	Curriculum Document			
Curriculum Code	**Curriculum Title**			
682201-002-00-00	Intermediate Occupational Certificate: Crafted Furniture Machinist			
	Name	**Email**	**Phone**	**Logo**
Development Quality Partner	Fibre Processing and Manufacturing SETA	AnsieN@fpmseta.org.za	0114031700	

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Learner QDF Signature **Date**

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QDF Signature **Date**

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DQP Representative Signature **Date**

Table of content

SECTION 1: CURRICULUM SUMMARY

1. Occupational Information

1.1 Associated Occupation

682201: Cabinet Maker

1.2 Occupation or Specialisation Addressed by this Curriculum

682201-002-00-00: Furniture Maker

1.3 Alternative Titles used by Industry

- None

2. Curriculum Information

2.1 Curriculum Structure

This qualification is made up of the following compulsory Knowledge and Practical Skills Modules:

Knowledge Modules:

- 682201002-00-KM-01, Introduction to furniture manufacturing, NQF Level 2, Credits 2
- 682201002-00-KM-02, Wood machining department and operations, NQF Level 2, Credits 8
- 682201002-00-KM-03, Crafted wood machine operation and safety in the furniture machining department, NQF Level 3, Credits 16
- 682201002-00-KM-04, Computer technology and operations, NQF Level 2, Credits 4
- 682201002-00-KM-05, Leadership and supervision, NQF Level 3, Credits 3

Total number of credits for Knowledge Modules: 33

Practical Skills Modules:

- 682201002-00-PM-01, Operate a range of machines in the wood machine shop to cut components for furniture manufacturing, NQF Level 2, Credits 20
- 682201002-00-PM-02, Operate advanced woodwork machines in a machining department to produce bored, edged, profiled, turned and jointed timber, board or components, NQF Level 3, Credits 30
- 682201002-00-PM-03, Guide teams in a fair and consistent manner to achieve set targets and outputs, NQF Level 3, Credits 2

Total number of credits for Practical Skills Modules: 52

This qualification also requires the following Work Experience Modules:

- 682201002-00-WM-01, Furniture machining operations, NQF Level 2, Credits 20
- 682201002-00-WM-02, Crafted furniture machining operations, NQF Level 3, Credits 30

Total number of credits for Work Experience Modules: 50

2.2 Entry Requirements

NQF 1

3. Assessment Quality Partner Information

Name of body: Fibre Processing and Manufacturing SETA

Address of body: 1 Newton Avenue, Killarney, 2193

Contact person name: Ms Ansie Nagel

Contact person work telephone number: 0800007395

4. Part Qualification Curriculum Structure

SECTION 2: OCCUPATIONAL PROFILE

1. Occupational Purpose

A Crafted Furniture Machinist produces bored, edged, profiled, turned and jointed timber, board or components for crafted furniture using advanced wood machines.

2. Occupational Tasks

- Perform breakout, planing, sanding and laminating operations to produce components for wood products by operating cross-cut saws, rip saws, surface and thickness planers, panel saws, radial arm saws, band saws, edge and stroke sanders (NQF Level 2)
- Perform joining, profiling, cutting of components using jigs, turning operations by operating spindles, overhead routers, mortise and tenon, multi borers and lathes (NQF Level 3)

3. Occupational Task Details

3.1. Perform breakout, planning, sanding, laminating operations to produce components for wood products by operating cross-cut saws, rip saws, surface and thickness planers, panel saws, radial arm saws, band saws, edge and stroke sanders. (NQF Level 2)

Unique Product or Service:

- Cut components for wood products

Occupational Responsibilities:

- Operate a range of woodwork machines to produce components for wood products

Occupational Contexts:

- Machining department

3.2. Perform joining, profiling, cutting of components using jigs, turning operations by operating spindles, overhead routers, mortise and tenon, multi borers and lathes (NQF Level 3)

Unique Product or Service:

- Cut, moulded or shaped woodstock or wood substitutes

Occupational Responsibilities:

- Operate a range of woodwork machines to produce components for crafted wood products

Occupational Contexts:

- Machining department for crafted wood furniture products

SECTION 3: CURRICULUM COMPONENT SPECIFICATIONS

SECTION 3A: KNOWLEDGE MODULE SPECIFICATIONS

List of Knowledge Modules for which Specifications are included:

- 682201-002-00-KM-01; Introduction to furniture manufacturing; NQF Level 2; Credits 2,
- 682201-002-00-KM-02; Wood machining department and operations; NQF Level 2; Credits 8,
- 682201-002-00-KM-03; Crafted wood machine operation and safety in the furniture machining department; NQF Level 3; Credits 16,
- 682201-002-00-KM-04; Computer technology and operations; NQF Level 2; Credits 4,
- 682201-002-00-KM-05; Leadership and supervision; NQF Level 3; Credits 3,

1. 682201002-00-KM-01, Introduction to furniture manufacturing, NQF Level 2, Credits 2

1.1 Purpose of the Knowledge Modules

The main focus of the learning in this knowledge module is to build an understanding of the manufacturing of furniture.

The learning will enable learners to demonstrate an understanding of:

- KM-01-KT01: Wooden and board furniture types, styles and construction (10%)
- KM-01-KT02: Timber technology (10%)
- KM-01-KT03: Composite board technology (10%)
- KM-01-KT04: Ergonomics related to furniture manufacturing (10%)
- KM-01-KT05: Processes in manufacturing of furniture (10%)
- KM-01-KT06: Productivity, quality and efficiency (10%)
- KM-01-KT07: Drawings for furniture manufacturing (10%)
- KM-01-KT08: Health and safety in the furniture machine/assembly/finishing department (10%)
- KM-01-KT09: Measuring and calculations (10%)
- KM-01-KT10: Compressor and compressed air (10%)

1.2 Guidelines for Topics

1.2.1. KM-01-KT01: Wooden and board furniture types, styles and construction (10%)

Topic elements to be covered include:

- KT0101 History of furniture
- KT0102 Styles and designs of furniture
- KT0103 Types, categories and uses of furniture
- KT0104 Antique and traditional furniture
- KT0105 Do-it-yourself (DIY) furniture
- KT0106 Furniture construction and components
- KT0107 Quality and customer requirements

Internal Assessment Criteria and Weight

- IAC0101 The history of furniture and furniture production is briefly outlined
- IAC0102 The styles and designs of furniture are listed and described along with the special considerations linked to each
- IAC0103 Antique and traditional furniture and furniture production are compared and contrasted
- IAC0104 Do-It-Yourself (DIY) furniture are discussed in terms of the considerations during their production
- IAC0105 The different types of furniture are described and matched to their uses
- IAC0106 The principles of furniture construction are outlined

- IAC0107 The functions of different components are listed
- IAC0108 The quality requirements for different types of furniture are outlined
- IAC0109 Customer requirements are identified and discussed

(Weight 10%)

1.2.2. KM-01-KT02: Timber technology (10%)

Topic elements to be covered include:

- KT0201 Origin of timber
- KT0202 Wood manufacturing principles
- KT0203 Types, properties and characteristics of timber
- KT0204 Structure of the timber
- KT0205 Drying processes
- KT0206 Timber products and uses
- KT0207 Timber used in construction and boat industry
- KT0208 Timber quality (faults and defects)
- KT0209 Related raw material used in the manufacturing of furniture

Internal Assessment Criteria and Weight

- IAC0201 The origin of different kinds of timber is listed
- IAC0202 The drying process is outlined and the reasons for each step in the process is clarified
- IAC0203 The effect of moisture in timber on timber products is explained to motivate the need for the drying process
- IAC0204 The different types of timber are listed along with their properties, characteristics and uses
- IAC0205 Timber structure is outlined along with the impact structure have on manufacturing
- IAC0206 The different products and uses of timber are described in order to ensure that timber is selected according to specification
- IAC0207 The specifications of timber used in the construction and boat industry are listed and explained
- IAC0208 Timber defects are listed and their impact on timber quality is explained

(Weight 10%)

1.2.3. KM-01-KT03: Composite board technology (10%)

Topic elements to be covered include:

- KT0301 Composite board manufacturing principles
- KT0302 Types and characteristics of boards

- KT0303 Composition of boards
- KT0304 Timber and board products and uses
- KT0305 Board used in construction and boat industry
- KT0306 Board quality (faults and defects)

