Microphone frequency response • Hi frequency • Mid frequency • Low frequency vii. Microphone placement					to programme / events requirement • Microphone accessories determined according to microphone selection • Microphone powering needs determined according to microphone specification • Microphone pattern identified based on given polar diagram • Frequency response differentiated based on type of source • Proper location and distance for optimal operation of microphone

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	• Positioning • Proximity					determined according to on/off axis rejection mode
		i. Differentiate types of programmes / events ii. Identify types of microphone for programme / events iii. Identify microphone accessories iv. Determine microphone powering needs v. Determine microphone polar pattern vi. Ability to differentiate frequency response vii. Identify proper location and distance for optimal operation of microphone	i. Resourceful of electrical & electronic safety handling procedure ii. Careful in microphone handling	12 hours	Demonstration	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
2. Prepare required microphone	i. Types of microphone • Dynamic • Condenser • Ribbon ii. Types of microphone powering • Battery • Phantom iii. Types of microphone accessories iv. Types of polar pattern • Omni directional • Uni directional (Cardiod, Super cardiod, Hyper cardiod) • Bi-directional (figure of 8) • Hemispherical v. Microphone frequency response • Hi frequency • Mid			8 hours	Lecture	• Microphone to channel input connection confirmed according to setup requirements • Powering needs complied according to types of microphone • Microphone polar pattern switched according to source requirement

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	frequency • Low frequency vi. Microphone placement • Positioning • Proximity					
		i. Select required types of microphone ii. Connect required microphone to audio channel input iii. Apply required power needs to selected microphone	i. Adhere to electrical & electronic safety handling procedure ii. Careful in microphone handling iii. Meticulous in selecting microphone powering needs	10 hours	Demonstration	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
3. Perform microphone signal testing	i. Microphone testing procedure ii. Microphone operation manual iii. Channel number and source abbreviation for microphone labelling			6 hours	Lecture	• Microphone connection to input channel confirmed based on requirement • Microphone activated according to standard operating procedure • Microphone signal routed according to assigned channel • Proper label attached to microphone according to checklist
		i. Check microphone line connection functionality ii. Check microphone connectivity at all input iii. Label all microphone according to source channel	i. Careful in microphone handling ii. Careful in microphone plug in and unplug in iii. Careful in activating phantom powering	8 hours	Demonstration	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
4. Re pack microphone and accessories after use	i. Functionality of microphone and accessories ii. Microphone handling techniques			8 hours	Lecture	• Microphone and accessories condition confirmed according to checklist • Correct packing on microphone and accessories confirmed • Safety procedures followed
		i. Check microphone and accessories condition ii. Perform microphone handling techniques iii. Prepare accurate reports of any loss or damage	i. Re pack microphone and accessories promptly to avoid lost ii. Comply to safety of lifting and handling methods iii. Protect equipment when in store or travelling iv. Use suitable packaging materials for protection purposes v. Ensure safe	12 hours	Demonstration	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
			temperature range of storage vi. Avoid from exposure to magnetic field			

Employability Skills

Core Abilities	Social Skills
02.01 Interpret and follow manuals, instructions and SOP's 03.05 Demonstrate safety skills 06.01 Understand system 06.02 Comply with and follow chain of command	1. Communication skills 2. Conceptual skills 3. Interpersonal skills 4. Learning skills 5. Leadership skills 6. Multitasking 7. Self-discipline 8. Teamwork 9. Self –reliance 10. Meticulous 11. Diligence 12. Compliance

Tools, Equipment and Materials (TEM)

ITEMS	RATIO (TEM : Trainees)
1. Microphone 2. Microphone operation manual book	1:10 1:1

References:

1. Bruce Bartlett (2008), *Practical Recording Techniques*, Fifth Edition: The Step- by- Step Approach to Professional Audio Recording
2. Joe Dochtermann (2010), *Big Studio Secrets for Home Recording and Production*
3. F. Alton Everest and Ken Pohlmann (2009), *Master Handbook of Acoustics*
4. Jeff Strong (2008), *Home Recording For Musicians For Dummies*
5. David Miles Huber and Robert E. Runstein (2009), *Modern Recording Techniques, Seventh Edition*

CURRICULUM of COMPETENCY UNIT (CoCU)

Sub Sector	**DIGITAL CREATIVE**						
Job Area	**AUDIO PRODUCTION**						
Competency Unit Title	**AMPLIFIER SETUP**						
Competency Unit Descriptor	Amplifier setup is focusing on events/programme speaker requirement of each individual crossover amplifier and power amplifier according to amplifier requirement						
Competency Unit ID	AP -XXX-03	**Level**	2	**Training Duration**	90 hours	**Credit Hours**	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
1. Identify programmes / events amplifier setup requirements	i. Amplifier power rating ii. Types of amplifier cable iii. Amplifier connector iv. Amplifier cable input & output v. Amplifier earth termination vi. Impedance matching vii. Power supply interference			10 hours	Lecture	• Power requirement calculated based on crowd and venue size • Amplifier cable and connector selected correctly according to requirement • Number of

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		i. Determine amplifier power rating ii. Determine types of amplifier cable iii. Determine amplifier connector iv. Determine amplifier cable input & output v. Determine amplifier earth termination vi. Determine power supply interference vii. Calculate impedance matching for speaker and amplifier connection	i. Meticulous in calculating impedance matching for speaker and amplifier connection ii. Resourceful of proper amplifier handling	14 hours	Demonstration	speakers to amplifier connection determined • Source of power supply distinguished according to types of system

