6.3   Module 3:   Recording Studio Principles

Module Title	Recording Studio Principles
Module NFQ Level (only if an NFQ level can be demonstrated)	6
Module number/Reference	BAAMT103
Parent Programme	BA (Hons) in Audio and Music Technology
Stage of Parent Programme	1
Semester	1 and 2
Module Credit Units (FET/HET/ECTS)	ECTS
Module Credit number of Units	10
List the teaching and learning modes	FT
Entry requirements (statement of knowledge, skill and competence)	Learner has earned Level 5 qualification. No previous applications technology ability is required.
Pre-requisite module titles	None
Co-requisite module titles	None
Is this a capstone module? (Yes or No)	No
Staff qualifications (academic, pedagogical and professional/occupational) and experience required. (staff includes workplace personnel who are responsible for learners such as apprentices, trainees and learners in clinical placements)	Staff are required to have at least a Bachelor of Arts (Honours) qualification in Music Technology or related discipline. Industry experience would be a benefit but is not a requirement. Staff are expected to have the Certificate in Training and Education qualification from Griffith College or its equivalent.
Staff/learner ratio per centre (or instance of the module)	For lecture load, ratio of 1:50 lecturer to learner is required and in lab sessions the maximum allowed is 1:25. The lecturer will also have 1 hour per week set aside in their timetable for 1:1 contact with learners who require it or have particular items they want to discuss.
Maximum number of learners per centre (or instance of the module)	50
Duration of the Module	Two Academic Semesters, 24 weeks teaching
Average (over the duration of the module) of the contact hours per week.	3
Physical resources and support required per centre (or instance of the module)	One lecture hall with capacity at least 50 and one computer lab with capacity of 25.

Analysis of Required Learning Effort										
Effort while in contact with staff										
Classroom and Demonstrations		Mentoring and small group tutoring		Other (Specify)		Directed e-learning (hours)	Independent learning (hours)	Other hours (specify)	Work-based learning hours of learning effort	Total Effort (hours)
Hours	Minimum ratio teacher/learner	Hours	Minimum ratio teacher/learner	Hours	Minimum ratio teacher/learner					
48	1:50	24	1:25				178			250
Allocation of marks (within the module)										
					Continuous Assessment	Supervised Project(s)	Proctored practical	Proctored Written Examination		Total
Percentage contribution							100%			100%

6.3.1 Module Aims and Objectives

The objective of the module is to introduce the learner to the operating principles of modern recording studios. The module provides detailed insights into audio processing and the operation and signal flow of analogue mixing consoles. Learners will complete a number of recordings to understand the principles of capturing sound.

6.3.2 Minimum Intended Module Learning Outcomes

On successful completion of this module the learner will be able to:

MLO 3.1   Recognise and identify the properties of sound, microphones, signal flow and speaker systems.

MLO 3.2   Correctly operate recording technologies, applying a range of audio and midi multi-track processes and techniques in the recording studio.

MLO 3.3   Apply the essential skills required for the mix down process and complete a number of multi-track recordings.

MLO 3.4   Develop workflow strategies for various recording projects.

MLO 3.5   Display proper care and maintenance of equipment, adhering to health and safety requirements.

MLO 3.6   Research key practitioner(s) in the field of professional audio/music

6.3.3 Rationale for inclusion of the module in the programme and its contribution to the overall IPLOs

This module focusses on the fundamental skills required by the learner in order to be a recording professional. Recording audio is the basis for this and the module introduces the fundamental recording techniques needed. These assist in the attainment of programme learning outcomes 6 and 8 while also contributing to programme learning outcomes 1, 3 and 4.

6.3.4 Information Provided to Learners about the Module

Learners enrolled on this module will receive a copy of the module descriptor and assignment briefs, including an outline of the criteria for assessment.

Previous examples of assignments are also presented to the class.

6.3.5 Module Content, Organisation and Structure

The module is organised to deliver theory through lectures (2 Hours) and supervised tutorials (1 Hour). During tutorials, each learner will have a workstation allowing the lecturer to work individually with learners to demonstrate and explain the material. Some tutorials will also take place in a studio environment to demonstrate techniques.

