

Unit 19:

Undertake Horseshoe Production

Unit reference number: R/602/0718

QCF Level 3: BTEC National

Credit value: 10

Guided learning hours: 60

● Aim and purpose

This unit aims to introduce learners to the skills and knowledge for horseshoe production and how these can be applied in practice. It is designed for learners in centre-based settings looking to progress into the sector or on to further/higher education.

● Unit introduction

Metal horseshoes have been an important part of the management of horses for centuries. Their development and use have been driven by many factors such as changes in horse nutrition, changes in horses' working and living environments and changes in the society's requirements for animal health and welfare.

The ability to make horseshoes is an essential and traditional part of the farrier's craft. Many of the skills required in the making of horseshoes are a central part of blacksmithing processes.

This unit covers the underpinning knowledge and skills required for the production of the common shoe types used in the farriery industry.

Learning outcome 1 looks at the purpose of horseshoes. Learners will cover the anatomy of the horse foot, the legislative requirements of the farriery industry along with the purpose relating to keeping horses and animal health and welfare.

Learning outcome 2 looks at the specialist tooling required for horseshoe production. It covers the use and materials of the specific tooling required for shoemaking.

Learning outcomes 3 and 4 cover the principles and practice of producing standard horseshoe types and those to set specifications. Learners will study the production methods of the core shoe types used within farriery. This will be related to horse type, conformation and work styles. As learners become more practised in shoemaking, there is a development opportunity for production to more rigorous specifications linked to differing foot shapes.

This unit does not purport to provide occupational competence in respect of farriery. Learners would be required to undertake further training in order to become a registered farrier.

● Learning outcomes

On completion of this unit a learner should:

- 1 Understand the purposes of horseshoes
- 2 Be able to use specialist tooling required for horseshoe production
- 3 Be able to demonstrate the principles and practice of producing standard horseshoe types
- 4 Be able to demonstrate the principles and practice of producing horseshoes to set specifications.

Unit content

1 Understand the purposes of horseshoes

Reasons for fitting horseshoes: breeds of horse and work styles; horseshoe development; animal health and welfare; improved grip; protection of the hoof; effects of not fitting/using horseshoes; effects of using poorly produced or badly fitted horseshoes; legal requirements of farriery; health and safety when working with horses and producing horseshoes; relevant current legislation eg Farriers (Registration) Act 1975, Health and Safety at Work Act 1974

2 Be able to use specialist tooling required for horseshoe production

Shoemaking tooling: types eg turning hammer, stamps, pritchels, tongs, punches; fuller

Materials: tool steel types; heat treatments

Use of tools: health and safety; risk assessment; nail hole production; heel forging eg upright, sloping

3 Be able to demonstrate the principles and practice of producing standard horseshoe types

Shoe types: front shoes; hind shoes; flat and concave fullered steel in the styles of eg plain stamped, concave fullered, riding style, driving style, toe clipped and quarter clipped

Production: materials eg concave fullered, flat; methods of making eg front, hind, left, right

4 Be able to demonstrate the principles and practice of producing horseshoes to set specifications

Dimension: working to set tolerances using templates; allowing for eg bends, heel types, material sizes, sections, in order to develop full awareness of the accuracy demands

Applications: breed and work style eg racing, jumping, heavy horse, driving

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 assessment 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 explain the reasons for fitting of horseshoes [IE]	M1 explain the possible effects on the working horse if horseshoes are absent or fitted incorrectly	
P2 use stamps and pritchels to produce plain stamped nail holes which meet a given specification	M2 produce standard shoe types from flat and concave fullered sections with toe and quarter clips.	D1 evaluate the process used to produce the standard shoe types making recommendations for improvement
P3 use fullers to produce fullering which meets a given specification		
P4 produce upright and sloping heels to meet a given specification [TW]		
P5 produce shoe clips to meet a given specification		
P6 produce plain stamped flat standard horseshoe types		
P7 produce concave fullered standard horseshoe types [EP]		
P8 produce unclipped plain stamped flat horseshoes to set size and shape		
P9 produce unclipped concave fullered horseshoes to set size and shape. [SM]		

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
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Essential guidance for tutors

Delivery

Delivery of this unit will involve practical assessments, written assessment, visits to suitable collections and will have links to industrial experience placements.

Tutors delivering this unit have opportunities to use as wide a range of techniques as possible. Lectures, discussions, seminar presentations, supervised workshop practicals, site visits, research using the internet and/or library resources and the use of personal and/or industrial experience would all be suitable. Delivery should stimulate, motivate, educate and enthuse learners.