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
2. Prepare required amplifier	i. Amplifier power rating ii. Types of amplifier cable iii. Amplifier connector iv. Amplifier cable input & output v. Amplifier earth termination vi. Impedance matching vii. Power supply interference			8 hours	Lecture	• Amplifier selection confirmed based on requirement • Amplifier to speaker connection complied to International Electro technical Commission (IEC) standard
		i. Select required amplifier ii. Connect amplifier to speaker iii. Ensure amplifier to speaker connection	i. Resourceful of amplifier power rating and impedance ii. Careful in amplifier handling	14 hours	Demonstration	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
3. Perform amplifier signal input checking	i. Audio amplifier functionality ii. Types of audio amplifier connection iii. Various source of audio input level			10 hours	Lecture	• Amplifier signal flow confirmed based on amplifier input indicator • Amplifier functionality confirmed based on amplifier power indicator • Amplified audio functionality confirmed based on audibility
		i. Check amplifier functionality ii. Check amplifier to speaker connectivity iii. Compensate various input sources	i. Meticulous in amplifier signal input checking ii. Resourceful of electrical & electronic safety handling procedure	14 hours	Demonstration	
4. Re pack amplifier and accessories after use	i. Functionality of amplifier and accessories ii. Amplifier handling techniques			8 hours	Lecture	• Amplifier and accessories condition confirmed according to checklist

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		i. Check amplifier and accessories condition ii. Perform amplifier handling techniques iii. Prepare accurate reports of any loss or damage	i. Re pack amplifier and accessories promptly to avoid lost ii. Comply to safety of lifting and handling methods iii. Protect equipment when in store or travelling iv. Use suitable packaging materials for protection purposes v. Ensure safe temperature range of storage vi. Avoid from exposure to magnetic field	12 hours	Demonstration	• Correct packing on microphone and accessories confirmed • Safety procedures followed

Employability Skills

Core Abilities	Social Skills
02.01 Interpret and follow manuals, instructions and SOP's 03.05 Demonstrate safety skills 06.02 Comply with and follow chain of command 06.01 Understand system	1. Communication skills 2. Conceptual skills 3. Interpersonal skills 4. Learning skills 5. Leadership skills 6. Multitasking 7. Self-discipline 8. Teamwork 9. Self –reliance 10. Meticulous 11. Diligence 12. Compliance

Tools, Equipment and Materials (TEM)

ITEMS	RATIO (TEM : Trainees)
i. Amplifier cable	1:20
ii. Amplifier connector	1:20

References:

1. Johan H. Huijsing (2011), *Operational Amplifiers: Theory and Design*
2. Johan H. Huijsing (Operational Amplifiers - *Theory and Design* (The Kluwer International Series in Engineering and Computer Science, Volume 605) (The Springer International Series in Engineering and Computer Science)
3. Mona M. Hella and Mohammed Ismail (2001), *RF CMOS Power Amplifiers: Theory, Design and Implementation* (The Springer International Series in Engineering and Computer Science)
4. Anthony Verbic (1999), *The Guitar Resource: A Comprehensive Acoustic/Electric Guitar Manual - Music Theory, Tuning, Setup, Repair, Amplifiers, Electronic Effects, Ear Training, Tablature*

CURRICULUM of COMPETENCY UNIT (CoCU)

Sub Sector	**DIGITAL CREATIVE**						
Job Area	**AUDIO PRODUCTION**						
Competency Unit Title	**SPEAKER SETUP**						
Competency Unit Descriptor	Speaker setup is focusing on events/programme requirement and the used of each individual numbers of speaker such as active and passive speaker, monitor and accessories according to speaker requirement						
Competency Unit ID	AP-XXX-04	**Level**	2	**Training Duration**	96 hours	**Credit Hours**	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
1. Identify programmes / events speaker setup requirements	i. Types of speaker ii. Speaker power rating iii. Speaker connector iv. Speaker cable input & output v. Speaker Impedance matching vi. Audio cross over vii. Acoustic calculation			10 hours	Lecture	• Number of required speakers calculated based on crowd, venue size and nature of event • Speaker cable and connector selected correctly according to requirement • Audio frequency in audio spectrum
		i. Determine speaker power rating ii. Determine speaker connector iii. Determine speaker cable input & output iv. Calculate	i. Meticulous in calculating impedance matching for speaker and amplifier connection	16 hours	Demonstration	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		impedance matching for speaker and amplifier connection v. Delegate cross over audio signal vi. Comply speaker acoustic requirement	ii. Resourceful of proper speaker handling			identified according to requirement • Speaker setup according to acoustic characteristic of the venue
2. Prepare required speaker	i. Types of speaker ii. speaker power rating iii. Amplifier connector iv. speaker cable input & output v. Speaker Impedance matching vi. Speaker rigging procedure • Stand • Stack • Hang			10 hours	Lecture	• Number of speakers selected confirmed based on requirement • Amplifier to speaker connection complied to International Electro technical Commission (IEC) standard • Speaker installed based on speaker rigging procedure

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		i. Select required speaker ii. Connect amplifier to speaker iii. Install required speaker iv. Ensure amplifier to speaker connection	i. Resourceful of speaker power rating and impedance ii. Careful in speaker handling and rigging iii. Adhere to speaker rigging procedure	16 hours	Demonstration	
3. Perform speaker signal checking	i. Audio speaker system functionality ii. Types of audio speaker system connection iii. Various source of audio input level			8 hours	Lecture	• Sound pressure level measured with sound level meter • Tone accuracy checked based on spectrum analyzer • Speaker system functionality confirmed based on audibility
		i. Check speaker system functionality ii. Check speaker to amplifier connectivity iii. Check speaker	i. Meticulous in amplifier signal input checking ii. Resourceful of electrical & electronic	16 hours	Demonstration	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		sound clarity and quality iv. Check speaker sound pressure level v. Compensate various input sources	safety handling procedure			
4. Re pack speaker and accessories after use	i. Functionality of speaker and accessories ii. Speaker handling techniques			8 hours	Lecture	• Speaker and accessories condition confirmed according to checklist • Correct packing on speaker and accessories confirmed • Safety procedures followed
		i. Check speaker and accessories condition ii. Perform speaker handling techniques iii. Prepare accurate reports of any loss or damage	i. Re pack speaker and accessories promptly to avoid lost ii. Comply to safety of lifting and handling methods iii. Protect equipment when in store or travelling iv. Use suitable	12 hours	Demonstration	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
			packaging materials for protection purposes v. Ensure safe temperature range of storage vi. Avoid from exposure to magnetic field			

