Unit 210: Manufacture routine products

# Delivery guide

Unit information

This unit is about manufacturing routine joinery products including doors, windows and straight staircases.

Learners may be introduced to this unit by asking themselves questions such as:

* What processes are required to manufacture joinery products?
* How do I sharpen and set up a smoothing plane?
* How do I check that a window frame has been assembled square?

Learning outcomes

1. Understand resource selection
2. Understand working to a contract specification
3. Comply with the given contract information to carry out the work safely and efficiently to the required specification

Suggested resources

* BS 459:1988. *Specification for Matchboarded wooden door leaves for external use.*
* BS 585-1:1989. *Wood stairs – Part 1: Specification for stairs with closed risers for domestic use, including straight and winder flights and quarter or half landings.*
* BS 585-2:1989. *Wood stairs – Part 2: Specification for performance requirements for domestic stairs constructed of wood-based materials.*
* BS 644:2012. *Timber windows and doorsets. Fully finished factory-assembled windows and doorsets of various types – Specification.*
* BS EN 942:2007. *Timber in joinery – General requirements.*
* BS EN ISO 19650-1:2018. *Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM). Information management using building information modelling. Part 1: Concepts and principles*.
* BS EN ISO 19650-2:2018 & Revised NA. *Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM). Information management using building information modelling. Part 2: Delivery phase of the assets.*
* BS EN ISO 9001:2000. *Quality management systems. Requirements*.

Suggested resources (continued)

Websites

* [Cadw (gov.wales) | Homepage](https://cadw.gov.wales/)
* [BWF | Homepage](https://www.bwf.org.uk/)

Legislation

* Approved Codes of Practice (ACOPs)
* [GOV.UK (www.gov.uk) | Building regulations approval](https://www.gov.uk/building-regulations-approval)
* [GOV.UK (www.gov.uk) | The Personal Protective Equipment at Work Regulations 1992](https://www.legislation.gov.uk/uksi/1992/2966/contents/made#:~:text=The%20Personal%20Protective%20Equipment%20at%20Work%20Regulations%201992,9%20Information%2C%20instruction%20and%20training%20More%20items...%20)
* [GOV.UK (www.gov.uk) | The Manual Handling Operations Regulations 1992](https://www.legislation.gov.uk/uksi/1992/2793/made)
* [GOV.UK (www.gov.uk) | The Control of Noise at Work Regulations 2005](https://www.legislation.gov.uk/uksi/2005/1643/made)
* [HSE | Health and safety in the woodworking industry](https://www.hse.gov.uk/woodworking/index.htm)
* [HSE | Health and Safety at Work Act 1974 explained](https://www.hse-network.com/health-and-safety-at-work-act-1974-explained)
* [HSE | Construction Design and Management Regulations 2015](https://www.hse.gov.uk/construction/cdm/2015/index.htm)
* [HSE | PUWER](https://www.hse.gov.uk/work-equipment-machinery/puwer.htm)
* [HSE | RIDDOR](https://www.hse.gov.uk/riddor/)
* [HSE | COSHH](https://www.hse.gov.uk/coshh/)
* [HSE | LOLER](https://www.hse.gov.uk/work-equipment-machinery/loler.htm)

Suggested resources (continued)

Textbooks

* Jones, S., Redfern, S., Fearn, C. (2019) *The City & Guilds Textbook: Site Carpentry and Architectural Joinery for the Level 2 Apprenticeship (6571), Level 2 Technical Certificate (7906) & Level 2 Diploma (6706).* London: Hodder Education.

ISBN 978-1-5104-5813-0

* Burdfield, M., Jones, S., Redfern, S., Fearn, C. (2020) *The City & Guilds Textbook: Site Carpentry & Architectural Joinery for the Level 3 Apprenticeship (6571), Level 3 Advanced Technical Diploma (7906) & Level 3 Diploma.* London: Hodder Education.

