

BA (Hons) Sound Technology

Module Information

Year 1 - Programme Credit Structure

- Core Recording Skills – 24 credits
- Sound Technology Theory – 12 credits
- Desktop Audio 1 – 24 credits
- Sound Reinforcement – 12 credits
- Audio Equipment Maintenance – 12 credits
- Audio Signal Processing – 12 credits
- The Context 1 – 12 credits
- Professional Development 1 – 12 credits

Core Recording Skills

The Core Recording Skills module aims to provide a solid foundation in the practical use and operation of modern recording studio technology. Although the module is predominantly based in a recording studio environment, it has been designed to ensure that much of the content is immediately transferable to other, more specialised areas.

By the end of this module, you should be able to display a reasonably detailed knowledge of the function and use of recording studio equipment, record and mix multi-track recordings to an appropriate standard using a non-automated desk and outboard equipment, evaluate your recorded work from a technical and non-technical perspective, demonstrate a clear grasp of signal path and routing within an analogue recording environment and identify and analyse production values in a recorded work by others.

Sound Technology Theory

This module will provide you with the theoretical knowledge underpinning the practical techniques taught in Core Recording Skills and will form the foundation for many of the other modules on the course. Whereas the theoretical elements of Core Recording Skills are very much rooted in specific practical techniques, the theory in this module is intended to apply to many general sound engineering applications. There is an element of mathematics in this module and you will be expected to understand and apply simple formulae using both calculators and spreadsheets – but this will always be presented within the context of sound recording.

The workshops will introduce spreadsheet based software techniques for dealing with the theory of audio signals and will be used to demonstrate how much of the objective consideration of these signals can be dealt with by using simple equations and graphs.

After completing this module, you should be able to demonstrate a theoretical understanding of the physical principles and metrics associated with basic acoustics, audio systems and psychoacoustics, explain the basic operating principles of transducers, metering systems and digital audio devices, perform calculations using acoustic pressure, decibels, time, frequency, wavelength, distance and other common measurement scales, and use spreadsheets in the context of audio and acoustic systems parameter calculation and graphing.

Desktop Audio 1

Desktop Audio 1 serves as a practical and theoretical introduction to the paradigm of desktop recording and production. In recent years, the boundary between MIDI sequencing and non-linear recording systems has become increasingly blurred, and requires an understanding of both of these elements and their relationship to each other in order to use them to their maximum capability. Starting with MIDI applications, you will be introduced to the MIDI protocol and the use of industry standard sequencing packages. You will then progress to using non-linear recording and editing systems such as ProTools, and finally investigate the integration of audio and MIDI capabilities in modern sequencers.

Although the software and hardware systems you will be using have strong links with creating and producing music, being a musician is not a prerequisite for this module. Instead, the tasks you are asked to undertake will be presented to you in a manner designed to develop your operational skills and understanding of these systems, and become creative in your application of them.

After completing this module, you should be able to recall and explain the data structure of MIDI and the underlying technologies of Desktop Audio systems, use a non-linear recording and editing package to competently and confidently record and edit audio, and produce an audio mix to an appropriate standard that integrates audio and MIDI in a single platform within the confines of the desktop environment.

Sound Reinforcement

Sound Reinforcement aims to provide you with the core practical skills and theoretical knowledge required to work in the field of sound reinforcement. Whilst there is some overlap in both theory and practice between this and studio based work, this module will place these in the context of live sound, in addition to introducing you to new skills and techniques. Particularly importantly, these skills will enable you to work effectively on collaborative projects later in the year.

The majority of applications covered in this module centre around small to medium scale portable sound reinforcement systems in the context of popular music performance. In addition to the technical skills required, you will also be given the opportunity to develop the interpersonal skills that are equally important in this, and other areas of sound production.

After completing this module, you should be able to plan for a small to medium live music event including appropriate sound reinforcement system design/deployment and non-technical considerations, demonstrate an understanding of the underlying theories relating to the design and use of sound reinforcement systems, apply a range of technical and creative skills and methodologies in the set-up, commissioning and operation of a sound reinforcement system, discuss the non-technical influences on a live performance and suggest measures to take account of these and critically evaluate your performance in a designated role of a sound reinforcement team.

Audio Equipment Maintenance

Audio Equipment Maintenance aims to provide an introduction to the electronic principles, components and systems relevant to typical audio systems. The syllabus will cover the theoretical and practical skills necessary to understand basic audio circuits, diagnose simple faults and be able to use standard audio measurement tools. The module includes both a theoretical component and a practical component in using electronic test and construction equipment.