Employability Skills

Core Abilities	Social Skills
02.01 Interpret and follow manuals, instructions and SOP's 03.05 Demonstrate safety skills 06.02 Comply with and follow chain of command 06.01 Understand system	1. Communication skills 2. Conceptual skills 3. Interpersonal skills 4. Learning skills 5. Leadership skills 6. Multitasking 7. Self-discipline 8. Teamwork 9. Self –reliance 10. Meticulous 11. Diligence 12. Compliance

Tools, Equipment and Materials (TEM)

ITEMS	RATIO (TEM : Trainees)
Speaker	1:20
Speaker cable input & output	1:20
Speaker stand	1:10

References:

1. Brett Mclaughlin (2004), *Home Theater Hacks: 100 Industrial-Strength Tips & Tools*
2. Thom Lisk (2008), *The Complete Idiot's Guide to Success as a Professional Speaker*
3. Jeffrey Falla and Aurora Johnson (2011), *How to Hot Rod Your Fender Amp: Modifying your Amplifier for Magical Tone*
4. Earl J Bauer (1977), *Convention manager's guide to A-V: How to select a room for a-v, ideal room setup, speaker ready room (SM book)*
5. David Miles Huber and Robert E. Runstein (2009), *Modern Recording Techniques,* Seventh Edition
6. Ira White (2007), *Audio Made Easy: (Or How to Be a Sound Engineer Without Really Trying)*
7. Daniel M. Thompson (2005), *Understanding Audio: Getting the Most Out of Your Project or Professional Recording Studio*

CURRICULUM of COMPETENCY UNIT (CoCU)

Sub Sector	**DIGITAL CREATIVE**						
Job Area	**AUDIO PRODUCTION**						
Competency Unit Title	**MIXER SETUP**						
Competency Unit Descriptor	Mixer setup is focusing on events/programme requirement and the used of number individual channel on the mixing desk and accessories according to mixer requirement						
Competency Unit ID	AP -XXX-05	**Level**	2	**Training Duration**	105 hours	**Credit Hours**	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
1. Identify programmes / events mixer setup requirements	i. Types of mixer • Analogue • Digital ii. Mixer connector iii. Mixer socket iv. Mixer signal flow • Channel input • Auxiliary -pre/ post • Insert send/ return • Group v. Phase button vi. Pan port vii. Assign button			11 hours	Lecture	• Number of channel required determined based on event • Mixer connectors selected according to requirement • Mixer signal flow distinguished according to types of event

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		i. Determine types of mixer ii. Determine required mixer connector iii. Determine required mixer socket iv. Differentiate mixer signal flow v. Recognise phase button vi. Recognise pan port vii. Recognise assign button	i. Resourceful of proper mixer handling ii. Resourceful of electrical & electronic safety handling procedure	14 hours	Demonstration	
2. Prepare required mixer	i. Types of mixer • Analogue • Digital ii. Normalizing procedure mixer connector iii. Mixer socket iv. Mixer signal flow • Channel			14 hours	Lecture	• Mixer normalized based on default procedure • Numbers of mixer prepared confirmed based on requirement

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	input • Auxiliary -pre/ post • Insert send/ return • Group v. Phase button vi. Pan port vii. Assign button					• Channel allocated based on sound source requirement • Signal for FOH confirmed based on audibility • Signal for MON confirmed based on audibility
		i. Select required mixer ii. Assign signal source to appropriate channel iii. Assign signal source to Front of House (FOH) iv. Assign signal source to monitor (MON) apply mixer normalizing procedure	i. Resourceful of speaker power rating and impedance ii. Careful in mixer handling	18 hours	Demonstration	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
3. Perform mixer signal checking	i. Mixer functionality ii. Types of audio mixer iii. Audio signal configuration			12 hours	Lecture	• Mixer functionality confirmed based level indicator • Mixer to amplifier connection checked based on level indicator • Mixer button, knob and faders functionality confirmed according mixer operation manual
		i. Check mixer functionality ii. Check mixer to amplifier connectivity iii. Confirm mixer button, knob and faders	i. Meticulous in mixer signal checking ii. Resourceful of electrical & electronic safety handling procedure	16 hours	Demonstration	
4. Re pack mixer and accessories after use	i. Functionality of mixer and accessories ii. Mixer handling techniques			8 hours	Lecture	• Mixer and accessories condition confirmed according to

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		i. Check mixer and accessories condition ii. Perform mixer handling techniques iii. Prepare accurate reports of any loss or damage	i. Re pack mixer and accessories promptly to avoid lost ii. Comply to safety of lifting and handling methods iii. Protect equipment when in store or travelling iv. Use suitable packaging materials for protection purposes v. Ensure safe temperature range of storage vi. Avoid from exposure to magnetic field	12 hours	Demonstration	checklist • Correct packing on mixer and accessories confirmed • Safety procedures followed

