

## 6.20 Module 20: Mixing and Mastering

<b>Module Title</b>	Mixing and Mastering
<b>Module NFQ Level (only if an NFQ level can be demonstrated)</b>	8
<b>Module number/Reference</b>	BAAMT302
<b>Parent Programme</b>	BA (HONS) Audio and Music Technology
<b>Stage of Parent Programme</b>	3
<b>Semester</b>	1 and 2
<b>Module Credit Units (FET/HET/ECTS)</b>	ECTS
<b>Module Credit number of Units</b>	10
<b>List the teaching and learning modes</b>	FT
<b>Entry requirements (statement of knowledge, skill and competence)</b>	Learner has earned Level 5 qualification. No previous applications technology ability is required.
<b>Pre-requisite module titles</b>	None
<b>Co-requisite module titles</b>	None
<b>Is this a capstone module? (Yes or No)</b>	No
<b>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)</b>	Staff are required to have at least a Master's qualification in Audio and 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.
<b>Staff/learner ratio per centre (or instance of the module)</b>	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.
<b>Maximum number of learners per centre (or instance of the module)</b>	50
<b>Duration of the Module</b>	Two Academic Semesters, 24 weeks teaching
<b>Average (over the duration of the module) of the contact hours per week.</b>	3
<b>Physical resources and support required per centre (or instance of the module)</b>	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
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				10%	90%			100%	

### 6.20.1 Module Aims and Objectives

This module aims to develop learner’s ability to create professional quality mixes and master audio across a wide range of genres and listening platforms. All aspects of the mixing process are explored in detail with focus on the technical aspects along with the psychoacoustic considerations. In-depth analysis and comparison of analogue versus “in the box” mixing is undertaken. The second element of this module focusses on the mastering stage. Traditional mastering techniques such as Limiting, Mid Side Processing, Over-Sampling and Dither are explored in detail.

## 6.20.2 Minimum Intended Module Learning Outcomes

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

- MLO 20.1 Apply sophisticated mixing techniques across the diversity of different genres
- MLO 20.2 Apply sophisticated and creative techniques using professional mixing tools.
- MLO 20.3 Illustrate informed selection and application of advanced mastering techniques.
- MLO 20.4 Exhibit comprehensive knowledge of deliverable formats for music.

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

There has been a major shift over the last 10 years in how people listen to music with the introduction of programs like Apple Music and streaming services such as Spotify and Pandora. This module explores and analyses the impact this has on traditional mixing and mastering techniques. The learning in this module will contribute directly to the learner's ability to achieve Programme Learning Outcomes 5 and 6, while also serving as an important factor in Outcomes 2 and 8.

## 6.20.4 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.

## 6.20.5 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 take place in a recording studio with digital and analogue processing equipment.

The 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

### Multi-genre mixing techniques

- An understanding of key principles
- Clear analysis of sonic references
- In depth understanding of psychoacoustic principles and their effect on a mix
- Creative use of samples to reinforce elements

### Mixing tools

- An understanding of spatial imaging and gain structure
- Floating point versus Fixed point processing
- Effective use of EQ, compression, limiting and spatial effects
- Creative and musical uses of automation

### Mastering techniques

- An understanding of industry standard metering requirements
- Effective use of mid-side processing techniques
- Clear understanding of loudness versus dynamic range
- Key practitioners & seminal works

### Deliverable formats for music

- An understanding of technical requirements for delivering to specific formats and platforms
- Ability to encode ISRC codes within each format
- Correct handling of Metadata
- Clear understanding of archival requirements

## 6.20.6 Module Teaching and Learning Strategy

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

Tutorials are will take place in recording studios and practical labs and are used to develop the learner's proficiency in mixing and mastering and enabling analysis of material in an industry environment.

In addition, learners will be required to do a large portion of practical work outside of timetabled hours.

Activity	Teaching / Learning Strategy	Learning Environment
<b>Lecture (48 hours)</b>	Lectures / participative discussions / case studies and audio examples of advanced mixing and mastering / practical demonstrations of mixing and mastering techniques / analysis of hardware and software tools	College
<b>Tutorial (24 hours)</b>	Practice and training on hardware and software mixing and mastering tools and techniques / guided mixing and mastering studio sessions / practical application of techniques	College / Mac lab
<b>Assignment (96 hours)</b>	Practice learning and perfecting mixing and mastering skills	College
<b>Independent Work (82 hours)</b>	Directed and self-directed learning / home study / practice in college studio spaces	College / Home

### 6.20.7 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 or lab tutorial.

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.

### 6.20.8 Work-based Learning and Practice-placement

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

### 6.20.9 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.

### 6.20.10 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 analogue and digital processing equipment. Industry standard monitoring will be required for each studio for analysis of material.