Internal Assessment Criteria and Weight

- IAC0301 The manufacture of different kinds of boards is described
- IAC0302 The effect of moisture in board on board products is explained to motivate the need for proper storage
- IAC0303 The different types of boards are listed along with their properties, characteristics and uses
- IAC0304 Composite board structure is outlined along with the impact structure have on manufacturing
- IAC0305 The different products and uses of boards are described in order to ensure that composite boards are selected according to specification
- IAC0306 Board defects are listed and their impact on board quality is explained
- IAC0307 Manufacturing principles and best practices such as economical cutting of boards are explained

(Weight 10%)

1.2.4. KM-01-KT04: Ergonomics related to furniture manufacturing (10%)

Topic elements to be covered include:

- KT0401 Definition
- KT0402 Principles
- KT0403 Purpose
- KT0404 Standard measurements for furniture
- KT0405 Lifting and stacking
- KT0406 Moving materials and equipment

Internal Assessment Criteria and Weight

- IAC0401 Ergonomics is defined in terms of its applications and impact in furniture manufacture
- IAC0402 The principles and best practices of ergonomics in the industry is outlined
- IAC0403 The purpose of ergonomics is described in terms of the effect on the finished product and the production processes
- IAC0404 The need for standard sizes in furniture manufacture is motivated with reference to ergonomics
- IAC0405 Lifting and moving equipment are listed and their uses describe
- IAC0406 The lifting and moving equipment's impact on ergonomics during production is outlined

- IAC0407 Material storage (such as stacking) is described with reference to the different sizes, the use of spacers and the avoidance of damage
- IAC0408 The correct equipment is used based on the situation such as ladders of sufficient lengths for the heights involved
- IAC0409 The principles of ergonomics are applied to lifting to identify correct lifting procedures and minimizing the risk of injury to self

(Weight 10%)

1.2.5. KM-01-KT05: Processes in manufacturing of furniture (10%)

Topic elements to be covered include:

- KT0501 Process flow and productivity
- KT0502 Operations in the process flow
- KT0503 Routing sheets
- KT0504 Cutting lists
- KT0505 Product specifications
- KT0506 Finishing aids

Internal Assessment Criteria and Weight

- IAC0501 The process of furniture manufacture is briefly outlined
- IAC0502 The operations in furniture manufacture such as machining, assembling and finishing operations are reviewed
- IAC0503 The finishing processes of furniture is outlined
- IAC0504 The importance of productivity and methods to enhance productivity are discussed
- IAC0505 The role of the routing sheet is described
- IAC0506 Job card information such as component sizes and details, shoulder-to-shoulder size and chemicals to use is explained
- IAC0507 Product specifications are understood and their impact on the manufacturing process is discussed in terms of the process flow and methods that will be used

(Weight 10%)

1.2.6. KM-01-KT06: Productivity, quality and efficiency (10%)

Topic elements to be covered include:

- KT0601 Productivity
- KT0602 Interruptions
- KT0603 Waste management
- KT0604 Timber and board quality

- KT0605 Timber and board faults and defects
- KT0606 Product quality of the machining/assembling/finishing process and defects

Internal Assessment Criteria and Weight

- IAC0601 The importance of planning the job in avoiding delays is explained
- IAC0602 The importance of productivity is discussed
- IAC0603 The factors influencing productivity are outlined along with their impact on manufacturing processes
- IAC0604 The role of accurate cutting lists, specification sheets and routing sheets are described
- IAC0605 The importance of minimizing waste is discussed
- IAC0606 The need to reuse raw material (timber/board) and store reusable raw materials is motivated
- IAC0607 The role of planned interruptions is explained
- IAC0608 The procedures for dealing with unplanned interruption are outlined

(Weight 10%)

1.2.7. KM-01-KT07: Drawings for furniture manufacturing (10%)

Topic elements to be covered include:

- KT0701 Sketches and engineering drawings
- KT0702 Isometric views
- KT0703 Lines used
- KT0704 Hidden detail
- KT0705 Legends and symbols

Internal Assessment Criteria and Weight

- IAC0701 Sketches and engineering drawings are identified according to type and use
- IAC0702 Engineering drawings are correctly interpreted and the relevant actions and processes are identified
- IAC0703 Line structure and dimensions are correctly identified and their meanings described
- IAC0704 The interpretation is done methodically to ensure that all the important details are incorporated into the manufacturing process
- IAC0705 Work pieces to be used are identified based on the engineering drawing
- IAC0706 Hidden details are listed and the actions to be taken are outlined

(Weight 10%)

1.2.8. KM-01-KT08: Health and safety in the furniture machine/assembly/finishing department (10%)

Topic elements to be covered include:

- KT0801 BCOE Act
- KT0802 OHS Act
- KT0803 General hazards in the workshop
- KT0804 Fire extinguishers and uses
- KT0805 Evacuation plans and signage in the workshop
- KT0806 Demarcation lines
- KT0807 Safe working procedures in the various manufacturing operations
- KT0808 Machine safety
- KT0809 Personal safety
- KT0810 Hazards and incidents
- KT0811 Lock-out devices and procedures

Internal Assessment Criteria and Weight

- IAC0801 Routines are described in accordance with safety and work requirements
- IAC0802 Common and critical faults of equipment are listed and described to aid early identification and the proper channels for fault reporting are given
- IAC0803 The importance of keeping the work area free from hazards is explained
- IAC0804 Fire extinguishers and other methods of fire control are listed, their uses and applications outlined
- IAC0805 The importance of not tampering with fire extinguishers is clearly explained
- IAC0806 The evacuation plan is understood and memorized to ensure compliance in hazardous situations
- IAC0807 Signage in the workshop is described and the meanings are explained
- IAC0808 The different demarcation lines and their functions are described to ensure activities such as stacking is done is appropriate places
- IAC0809 Machine safety devices and their functions are given and the installation methods are outlined
- IAC0810 The safety checks for all machines used such as checking for blockages, testing emergency buttons and ensuring lock-out device availability are listed in order
- IAC0811 The personal protective equipment to be used in the workshop is described
- IAC0812 The protocol for incidents and injuries is described and the reporting channels for incidents and injuries are outlined

(Weight 10%)

1.2.9. KM-01-KT09: Measuring and calculations (10%)

Topic elements to be covered include:

- KT0901 Conversions
- KT0902 Taking accurate measures
- KT0903 Calculations
- KT0904 Angles
- KT0905 Tape Measure
- KT0906 Vernier calipers
- KT0907 Measuring cups
- KT0908 Viscosity cups

Internal Assessment Criteria and Weight

- IAC0901 Measuring equipment are identified and matched to their uses
- IAC0902 Correct measuring units are listed along with the scenarios in which they are used
- IAC0903 Conversions between units are demonstrated
- IAC0904 Angels are correctly identified, measured and calculated
- IAC0905 Measuring equipment are used accurately to get correct sizes and meet product specifications
- IAC0906 The considerations for using tape measures to ensure accuracy are listed
- IAC0907 The considerations for using Vernier calipers to ensure accuracy are listed
- IAC0908 The considerations for using measuring cups to ensure accuracy are listed
- IAC0909 The considerations for using viscosity cups to ensure accuracy are listed

(Weight 10%)

1.2.10. KM-01-KT10: Compressor and compressed air (10%)

Topic elements to be covered include:

- KT1001 Compressed air
- KT1002 Compressed air generation
- KT1003 Compressed air properties
- KT1004 Compressed air uses
- KT1005 Identify and solve problems
- KT1006 Hazards and risks
- KT1007 Pneumatic tools

Internal Assessment Criteria and Weight

- IAC1001 The concept of compressed air is described
- IAC1002 The process of compressed air generation is outlined
- IAC1003 Different compressors are identified and their advantages and disadvantages are outlined
- IAC1004 The properties of compressed air are listed and linked to the uses thereof
- IAC1005 Hazards arising from various air tools, including noise, vibration, fumes, hoses and connectors are explained
- IAC1006 The safety requirements and procedures of working with compressed air is outlined and linked to the hazards they are meant to address
- IAC1007 The standard operating procedures for pneumatic devices such as start-up and shut down procedures are outlined
- IAC1008 Common and critical faults of equipment are listed and described to aid early identification and the proper channels for fault reporting are given
- IAC1009 The importance of setting the correct pressure on all pneumatic tools and machines is explained
- IAC1010 The importance of draining water out of airlines is explained
- IAC1011 The proper colour coding for airlines is described

(Weight 10%)

1.3 Provider Programme Accreditation Criteria

Physical Requirements:

- The provider must have lesson plans and structured learning material or provide learners with access to structured learning material that addresses all the topics in all the knowledge modules.