Employability Skills

Core Abilities	Social Skills
02.01 Interpret and follow manuals, instructions and SOP's 03.05 Demonstrate safety skills 06.02 Comply with and follow chain of command 06.01 Understand system	1. Communication skills 2. Conceptual skills 3. Interpersonal skills 4. Learning skills 5. Leadership skills 6. Multitasking 7. Self-discipline 8. Teamwork 9. Self –reliance 10. Meticulous 11. Diligence 12. Compliance

Tools, Equipment and Materials (TEM)

ITEMS	RATIO (TEM : Trainees)
Mixer	1:20
Mixer connector	1:20
Mixer socket	1:20

References:

1. Ira White (2007), *Audio Made Easy: (Or How to Be a Sound Engineer Without Really Trying)*
2. Jason Emsley (2010), *The Laptop DJ Handbook: Setups and Techniques of the Modern Performer*
3. Erik Hawkins (2004), *The Complete Guide to Remixing: Produce Professional Dance-Floor Hits on Your Home Computer*
4. Bill Gibson (2007), *Hal Leonard Recording Method Vol. 1 Microphones and Mixers with DVD (v. 1)*
5. Jon Margulies (2009), *Ableton Live 8 Power!: The Comprehensive Guide*
6. Todd M. Howard (2011), *GarageBand '11 Power!: The Comprehensive Recording and Podcasting Guide*
7. Robert Guérin (2005), *MIDI Power!: The Comprehensive Guide*
8. Steven Ascher and Edward Pincus (2007), *The Filmmaker's Handbook: A Comprehensive Guide for the Digital Age*
9. Jay Rose (2008), *Producing Great Sound for Film and Video, Third Edition (DV Expert Series)*
10. Jeff Strong (2005), *Home Recording For Musicians For Dummies (For Dummies (Lifestyles Paperback))*

CURRICULUM of COMPETENCY UNIT (CoCU)

Sub Sector	**DIGITAL CREATIVE**						
Job Area	**AUDIO PRODUCTION**						
Competency Unit Title	**AUDIO DEVICES RECORDING SETUP**						
Competency Unit Descriptor	Audio devices recording setup is focusing on events/programme requirement and the used of each individual such as graphic equalizer, compressor, sampler, effect processor, CD player, audio interface and feedback destroyer according to recording requirement						
Competency Unit ID	AP -XXX-06	**Level**	2	**Training Duration**	120 hours	**Credit Hours**	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
1. Identify programmes / events recording devices setup requirements	i. Types of recording devices • Digital Hard disk recorder • Analogue recorder • Portable recorder ii. Studio equipment layout diagram iii. Audio devices Standard operating level			16 hours	Lecture	• Types of recording devices required determined correctly based on recording requirement • Required recording devices selected according to requirement • Recording devices usage

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		i. Determine types of recording devices ii. Determine required recording devices iii. Differentiate recording devices usage iv. Illustrate simple studio equipment block diagram v. Comprehend basic Audio devices Standard operating level	i. Resourceful of proper recording devices handling ii. Resourceful of Audio devices Standard operating level iii. Resourceful of electrical & electronic safety handling procedure	20 hours	Demonstration	distinguished according to requirement • Simple studio equipment block diagram illustration produced according to requirement
1. Perform recording devices setup	i. Types of recording devices • Digital Hard disk recorder • Analogue recorder • Portable recorder ii. Studio equipment layout diagram iii. Audio devices			14 hours	Lecture	• Recording devices selection confirmed according to requirement • Recording devices placed on mounting rack securely • Proper cable connection and

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	standard operating level iv. Recording devices installation procedure v. Proper mounting procedure					termination for recording devices confirmed according to standard operating procedure
		i. Select required recording devices ii. Prepare recording devices mounting rack iii. Secure recording devices on mounting rack iv. Connect recording devices cables v. Ensure proper cable connection and termination for recording devices vi. Label all input and output cables to recording devices	i. Careful in recording devices handling ii. Careful in recording devices cabling iii. Adhere recording devices installation procedure iv. Adhere proper mounting procedure	18 hours	Demonstration	• Proper label attached to recording devices according to standard operating procedure

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
2. Perform recording devices checking	i. Recording devices signal flow ii. Studio equipment layout diagram iii. Recording devices operation manual			14 hours	Lecture	• Recording devices functionality confirmed based on operation manual • Recording devices to other audio equipments connection checked based on level indicator • Recording devices button, knob and faders functionality confirmed according audio outboard operation manual
		i. Check recording devices connection ii. Check recording devices functionality iii. Check recording devices input selection iv. Confirm recording devices functionality	i. Meticulous in recording devices checking ii. Resourceful of recording material and media handling procedure	18 hours	Demonstration	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
3. Re pack recording devices and accessories after use	i. Functionality of recording devices and accessories ii. Microphone handling techniques			8 hours	Lecture	• Recording devices and accessories condition confirmed according to checklist • Correct packing on recording devices and accessories confirmed • Safety procedures followed
		i. Check recording devices and accessories condition ii. Perform recording devices handling techniques iii. Prepare accurate reports of any loss or damage	i. Re pack recording devices and accessories promptly to avoid lost ii. Comply to safety of lifting and handling methods iii. Protect equipment when in store or travelling iv. Use suitable packaging materials for protection purposes v. Ensure safe temperature	12 hours	Demonstration	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
			range of storage vi. Avoid from exposure to magnetic field			

Employability Skills

Core Abilities	Social Skills
01.02 Document information, procedures or processes 01.04 Analyse information 02.01 Interpret and follow manuals, instructions and SOP's 02.03 Communicate clearly 03.05 Demonstrate safety skills 06.01 Understand systems 06.05 Analyse technical systems	1. Communication skills 2. Conceptual skills 3. Interpersonal skills 4. Learning skills 5. Leadership skills 6. Multitasking 7. Self-discipline 8. Teamwork 9. Self –reliance 10. Meticulous 11. Diligence 12. Compliance