After completing the module, you should be able to demonstrate an understanding of simple analogue circuit analysis of resistor and capacitors networks, demonstrate an understanding

of simple operational amplifiers, analogue filters, electro-magnetic and tape based recording devices, measure common technical parameters and fault-find within audio systems using standard test, construction and maintenance tools, and conduct research into technical specification parameters and methods of presenting these.

Audio Signal Processing

The Audio Signal Processing module is designed to enhance and build on the basic knowledge gained regarding signal processing in Core Recording Skills. The primary aim is to provide a detailed understanding of the fundamental technical operation of software and hardware signal processing and your applications. The syllabus can be broadly broken into three areas; design and building simple time based processors, using software based processing and using studio hardware. The workshops and assessments will reflect these three areas.

The content includes a significant amount of technical theory to provide a solid foundation in understanding the methods used to design and apply typical signal processing. You are also encouraged to relate your technical knowledge with your creative aspirations and to be able to realise a wide range of processing techniques in different applications.

Upon completion of this module, you should be able to design your own time delay based signal processing algorithms for audio processing effects, recall the principles of common types of signal processing and their parameters, explain how signal processing can be used in both remedial and creative applications, and apply signal processing to creatively manipulate audio signals for artistic and aesthetic purposes.

The Context 1

The Context aims to provide you with a shared understanding of the broad, current, performing arts landscape and the disciplines which constitute it, as well as the Political, Economic, Socio-Cultural, Technological and other forces which shape the evolution of and employment in performing arts disciplines. It also aims to provide you with an understanding of essential research and writing skills.

By the end of this module, you should be able to demonstrate an understanding of the key external, contextual forces and how they shape the practice and evolution of specific sectors within individual performing arts disciplines. You will also be able to apply research, writing skills and appropriate academic conventions in communicating research outcomes.

Professional Development 1

Professional Development provides the foundation for your journey towards sustained employment. Essential skills include an informed understanding of the event process, collaborative working and the realities of work in the performing arts. Underpinning these skills is a fundamental essential: being a learner.

By the end of the professional development module, you should be able to display an awareness of career development options within an individual performing arts discipline. You will be able to demonstrate an ability to engage in effective team working processes, and present evidence of a basic understanding of essential enterprise skills. You shall propose a personal strategy for the use of web, social networking and other relevant technologies as a component of the career development process.

Year 2 - Programme Credit Structure

- Advanced Studio Techniques - 24 credits
- Desktop Audio 2 – 24 credits
- Sound Reinforcement 2 – 12 credits
- Critical Listening - 12 credits
- Sound Design for Film, Television and Video – 12 credits
- Sound Technology Theory 2 – 12 credits
- Professional Development 2 – 12 credits
- The Context 2: The Producer – 12 credits

Advanced Studio Techniques

The aim of the Advanced Studio Techniques module is to allow you to gain a deeper understanding of the specialist tools and techniques employed during the processes of professional music recording, mixing and mastering.

After completing this module, you should be able to use advanced analogue and digital production consoles efficiently and effectively, explain the underlying theoretical concepts underpinning various studio subsystems and tools, choose appropriate technical tools and methods to run a multi-track recording session for a defined genre, mix a multi-track recording an appropriate standard -making use of automation, EQ, effects and dynamics processors as appropriate, demonstrate an understanding of the issues and processes involved in CD mastering and pre-mastering, explain the function and application of specialist tools employed in a music recording studio environment and evaluate the relationship between technological process and finished product.

Desktop Audio 2

Desktop Audio 2 is designed to build on the skills and knowledge acquired in Desktop Audio One. It aims to provide you with the knowledge and understanding of additional areas that can be incorporated into desktop audio production, and to develop some areas covered in the first year to a higher level.

The module embraces 'music technology' in its widest sense by introducing you to the broad theoretical concepts that underpin sound synthesis and sampling, and provides you with the practical skills to apply these concepts using software devices. Advanced areas of MIDI and sequencing are explored and applied, including synchronisation, MIDI timecode and the creation of simple virtual 'environments' for MIDI control.

After completing Desktop Audio 2, you should be able to recall the structure and use of MIDI timecode and MIDI clock, explain the theoretical concepts which underpin sound synthesis and audio sampling, apply the techniques required to integrate sampling and synthesis within the desktop audio environment, including complex software patching and modulation techniques and design MIDI control environments to control hardware and software devices.