Human Resource Requirements:

- Lecturer/learner ratio of 1:20.
- Qualifications of lecturers: 5 years' relevant experience or NQF 2 58227 with 2 years of experience

Legal Requirements:

- OHS compliant

1.4 Exemptions

- No exemptions, but the module can be achieved in full through a normal RPL process

2. 682201002-00-KM-02, Wood machining department and operations, NQF Level 2, Credits 8

2.1 Purpose of the Knowledge Modules

The main focus of the learning in this knowledge module is to build an understanding of the principles and procedures involved in basic machining processes in the bulk production of furniture.

The learning will enable learners to demonstrate an understanding of:

- KM-02-KT01: Machines in the furniture making machine shop (20%)
- KM-02-KT02: Saw blade technology (20%)
- KM-02-KT03: Cutter technology (20%)
- KM-02-KT04: Adhesives and abrasives used in the machining department (20%)
- KM-02-KT05: Quality control in wood machining processes (20%)

2.2 Guidelines for Topics

2.2.1. KM-02-KT01: Machines in the furniture making machine shop (20%)

Topic elements to be covered include:

- KT0101 Types and uses of machines
- KT0102 Machine calibrations and settings
- KT0103 Routine maintenance and cleaning
- KT0104 Safety mechanisms and warning signals
- KT0105 Lock out procedures and isolating machines
- KT0106 Operation and setting up of machine
- KT0107 Colour coding of the machine (orange, red, green)
- KT0108 Trouble shooting

Internal Assessment Criteria and Weight

- IAC0101 Different machines in the machines shop are identified according to their use
- IAC0102 Machine settings are described along with the procedures for achieving the correct settings
- IAC0103 The calibration procedures for machines are delineated
- IAC0104 Machine maintenance and cleaning procedures are described
- IAC0105 The importance of avoiding damage to cables, electrical wiring and parts is explained
- IAC0106 The role of extraction pipes and the fitment procedures are described
- IAC0107 Machine lubrication is described with attention given to the process of excessive oil and lubricant removal
- IAC0108 Lock-out devices for different machines are identified and their uses and roles are described

- IAC0109 Pre-start up checks such as belt or chain tension, proximity of lock-out devices, calibration and cutting tool fitted to the machine are listed
- IAC0110 Control panels are described with special attention to key settings and controls such as emergency light
- IAC0111 Colour coding of machinery in the industry is discussed
- IAC0112 Troubleshooting for common faults and problems of machines is described
- IAC0113 The role of noise in identifying machine faults is discussed in terms of the probable causes of the different noises and the corrective action necessary

(Weight 20%)

2.2.2. KM-02-KT02: Saw blade technology (20%)

Topic elements to be covered include:

- KT0201 Different blades
- KT0202 Blade characteristics
- KT0203 Uses
- KT0204 Band saw blade
- KT0205 Safety requirements
- KT0206 Quality requirements
- KT0207 Faults and defects

Internal Assessment Criteria and Weight

- IAC0201 The different kinds of blades are listed and described
- IAC0202 The characteristics of the different blades are discussed in terms of their uses in the manufacturing process
- IAC0203 The saw blades are matched to the machines and product specifications
- IAC0204 The requirements and considerations of band saw blades are explained
- IAC0205 The reasons for working with sharp, well-maintained blades are given
- IAC0206 Blade labels are identified and their meaning discussed
- IAC0207 Quality requirements of blades are described
- IAC0208 Common or critical faults or damage to the blade are listed and the effects on safety and production is described
- IAC0209 Safety procedures and regulations when working with saw blade technology are outlined
- IAC0210 The correct PPE is listed for working with saw blade technology

(Weight 20%)

2.2.3. KM-02-KT03: Cutter technology (20%)

Topic elements to be covered include:

- KT0301 Different types of cutters
- KT0302 Different cutting speed
- KT0303 Knives and solid cutters
- KT0304 Angle of the cutters
- KT0305 Cutter block
- KT0306 Quality requirements
- KT0307 Faults and defects
- KT0308 Safety requirements

Internal Assessment Criteria and Weight

- IAC0301 Different cutters are identified and described
- IAC0302 The characteristics of the different cutters are discussed in terms of their uses in the manufacturing process
- IAC0303 The requirements and considerations of cutters are explained
- IAC0304 The role and importance of the speed of the machine spindle is discussed in terms of cutter specification and material
- IAC0305 The reasons for working with sharp, well-maintained cutters and knives are given
- IAC0306 Quality requirements of cutters and knives are described
- IAC0307 Common or critical faults or damage to the cutter such as chips are listed and the effects on safety and production is described
- IAC0308 Safety procedures and regulations when working with cutter technology are outlined
- IAC0309 The correct PPE is listed for working with cutter technology

(Weight 20%)

2.2.4. KM-02-KT04: Adhesives and abrasives used in the machining department (20%)

Topic elements to be covered include:

- KT0401 Adhesives
- KT0402 Cold and hot adhesives and application methods
- KT0403 Solvents
- KT0404 Other chemicals
- KT0405 Hazards and risks associated with chemicals
- KT0406 Safe handling and storage of adhesives and solvents
- KT0407 Abrasives
- KT0408 Sand paper and grit sizes

Internal Assessment Criteria and Weight

- IAC0401 The properties of adhesives are outlined
- IAC0402 The characteristics of the different kinds of adhesives are listed and linked to their advantages and disadvantages
- IAC0403 Adhesive selection is explained in terms of product requirements
- IAC0404 Adhesive preparation is outlined and the impact of incorrect preparation on the quality of the adhesive is explained
- IAC0405 The application of hot and cold glue is delineated
- IAC0406 Material safety data sheet (MSDS) for the adhesive is explained
- IAC0407 The PPE to be used when working with adhesives is describe
- IAC0408 Hazards associated with adhesives are identified and the correct safety procedures are described
- IAC0409 The storage of adhesives is described
- IAC0410 The properties of abrasives are outlined
- IAC0411 The characteristics of the different kinds of abrasives are listed and linked to their advantages and disadvantages
- IAC0412 The selection of grit size and sand paper is explained in terms of product requirements
- IAC0413 Hazards associated with adhesives are identified and the correct safety procedures are described

(Weight 20%)

2.2.5. KM-02-KT05: Quality control in wood machining processes (20%)

Topic elements to be covered include:

- KT0501 Timber or board quality
- KT0502 Machine quality
- KT0503 Process quality
- KT0504 Faults and defects

Internal Assessment Criteria and Weight

- IAC0501 Timber defects are listed and their impact on timber quality is explained
- IAC0502 Board defects are listed and their impact on board quality is explained
- IAC0503 The grading and classification of timber quality is outlined
- IAC0504 The grading and classification of board quality is outlined
- IAC0505 The quality requirements for different types of furniture are outlined
- IAC0506 The quality requirements of different operations such as cutting and sawing are described and their identification discussed

- IAC0507 Sawing, cutting and other process faults are discussed in terms of their effect on the end product

(Weight 20%)

2.3 Provider Programme Accreditation Criteria

Physical Requirements:

- The provider must have lesson plans and structured learning material or provide learners with access to structured learning material that addresses all the topics in all the knowledge modules.

Human Resource Requirements:

- Lecturer/learner ratio of 1:20.
- Qualifications of lecturers: 5 years relevant experience or NQF 2 58227 with 2 years of experience

Legal Requirements:

- OHS compliant

2.4 Exemptions

- No exemptions, but the module can be achieved in full through a normal RPL process

3. 682201002-00-KM-03, Crafted wood machine operation and safety in the furniture machining department, NQF Level 3, Credits 16

3.1 Purpose of the Knowledge Modules

The main focus of the learning in this knowledge module is to build an understanding of occupational health and safety act, maintenance, jigs and templates, profiling, moulding, boring and edging of wooden products.

