

Training Package	Entertainment (CUE03)	HSC Requirements and Advice
Title	Apply a general knowledge of audio to work activities	
Unit code CUESOU07A	Unit Descriptor This unit describes the foundation skills and knowledge required to complete a range of general audio-related tasks in a live venue environment. It includes the need for an understanding of the role of the audio technician, overall audio system layouts and basic equipment recognition. Tasks would generally be completed under supervision.	HSC Indicative Hours 10

Evidence Guide			
Underpinning skills and knowledge	Linkages to other units	Resource requirements	HSC Requirements and Advice
<p>Assessment must include evidence of the following knowledge and skills:</p> <ul style="list-style-type: none"> • the general scope and potential of audio operations within different live production contexts, e.g. theatre, music, corporate • the relationship between audio operations and other technical and performance areas, including lighting, vision systems and performance • typical roles and responsibilities of audio technicians in different contexts, including different career paths • fundamentals of sound in a circuit, including understanding that microphone level is -40 to -60dB line level • features and meaning of a typical sound system signal flow chart, including signal chains, gain structure and levels • decibel levels and basic sound pressure level measurement, including that frequency is measured in Hertz, understanding the differences between 100Hz and 1kHz • understanding of phase, including phase cancellation, and that at 180 degree phase difference signals do cancel each other out • common terminology used in relation to audio • key features, purpose and basic operating procedures of major types of audio equipment, including different types of loudspeakers, audio mixing consoles, signal processing equipment, input source equipment and common accessories • different types of cable, their usage in different situations and how to care for them, including: 	<p>This unit underpins and has linkages to general technical units and all other audio units, and combined training and assessment with those units may be appropriate, eg:</p> <ul style="list-style-type: none"> • CUFSAF01B - Follow health, safety and security procedures • CUETGE11A - Handle physical elements safely during bump in/bump out. 	<p>Assessment of this unit requires access to:</p> <ul style="list-style-type: none"> • a range of sound equipment as identified in the Range Statement • a sound system • an environment in which an audio system can be run. 	<p>Key Terms and Concepts</p> <ul style="list-style-type: none"> • audio desk • audio equipment and accessories • audio installation plans • audio operations • audio technician • cables • decibel levels • electricity • Hertz • occupational health and safety (OHS) • phase and phase cancellation • positioning and equalising techniques • problems and faults • rigging and positioning • signal processing equipment • sound in a circuit • sound pressure level measurement • sound system signal flow chart.

Underpinning skills and knowledge	Linkages to other units	Resource requirements	HSC Requirements and Advice
<ul style="list-style-type: none"> - microphone cables; how to run safely and neatly and where to store excess - speaker cables; how to run safely and neatly and avoid lighting components - multicore cables, how to run safely and neatly and where to store excess - power cables, how to run safely and neatly and where to store excess • requirements for the storage of audio equipment • Occupational Health and Safety requirements and legislation that relate to audio personnel, in particular with regard to working safely with electricity • literacy skills sufficient to extract key information from audio installation plan • numeracy skills sufficient to sort and count equipment. 			

Method and context of assessment	Critical aspects of evidence	HSC Requirements and Advice
<p>The assessment context must provide for:</p> <ul style="list-style-type: none"> • practical demonstration of skills through the completion of a range of preparatory and set-up tasks with industry-current audio equipment • project or work activities that allow knowledge to be applied to specific production contexts and situations. <p>Assessment may incorporate a range of methods to assess performance and the application of essential underpinning knowledge, and might include:</p> <ul style="list-style-type: none"> • direct observation of the candidate completing audio-related tasks • evaluation of equipment which has been set-up by the candidate • oral or written questioning to assess knowledge of equipment and audio theory • review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate. <p>Assessment methods should closely reflect workplace demands and the needs of particular groups (e.g. people with disabilities, and people who may have literacy or numeracy difficulties such as speakers of languages other than English, remote communities and those with interrupted schooling).</p>	<p>The following evidence is critical to the judgement of competence in this unit:</p> <ul style="list-style-type: none"> • recognition of sound equipment, including key features and purpose • understanding of signal flow through the audio chain • completion of audio-related tasks in accordance with health and safety procedures. 	

Key competencies in this unit

Key competencies are built into all workplace competencies. The table below describes those applicable to this unit. Trainers and assessors should ensure that they are addressed in training and assessment.

Level 1 = Perform Level 2 = Administer and Manage Level 3 = Design and Evaluate

Key competencies	Level	Examples
Collecting, organising and analysing information	1	Reading audio plan to determine equipment required.
Communicating ideas and information	1	Discussing work requirements with supervisor.
Planning and organising activities	1	Discussing work requirements with supervisor.
Working with others and in teams	1	Liaising with other technicians during set-up.
Using mathematical ideas and techniques	1	Calculating the number of cables required.
Solving problems	1	Amending positioning of equipment to remove feedback problems.
Using technology	1	Wiring the audio system.