Sound Reinforcement 2

Sound Reinforcement 2 aims to build on and develop the skills and techniques learned in Sound Reinforcement 1. Whilst that module is based around small to medium sized portable sound reinforcement, and largely in a popular music context, this module addresses larger sound reinforcement systems in both fixed installations and portable situations. It also introduces the learner to the specific requirements of sound reinforcement and sound design in theatrical and other non-musical contexts. More advanced technologies are introduced, such as the use of RF systems for microphones and monitoring, active speaker

management and measurement systems, digital mixing consoles and the use of sophisticated DSP based system processing.

After completing this module, you should be able to design, rig, optimize and operate a medium to large sound reinforcement system appropriate to a given brief in a theatrical context and including both live elements and recorded cues, demonstrate a detailed knowledge of the function and use of digital speaker management and measurement systems, RF mic and monitor systems, identify and solve faults in complex sound reinforcement systems taking into account relevant safety requirements, including power distribution, apply the forms and conventions of theatrical sound design to process and product, and critically evaluate their process and product including both technical and nontechnical influences.

Critical Listening

It is crucial that audio professionals actively and continuously develop and maintain their ability to listen and hear. The aim of this module is to encourage you to further develop your critical listening skills, but importantly, to contextualize these within the more subjective areas of music recording & production and other creative audio fields. It is important to note that 'audio quality' as a technical concept is distinct from 'appropriateness of sound', and while highest audio quality is the sound engineer's responsibility, this may be tempered by other artistic or commercial requirements. This module will explore these distinctions and encourage you to apply findings to your own work.

After completing this module, you should be able to identify the effects of equipment and environment on the physical qualities of sound, categorise the physical qualities of sound, evaluate the musical elements of recordings in a coherent manner and communicate this effectively and examine the structures, conventions and techniques employed in a variety of popular music genres.

Sound Design for Film, Television and Video

This module is intended to provide you with practical and theoretical skills necessary to work with sound when allied to the film and television industries. You will learn the skills needed to effectively record and edit audio for video, and will be introduced to the idea of post producing or 'sweetening' audio for TV and film. You will also be given a broad overview of the supporting processes and technologies involved in video production so that you can see where sound design fits into this process.

Although largely applied to Video and Television, you will find that some of these skills have applications in other areas, including computer entertainment, and increasingly music mixing. Towards the end of the module, we will cover theoretically some of the issues surrounding working with film, although your work will be based primarily around video.

After completing the module, you student should be able to apply established forms and conventions in the production of audio for moving image, produce audio for a piece of video selecting appropriate technical methods, use a surround capable desk / DAW to produce mixes in Dolby Surround and Dolby Digital, and explain the key technological principles and workflows associated with sound for film and television.

Sound Technology Theory 2

Sound Technology Theory 2 will explore the fundamentals of specialist techniques and principles that are relevant to contemporary and nascent developments in the field of audio recording practice. It builds on Level 1 theoretical and practical modules such as ST1020 and ST1001. Whilst the core teaching methods of this module are focussed towards practical applications, this is supported by a strong theoretical core and context.

After completing the module, you should be able to demonstrate a thorough understanding of the techniques involved in binaural and B Format recording and processing, apply digital signal processing theory in the design of practical signal processing applications, explain the underlying theory and practice associated with digital audio conversion and transmission, and evaluate a range of techniques employed in data compression for audio.

Professional Development 2

Professional Development 2 aims to provide you with additional depth in generic employment and enterprise skills (i.e. employment and business structures and practices, business and event planning, negotiation, self-employment, financial and tax planning, etc.). It also allows you to gain skills in learning how to consolidate generic and the allied discipline-specific skills through focused application in the context of employment, career or enterprise planning.

Upon completion of this module, you should be able to analyse and contextualise your own music practice and products within sociocultural and professional contexts, explain key theoretical concepts and apply them to your music practice and products, and communicate information, arguments and analysis through the application of research and writing skills, and the use of appropriate academic conventions.

The Context 2: The Producer

This module encourages you to view music production from the perspectives of audience and industry; adopting a primarily aesthetic and commercial view of music recording over the technical considerations. It aims to place music production with a cultural framework, both historically and contemporarily.

After completing this module, you should be able to recognise the key themes and concepts associated with music production, apply the results of research to practical process, with particular regard to music genres, appraise current practical work and practitioners within a social, cultural and theoretical context and evaluate and critique your own work in the context of audience and industry perceptions.