The learning will enable learners to demonstrate an understanding of:

- KM-03-KT01: Historical and technological factors influencing furniture manufacturing processes (5%)
- KM-03-KT02: Furniture types, styles, and construction (5%)
- KM-03-KT03: Machining processes, procedures and technology (5%)
- KM-03-KT04: Maintenance of woodwork machines in the machining department (5%)
- KM-03-KT05: Health, safety and environmental protection procedures (10%)
- KM-03-KT06: Engineering drawings (5%)
- KM-03-KT07: Using jigs and templates in the wood machining department (5%)
- KM-03-KT08: Bored furniture components, products and manufacturing techniques and processes (10%)
- KM-03-KT09: Edge banded furniture components, products and manufacturing techniques and processes (5%)
- KM-03-KT10: Profiled furniture components, products and manufacturing techniques and processes (10%)
- KM-03-KT11: Operating a lathe to produce turned timber components and products (10%)
- KM-03-KT12: Jointed timber and composite board components, products and manufacturing techniques and processes (10%)
- KM-03-KT13: Bended timber and board components, products and manufacturing techniques and processes (5%)
- KM-03-KT14: CNC machines in the wood machining department (5%)
- KM-03-KT15: Concepts and principles of measuring and calculations used in the furniture manufacturing processes (5%)

3.2 Guidelines for Topics

3.2.1. KM-03-KT01: Historical and technological factors influencing furniture manufacturing processes (5%)

Topic elements to be covered include:

- KT0101 Types, styles and uses of furniture including cabinets
- KT0102 The main historical factors and eras that influenced the designs of different types of furniture
- KT0103 The industrial revolution and the development of new technologies and furniture making materials
- KT0104 The impact of factories on the human resources and their skills

Internal Assessment Criteria and Weight

- IAC0101 Describe the main historical factors and eras, such as the voyages of discovery, royalty in Europe, both world wars, the development of craftsmen and designers and their designs
- IAC0102 Describe the impact of the industrial revolution its influence on the development of new materials and technology.
- IAC0103 Identify the differences between mass production and upholstery services provided by a small business
- IAC0104 Describe how the establishment of factories historically influenced the lives of the people working in the factories and the skills they needed

(Weight 5%)

3.2.2. KM-03-KT02: Furniture types, styles, and construction (5%)

Topic elements to be covered include:

- KT0201 Types and styles of furniture, including cabinets, and their uses
- KT0202 Concepts of ergonomic design and standard dimensions of furniture
- KT0203 Main furniture construction principles (stability, squareness, ergonomics, measurements, conversions, etc.)
- KT0204 Concepts of furniture construction including materials, parts identification, machining, joints and assembly techniques, using the correct terminology
- KT0205 Furniture manufacturing process from raw wood to finished product
- KT0206 Impact of design and construction faults
- KT0207 Problem solving

Internal Assessment Criteria and Weight

- IAC0201 Define the terminology and abbreviations used in the furniture industry
- IAC0202 Identify the parts of various advanced furniture and their construction, using industry terminology
- IAC0203 Describe the mass production process of making furniture from raw wood to finished product with reference to the various departments and their contribution to the final product
- IAC0204 Describe the production process of making upholstered furniture as a small business owner
- IAC0205 The main furniture construction principles are identified and the impact on product quality is reasoned

(Weight 5%)

3.2.3. KM-03-KT03: Machining processes, procedures and technology (5%)

Topic elements to be covered include:

- KT0301 Machine types
- KT0302 Tooling (spanners, wrenches, sockets)

- KT0303 Cutters, knives, bearings, guillotines
- KT0304 Machine sequencing
- KT0305 Machine safety and hazards
- KT0306 Colour coding of the machines
- KT0307 Attachment for the machines (spindle feeders, collets, bearings, fences, jigs,)

Internal Assessment Criteria and Weight

- IAC0301 Machine types are identified and used according to their designated use
- IAC0302 Different spanners sizes, wrenches, and sockets are identified for different parts of the machine
- IAC0303 Cutters, knives and bearing for different machines are identified and fitted.
- IAC0304 Machine cutting speeds and directions are observed
- IAC0305 Colour coding of the machines are understood (orange/ red/ green/ black)
- IAC0306 Machine hazards and safety mechanism are identified and fitted accordingly.
- IAC0307 Different attachments for the machines are identified and attached safely
- IAC0308 General machine safety is observed.

(Weight 5%)

3.2.4. KM-03-KT04: Maintenance of woodwork machines in the machining department (5%)

Topic elements to be covered include:

- KT0401 Machine tooling
- KT0402 Calibration
- KT0403 Lubrication
- KT0404 Disassemble and assemble the machine
- KT0405 Tension of the belts
- KT0406 Changing cutting tools of the machine
- KT0407 Maintenance checklists
- KT0408 Recording and recording

Internal Assessment Criteria and Weight

- IAC0401 Different machine tools used for maintenance are identified
- IAC0402 Machine are calibrated and tested for accuracy
- IAC0403 Machine lubrication is carried out on all moving parts of the machine
- IAC0404 Correct lubrication is selected for the machine (grease, oil, polish)
- IAC0405 Tension of belts, moving chain is correctly set

- IAC0406 Running hours of the machine is observed
- IAC0407 Changing of blades, cutters, knives of the machine is done accordingly
- IAC0408 Maintenance checklist is followed and completed according to policy
- IAC0409 All deviations on the machines are recorded and reported to relevant personnel
- IAC0410 Recommendation for major maintenance or replacement of worn out parts is done
- IAC0411 Foreign objects (sawdust, offcuts, rags,) are removed from the machine
- IAC0412 Faults cables, wires are reported and replaced by qualified personnel
- IAC0413 Lockout of the machine is carried out as required.

(Weight 5%)

3.2.5. KM-03-KT05: Health, safety and environmental protection procedures (10%)

Topic elements to be covered include:

- KT0501 BCOE Act
- KT0502 OHS Act
- KT0503 General hazards in the workshop
- KT0504 Fire extinguishers and uses
- KT0505 Evacuation plans and signage in the workshop
- KT0506 Demarcation lines and designated areas
- KT0507 Safe working procedures in the various machining operations
- KT0508 Machine safety (isolate the machine)
- KT0509 Hazards, risks, incidents, accidents and unsafe conditions and acts
- KT0510 Personal safety and protective equipment: eye protection; gloves; overalls/ dustcoats; respiratory protection; barrier cream; cleansing cream
- KT0511 Lock-out devices and procedure
- KT0512 Dust extraction system: fixed ducting; portable unit
- KT0513 Waste and off-cuts: re-usable; non-reusable

Internal Assessment Criteria and Weight

- IAC0501 Routines are carried out safely and in accordance with work requirements
- IAC0502 Any faults identified with equipment are reported to the relevant person
- IAC0503 Work area is kept free from hazards
- IAC0504 Fire extinguishers are identified and are easily accessible, labels on the fire extinguishers are clear and not tampered with
- IAC0505 Evacuation plan is studied and understood
- IAC0506 Demarcation lines are adhered to, stacking is done is appropriate places

- IAC0507 All machines are fitted with safety devices, all foreign objects on the machines are removed
- IAC0508 Isolator and emergency buttons are tested to be in a good working condition
- IAC0509 Lock-out devices are available for all the machines
- IAC0510 Relevant Personal Protective equipment is used in the workshop
- IAC0511 Incident and injuries are reported to the relevant personnel

(Weight 10%)

3.2.6. KM-03-KT06: Engineering drawings (5%)

Topic elements to be covered include:

- KT0601 Read and interpret furniture specifications
- KT0602 Sketches and engineering drawings
- KT0603 Layout of drawings
- KT0604 Legends and symbols
- KT0605 Dimensions and labelling
- KT0606 Cutting lists
- KT0607 Isometric views
- KT0608 Line types
- KT0609 Solid lines
- KT0610 Projections
- KT0611 To scale drawing
- KT0612 Hidden details

Internal Assessment Criteria and Weight

- IAC0601 Engineering drawings correctly interpreted, taking into account line structures and dimensions.
- IAC0602 All drawing projections are observed
- IAC0603 Scale of drawing is according to specification
- IAC0604 Hidden details are understood and information is applied to the work pieces
- IAC0605 Drawing labels are understood and according to specification, showing all details, chamfers, diameters, radiuses and depths

(Weight 5%)

3.2.7. KM-03-KT07: Using jigs and templates in the wood machining department (5%)

Topic elements to be covered include:

- KT0701 Definition and function of jigs and templates
- KT0702 Types of materials used for jigs and templates
- KT0703 Jig and template making methods
- KT0704 Jig and template requirements (sample match) and accuracy
- KT0705 Testing and adjustments
- KT0706 Modification of jigs
- KT0707 Tools and equipment
- KT0708 Jig and template labelling
- KT0709 Repair to damaged jigs
- KT0710 Maintenance of jigs
- KT0711 Defects and jig and template quality

Internal Assessment Criteria and Weight

- IAC0701 The various purposed of jigs and templates (once offs; for multiple use; for short term use; for long term use) are differentiated
- IAC0702 The various materials for making jigs and templates such as solid wood, plywood, MDF, Perspex, Masonite, etc. is compared for selecting the most suitable material for the purpose
- IAC0703 Tools and equipment such as toggle clamps, hand tools, etc. are correctly identified and the various functions are described
- IAC0704 The making of jigs and template for various operations are differentiated
- IAC0705 The importance of accurate sampling matching is justified
- IAC0706 The importance of accurate identification and labelling of jigs and templates is justified
- IAC0707 Ways to identify damage to jigs and templates and repairs are described
- IAC0708 The negatively impact upon all parts of the furniture production cycle caused by a failure to maintain the quality and accuracy of jigs and templates are understood

(Weight 5%)

3.2.8. KM-03-KT08: Bored furniture components, products and manufacturing techniques and processes (10%)

Topic elements to be covered include:

- KT0801 Boring of hardwood; softwood; composite board; components
- KT0802 Dimension control aids: jigs, templates, tape measure, Vernier callipers and square
- KT0803 Machines, machine parts and their relationship (borer, router, drill bits)
- KT0804 Tools and equipment (fence, ring fence, bearing, jigs, tooling)
- KT0805 Measuring aids and the correct use thereof
- KT0806 Feed speeds

- KT0807 Dowels
- KT0808 Drilling bits (left and right)
- KT0809 Angle drilling
- KT0810 Face and edge drilling
- KT0811 Stoppers
- KT0812 Pressure
- KT0813 Depth, diameters, tolerances and accuracy
- KT0814 Defects and bored quality

Internal Assessment Criteria and Weight

- IAC0801 The various purposes and methods of drilling and boring are discussed
- IAC0802 The suitability and consideration of various materials for drilling and boring is differentiated
- IAC0803 The importance of accuracy (depth, diameter, angles) and working within tolerances when boring and drilling is justified
- IAC0804 A broad understanding of quality checks and acceptable tolerances and the deviations of tolerances is demonstrated
- IAC0805 Machines, machine parts, tools and equipment used in boring of products are identified and the various functions are described
- IAC0806 A broad understanding of the various tooling procedures that are available and the correct uses thereof is demonstrated
- IAC0807 Different dowel types and sizes are identified and explained
- IAC0808 Drilling bits are identified according to function and operation and the correct direction (colour coding observed) of fitting is explained
- IAC0809 Settings of stoppers and clamps according to the thickness of material are explained
- IAC0810 The effect of feed speed on the finished product is reasoned
- IAC0811 The importance of correct machine settings (required angle, feed speed, pressure) is justified
- IAC0812 Face and edge drilling methods are explained
- IAC0813 Boring and drilling faults and defects are identified and possible causes and corrective action is reasoned

(Weight 10%)

3.2.9. KM-03-KT09: Edge banded furniture components, products and manufacturing techniques and processes (5%)

Topic elements to be covered include:

- KT0901 Edge banding equipment and manual and automatic edge banding machines
- KT0902 Edge banded components and products

- KT0903 Feed speeds appropriate to hand fed and mechanically fed
- KT0904 Dimension control aids (jigs; templates; measuring tape; Vernier callipers)
- KT0905 Operation and settings of edge banding machines
- KT0906 Types and quality of edge banding materials
- KT0907 Adhesives, bonding and adhesive preparation
- KT0908 Shelf life and pot life of chemicals
- KT0909 Safe handling and storing of chemicals
- KT0910 Spillages and environmental aspects
- KT0911 Defects and edge banded quality

Internal Assessment Criteria and Weight

- IAC0901 The aspects of temperature and bonding in the edge banding process is reasoned
- IAC0902 Adhesives, their safe working, disposal procedures and adhesive preparation: mixing; stirring; viscosity; is explained
- IAC0903 Different types of machines, tools and techniques used for the application of edge banding
- IAC0904 The various types of edge banding that is available is differentiated and the correct uses thereof is discussed
- IAC0905 A broad understanding of quality checks and acceptable tolerances and the deviations from tolerances relevant to adhesives, bonding and edge banding is demonstrated
- IAC0906 The importance of dust extraction and waste removal procedures is justified

(Weight 5%)

3.2.10. KM-03-KT10: Profiled furniture components, products and manufacturing techniques and processes (10%)

Topic elements to be covered include:

- KT1001 Profiling machines, machine parts, attachments and tooling
- KT1002 Suitable timber and composite board for profiling
- KT1003 Machine parts and they relationship
- KT1004 Preparing and machines settings for the production of profiled timber and board product components and products
- KT1005 Working with jigs, templates and other necessary dimension control aids
- KT1006 The function of toggle clamps
- KT1007 Cutter technology (cutter blocks, knives, bearings)
- KT1008 Profiling, moulding, rebates and grooves
- KT1009 Manual feed and automatic feed
- KT1010 Reverse and forward feeding

- KT1011 Running/cutting speed
- KT1012 Machining materials to form profiled timber and composite board components or products
- KT1013 Defects and profiling quality

Internal Assessment Criteria and Weight

- IAC1001 Types of furniture where profiling, moulding, rebates and grooves are applied are identified
- IAC1002 The aesthetic value of profiling, moulding, rebates and grooves are compared
- IAC1003 Profiling, moulding, rebates and grooves methods and techniques are explained
- IAC1004 Machines and equipment used for profiling, moulding, rebates and grooves are identified and the appropriate functions are explained
- IAC1005 The suitability of timber and composite board for profiling is compared
- IAC1006 Different cutters are identified and are uses for respective profiles are differentiated
- IAC1007 The importance of the correct machine settings is justified

(Weight 10%)

3.2.11. KM-03-KT11: Operating a lathe to produce turned timber components and products (10%)

Topic elements to be covered include:

- KT1101 Wood turning machines, equipment and tooling
- KT1102 Machine parts and their relationship
- KT1103 Turned timber components and products
- KT1104 Dimension control aids (jigs; templates; measuring tape; Vernier callipers)
- KT1105 Operation and settings of lathes
- KT1106 Types and quality of materials for turning
- KT1107 Selecting and preparing materials for turning
- KT1108 Fitting of timber to lathes
- KT1109 Feed speeds suitable for raw material and product
- KT1110 Modifying materials to form turned components and products.
- KT1111 Types of chisels and their uses
- KT1112 Manual turning and copying
- KT1113 Feed speeds appropriate to hand fed and mechanically fed
- KT1114 Defects and turning quality
- KT1115 Risks and hazards associated with the lathe and wood turning operations

Internal Assessment Criteria and Weight

- IAC1101 Types of furniture where turned components and products are applied are identified

- IAC1102 The aesthetic value of turned timber is justified
- IAC1103 Wood turning methods and techniques are explained
- IAC1104 Machines (lathe) and equipment used for wood turning are identified and the appropriate functions are explained
- IAC1105 The suitability of timber for turning is justified
- IAC1106 Different cutters are identified and are uses for respective turned products are differentiated
- IAC1107 The importance of the correct machine settings is justified
- IAC1108 The risk of injury and damage to machinery and equipment and the health and safety of self and others

(Weight 10%)

3.2.12. KM-03-KT12: Jointed timber and composite board components, products and manufacturing techniques and processes (10%)

Topic elements to be covered include:

- KT1201 Different types and functions of joints
- KT1202 Jointing machines, machine parts, tooling and equipment
- KT1203 Machine parts and their relationship
- KT1204 Working with jigs, templates and other necessary dimension control aids
- KT1205 Suitable timber and composite board for jointing
- KT1206 Preparing and machines settings for the production of profiled timber and board product components and products
- KT1207 Measurements, tolerances, formulae and calculations
- KT1208 Shoulder to shoulder sizes
- KT1209 Machine joints
- KT1210 Angled joints
- KT1211 Defects on joints and joint quality
- KT1212 Left and right tables