Tools, Equipment and Materials (TEM)

ITEMS	RATIO (TEM : Trainees)
1. Studio equipment layout diagram	1:10
2. Recording devices operation manual book	1:10
3. Digital Hard disk recorder	1:10
4. Analogue recorder	1:10
5. Portable recorder	1:10

References:

1. Daniel Park (2007), *Camtasia Studio 4: The Definitive Guide (Wordware Applications Library)*
2. David Miles Huber and Robert E. Runstein (2009), *Modern Recording Techniques,* Seventh Edition
3. David Franz (2004), *Recording and Producing in the Home Studio: A Complete Guide*
4. Bruce Bartlett (2008), *Practical Recording Techniques, Fifth Edition: The Step- by- Step Approach to Professional Audio Recording*
5. David Miles Huber and Robert E. Runstein (2005), *Modern Recording Techniques, Sixth Edition*
6. Marc Schonbrun (2004), *The Everything Home Recording Book: From 4-track to digital--all you need to make your musical dreams a reality (Everything: Sports and Hobbies)*

CURRICULUM of COMPETENCY UNIT (CoCU)

Sub Sector	**DIGITAL CREATIVE**						
Job Area	**AUDIO PRODUCTION**						
Competency Unit Title	**AUDIO OUTBOARD SETUP**						
Competency Unit Descriptor	Audio outboard setup is focusing on events/programme requirement and the used of each individual such as graphic equalizer, compressor, sampler, effect processor, CD player, audio interface and feedback destroyer according to performance requirement						
Competency Unit ID	AP -XXX-07	**Level**	2	**Training Duration**	84 hours	**Credit Hours**	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
1. Identify programmes / events audio outboard devices setup requirements	i. Types of outboard devices ii. Functions of outboard devices iii. Types of outboard hardware • Compressor • Graphic equalizer • Signal Processor • Pre Amplifier • CD Player • Patch Bay • Etc iv. Outboard devices signal flow			8 hours	Lecture	• Types of required outboard devices selection confirmed according to requirement • Outboard devices functions distinguished properly according to specific function • Outboard devices signal flow interface determined

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	interface v. Outboard devices installation and integration procedure					according to requirement • Outboard devices installation and integration procedure figured out properly according to requirement
		i. Determine types of outboard devices ii. Differentiate functions of outboard devices iii. Determine required outboard hardware iv. Comprehend outboard devices signal flow interface vi. Comprehend outboard devices installation and integration procedure	i. Resourceful of proper outboard devices handling ii. Resourceful of outboard devices installation and integration procedure	10 hours	Demonstration	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
2. Perform audio outboard devices setup	i. Types of outboard devices ii. Functions of outboard devices iii. Types of outboard hardware • Compressor • Graphic equalizer • Signal Processor • Pre Amplifier • CD Player • Patch Bay • Etc iv. Outboard devices signal flow interface v. Outboard devices installation and integration procedure vi. Outboard devices installation procedure vii. Proper outboard devices mounting procedure			10 hours	Lecture	• Outboard devices selection confirmed according to requirement • Outboard devices placed on mounting rack securely • Proper cable connection and termination for outboard devices confirmed according to standard operating procedure • Proper label attached to outboard devices according to standard operating procedure

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		i. Select required outboard devices ii. Prepare outboard devices mounting rack iii. Secure on outboard devices mounting rack iv. Connect outboard devices cables v. Ensure proper cable connection and termination for outboard devices vi. Label all input and output cables to outboard devices	i. Careful in outboard devices handling ii. Careful in outboard devices cabling iii. Adhere outboard devices installation procedure iv. Adhere proper outboard devices mounting procedure	12 hours	Demonstration	
3. Perform audio outboard devices checking	i. Audio outboard devices signal flow ii. Outboard devices operation manual			8 hours	Lecture	• Outboard devices functionality confirmed based level

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		i. Check audio outboard devices connection ii. Check audio outboard devices functionality iii. Check audio outboard devices input selection iv. Confirm audio outboard devices functionality	i. Meticulous in audio outboard devices checking ii. Resourceful of audio outboard devices handling procedure	14 hours	Demonstration	indicator • Outboard devices to other audio equipments connection checked based on level indicator • Outboard devices button, knob and faders functionality confirmed according outboard devices operation manual
4. Re pack audio outboard devices and accessories after use	i. Functionality of audio outboard devices and accessories ii. Audio outboard devices handling techniques			8 hours	Lecture	• Audio outboard devices and accessories condition confirmed according to

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		i. Check audio outboard devices and accessories condition ii. Perform audio outboard devices handling techniques iii. Prepare accurate reports of any loss or damage	i. Re pack audio outboard devices and accessories promptly to avoid lost ii. Comply to safety of lifting and handling methods iii. Protect equipment when in store or travelling iv. Use suitable packaging materials for protection purposes v. Ensure safe temperature range of storage vi. Avoid from exposure to magnetic field	14 hours	Demonstration	checklist • Correct packing on audio outboard devices and accessories confirmed • Safety procedures followed

Employability Skills

Core Abilities	Social Skills
01.02 Document information, procedures or processes 01.04 Analyse information 02.01 Interpret and follow manuals, instructions and SOP's 02.03 Communicate clearly 03.05 Demonstrate safety skills 06.01 Understand systems 06.05 Analyse technical systems	1. Communication skills 2. Conceptual skills 3. Interpersonal skills 4. Learning skills 5. Leadership skills 6. Multitasking 7. Self-discipline 8. Teamwork 9. Self –reliance 10. Meticulous 11. Diligence 12. Compliance