### 6.20.11 Reading Lists and Other Learning Materials

#### Recommended Reading

- Izhaki, R. (2011) *Mixing audio: concepts, practices and tools*. Oxford; Focal Press.  
 Katz, B. (2014) *Mastering audio*. Oxford: Focal Press.  
 Senior, M. (2011) *Mixing secrets for the small studio*. Oxford: Focal Press.  
 Owsinski, B. (2013) *The Mixing engineer's handbook*. Boston MA: Cengage Learning  
 Owsinksi, B. (2011) *Audio mixing bootcamp*. Lynda.com  
 Savage, S. (2014) *Mixing and mastering in the box: the guide to making great mixes and final masters on your computer*. Oxford: OUP.

### Secondary Reading

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

Cousins, M. (2013) *Practical mastering: a guide to mastering in the modern studio*, Oxford: Focal Press

Wadell, G. (2013) *Complete audio mastering: practical techniques*. New York: McGraw-Hill

Wyner, J. (2013) *Audio mastering: essential practices*. Boston MA: Berklee Press.

Fisher, C. (2015) *Advanced EDM Mixing Principles*. Lynda.com

Lee White, B. (2012) *Mixing a Rock Song in Pro Tools*. Lynda.com

Oswinski, B (2013) *Audio Mastering Techniques*. Lynda.com

Oswinski, B (2012) *Mastering for iTunes*. Lynda.com

### 6.20.12 Specifications of Module Staffing Requirements

For each instance of the module, there will be one lecturer qualified to at least Master's 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 postgraduate student of Audio and Music Production may be suitable to assist the lecturer in lab sessions. Any lab assistant will work under the supervision of the lecturer and to agreed worksheets

### 6.20.13 Module Summative Assessment Strategy

Name	Weighting	Description	Learning Outcomes
Practical Project	30%	Learners will be provided with a multi-track session file. They will then be required to do a 'Professional' standard mix demonstrating clear analysis of reference material and creative use of mixing techniques.	18.1 – 18.3
Assignment	40%	For this assignment learners, will mix a minimum of 4 songs/pieces from an E.P or album project. They must demonstrate professional standard mixes and maintain continuity and cohesiveness across the project. Each song, while individual should sound like it belongs on the same record as the others.	18.1 - 18.2
Continuous assessment	10%	Using the songs/pieces, learners will be required to attend formative assessment meetings to monitor progression of the project through stages.	18.1 – 18.4
Assignment	20%	Compilation Album Master demonstrating advanced mastering techniques with focus on overall tone, track order, gap length and overall sonic quality.	18.2 – 18.4

## 6.20.14 Sample Assessment Materials

### Assessment 1: Mixing.

For this assignment, you will be provided with a multi-track session of a piece of music by your tutor.

You must then take this project and perform a 'professional' standard mix to the song. You may mix the song to your own taste. There are no specific requirements for elements to include. Be creative.

During the project, you will be expected to bring in the project as it evolves through stages. You will then have the opportunity to present the mix for peer review and feedback from your tutor. You should have clear ideas as to the reference material and your goals for the piece. I.e. Have reference pieces of styles, genres, sounds you are using as inspiration for your mix.

The song should be mixed to a professional standard, e.g., it should not sound out of place on radio or on a streaming service like Spotify.

**Submit:**

- 1 x DAW project file of final mix**
- 1 x stereo wav file of final mix (24 bit 48KHz, .WAV)**
- 1 x technical log (Microsoft Word Document) documenting the working processes employed, a critical reflection on the processes and an evaluation and critique of the completed work**

### **Assessment 2: Mixing an E.P/Album**

For this assignment, you may choose your own pieces of music (must be negotiated with tutor). These can be previously recorded pieces, or new recordings can be made.

Then, like Assignment 1, you must mix each song to a professional standard

You may mix the songs to your own taste. There are no specific requirements for elements to include. Be creative. While each mix should have its own individual considerations, you should also consider the project as a whole. Each song should sound like it belongs with the others. There should be a sonic signature the whole record.

During the project, you will be expected to bring in the songs as they evolve through stages. You will then have the opportunity to present the mixes for peer review and feedback from your tutor. You should have clear ideas as to the reference material and your goals for the piece. I.e. Have reference pieces of styles, genres, sounds you are using as inspiration for your mix.

The song should be mixed to a professional standard, e.g., it should not sound out of place on radio or on a streaming service like Spotify.

**Submit:**

- 1 x DAW project file per song.**
- 1 x stereo wav file per mix (24 bit 48KHz, .WAV)**
- 1 x technical log (Microsoft Word Document) documenting the working processes employed, a critical reflection on the processes and an evaluation and critique of the completed work.**

### **Assessment 3: Mastering.**

Using the material from assignment 2, you are required to 'Master' each piece of the project to produce a final master copy of the album/E.P.

This album should be mastered to industry standards for CD, and digital streaming service.

You should include details on reference levels used for each format.

**Submit:**

- 1 x DAW project file of Mastering project**
- 1 x Mastered CD of album/E.P. (Adhering to Redbook Standard)**
- 1 x digital master file (per mix) for streaming/digital download.**
- 1 x technical log (Microsoft Word Document) documenting the working processes employed, a critical reflection on the processes and an evaluation and critique of the completed work**