

Unit 5: Backline Technical Management

Unit code:	A/600/6893
QCF Level 3:	BTEC National
Credit value:	10
Guided learning hours:	60

● Aim and purpose

The aim of this unit is to enable learners to develop their knowledge and skills in the setting up and maintenance of backline instruments – guitars and basses with associated equipment – and the methods used to support musicians in performance situations safely.

● Unit introduction

Knowledge of the construction methods used in the creation of musical instruments and the skills required to set up and maintain these instruments can be valuable assets for the complete musician. It should be appreciated that these skills alone can form the basis for a career that does not focus primarily on performance or the creation of a music product. A team of effective support staff can be an important element of everyday life for the performing musician in both the preparation and performance of live and recorded work.

Learners will consider how the design and construction of instruments has developed, and develop an understanding of current methods and practices. They will complete a number of practical tasks which will develop the skills required in setting up and maintaining instruments safely whilst developing an understanding of practical issues, including costs and budgeting for the effective maintenance of backline equipment. There will be a focus on associated backline equipment such as amplifiers, effects units and methods of interconnection.

Current trends in instrument and equipment design, both technical and aesthetic tend to be a healthy mix of old and new. Learners will be encouraged to consider how modern instruments and equipment have developed from the original concepts of early electric solutions to the problem of under-powered acoustic instruments struggling to compete with the other instruments in a band or orchestra. Learners will be encouraged to look at both musical and social influences when considering the design and construction of backline instruments.

Learners will take into account health and safety issues when covering both practical and theoretical aspects of the unit.

● Learning outcomes

On completion of this unit a learner should:

- 1 Know the design and construction basics of backline instruments
- 2 Be able to set up and maintain backline instruments and equipment
- 3 Know technical roles and commercial practice
- 4 Know health and safety practice for the backline technician.

Unit content

1 Know the design and construction basics of backline instruments

Design and construction: materials; finishes; set neck; bolt-on neck; pickup configuration; vibrato; hard-tail; active and passive electronic configuration; materials: woods; plastics; carbon fibre; laminate

Musical influences: ergonomics; aesthetics; design; considerations of tonal range; playability; sustain and feedback

2 Be able to set up and maintain backline instruments and equipment

Instrument set up: tuning; intonation; playing action; truss rod adjustment; vibrato/tremolo adjustment; string alignment; neck alignment

Instrument maintenance: re-stringing; checking batteries in active systems; reviewing truss rod alignment; replacing bridge components; checking nut for wear; cleaning potentiometers and switches; checking machine heads

Equipment set up: lifting; inter-connecting systems; effects loops; ground loops; D I (direct injection); microphones for sound reinforcement; speaker impedance matching

Equipment maintenance: basic fault analysis; cable checking; battery checking; wireless systems; speakers; valves/vacuum tubes; cleaning potentiometers and switches; replacing fuses

3 Know technical roles and commercial practice

Roles: eg permanent crew, technical tour support, pre- and post-sales servicing, personal assistant, luthier

Commercial practice: eg economic repairs, time and materials costing, working to deadlines, adhering to a budget, effective planning

4 Know health and safety practice for the backline technician

Hazards: physical hazards; electric shock; heavy loads; noise

Safe practice: using tools; soldering; cutting; hand tools; erecting equipment; lifting; moving; rigging; ear protection

Assessment and grading criteria

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The criteria for a pass grade describe the level of achievement required to pass this unit.

Assessment and grading criteria		
To achieve a pass grade the evidence must show that the learner is able to:	To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to:	To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to:
P1 identify the ways in which musical styles, available materials, and popular trends have influenced the design and construction of backline instruments [IE]	M1 describe the ways in which musical styles, available materials, and popular trends have influenced the design and construction of backline instruments	D1 explain the ways in which musical styles, available materials, and popular trends have influenced the design and construction of backline instruments
P2 prepare an instrument to performance standard with some assistance [RL]	M2 prepare an instrument to performance standard with only occasional assistance	D2 prepare an instrument to performance standard independently and to near-professional expectations
P3 prepare the backline equipment to performance standard with some assistance [EP]	M3 prepare the backline equipment to performance standard with only occasional assistance	D3 prepare the backline equipment to performance standard independently and to near-professional expectations
P4 identify the commercial practices used to perform backline technicians skills effectively in a variety of roles	M4 describe the commercial practice used to perform backline technician skills effectively in a variety of roles	D4 explain the commercial practice used to perform backline technician skills effectively in a variety of roles
P5 identify the electrical and physical hazards likely to be encountered by the backline technician, giving effective solutions.	M5 describe the electrical and physical hazards likely to be encountered by the backline technician, giving effective solutions.	D5 explain the electrical and physical hazards likely to be encountered by the backline technician, giving effective solutions.