Tools, Equipment and Materials (TEM)

ITEMS	RATIO (TEM : Trainees)
1. Compressor	1:10
2. Graphic equalizer	1:10
3. Signal Processor	1:10
4. Pre Amplifier	1:10
5. CD Player	1:10
6. Patch Bay	1:10

References:

1. Paul White (2006), *Basic Mixing Techniques (Sound on Sound)*
2. Peter McIan (1996), *Using Your Portable Studio*
3. Gerald Weber (1996), *A Desktop Reference of Hip Vintage Guitar Amps*
4. Doug Newcomb and Mike Mettler (2008), *Car Audio For Dummies*
5. Howard Ferstler (2007), Hsu *Research VTF-3 MK-3 subwoofer, Turbocharger low-bass augmenting device, and optional outboard High-Pass filter.(Product/service evaluation): An article from: Sensible Sound*
6. John Rofrano and Iacobus (2005), *Instant ACID*

CURRICULUM of COMPETENCY UNIT (CoCU)

Sub Sector	**DIGITAL CREATIVE**						
Job Area	**AUDIO PRODUCTION**						
Competency Unit Title	**AUDIO EQUIPMENT PREVENTIVE MAINTENANCE**						
Competency Unit Descriptor	Audio Equipment Preventive maintenance is focusing on checking of equipments functionalities according to planned schedule. The personnel shall be able to carry out maintenance activities to ensure the equipments are in good conditions at the required time						
Competency Unit ID	AP -XXX-08	**Level**	2	**Training Duration**	129 hours	**Credit Hours**	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
1. Check cables continuity	i. Types of cables ii. Basic electronic & electrical iii. Cable soldering technique and termination iv. Multimeter usage v. Maintenance schedule			18 hours	Lecture	• Cable for continuity checking selected correctly according to maintenance requirement • Multimeter or cable tester for cable continuity testing used

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		i. Obtain cable for continuity checking ii. Test cable continuity using multimeter or cable tester iii. Determine cause of cable fault iv. Repair/ replace faulty cable	i. Resourceful of cable faulty types ii. Adhere to cable soldering procedure	25 hours	Demonstration	properly according standard operation manual • Cause of cable fault found out according to standard operation procedure • Broken cable soldered properly according cable soldering technique • New cable requested according to requisition procedure

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
2. Check connectors continuity	i. Types of connectors ii. Basic electronic & electrical iii. Connectors soldering technique and termination iv. Multimeter and cable tester usage v. Maintenance schedule			18 hours	Lecture	• Connectors for continuity checking selected correctly according to maintenance requirement • Multimeter or cable tester for connectors continuity testing used properly according standard operation manual • Cause of connectors fault identified according to standard operation procedure • Loose connectors determined for
		i. Obtain connectors for continuity checking ii. Test connectors continuity using multimeter or cable tester iii. Determine cause of connectors fault iv. Repair/ replace faulty connectors	i. Resourceful of connectors faulty types	25 hours	Demonstration	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
						replacement • New connectors requested according to requisition procedure
3. Perform audio hardware external cleaning	i. Audio hardware specification ii. Manufacture operation manual iii. Audio hardware maintenance schedule iv. Audio hardware cleaning procedure			18 hours	Lecture	• Audio hardware specification recognised • Audio hardware maintenance schedule requirement

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		i. Determine audio hardware specification ii. Determine audio hardware maintenance schedule requirement iii. Identify manufacture operation manual iv. Clean audio hardware v. Prepare audio hardware maintenance report	i. Careful in audio hardware external cleaning ii. Careful in audio hardware handling iii. Details in writing hardware maintenance report	25 hours	Demonstration	identified • Manufacture operation manual comprehended • Audio hardware cleaned according to cleaning procedure • Audio hardware fault reported properly according to standard operation procedure

Employability Skills

Core Abilities	Social Skills
01.02 Document information, procedures or processes 01.04 Analyse information 02.01 Interpret and follow manuals, instructions and SOP's 02.03 Communicate clearly 03.05 Demonstrate safety skills 06.01 Understand systems 06.05 Analyse technical systems	1. Communication skills 2. Conceptual skills 3. Interpersonal skills 4. Learning skills 5. Leadership skills 6. Multitasking 7. Self-discipline 8. Teamwork 9. Self –reliance 10. Meticulous 11. Diligence 12. Compliance

Tools, Equipment and Materials (TEM)

ITEMS	RATIO (TEM : Trainees)
1. Cables 2. Multimeter 3. Maintenance schedule	1:10 1:10 1:1

References:

1. Broadcast Cable Financial Mana, Walter McDowell and Alan Batten(2008), *Understanding Broadcast and Cable Finance, Second Edition: A Primer for Nonfinancial Managers*
2. Stephen H. Lampen (2002), *Audio/Video Cable Installer's Pocket Guide (Pocket Reference)*
3. Lily M. Chin (2010), *Power Cables*
4. Dan Anderson (2005), *Multimeter Magic.: An article from: Farm Journal*
5. Andrew Oliviero and Bill Woodward (2009), *Cabling: The Complete Guide to Copper and Fiber-Optic Networking*
6. David Barnett, David Groth and Jim McBee (2004), *Cabling: The Complete Guide to Network Wiring, 3rd Edition*
7. Glen Ballou (2008), *Handbook for Sound Engineers, Fourth Edition*

CURRICULUM of COMPETENCY UNIT (CoCU)