The 2-hour lectures each week will combine lecture delivery and discussion on the material.

Each lecturer has a time allocated for one-to-one meetings with learners as required. These are not mandatory sessions but available either where the lecturer wishes to discuss an element of the module with a learner, or a learner requests a meeting to discuss a particular topic. These sessions focus on academic issues only.

Module Content

Sound and Recording
- Basic properties of sound: The sound wave, wavelength, amplitude, frequency response, phase.
- Microphones: Types, design and characteristics, polar response, frequency response, multi mic recording.
- Signal flow: Pre-amplifiers, introduction to the circuit diagram, components.
- Speakers and amplifiers: Types, design & characteristics, components, crossovers, filters, distortion.
- Basic recording techniques: Drums, bass, guitar, vocals, piano and various solo and stringed instruments. recording electronic instruments through a D.I. box.

Audio processing
- Tonal and dynamic: Compression, eq., gates, expanders.
- Spatial effects: Reverberation, echo and delay.
- Time based effects: Chorus, flanging, phasing, ADT and thickeners.
- Corrective: Pitch, rhythm.

Mixing Consoles
- An introduction to the studio analogue mixing console: Channel section, monitor section, inserts, pre and post fader aux sends, master section, cue section, groups, multitrack sends, multitrack returns, mute, solo, solo in place
- The patch bay: Types, design, layout, normalling, half normalling, parallels
- An introduction to stereo Mix-down: Preparation, techniques for creating height, width, depth. Masking, creating "sonic boxes", texture and atmosphere. Recording to two – track master.
- Mastering: Limiting, equalization, spatial enhancement, noise reduction, industry standard file types for various media.

6.3.6 Module Teaching and Learning Strategy

Learners are taught using a combination of lectures and practical tutorials.

Tutorials are recording studio based and are used to develop the learner's proficiency in recording techniques and processing. In addition to this, learners also work on recording projects in a creative, collaborative fashion.

Activity	Teaching / Learning Strategy	Learning Environment
Lectures (48 hours)	Lectures / participative discussions / problem solving exercises / demonstrations of recording equipment and studio management / flipped classroom discussion and engagement	College
Tutorial (24 hours)	Studio-based learning / practical demonstrations of recording different instruments / training in use of recording equipment and mixing consoles	College / Studio / Mac lab
Assignment (96 hours)	Practice learning and perfecting recording studio skills	College
Independent Work (82 hours)	Directed and self-directed study / use of college studios to practice skills	College / Home

6.3.7 Timetabling, Learner Effort and Credit

The module is timetabled as one 3-hour session to the whole class. This will consist of the 2-hour lecture, and a 1-hour studio tutorial. In recording studios, the learners engage directly with hardware and software used within professional audio environments.

The number of credits assigned to this module is our assessment of the learner effort required. It is our view that 10 ECTS of learner effort is required by learners coming new to the material to achieve the learning outcomes required.

6.3.8 Work-based Learning and Practice-placement

There is no work based learning or practical placement involved in the module.

6.3.9 E-Learning

The College VLE is used to disseminate notes, advice and online resources to support the learners. The learners are also given access to Lynda.com as a resource for reference.

6.3.10 Module Physical Resource Requirements

Requirements are for a fully equipped lecture hall and access to one or more recording studios. In the recording studios, there should be an analog mixing console with patch bay.

6.3.11 Reading Lists and Other Learning Materials

Recommended reading
Ballou, G. (2015) *Handbook for sound engineers,* Oxford: Focal.
Blesser, B. & Salter, L.R. (2009) *Spaces speak, are you listening?: experiencing aural architecture,* Cambridge Mass.: MIT Press.
Huber, D. (2013) *Modern recording techniques.* Oxford: Focal Press.