Internal Assessment Criteria and Weight

- IAC1201 Different joints and applications are understood
- IAC1202 Types of furniture and suitable joints are identified
- IAC1203 The aesthetic value of joints is justified
- IAC1204 Jointing methods and techniques are explained
- IAC1205 Machines and equipment used for joints are identified and the appropriate functions are explained
- IAC1206 The suitability of timber for respective joints is justified

- IAC1207 Different tooling is identified and are uses for respective joints are differentiated
- IAC1208 The importance of the correct machine settings is justified
- IAC1209 The risk of injury and damage to machinery and equipment and the health and safety of self and others is understood

(Weight 10%)

3.2.13. KM-03-KT13: Bended timber and board components, products and manufacturing techniques and processes (5%)

Topic elements to be covered include:

- KT1301 Types of adhesives
- KT1302 Glue temperature
- KT1303 Machine part and they relationship
- KT1304 Different size of edging
- KT1305 Feeding mechanism
- KT1306 Straight edging
- KT1307 Curved edging

Internal Assessment Criteria and Weight

- IAC1301 Machine is set according to specification
- IAC1302 Different types of adhesives are understood
- IAC1303 Glue temperature is according to machine requirements
- IAC1304 Edging size is selected according to specification
- IAC1305 Edging is fed to the machine as required
- IAC1306 Machine table, rollers are set according to the thickness of the board and edging
- IAC1307 Machine parts are identified and how they relate to each other

(Weight 5%)

3.2.14. KM-03-KT14: CNC machines in the wood machining department (5%)

Topic elements to be covered include:

- KT1401 Ergonomics in the machining department
- KT1402 CNC machine alignment and control
- KT1403 Interface devices
- KT1404 Programmes, programming and software
- KT1405 CNC cutting methodology

- KT1406 Basic cleaning and maintenance techniques

Internal Assessment Criteria and Weight

- IAC1401 The function of CNC machines in the furniture manufacturing is described
- IAC1402 The operation of CNC machines is explained
- IAC1403 The advantages of the use of CNC machines are discussed

(Weight 5%)

3.2.15. KM-03-KT15: Concepts and principles of measuring and calculations used in the furniture manufacturing processes (5%)

Topic elements to be covered include:

- KT1501 Taking accurate measures
- KT1502 Units of measurement
- KT1503 Conversions
- KT1504 Formulae and calculations
- KT1505 Angles and curves
- KT1506 Standard sizes
- KT1507 Allowances and tolerances
- KT1508 Measuring instruments: Tape measure, Vernier, callipers, square
- KT1509 Calibrations
- KT1510 Accuracy and faults

Internal Assessment Criteria and Weight

- IAC1501 The application of various formulae in furniture making is explained
- IAC1502 The importance of accuracy on the quality of the work piece is justified
- IAC1503 The effect of inaccuracy and faults are explained
- IAC1504 Measuring equipment are identified and selected for the job
- IAC1505 Correct measuring units are used
- IAC1506 Measuring equipment are used accordingly to get correct sizes
- IAC1507 The importance of the good quality of measuring tapes, Vernier callipers etc. is justified

(Weight 5%)

3.3 Provider Programme Accreditation Criteria

Physical Requirements:

- The provider must have lesson plans and structured learning material or provide learners with access to structured learning material that addresses all the topics in all the knowledge modules.

Human Resource Requirements:

- Lecturer/learner ratio of 1:20.
- Qualifications of lecturers: 5 years relevant experience or NQF 4 qualified in furniture technology

Legal Requirements:

- OHS compliant

3.4 Exemptions

- No exemptions, but the module can be achieved in full through a normal RPL process

4. 682201-002-00-KM-04, Computer technology and operations, NQF Level 2, Credits 4

4.1 Purpose of the Knowledge Modules

The main focus of the learning in this knowledge module is to provide the learner with an opportunity to acquire general knowledge and understanding of the functioning and purpose of information and computer technology and computer hardware units. The learning of this module will also enable the Learner to acquire an understanding of the principles of electronic communication and the operation and functioning of software packages, including the design of presentations and specialised computerised management information systems

The learning will enable learners to demonstrate an understanding of:

- KM-04-KT01 : Information, communication technology **5%**
- KM-04-KT02 : Computer hardware **10%**
- KM-04-KT03 : Electronic communication **10%**
- KM-04-KT04 : Software packages for office use **4%**
- KM-04-KT05 : Operating a software package **16%**
- KM-04-KT06 : Create text documents using an appropriate software package **16%**
- KM-04-KT07 : Create spreadsheets using an appropriate software package **16%**
- KM-04-KT08 : Presentations **12%**
- KM-04-KT09 : Specialised computerised management production systems **7%**

4.2 Guidelines for Topics

4.2.1. KM-04-KT01 : Information, communication technology 5%

Topic elements to be covered include:

- KT0101 Computer technology
- KT0102 Communication technology
- KT0103 Access to information
- KT0104 Cell phones
- KT0105 Social media

Internal Assessment Criteria and Weight

- IAC0101 Information is accessed using internet browser and search engines
- IAC0102 The use of computer technology as a communication tool is demonstrated

(Weight 5%)

4.2.2. KM-04-KT02 : Computer hardware 10%

Topic elements to be covered include:

- KT0201 Monitor
- KT0202 Keyboard
- KT0203 Mouse
- KT0204 Input and output devices
- KT0205 Memory stick and compact disks

Internal Assessment Criteria and Weight

- IAC0201 Computer hardware is identified and the purpose is stated

(Weight 10%)

4.2.3. KM-04-KT03 : Electronic communication 10%

Topic elements to be covered include:

- KT0301 Internet
- KT0302 Web sites
- KT0303 Internet service providers
- KT0304 Electronic mail
- KT0305 Internet forums and virtual meetings
- KT0306 Digital learning

Internal Assessment Criteria and Weight

- IAC0301 Electronic communication options are identified and the purposes are described and applied

(Weight 10%)

4.2.4. KM-04-KT04 : Software packages for office use 8%

Topic elements to be covered include:

- KT0401 Electronic text documents
- KT0402 Electronic spreadsheets
- KT0403 Internet access
- KT0404 Electronic written communication
- KT0405 Electronic meetings

- KT0406 Electronic seminars

Internal Assessment Criteria and Weight

- IAC0401 Software packages for office use are identified and the purposes are described and applied

(Weight 8%)

4.2.5. KM-04-KT05 : Operating a software package 16%

Topic elements to be covered include:

- KT0501 Create new folders
- KT0502 Move files
- KT0503 Copy files
- KT0504 Open files and folders
- KT0505 Create folders and files
- KT0506 Undo commands
- KT0507 Find files
- KT0508 Recycle bin

Internal Assessment Criteria and Weight

- IAC0501 Ways to systemise and optimise operations on a computer are identified and applied

(Weight 16%)

4.2.6. KM-04-KT06 : Create text documents using an appropriate software package 16%

Topic elements to be covered include:

- KT0601 Select text
- KT0602 Replace text
- KT0603 Insert text
- KT0604 Format text
- KT0605 Find and replace text
- KT0606 Align text
- KT0607 Use tabs
- KT0608 Move, cut and paste text

- KT0609 Format size and appearance of text
- KT0610 Create tables

Internal Assessment Criteria and Weight

- IAC0601 The use of software for creating texts (documents) are described and applied

(Weight 16%)

4.2.7. KM-04-KT07 : Create spreadsheets using an appropriate software package 16%

Topic elements to be covered include:

- KT0701 Create tables
- KT0702 Addition
- KT0703 Sum
- KT0704 Subtraction
- KT0705 Multiplication
- KT0706 Division
- KT0707 Change text colours
- KT0708 Add and delete columns and rows
- KT0709 Clear cells and worksheets
- KT0710 Move data
- KT0711 Copy data
- KT0712 Costing and pricing worksheets

Internal Assessment Criteria and Weight

- IAC0701 The use of software for creating spreadsheets are described and applied

(Weight 16%)

4.2.8. KM-04-KT08 : Presentations 12%

Topic elements to be covered include:

- KT0801 Layout and design
- KT0802 Shapes, smart art and charts
- KT0803 Text and text box
- KT0804 Illustrations and visuals

- KT0805 Smart texts
- KT0806 Transitions
- KT0807 Animation
- KT0808 Slide show

Internal Assessment Criteria and Weight

- IAC0801 The use of software for creating presentations are described and applied

(Weight 12%)

4.2.9. KM-04-KT09 : Specialised computerised management production systems 7%

Topic elements to be covered include:

- KT0901 Capturing production information into a production system

Internal Assessment Criteria and Weight

- IAC0901 Production information is captured onto the system and is accurate

(Weight 7%)

4.3 Provider Programme Accreditation Criteria

Physical Requirements:

- The provider must have lesson plans and structured learning material or provide learners with access to structured learning material that addresses all the topics in all the knowledge modules.