ISBN 978-1-5104-5815-4

| **Learning outcomes** | **Criteria** | **Delivery guidance** |
| --- | --- | --- |
| 1. Understand resource selection | * 1. Characteristics of the resources | * Learners to understand the characteristics (features) and suitability (final use) of resources when selecting them for manufacturing routine products. * Learners to know how to assess the quality of the resources including grading of timber for a particular use when appearance, strength and durability is important. * Learners to be able to recognise a range of manufactured boards available (types of fibreboard, ply, solid core boards, fire resistant boards, their production methods and features). * Learners to be able to recognise a range of timbers, their features and suitability for use, including: * European redwoods and whitewoods * Douglas fir * European oak * American red and white oak * ash * sapele * idigbo * Iroko * maple * acetylated/heat treated softwoods * plywood * fibreboard * solid core boards (blockboard etc.). * Learners to be able to identify a range of ironmongery, including: * hinges (butt, loose pin, rising, concealed, storm proof, friction, T, friction back flaps) * locks (rim, mortice, sash mortice, Suffolk latches, drawer and cupboard locks) * casement fasteners and stays, pivot centres * pulley wheels, fitch fasteners, sash lifts * glazing rebates suitable to accept glass (single, double, treble and secondary). |
| * 1. Use of resources | * Learners to know: * which resources are suitable to meet the specification of the finished joinery product * how and when to report problems with resources when producing routine products. |
| * 1. Organisational procedures to select resources | * Learners to know the process for selecting materials using technical information sources, including drawings, cutting lists, specifications, schedules and manufacturers’ information when producing routine products. |
| * 1. Hazards | * Learners to understand the hazards and risks associated with manufacturing routine products including Local Exhaust Ventilation (LEV), both with power tools and machinery. * Learners to understand how to reduce the hazards of dust from timber solids and manufactured products and the associated respiratory problems (asthma, emphysema). * Learners to understand the importance of using appropriate manual handling techniques (carrying, pushing, assessing weight, manual assistance where required, strains) and how to prevent musculoskeletal disorders. * Learners to understand the importance of using eye protection (safety glasses, face shields) and ear protection (ear plugs, ear defenders). * Learners to know the correct use and setting of guards for power tools and fixed machinery and associated risks (cuts, bruising, lacerations, projectiles, cutter contact, noise, dust, vibration, electrocution, slips, trips, falls and entanglement, orificial bodily entry, skin penetration (pneumatic supply)). * Learners to know how to access information for their safe use including manufacturers’ instructions, Approved Codes of Practice (ACOPs), appropriate legislation i.e., Provision and Use of Work Equipment Regulations (PUWER), abrasive wheels. |
| 1. Understand working to a contract specification | * 1. Methods of work | * Learners to know how to cut and machine joints and run profiles from the marking out process including: * mortice and tenon (barefaced, long/short shoulder, diminished shoulder, stub) * other joints (types of housing and dovetail) * Mouldings, rebates and grooves. * Learners to know how to recognise the orientation of the material for the machining process to include face side, face edge of stock. * Learners to know how to safely use hand, power tools and machinery for jointing, profiling and shaping prior to assembly. * Learners to know how to fit up and assemble components to achieve the finished product, select the correct adhesive (Polyvinyl Acetate (PVA), Polyurethane (PU), synthetic resin, rubber solvent and cramping methods (use of protection blocks and cauls to prevent bruising, masking methods to prevent glue staining)). * Learners to know how to flush joint surfaces and prepare joinery products for surface finishes. * Learners to know the appropriate abrasives (grit grades) for the specified finishes (painted, clear finish). * Learners to know how to rectify problems (dead knots, shakes and surface damage), how to use filling, piecing and how to steam out bruising damage. * Learners to know how to protect and store finished products prior to delivery. |
| * 1. Tools and equipment | * Learners to know how to set up and use hand tools, power tools and associated fixed machinery, including the correct setting of safety guarding, fence and stop settings, blade replacement and setting, cutter replacement and setting along with abrasive loadings. * Fixed machines to include: * cross cut saw * rip saw * surface planer * thicknesser * morticer * band saw * spindle moulder * finishing sander * drum/straight belt sander. * Power tools to include: * router * jigsaw * cordless drill driver * biscuit jointer * random orbital sander * belt sander * laminate trimmer * brad nailer. * Equipment to include: * bench bearers * sash cramps * G/F cramps * toggle cramps * squaring rod. * Hand tools to include: * tenon saw * mallet * chisels * coping saw * shoulder plane * smoothing plane * block plane * compass plane * concave and convex spokeshaves * cork rubber * cabinet scraper * draw pins * square * mitre template * cutting gauge * hammer * nail punch * pincers. |
| 1. Comply with the given contract information to carry out the work safely and efficiently to the required specification | * 1. Demonstrate work skills to measure, mark out, fit, finish, position and secure | * Learners to understand the manufacturing of: * match boarded, panelled and glazed doors * traditional casement, single- and double-glazed windows * dwarf, dado, frieze and full height panelling incorporating sunk, beaded and raised panels * internal and external jointing details for cladding * unit and fitment carcass construction to include drawers * closed string and open riser, straight flights of stairs. * Learners to know how to: * prepare surfaces for final specified finish of chosen products. * select, safely set up, use and maintain the different types of hand tools, power tools and associated equipment. * select, safely handle, stack and store resources using correct manual handling techniques. |
| * 1. Use and maintain hand and power tools to fit and assemble routine manufactured products to given working instructions, at least two items from the following: * doors * windows with opening lights * units and/or fitments * panelling and cladding * staircases (straight) |