Secondary reading

Owsinski, B. (2012) *Audio Recording Techniques.* Lynda.com

Lee White, B (2014) *Foundations of AudioCompression and Dynamic Processing* Lynda.com

Lee White, B (2014) *Foundations of Audio: EQ and Filters*   Lynda.com

Brice, R. (1998) *Music engineering: the electronics of playing and recording.* Oxford: Newnes.

Gibson, D. (2005) *The art of mixing: a visual guide to recording, engineering, and production.* Boston, MA: Thomson Course Technology.

Pohlmann, K. (2011) *Principles of digital audio.* New York: McGraw-Hill.

Rayburn, R. (2011) *Eargle's the microphone book: From mono to stereo to surround - a guide to microphone design and application.* Oxford: Focal Press

Watkinson, J. (2002) *An introduction to digital audio.* Oxford: Focal Press.

White, P. (2002) *Recording and production techniques.* London: SMT.

6.3.12 Specifications of Module Staffing Requirements

For each instance of the module, there will be one lecturer qualified to at least Bachelor of Arts (Honours) level in Sound Engineering or equivalent, and with a relevant third level teaching qualification (e.g. Certificate in Training and Education). Depending on numbers a lab assistant may be required. Where this is the case the Assistant will be required to have a sound understanding of music technology and computer based workstations, either through industry experience or academic qualification. For example, a final year Bachelor of Music Production (Honours) learner may be suitable to assist the lecturer in lab sessions. Any lab assistant will work under the supervision of the lecturer.

6.3.13 Module Assessment Strategy

Name	Description	Weighting	Learning Outcomes
Project 1: Stereo Recording	Learners will be asked to make an ensemble recording using a minimum of three stereo recording techniques. This will give the learner an opportunity to implement recording skills they learn in early lectures and tutorials. Supporting documentation will be submitted detailing technical processes and critical reflection on working processes and an evaluation of the artefact.	30%	3.1 – 3.5
Project 2: Multi-track recording	Learners will complete one multi-track recording. To do this, learners will plan and realise a multi-instrument recording. This recording will then require appropriate editing and mixing skills. Supporting documentation will be submitted detailing technical processes and critical reflection on working processes and an evaluation of the artefact.	60%	3.1 – 3.5
Written Report	Learners are required to research and write a report on a key practitioner from the world of Engineering/Production. The report should be 2000 – 3000 words in length	10%	3.6

6.3.14 Sample Assessment Materials

Sample Project 1 – Stereo Recording

Working in tutor assigned groups, you will engineer and record an ensemble comprised of artists that will not include yourself or other members of your assignment group. There must be at least two sound sources recorded simultaneously live in the same room. The microphone captured sound, the ensemble you record and the duration of the piece will be decided by negotiation with your tutor. A detailed plan showing the position of the instruments, as well as the type and placements of the microphones employed must be submitted with your work.

The session must be recorded at **48KHz, 24 – bit resolution.**

Submit:

- **DAW session file**
- **Stereo audio files of recording, with correct labelling of stereo techniques employed. (X-Y, MS, ORTF, etc.)**
- **Supporting documentation**

Sample Project 2 – Multi-track Recording

Working in tutor assigned groups, you will engineer and record a multi-track session consisting of multiple instruments. There must be at least 8 tracks of recorded audio. The piece will be decided by negotiation with your tutor. A detailed plan showing the position of the instruments, as well as the type and placements of the microphones employed must be submitted with your work.

Once recorded, a stereo monitor mix of the file should be kept for reference. Each participant should then submit their own mixes of the piece. Supporting documentation showing the position of the instruments, as well as the type and placements of the microphones employed must be submitted with your work. Details on any edit/mix decisions should also be included in this.

The session must be recorded at **48KHz, 24 – bit resolution**.

Submit:

- **DAW session file**
- **One stereo Monitor mix of piece**
- **One finished Mix of piece**
- **Supporting documentation**

Sample Project 3 – Research Report

You will carry out research and write a report on any key recording practitioner or technique (to be negotiated with your tutor) in the field of professional audio. The report must be 2000 words in length and employ Harvard referencing format.

Submit:

- **1 x Microsoft Word Document (2000 words)**