PLTS: This summary references where applicable, in the square brackets, the elements of the personal, learning and thinking skills applicable in the pass criteria. It identifies opportunities for learners to demonstrate effective application of the referenced elements of the skills.

Key	IE – independent enquirers CT – creative thinkers	RL – reflective learners TW – team workers	SM – self-managers EP – effective participators
------------	--	---	--

Essential guidance for tutors

Delivery

Although there are four learning outcomes, the focus of this unit is on the practical element addressed by learning outcome 2 P2, M2, D2 and P3, M3, and D3.

Learners could begin by researching how social influences and popular trends, have influenced the various areas of design and construction of modern guitars and basses. For example, the way that the use of bright colours on motor cars in the late 50s and 60s influenced the finishes on electric guitars and basses – particularly those built by Fender in this period. Aesthetic design combined with practical, playability considerations drove manufacturers to new heights during this period. Many designs created at this time remain the most popular today, with original examples of these instruments fetching many times the price originally paid.

Another area of development has been the use of modern materials, with plastics in particular replacing wood, and even the animal parts originally utilised in instrument making (tortoiseshell, abalone, bone).

The practical elements of the unit require learners to be provided with a safe environment in which to work on a range of guitar and bass instruments. Initially, learners can attempt simple tasks such as the re-stringing of instruments, progressing to the techniques needed for a full setup of an instrument. On completion of the unit learners will know how to work safely whilst setting up and maintaining the actual instruments available, and preparing backline rigs fit for performance. There will be areas beyond the learner's expertise, however, in recognising this. Learners will also know the procedure for obtaining the correct quote for the right job in hand.

There are a number of potential areas of employment for learners. Each learner should know the roles involved, together with the skills particular to each role including any commercial practice involved in completing each role effectively.

Health and safety is an important issue, with learners likely to encounter both electrical and physical hazards; it is important that each learner knows how to identify and avoid potential injury.

Outline learning plan

The outline learning plan has been included in this unit as guidance and can be used in conjunction with the programme of suggested assignments.

The outline learning plan demonstrates one way in planning the delivery and assessment of this unit.

Topic and suggested assignments/activities and/assessment
Introduction to the unit and structure of the programme of learning.
Whole-class sessions covering the design and construction of guitars and basses with learners accessing the internet wherever possible.
Assignment 1: The Development of the Modern Guitar – P1, M1, D1
Assignment overview: <ul style="list-style-type: none">• individual and class discussions – example and methods• research and preparation of materials.
Whole-class sessions covering the basic skills for setting up an instrument – tutor or technician demonstration.
Assignment 2: Guitar or Bass Set up – P2, M2, D2
Assignment overview: <ul style="list-style-type: none">• individual and group practical sessions – setting up an instrument• consultation and review.
Whole-class sessions covering the basic skills for setting up a backline equipment rig – tutor or technician demonstrations.
Assignment 3: Preparing the Rig – P3, M3, D3
Assignment overview: <ul style="list-style-type: none">• individual and group practical sessions – setting up a rig• consultation and review.
Whole-class sessions covering roles and commercial practice.
Assignment 4: Roles and Responsibilities – P4, M4, D4
Assignment overview: <ul style="list-style-type: none">• individual and class discussions• collating evidence, report writing.
Assignment 5: Health and Safety Guide – P5, M5, D5
Assignment overview: <ul style="list-style-type: none">• individual and class discussions• H&S tests, collating materials, resource writing.

Assessment

For P1, learners will identify some of the obvious ways in which musical styles, materials and popular trends have influenced the design and construction of guitars and basses over time, however the evidence will lack detail. For M1, learners will provide detailed and elaborated description that provides an account of how styles, materials and trends have influenced design and construction. For D1, there will be an explanation which considers the reasons behind these influences.

For P2 and P3, learners will prepare a guitar or bass and any associated equipment (eg amplifiers) for a performance, but may require support from others to complete the tasks. For M2 and M3, learners may require minor prompts to ensure that the tasks are completed successfully. For D2 and D3, learners will complete the tasks successfully and with complete independence.