Element	Performance Criteria	Range Statement	HSC Requirements and Advice
1 Make preparations for audio set-up	1.1 Extract key information from audio installation plans and confirm requirements with supervisor	The following explanations identify how this unit may be applied in different workplaces, sectors and circumstances.	<p>Learning experiences for the HSC must address:</p> <p>Understanding a range of audio operations for:</p> <ul style="list-style-type: none"> • different entertainment industry contexts <ul style="list-style-type: none"> - live performance - theatre - music - corporate/events • different venue types <ul style="list-style-type: none"> - indoor - outdoor. <p>Typical roles and responsibilities of audio technicians in different contexts and possible career pathways.</p> <p>An awareness of production plans in relation to audio systems activities including:</p> <ul style="list-style-type: none"> • technical notes • stage plan • audio installation plans. <p>Common terminology used in audio installation plans including key terms and symbols.</p>
	1.2 Correctly identify preferred rigging and positioning points for audio equipment	<p>Equipment must include:</p> <ul style="list-style-type: none"> • loudspeakers • audio mixing consoles • input source equipment <p>Sound equipment may include:</p> <ul style="list-style-type: none"> • stereo 3-way PA system for audiences of different sizes • microphones of different pickup patterns and types • amplifiers to suit the system • speakers as part of the system • analogue FOH mixing desk of at least 24:8:2 format • effects rack • CD player • computer DAT • mini disc 	<p>Learning experiences for the HSC must address:</p> <p>General features, purpose and operation of a range of audio equipment including:</p> <ul style="list-style-type: none"> • loudspeakers • audio mixing consoles/desks • input source equipment • microphones • amplifiers • CD player • signal processing equipment • audio accessories appropriate to entertainment industry context. <p>Recognition of rigging and positioning points within different venues for a range of audio equipment and accessories.</p>

Element	Performance Criteria	Range Statement	HSC Requirements and Advice
		<ul style="list-style-type: none"> • hard disc recorder • signal processing equipment <p>Accessories used in live audio may include:</p> <ul style="list-style-type: none"> • DI boxes • insulation transformers • active splits • SPL meters • white or pink noise generators • spectrum analysers • analysis software • continuity and phase testers 	
	1.3 Correctly identify cables used to connect different audio components		<p>Learning experiences for the HSC must address:</p> <p>Knowledge of:</p> <ul style="list-style-type: none"> • different types of cables <ul style="list-style-type: none"> - microphone - speaker - multicore - power cables • cable usage in different situations • safe work practices <ul style="list-style-type: none"> - how to run safely and neatly - where to store excess - avoiding lighting components.
	1.4 Correctly identify and sort equipment and accessories in preparation for set-up, ensuring appropriate handling and taking account of equipment differences	<p>Equipment differences for loudspeakers may include:</p> <ul style="list-style-type: none"> • size of paper cone loudspeakers • features of high frequency compression driver types <p>Equipment differences for audio mixing consoles may include:</p> <ul style="list-style-type: none"> • how front of house consoles differ from stage monitor consoles, particularly the difference between pre and post fade auxiliary sends <p>Equipment differences for input source equipment may include:</p> <ul style="list-style-type: none"> • devices in the main signal chain, e.g. equalisers, CD, cassette, mini disk • devices inserted over individual channels, such as noise gates, limiters, compressors, preamps 	<p>Learning experiences for the HSC must address:</p> <p>Differences in a range of audio equipment and accessories including:</p> <ul style="list-style-type: none"> • loudspeakers • mixing consoles • input source equipment. <p>Knowledge of safe work practices for:</p> <ul style="list-style-type: none"> • manual handling • lifting techniques • packing/storage.

Element	Performance Criteria	Range Statement	HSC Requirements and Advice
2 Complete tasks using audio equipment	2.1 Correctly connect, disconnect and position audio system cables, including microphone, speaker, multicore and power feeds, in accordance with supervisor's instructions and safety requirements		<p>Learning experiences for the HSC must address:</p> <p>Occupational health and safety (OHS) regulations and requirements that relate to audio personnel, in particular with regard to working safely with electricity.</p>
	2.2 Wire the audio system in correct sequence and confirm with supervisor	<p>Correct sequencing of wiring would include:</p> <ul style="list-style-type: none"> • connection of adequate mains to all components and understanding of power isolation • safe and neat positioning of cables and multicore • patching to create a complete signal chain from input to output 	
	2.3 Set start up and operating settings in correct sequence and correctly use features of audio desk in accordance with instructions	<p>Correct start up sequence and operating settings for an audio system would include:</p> <ul style="list-style-type: none"> • ensuring all output faders on console are down (at minimum settings or muted) • ensuring all amplifier volume controls are down (at minimum settings) • powering up all front-of-house equipment first • powering up amplifiers last • winding up amplifier volumes after all equipment is powered up 	<p>Learning experiences for the HSC must address:</p> <p>A basic knowledge of:</p> <ul style="list-style-type: none"> • decibel levels and basic sound pressure level measurement including <ul style="list-style-type: none"> - frequency is measured in Hertz - understanding of difference between 100Hz and 1kHz • fundamentals of sound in a circuit including <ul style="list-style-type: none"> - microphone level is -40 to -60dB line level • features and meaning of a typical sound system signal flow chart including <ul style="list-style-type: none"> - signal chains - gain structure - levels • phase and phase cancellation • signals <ul style="list-style-type: none"> - analogue - digital.
	2.4 Identify any problems with equipment promptly, take action within scope of individual responsibility or report to supervisor		<p>Learning experiences for the HSC must address:</p> <p>Solutions to a range of common audio faults/problems.</p> <p>How and when to seek assistance.</p> <p>The importance of acting within level of authority in terms of:</p> <ul style="list-style-type: none"> • taking initiative

Element	Performance Criteria	Range Statement	HSC Requirements and Advice
			<ul style="list-style-type: none"> • problem-solving • decision-making.
	2.5 Use positioning and equalising techniques to create optimum sound quality		
	2.6 Communicate appropriately with other technicians, performers or customers during the completion of tasks		<p>Learning experiences for the HSC must address:</p> <p>Awareness of the relationship between audio operations and other technical and performance areas including:</p> <ul style="list-style-type: none"> • lighting • vision systems • performers • stage manager • director • staging.