Work placements should be monitored regularly in order to ensure the quality of the learning experience. It would be beneficial if learners and supervisors were made aware of the requirements of this unit prior to any work-related activities so that naturally occurring evidence can be collected at the time. For example, learners may have the opportunity to produce a set of shoes and they should be encouraged to ask for observation records and/or witness statements to be provided as evidence of this. Guidance on the use of observation records and witness statements is provided on the Edexcel website.

Visiting expert speakers could add to the relevance of the subject for learners. For example, farriers could talk about their work, the situations they face and the methods they use.

Health and safety issues relating to shoemaking and working with horses must be stressed and regularly reinforced, and risk assessments must be undertaken prior to practical activities. Adequate personal protective equipment (PPE) must be provided and used following the production of suitable risk assessments.

Tutors should consider integrating the delivery, private study and assessment for this unit with other relevant units and assessment instruments learners are taking as part of their programme of study.

Learning outcome 1 looks at the purposes of horseshoes. This is likely to be delivered through formal lectures, discussion, site visits, supervised practicals and independent learner research.

Learning outcome 2 looks at the specialist tooling needed for horseshoe production. Supporting knowledge will be delivered within a workshop and classroom environment via set and learner project work. The use of morbid specimens, shoe and tool examples is strongly recommended. Differing sections and sizes of mild steel should be used to produce shoes so that learners have a wide experience and develop a greater understanding of material estimation techniques.

Learning outcomes 3 and 4 cover the principles and practice of producing standard horseshoe types and those to set specifications. Learners should undertake a number of practical shoemaking exercises in the forge environment. Practical demonstrations by tutors should be progressive followed by learners practising the demonstrated elements. As learners become more competent in individual techniques, for example of nail hole production and heel forging, they should be encouraged to progress to more complex scenarios requiring the use of several techniques leading up to full shoe production. As the unit progresses learners are expected to take greater responsibility in evaluating the requirements/specifications of the various shoe types and work styles and to justify decisions for the selection of material sizes, sections and shoe types.

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 gives **an indication of the volume of learning it would take the average learner** to achieve the learning outcomes. It is **indicative and is one way of achieving the credit value**.

Learning time should address all learning (including assessment) relevant to the learning outcomes, regardless of where, when and how the learning has taken place.

Topic and suggested assignments/activities and/assessment
Introduction and overview of the unit.
Assignment 1: Horseshoes (P1, M1)
Tutor introduces the assignment brief.
Animal welfare, horseshoe development and fitting.
Demonstration of horseshoe production and fitting techniques.
Learner research of issues around horseshoeing.
Learner assessment/feedback.
Assignment 2: Practical Horseshoe Production (P2, P3, P4, P5, P6, P7, P8, P9, M2, D1)
Tutor introduces the assignment brief.
Following the introduction of horseshoe techniques including specifications, the learner produces horseshoe items using the required processes.
Learners evaluate process as set against specification and make recommendations for improvement.
Student assessment/feedback.
Guest speaker, workshop/site visits.
Unit review.

Assessment

For P1, learners must explain the purposes of horseshoes. They must cover the topics listed in the unit content. Evidence could take the form of a pictorial presentation with notes (possibly using appropriate software or an overhead projector) or an assignment.

For P2, P3, P4, P5, P6, P7, P8 and P9, learners must produce equine shoes to meet given specifications. Tutors should identify the specifications or agree these through discussion with learners. Where possible, to ensure fairness of assessment, the size and complexity of the task should be the same for all learners. Evidence is likely to be in the form of observation records and/or witness statements together with a completed portfolio of work carried out.

For M1, learners must explain the possible effects on the working horse if horseshoes are absent or fitted incorrectly. This must relate to animal welfare, health and safety, legal and professional implications of poorly fitted standard horseshoes. Learners could include in their evidence examples of situations that they have seen or heard of during the delivery of this unit. Evidence could be in the same form as for P1.

For M2, learners must produce standard shoe types from flat and concave fullered sections with toe and quarter clips. These must meet the requirements of driving and competition styles to fit a specified foot type and size. Learners are expected to provide evidence for at least six different standard horseshoe types. Evidence could be in the same form as for P2.

For D1, learners must evaluate the process used to produce the standard shoe types, making recommendations for improvement. Learners' evaluation must cover the use of materials and standard of horseshoes produced. Evidence could be in the same form as for P2.

Programme of suggested assignments

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

Criteria covered	Assignment title	Scenario	Assessment method
P1, M1	Horseshoes	You are working as a self-employed horseshoemaker and have been asked to supply horseshoes for an equine yard. You must first provide information on the purpose of horseshoes and related issues.	Assignment. Project.
P2, P3, P4, P5, P6, P7, P8, P9, M2, D1	Practical Horseshoe Production	You need to undertake the horseshoe production methods.	Practical production of horseshoes. Observation evidence. Work logs or other relevant learner notes and drawings.