For P4, learners will list the range of roles associated with backline technical work and outline the skills, routines and procedures necessary to undertake these roles successfully. For M4, learners will provide a detailed and elaborated account of these roles and the practices involved and for D4 there will be explanations which account for these practices giving reasons why each role and its associated practices are vital to a successful outcome.

For P5, learners will list the potential hazards likely to be encountered by a backline technician and offer basic and straightforward solutions to minimise the risk. For M5, learners will elaborate on the potential risks they have identified and will provide detailed and robust solutions to mitigate these. For D5, learners will offer detailed and robust solutions, with thorough consideration of potential hazards and clear reasons as to why the risks exist.

Programme of suggested assignments

The table below shows a programme of suggested assignments that cover the pass, merit and distinction criteria in the assessment and grading grid. This is for guidance and it is recommended that centres either write their own assignments or adapt any Pearson assignments to meet local needs and resources.

Criteria covered	Assignment title	Scenario	Assessment method
P1, M1, D1	The Development of the Modern Guitar	Brief from a magazine to write a piece on how the design of modern guitars and basses has been influenced by social and technical factors.	<ul style="list-style-type: none"> Magazine article. Evidence to include: <ul style="list-style-type: none"> written piece illustrations technical information.
P2, M2, D2	Guitar or Bass Set up	Learners will set up and prepare an instrument to a level fit for performance.	<ul style="list-style-type: none"> Practical sessions to set up and prepare a guitar or bass. Evidence to include: <ul style="list-style-type: none"> completed instrument video evidence.
P3, M3, D3	Preparing the Rig	Learners will set up and prepare backline equipment to a level fit for performance.	<ul style="list-style-type: none"> Practical sessions to set up and prepare a guitar or bass rig. Evidence to include: <ul style="list-style-type: none"> completed rig video evidence.
P4, M4, D4	Roles and Responsibilities	Brief from school or college careers office to prepare a piece for the careers magazine, on the roles and responsibilities of a backline technician.	<ul style="list-style-type: none"> Magazine article. Evidence to include: <ul style="list-style-type: none"> written piece illustrations technical information.
P5, M5, D5	Health and Safety Guide	Brief to prepare a guide covering all the elements/hazards likely to be encountered when completing this unit.	Health and safety guide to include solutions, illustrations and instructions.

Links to other BTEC units

This unit forms part of the BTEC Music and Music Technology sector suite. This unit has particular links with the following unit titles in the BTEC Music and Music Technology suite:

Level 1	Level 2	Level 3
		Concert Production and Staging
		Live Sound Techniques

Essential resources

Learners will need access to a safe working environment with working surfaces on which to lay out instruments when working on them, and to place other items of backline equipment when inspecting for routine maintenance.

Tools will need to include electronic tuners, soldering equipment, screwdrivers and allen keys, cutters and pliers. There should be guitar and bass strings available, and a full range of fuses, jack plugs and batteries.

Employer engagement and vocational contexts

Learners would benefit from access to professionals working in the backline and technical areas of the music industry, or performers needing assistance/support.

Delivery of personal, learning and thinking skills

The table below identifies the opportunities for personal, learning and thinking skills (PLTS) that have been included within the pass assessment criteria of this unit.

Skill	When learners are ...
Independent enquirers	investigating roles and responsibilities
Reflective learners	evaluating the success of a guitar setup
Team workers	working with others when setting up backline for a performance
Self-managers	managing time whilst setting up an instrument
Effective participators	setting up for the performance.

Although PLTS are identified within this unit as an inherent part of the assessment criteria, there are further opportunities to develop a range of PLTS through various approaches to teaching and learning.

Skill	When learners are ...
Independent enquirers	considering the needs of the performer
Self-managers	ensuring deadlines are met.

● Functional Skills – Level 2

Skill	When learners are ...
ICT – Develop, present and communicate information	
Present information in ways that are fit for purpose and audience	using ITC to create publicity materials
English	
Speaking and listening – make a range of contributions to discussions and make effective presentations in a wide range of contexts	discussing the running of a marketing campaign
Reading – compare, select, read and understand texts and use them to gather information, ideas, arguments and opinions	exploring marketing materials used by music organisations
Writing – write documents, including extended writing pieces, communicating information, ideas and opinions, effectively and persuasively	producing copy for marketing materials.