Sub Sector	**DIGITAL CREATIVE**						
Job Area	**AUDIO PRODUCTION**						
Competency Unit Title	**AUDIO PRODUCTION SAFETY COMPLIANCE**						
Competency Unit Descriptor	Audio production safety compliance is identification of the safety precautions to eliminate/control hazards for each expected sequential steps for completion of audio production work						
Competency Unit ID	AP -XXX-09	**Level**	2	**Training Duration**	152 hours	**Credit Hours**	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
1. Identify expected sequential steps for completion of work	i. Equipment IOM service procedure ii. Standard operation procedure			14 hours	Lecture	• Safety precautions identified to eliminate/control • Risk definition confirmed • Risk matrix table generated
		i. Perform of work steps for specific service on the particular equipment prior to commencement of work	i. Follow safety policy ii. Initiates ideas for safety improvement	18 hours	Demonstration	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
2. Identify potential hazard/risk	i. Risk assessment methodology			14 hours	Lecture	• Risk assessment methodology determined • Risk definition determined
		i. Rate potential consequence ii. Estimate likelihood	i. Follow safety policy ii. Understand the concerns of others iii. Participates in safety training	20 hours	Demonstration	
3. Determine risk rating	i. Risk definition ii. Risk matrix			16 hours	Lecture	• Generation of RHA for the specific work on the particular • 7 high risks confirmed
		i. Determine risk according to matrix	i. Follow safety policy ii. Work with others in a professional manner iii. Use tools in a safe manner	25 hours	Demonstration	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
4. Identify safety precaution required to eliminate/control hazards	i. Expected sequential steps for completion of work ii. Potential risk/hazard iii. Safety policy iv. Safety audit v. Fleet safety vi. Hearing Protection vii. Fall protection viii. Log Out Tag out ix. Hazard Communication x. Respiratory Protection xi. Confined Space xii. Documentation on accident, near miss and first aid case xiii. Documentation of workers safety training xiv. Initiates ideas for safety improvement			20 hours	Lecture	• Documentation of safety training • Reporting on accident, near miss and first aid case • Documentation on accident, near miss and first aid case • Generate company crisis management plan

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
	xv. Crisis Management					
		i. Perform expected sequential steps for completion of work ii. Determine potential of risk rating for each sequential step of work iii. Perform safety precautions to eliminate/control hazard/risk for each sequential step of work	i. Follow safety policy ii. Wear safety PPE when specified iii. Report accidents, near miss and first aid case iv. Participates in safety training	25 hours	Demonstration	

Employability Skills

Core Abilities	Social Skills
01.02 Document information, procedures or processes 01.04 Analyse information 02.01 Interpret and follow manuals, instructions and SOP's 02.03 Communicate clearly 03.05 Demonstrate safety skills 06.01 Understand systems 06.05 Analyse technical systems	1. Communication skills 2. Conceptual skills 3. Interpersonal skills 4. Learning skills 5. Leadership skills 6. Multitasking 7. Self-discipline 8. Teamwork 9. Self –reliance 10. Meticulous 11. Diligence 12. Compliance

Tools, Equipment and Materials (TEM)

ITEMS	RATIO (TEM : Trainees)
Mixing consoles	1:10
Microphones	1:10
Signal processors	1:10
Analog-to-digital converters	1:10
Tape machines	1:10
Digital audio workstations	1:10
Music sequencers	1:10
Digital-to-analog converters	1:10
Loudspeakers	1:10
Preamplifiers	1:10

Amplifiers Dynamic range compression	1:10 1:10

References:

1. MA YIN SHAN (2010) , Power production safety law Compliance 500
2. Simon Slavin (1982), Applying Computers in Social Service and Mental Health Agencies: A Guide to Selecting Equipment, Procedures and Strategies
3. Michel Crouhy, Dan Galai and Robert Mark (2005), The Essentials of Risk Management
4. Alice F Stuhlmacher and Douglas F Cellar (2001), Workplace Safety: Individual Differences in Behavior
5. Margaret R. Richardson (1997), Managing Worker Safety and Health for Excellence (Occupational Health & Safety)
6. Jack Campbell (2006), Dauntless (The Lost Fleet, Book 1)
7. Frank R. Spellman and Revonna M. Bieber (2011), Physical Hazard Control: Preventing Injuries in the Workplace
8. Michael McCann (2005), Artist Beware, Updated and Revised: The Hazards in Working with All Art and Craft Materials and the Precautions Every Artist and Craftsperson Should Take

CURRICULUM of COMPETENCY UNIT (CoCU)

Sub Sector	**DIGITAL CREATIVE**						
Job Area	**AUDIO PRODUCTION**						
Competency Unit Title	**EXTERNAL HARDWARE PREVENTIVE MAINTENANCE**						
Competency Unit Descriptor	External hardware preventive maintenance is activities to prevent the failure of equipment before it actually occurs.						
Competency Unit ID	AP -XXX-10	**Level**	2	**Training Duration**	62 hours	**Credit Hours**	

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
1. Analyse external hardware preventive maintenance schedule	i. Type of preventive maintenance schedule ii. Source of preventive maintenance schedule iii. Procedure to acquire preventive maintenance schedule			10 hours	Lecture	• Type of external hardware preventive maintenance schedule identified • Source of external hardware preventive maintenance schedule identified • Preventive maintenance schedule determined

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		i. Determine type of preventive maintenance schedule ii. Determine source of preventive maintenance schedule iii. Acquire preventive maintenance schedule	i. Resource of preventive maintenance requirements	14 hours	Demonstration	
2. Perform external hardware preventive maintenance	i. Equipment external hardware preventive maintenance ii. Preventive maintenance methods and procedures			8 hours	Lecture	• Equipment external hardware preventive maintenance completed according to checklist given • Preventive maintenance