Links to National Occupational Standards, other BTEC units, other BTEC qualifications and other relevant units and qualifications

This unit forms part of the BTEC land-based sector suite. This unit has particular links with:

Level 2	Level 3
Introduction to Forgework Processes	Understanding and Using Forging Techniques for Blacksmithing and Metalworking
	Undertake Forge Practice for Blacksmithing and Metalworking
	Undertake Blacksmithing Processes

This unit also has links with Level 3 National Occupational Standards in Farriery and in Fabrication and Welding Engineering.

Essential resources

Learners will require supervised access to a sufficiently resourced forge workshop.

This should offer a comprehensive range of blacksmithing and farriery forge tools, including solid fuel forge hearths, anvils and leg vices supported by a range of tongs, hammers, stamps, pritchels and other ancillary equipment. Learners should be encouraged to source their personal tool kits.

Learners will also require access to a sufficiently diverse range of materials and stock sizes/sections, eg mild steel, tool steels.

Health and safety considerations and effective learning require that sufficient facilities be provided to allow for one forging station per learner. Health and safety information and support must be provided.

With the use of fresh morbid specimens, appropriate hygiene rules must be observed and appropriate disposal procedures followed.

Any live horses used in the delivery of this unit should be placid and handled by an appropriately experienced person. (It should be noted that it is illegal for an unregistered person to perform an act of farriery and as such the horse should be used for observation, measurement and evaluation purposes only.)

This unit requires vocationally specific craft knowledge and demands appropriately qualified staff to deliver it.

Indicative reading for learners

Textbooks

Andrews J – *New Edge of the Anvil: A Resource Book for the Blacksmith* (Skipjack Press, 1994)
ISBN 9781879535091

Bealer A – *The Art of Blacksmithing* (Castle, 1996) ISBN 9780785803959

Blandford P – *Practical Handbook of Blacksmithing and Metal Work* (Bantam Doubleday Dell Publishing Group, 1998) ISBN 9780318148915

Bray S – *Metalworking: Tools and Techniques* (The Crowood Press, 2003) ISBN 9781861265739

Hickman J – *Farriery* (J A Allen & Co, 1977) ISBN 9780851312286

Hickman J and Humphrey M – *Hickman's Farriery 2nd Edition* (J A Allen & Co, 1999) ISBN 9780851314518

Marlow F – *Welding Fabrication and Repair: Questions and Answers* (Industrial Press, 2002)
ISBN 9780831131555

McDaniel R – *Blacksmithing Primer: A Course in Basic and Intermediate Blacksmithing*
(Dragonfly Enterprises, 2004) ISBN 9780966258912

Parkinson P – *The Artist Blacksmith: Design and Techniques* (The Crowood Press, 2001)
ISBN 9781861264282

Rural Development Commission – *The Blacksmith's Craft 2nd Edition* (Countryside Agency, 1990)
ISBN 9781869964146

Rural Development Commission – *Wrought Ironwork: A Manual of Instruction for Craftsmen*
(Rural Industries Bureau, 1957) ASIN B0000EEYT5

Journals

Forge

Websites

blacksmith.forge.cc/blinks.htm

Blacksmith Forge Links

www.az-blacksmiths.org

The Arizona Artist Blacksmith Association

www.blacksmithingebooks.com

Blacksmithing e-books

www.blacksmithscompany.org.uk

The Worshipful Company of Blacksmiths

www.blacksmithsjournal.com

Blacksmith's Journal

www.centaurforge.com

Centaur Forge

www.farrier-reggov.uk

The Farriers Registration Council

www.hse.gov.uk

Health and Safety Executive

www.nafbae.org

National Association of Farriers, Blacksmiths and
Agricultural Engineers

www.naturalengland.org.uk

Natural England

Delivery of personal, learning and thinking skills (PLTS)

The following table identifies the PLTS opportunities that have been included within the assessment criteria of this unit:

Skill	When learners are ...
Independent enquirers	explaining reasons for fitting of horseshoes
Team workers	producing fullering to meet set specification
Self-managers	producing unclipped concave fullered horseshoes to set size and shape
Effective participators	producing shoe clips to meet set specification.

Although PLTS opportunities 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 ...
Creative thinkers	explaining the possible effects on the working horse if horseshoes are absent or fitted incorrectly
Reflective learners	evaluating the process used to produce the standard shoe types making recommendations for improvement.