Human Resource Requirements:

- Lecturer/learner ratio of 1:20.
- Qualifications of lecturers: 5 years relevant experience or NQF 4 qualified in furniture or wood technology

Legal Requirements:

- OHS compliant

4.4 Exemptions

- No exemptions, but the module can be achieved in full through a normal RPL process

5. 682201-002-00-KM-05, Leadership and supervision, NQF Level 3, Credits 3

5.1 Purpose of the Knowledge Modules

The main focus of the learning in this knowledge module is to build an understanding of the supervisory principles and the role of the supervisor in the throughput of the furniture production

The learning will enable learners to demonstrate an understanding of:

- KM-05-KT01 : Supervisory principles **20%**
- KM-05-KT02 : Supervision **25%**
- KM-05-KT03 : Training and coaching **15%**
- KM-05-KT04 : Interpersonal relations **20%**
- KM-05-KT05 : Labour relations **15%**
- KM-05-KT06 : Productivity, motivation and performance **5%**

5.2 Guidelines for Topics

5.2.1. KM-05-KT01 : Supervisory principles 20%

Topic elements to be covered include:

- KT0101 Planning, leading, organising and control
- KT0102 Leadership
- KT0103 Team work and group dynamics
- KT0104 Monitoring and assessing of work of workers and slaughterers

Internal Assessment Criteria and Weight

- IAC0101 The concepts and principles of planning, leading, organising and control are described
- IAC0102 Planning, leading, organising and control practices are described
- IAC0103 The importance of planning, leading, organizing and control is discussed
- IAC0104 Leadership is defined to illustrate its importance in the industry
- IAC0105 The characteristics of a leader are listed and discussed to highlight the qualities and behaviours that make good leaders but also qualities and behaviours that good leaders will actively avoid
- IAC0106 The principles of leadership are given and reviewed
- IAC0107 The best practices of leadership are stated and their relevance to the industry is explained
- IAC0108 The composition of a team is outlined with special attention given to the team composition in a furniture production unit
- IAC0109 Characteristics of a well-functioning team are listed
- IAC0110 Job maturity of individuals in a team is reviewed to assess the effect on team functionality
- IAC0111 The role of a team is explained

- IAC0112 The dynamics of a well-functioning team are explored
- IAC0113 The influence of different team members is discussed with regards to its effect on team performance
- IAC0114 Methods that encourage team cohesion are depicted
- IAC0115 External factors which impact teamwork are identified
- IAC0116 Internal factors which impact teamwork are given

(Weight 20%)

5.2.2. KM-05-KT02 : Supervision 25%

Topic elements to be covered include:

- KT0201 Supervisory styles
- KT0202 Role of the supervisor
- KT0203 Ethics
- KT0204 Acknowledging when to call for second opinion

Internal Assessment Criteria and Weight

- IAC0201 Different supervisory styles are listed and their impact on team dynamics are explained
- IAC0202 Different supervisory styles are compared and contrasted with respect to their impact on individual team members
- IAC0203 The position of the supervisor in the structure of the organisation is described in terms of roles and duties
- IAC0204 The importance of role clarification, accountability and responsibility is explained to show how it will affect the position and efficacy of the supervisor
- IAC0205 Supervisory techniques and methods are described and contrasted to highlight the advantages and disadvantages of each
- IAC0206 The principles of delegation and authority are defined and their roles in supervision are outlined
- IAC0207 The importance of correctly formulating instructions is reviewed in terms of the impact thereof on team members
- IAC0208 The cultural and social pressures on supervisors are identified to show the influence thereof on supervisors
- IAC0209 The role of the code of conduct in the organisation is assessed
- IAC0210 The importance of being honest and truthful even if it leads to some ramifications is motivated
- IAC0211 The cost of dishonesty to company is explained
- IAC0212 The concepts of nepotism, bribery, theft, corruption, favouritism, dishonesty,

intimidation, instigation, breaking confidentiality, rumour mongering and witch craft and their effects on team members and the organisation are discussed

(Weight 25%)

5.2.3. KM-05-KT03 : Training and coaching 15%

Topic elements to be covered include:

- KT0301 Importance of skilled workers in terms of the job requirements
- KT0302 Training and coaching methods and techniques
- KT0303 The purpose of skills needs analysis to determine a coaching or training programme for the individual
- KT0304 The repetitive nature of coaching and training
- KT0305 Role of the supervisor in relation to training and coaching

Internal Assessment Criteria and Weight

- IAC0301 The concept of training and coaching is explained
- IAC0302 The role and responsibilities of the supervisor are identified and explained
- IAC0303 Different methods and techniques are explained

(Weight 15%)

5.2.4. KM-05-KT04 : Interpersonal relations 20%

Topic elements to be covered include:

- KT0401 Cultural diversity and social pressures
- KT0402 Types of attitudes and the effect thereof on the team cohesion and achievement
- KT0403 The influence of work ethos on team performance and methods to enhance it
- KT0404 The influence of role clarification on team performance and methods to enhance it
- KT0405 The characteristics of the professional interpersonal relationship with the team workers and the effects on the workers' motivation
- KT0406 Gauging own performance within the scope of the performance of the team

Internal Assessment Criteria and Weight

- IAC0401 Different types of interpersonal relations are identified and explained
- IAC0402 The importance of the team performance and methods are defined
- IAC0403 The role of cultural diversity is discussed

(Weight 20%)

5.2.5. KM-05-KT05 : Labour relations 15%

Topic elements to be covered include:

- KT0501 Basic understanding of legislation (BCEA, OHS) and compliance criteria
- KT0502 Conflict handling methods
- KT0503 Disciplinary procedures
- KT0504 Concept of discipline
- KT0505 The role of discipline and disciplinary measures
- KT0506 Role of labour relations and legislation in the organisation

Internal Assessment Criteria and Weight

- IAC0501 The influence of representation in the organisation on team performance, as well as methods to enhance it, are described
- IAC0502 The influence of safety, health, environment and quality on team performance and methods to enhance it, are described
- IAC0503 Principles of Labour relations, with examples, are described
- IAC0504 Grievance procedures are evaluated

(Weight 15%)

5.2.6. KM-05-KT06 : Productivity, motivation and performance 5%

Topic elements to be covered include:

- KT0601 The importance of productivity to keep sustainable organisation
- KT0602 The importance of motivation
- KT0603 The importance of performance and quality output to grow client base

Internal Assessment Criteria and Weight

- IAC0601 Principles of productivity are discussed
- IAC0602 The aspects of productivity (time, people, money, resources, quality) and how it relates to each other, are described
- IAC0603 The importance of standards and target setting for the organisation and the purpose of daily targets, standards and quality are discussed
- IAC0604 Performance is defined
- IAC0605 The implication of not applying a performance measurement system is explained
- IAC0606 The importance of performance standards and measurement is explained
- IAC0607 Ways and means to encourage and support performance are indicated
- IAC0608 Principles of motivation are discussed

(Weight 5%)

5.3 Provider Programme Accreditation Criteria

Physical Requirements:

- The provider must have lesson plans and structured learning material or provide learners with access to structured learning material that addresses all the topics in all the knowledge modules.

Human Resource Requirements:

- Lecturer/learner ratio of 1:20.
- Qualifications of lecturers: 5 years relevant experience or NQF 4 qualified in furniture or wood technology

Legal Requirements:

- OHS compliant

5.4 Exemptions

- No exemptions, but the module can be achieved in full through a normal RPL process

SECTION 3B: PRACTICAL SKILLS MODULE SPECIFICATIONS

List of Practical Skills Module Specifications

- 682201-002-00-PM-01; Operate a Range of Machines in the Wood Machine Shop to cut Components for Furniture Manufacturing; NQF Level 2; Credits 20
- 682201-002-00-PM-02; Operate advanced Woodwork Machines in a Machining Department to produce Bored, Edged, Profiled, Turned and Jointed timber, board or components; NQF Level 3; Credits 30
- 682201-002-00-PM-03; Guide Teams in a Fair and Consistent Manner to Achieve Set Targets and Outputs; NQF Level 3; Credits 2

1. 682201002-00-PM-01, Operate a range of machines in the wood machine shop to cut components for furniture manufacturing, NQF Level 2, Credits 20

1.1 Purpose of the Practical Skill Modules

The focus of the learning in this module is on providing the learner an opportunity to instill the skills to prepare, set and operate a range of basic wood machines, equipment, power tools and hand tools in the furniture machining department to produce cut furniture components to specifications.