Year 3 – Programme Credit Structure

- The Context 3: Research Project – 24 credits
- Final Project Portfolio – 48 credits
- Professional Development 3 – 12 credits
- Advanced Live Sound – 12 credits
- Classical and Location Recording – 12 credits
- Composition and Arranging – 12 credits
- Desktop Audio 3 – 12 credits
- Multimedia Design – 12 credits
- Broadcast Audio – 12 credits
- Studio Design – 12 credits
- Video Production – 12 credits

The Context 3: Research Project

This module aims to provide you with the opportunity to develop your skills in document searching, practical research, analysis and presentation by working towards the production of a substantial (6000 word) written article.

The work should be clearly related to a part or parts of previous material covered in course modules in Level 1 and 2 but the research should substantially develop this to a high academic level appropriate for the final year degree standard. The subject matter can be chosen from a number of suggested academic and vocational avenues but it is a requirement that some practical work is conducted (e.g. experiments, surveys, listening tests, equipment building) as part of the project. A further aim is to give you an opportunity to develop a specific knowledge in an area related to your career aspirations.

After completing the module, you should be able to manage time and resources effectively in the production of negotiated tasks, evaluate and compare existing research source materials in an advanced area of sound technology, analyse, evaluate and record information independently using appropriate evidence and referencing, present your research findings in a coherent form using appropriate visual aids, produce a final research article demonstrating high levels of application, achievement and presentation and identify and develop knowledge and understanding of a specific subject area in relation to potential career aspirations.

Final Project Portfolio

The aim of the Final Project Portfolio module is to allow you to consolidate your practical skills, knowledge and understanding in the planning, execution and delivery of a range of work that matches professional standards and practice.

After completing your Final Project Portfolio, you should be able to produce a range of audio-related products to a standard comparable with similar professional products, relate production values from extant material to your own work in an innovative rather than purely derivative fashion, critically analyse your own work in relation to comparable professional products, work with/for external agencies or clients in a professional manner on a distinct project or specific elements of a project, critically evaluate the planning and execution of a project, and relate this to the project outcome, develop a realistic working production schedule and work to this schedule to a given deadline.

Professional Development 3

This module will encourage you to develop a critical view of your career sector in order to identify potential progression paths. You will actively plan and critically review your 3rd year's activities according to the skills and experiences valued by employers or clients in your sector. You will conceive a plan for career development that embraces the professional principle of lifelong learning.

After completing this module, you should be able to produce a systematic and detailed analysis of the appropriate industry sector to identify wider opportunities and threats, demonstrate an ability to robustly match your own abilities and experience to the requirements of the client / employer, and prepare for and undertake a professional presentation (either a job interview or business funding interview).

Advanced Live Sound

The Advanced Live Sound module aims to provide the learner with the opportunity to apply knowledge and finesse skills learnt in Levels 1 and 2 in a wholly practical context, as much of the delivery of the module is built around providing the technical input to major performances and shows. In addition, a number of alternative, advanced technical approaches will be explored which will enable you to achieve a higher standard and work more efficiently.

After completing this module, you should be able to demonstrate a detailed knowledge and skilled use of speaker arraying technologies/methodologies, live digital consoles, automation, show control and digital audio distribution/networking, independently design, rig and operate a medium to large-scale sound reinforcement system to support a specific production, undertake the organisational and technical roles and responsibilities of Sound Designer, production sound engineer and sound number 1 and 2, apply professional fault-finding skills and solve problems/apply solutions to complex/challenging live sound situations and critically evaluate your performance in relation to your differing roles.

Classical and Location Recording

This Classical and Location Recording module aims to introduce you to the techniques and working practices of classical recording techniques in a live performance situation. Unlike studio recording where every instrument is recorded on its own track and then panned, EQ'd and effected during the mix process, the minimum of equipment is often favoured and all decisions must be made before the recording. Often the perfect positioning of a stereo reference configuration will be the chief concern and main recording source. Much of the theory covered is transferable to other, more general areas. Stereo microphone techniques are useful in many and varied recording scenarios.

After completing this module, you should be able to demonstrate an understanding of the classical performance format and related recording techniques, select from a range of coincident, near-coincident and spaced microphone techniques as appropriate to a specific genre, edit and produce a CD of a classical recording to professional quality, work effectively and professionally with musical directors and conductors in performance venue, finalise a recording to CD sympathetically and appropriately to the music and record a live acoustic as a means of contextualising performance.