Work Activities	Related Knowledge	Applied Skills	Attitude / Safety / Environmental	Training Hours	Delivery Mode	Assessment Criteria
		i. Exercise equipment external hardware preventive maintenance ii. Apply preventive maintenance methods and procedures	i. Safety conscious ii. Compliance with rule and regulations	12 hours	Demonstration	methods and procedures are followed properly according to standard operating procedure
3. Prepare external hardware preventive maintenance report	i. Procedure to record preventive maintenance status			8 hours	Lecture	• Preventive maintenance status report produced according to checklist
		i. Write preventive maintenance status report	i. Safety conscious ii. Compliance with rule and regulations	10 hours	Demonstration	

Employability Skills

Core Abilities	Social Skills
01.02 Document information, procedures or processes 01.04 Analyse information 02.01 Interpret and follow manuals, instructions and SOP's 02.03 Communicate clearly 03.05 Demonstrate safety skills 06.01 Understand systems 06.05 Analyse technical systems	1. Communication skills 2. Conceptual skills 3. Interpersonal skills 4. Learning skills 5. Leadership skills 6. Multitasking 7. Self-discipline 8. Teamwork 9. Self –reliance 10. Meticulous 11. Diligence 12. Compliance

Tools, Equipment and Materials (TEM)

ITEMS	RATIO (TEM : Trainees)
Laptop computer	1:10
Digital voltmeter (DVM)	1:10
Screwdriver, flat blade	1:10
Screwdrivers, Phillips, #1, #2	1:10
Adjustable wrench, 1.5-inch (3.8 cm) capacity	1:10
Wiping cloth or shop towel	1:10
Isopropyl alcohol (medical rubbing alcohol) or alcohol pads	1:10
Anti-corrosion compound (suitable for protecting most metal types)	1:10

References:

1. David Anfinson and Kenneth Quamme (2008), *IT Essentials: PC Hardware and Software Companion Guide (3rd Edition)*. Cisco Press; 3 edition. ISBN-10: 1587131994
2. Jack Ganssle, Tammy Noergaard, Fred Eady and Lewin Edwards Lewin Edwards is an embedded engineer with over 15 years experience designing embedded systems hardware firmware and control software. (2007), *Embedded Hardware: Know It All (Newnes Know It All).* Newnes. ISBN-10: 0750685840
3. Stephen C. Rood (1995), *Computer Hardware Maintenance: An IS/IT Manager's Guide (Datamation Professional Series).* Butterworth Heineman. ISBN-10: 0750694947
4. Douglas Goldstein (1996), *Building And Managing Effective Physician Organizations Under Capitation (Aspen Executive Reports).* Jones & Bartlett Learning; ISBN-10: 0834208091
5. J.A.N. Lee and John Impagliazzo (2004), *History of Computing in Education (IFIP Advances in Information and Communication Technology).*

SUMMARY OF TRAINING DURATION

No.	Competency Unit Title	Work Activities	Related Knowledge	Applied Skills	Hours	Assessment (KA & PA)	Total (Hours)
1	Audio Cable Setup	Identify programmes / events cabling setup	14	18	32		109
		Prepare necessary cables and connectors according to checklist	10	14	24		
		Install necessary cables and connectors according to setup requirement	8	20	28		
		Re-pack cables and connectors after use	10	15	25		
2	Microphone Setup	Identify programmes /events microphone setup requirements	8	12	20		72
		Prepare required microphone	8	10	18		
		Perform microphone signal testing	6	8	14		
		Re-pack microphone and accessories after use	8	12	20		
3	Amplifier Setup	Identify programmes / events amplifier setup requirements	10	14	24		90
		Prepare required amplifier	18	14	22		
		Perform amplifier signal input checking	10	14	24		
		Re-pack amplifier and accessories after use	8	12	20		

4	Speaker Setup	Identify programmes / events speaker setup	10	16	26		96
		Prepare required speaker	10	16	26		
		Perform speaker signal checking	8	16	24		
		Re-pack speaker and accessories after use	8	12	20		
5	Mixer Setup	Identify programmes / events mixer setup requirements	11	14	25		105
		Prepare required mixer	14	18	32		
		Perform mixer signal checking	12	16	28		
		Re-pack mixer and accessories after use	8	12	20		
6	Audio Devices Recording Setup	Identify programmes / events recording devices setup requirements	16	20	36		120
		Perform recording devices setup	14	18	32		
		Perform recording devices checking	14	18	32		
		Re-pack recording devices and accessories after use	8	12	20		
7	Audio Outboard Setup	Identify programmes / events audio outboard devices setup requirements	8	10	18		84
		Perform audio outboard devices setup	10	12	22		
		Perform audio outboard devices checking	8	14	22		
		Re-pack audio outboard devices and accessories	8	14	22		

8	Audio equipment preventive maintenance	Check cables continuity	18	25	43		129
		Check connectors continuity	18	25	43		
		Perform audio hardware external cleaning	18	25	43		
9	Audio Production Safety Compliance	Identify expected sequential steps for completion of work	14	18	32		152
		Identify potential hazard/risk	14	20	34		
		Determine risk rating	16	25	41		
		Identify safety precaution required to eliminate/ control hazards	20	25	45		
TOTAL HOURS (CORE Competencies)			393	564	957		957
10	External Hardware Preventive Maintenance	Analyze external hardware preventive maintenance schedule	10	14	24		62
		Perform external hardware preventive maintenance	8	12	20		
		Prepare external hardware preventive maintenance report	8	10	18		
TOTAL HOURS (CORE Competency + Elective Competency)			419	600	1019		1019