Composition and Arranging

Composition and Arranging is designed to take students who have already studied music theory further. The module aims to develop your knowledge of harmony and arrangement through a combination of seminars, workshops and practical exercises. Because of the written music elements in both the teaching and practical areas of the course a solid foundation in music theory and performance is a pre-requisite. If you have difficulty reading

and writing music notation then this course is not for you. Although this module spends no time in the studios and most of its time in the rehearsal rooms, the skills that are learnt here will be directly relevant to the production side of a recording environment. Arrangement skills developed through this module are applicable in any musical style.

After completing this module, you should be able to compose in a personal style to a given structural brief, prepare scores to a professional standard for the most common instrumental and vocal ensembles, identify chord types and progressions aurally and from score, recognise the specific requirements of arranging for ensembles and sections, compose and present work to a given schedule and produce musical arrangements that balance richness of aural texture with clarity of melody and harmonic support.

Desktop Audio 3

Desktop Audio 3 is designed to build on the skills and knowledge acquired in Desktop Audio 1 and 2. It aims to provide you with the knowledge and understanding of additional areas that can be incorporated into desktop production and to develop areas covered in the first and second years to a higher level. Advanced use of samplers and synthesisers will be utilised from within a desktop environment.

Advanced areas of MIDI sequencing and the creation of some advanced MIDI control environments will also be explored. This advanced use of MIDI is useful in several areas of music industry such as bespoke MIDI environments within the theatre and customised live settings.

After completing this module, you should be able to employ complex software patching and modulation techniques to integrate sampling and synthesis within the desktop audio environment, design advanced MIDI control environments to control software and hardware devices and choose appropriate tools and techniques to create bespoke solutions in a desktop audio environment.

Multimedia Design

The Multimedia Design module aims to introduce elements of multimedia design and build with an emphasis on integration with audio. It will concentrate almost exclusively on those skills needed to design and create a multimedia project using Flash as a development tool. This course will go much further than the menu driven elements of these tools, you will learn in depth about the use of these programmes, including writing code in ActionScript.

After completing this module, you should be able to demonstrate detailed knowledge of the operation of commercial multimedia production software, apply visual design concepts in the context of a multimedia project., solve problems to generate bug-free code, apply the principles of interactivity within both the design and realisation of a multimedia project and combine real-time audio elements into a multimedia project.

Broadcast Audio

The Broadcast Audio module aims to give students a deep understanding of the technical requirements, systems and operational considerations when working with audio for broadcast. Starting in the field of radio broadcasting, the module will also explore audio in the context of television production in both studio and outside broadcast contexts.

After completing this module, you should be able to operate a small format radio production studio to 'drive' live output delivered by others, design an audio specification for a live television event to a defined brief and recall and explain the key technical processes associated with audio for broadcast.

Studio Design

The Studio Design module is intended to provide the core skills relating to the acoustic design and improvement of recording studio spaces. Much of the work will involve mathematical calculations and equations essential for understanding the physics in a methodical manner. Spreadsheet software will be introduced for the purpose of automating the design process and this forms a major part of the module. Depending on availability, guest speakers and site visits will provide unique insights into the field.

Upon completion of this module, you should be able to apply specific technical theories relating to the internal acoustic design and noise control of recording studio spaces, design and use spreadsheets to make the acoustic design process more accurate, efficient and client friendly, conduct research into and critically evaluate the performance of a range of commercial products to be used in typical studio design and work to a brief to design a recording studio space, presenting this in a technical document.

Video Production

The Video Production module aims to introduce the basic techniques, skills and ideas needed to produce short video programmes. Although students are introduced to video technologies when studying sound design for film and television, this module is intended to broaden that skill base by developing the skills necessary to produce vision as well as audio.

After completing this module, you should be able to demonstrate operational competence in the use of video equipment to acquire location footage, paying due consideration to location choice, framing, sound and lighting, display operational competence in the use of non-linear video editing systems, produce a detailed treatment of a short video, script, storyboard, shoot and edit a video to a given brief, critically evaluate your individual and group performance as a production team and critically evaluate your finished video programme by reference to professional practice and standards.

Please note: This document is intended to give you a flavour of the course content in your first, second and third year. All of this information can be subject to change as LIPA programmes change to reflect the changing needs of the arts and entertainment industries.