The learner will be required to:

- PM-01-PS01: Identify and categorize typical wooden furniture products and accessories
- PM-01-PS02: Identify timber and board used in the manufacturing of wooden furniture
- PM-01-PS03: Identify consumables and accessories used in furniture manufacturing
- PM-01-PS04: Identify a range of machines, machine parts, machine attachments and tools in the furniture machine shop
- PM-01-PS05: Apply safety measures related to the machine operation and work area
- PM-01-PS06: Prepare for machine operations
- PM-01-PS07: Operate various machines in the machining department in laminating, breakout, planing and sanding operations to produce timber components to specifications (cut, drill, shape, edge) in a safe and accurate manner
- PM-01-PS08: Produce profiled, shaped and cut components to specifications from timber or board
- PM-01-PS09: Inspect the physical product, visually and by feel, checking against specification and applying tolerances to ensure quality and accuracy
- PM-01-PS10: Operate pneumatic machines/tools and compressed air according to manufacturer specifications
- PM-01-PS11: Delicately handle, inspect and store raw material (solid wood and boards) ensuring maintained quality
- PM-01-PS12: Perform routine cleaning, quality change cleaning and housekeeping in the machining process
- PM-01-PS13: Conduct maintenance procedures on sawing machines
- PM-01-PS14: Record and report machining production information and prepare machining documentation

1.2 Guidelines for Practical Skills

1.2.1. PM-01-PS01: Identify and categorize typical wooden furniture products and accessories

Scope of Practical Skill

Given a range of samples or photos of different wooden furniture products and accessories, the learner must be able to:

- PA0101 Identify and categorise the product according to types, uses and styles
- PA0102 Identify and categorise the products according to the raw materials used in the manufacturing process
- PA0103 Identify and categorise the accessories according to the uses and furniture design

Applied Knowledge

- AK0101 Furniture types, uses, styles and designs

Internal Assessment Criteria

- IAC0101 Furniture products are accurately identified according to the various categories
- IAC0102 Accessories identified is relevant to the specified use in the furniture manufacturing process

1.2.2. PM-01-PS02: Identify timber and board used in the manufacturing of wooden furniture

Scope of Practical Skill

Given a range of different types of timber and boards (which could be samples or access to a timber store) the learner must be able to:

- PA0201 Identify types of solid wood (soft and hard wood)
- PA0202 Identify types of composite boards (supa wood, chip board, melamine, veneer board, ply board, hard board
- PA0203 Inspect wood and boards for defects and defaults visually
- PA0204 Use a metal detector to inspect reclaimed wood
- PA0205 Use a moisture meter to determine the moisture content of the wood
- PA0206 Identify standard sizes according to the product to be manufactured in order to reduce waste
- PA0207 Handle and store raw material such as lifting or pallet jacks in a safe manner in order to prevent injury to self and damage to the material
- PA0208 Identify and interpret the labeling and coding system used to identify and trace raw material and products

Applied Knowledge

- AK0201 Timber and board characteristics and quality
- AK0202 Stacking requirements and techniques

Internal Assessment Criteria

- IAC0201 Timber and board is correctly identified in terms of type and size and matched to the product specifications
- IAC0202 Raw materials are checked for quality and defects to ensure high quality end products
- IAC0203 Machinery and tools are correctly used to check, handle and store raw materials

1.2.3. PM-01-PS03: Identify consumables and accessories used in furniture manufacturing

Scope of Practical Skill

Given a range of consumables, chemicals and accessories used in the cabinet making process the learner must be able to:

- PA0301 Identify consumables according to uses
- PA0302 Identify accessories match to specific uses and furniture styles
- PA0303 Inspect consumables and accessories for faults and defects
- PA0304 Handle and store chemicals according to safety requirements and to prolong product lifetime
- PA0305 Identify standard sizes
- PA0306 Handle and store consumables safely and according to requirements

Applied Knowledge

- AK0301 Types of consumables, accessories their use and characteristics

Internal Assessment Criteria

- IAC0301 Different types of consumables and accessories are identified and selected according to the job card specifications
- IAC0302 Consumables are handled and stored according to health and safety specifications
- IAC0303 Accessories are selected according to their design and characteristics.
- IAC0304 Correct tools are used when fitting accessories (hinges, runners, handles).

1.2.4. PM-01-PS04: Identify a range of machines, machine parts, machine attachments and tools in the furniture machine shop

Scope of Practical Skill

Given access to a range of machines used in the machine shop and tools the learner must be able to:

- PA0401 Identify the machines, parts, attachments and tools used in the break-out operation
- PA0402 Identify the machines, parts, attachments and tools used in the planing operation
- PA0403 Identify the machines, parts, attachments and tools used in the sanding operation
- PA0404 Identify the machines, parts, attachments and tools used in the laminating operation
- PA0405 Identify the safety mechanisms applicable to various machines
- PA0406 Identify the control systems for operating the machine
- PA0407 Identify and explain different colour coding used on the machines
- PA0408 Identify the pneumatic machines and the required pressures

Applied Knowledge

- AK0401 Machines in the wood workshop
- AK0402 Meaning of signals, switches, alarms, guides and gauges
- AK0403 Safety when using machines, equipment and tools

Internal Assessment Criteria

- IAC0401 The different machines operating in the machine shop are correctly identified along with their parts and their functions
- IAC0402 All switches, lights and signals on the panel board or control system are correctly identified and interpreted
- IAC0403 The safety mechanisms on the various machines in the machine shop is correctly identified in order to ensure they are functioning properly

1.2.5. PM-01-PS05: Apply safety measures related to the machine operation and work area

Scope of Practical Skill

Given access to a range of machines used in the machine shop and tools the learner must be able to:

- PA0501 Set up the machine to ensure that the work area will be safe and efficient
- PA0502 Use the correct PPC and PPE for the given situation and machine
- PA0503 Identify hazards and risks related to the operation and machine

Applied Knowledge

- AK0501 Understanding of safety notices, colour coding and demarcation lines
- AK0502 Personal protective equipment

Internal Assessment Criteria

- IAC0501 Different notices in the work area are identified and adhered to
- IAC0502 Work is performed within the demarcated area
- IAC0503 Work is performed without creating hazards for self and that of others and safety rules and practices are adhered to at all times

1.2.6. PM-01-PS06: Prepare for machine operations

Scope of Practical Skill

Given a cutting list/job card and sample, timber and access to various machines in the machining department the learner must be able to:

- PA0601 Read and understand the cutting list/job card and sample
- PA0602 Select the correct timber indicated on the cutting list/job card
- PA0603 Select knives, saws, blades, cutter heads, cams, bits, or belts, according to the workpiece, machine functions, or product specifications
- PA0604 Fit the correct tool to the machine or check if the correct tool and/or sanding belts are installed
- PA0605 Set machine speeds (rotation of the blade) according to the type of material
- PA0606 Conduct pre-start-up checks which includes listening to the sound of the machine, adjusting settings if necessary, running a test piece and making sure safety guards are in place
- PA0607 Conduct safety checks

- PA0608 Inspect the machine is operational
- PA0609 Inspect blade and cutting tools for sharpness and correct blade and belts
- PA0610 Replace the blade or belts after specific number of components are completed

Applied Knowledge

- AK0601 Different measuring equipment
- AK0602 Angles and degrees
- AK0603 Basic calculations

Internal Assessment Criteria

- IAC0601 Different measuring equipment are used to measure timber such as measuring tapes and vernier calipers
- IAC0602 The machine is set and ready for operation and all foreign objects are removed from the machine.
- IAC0603 The raw material is inspected for grain direction, type (board or solid) and defects
- IAC0604 Waste control is exercises while cutting material to eliminate fire hazards
- IAC0605 Basic calculations are applied in order to obtain the right number and size of components
- IAC0606 Machine problems are identified and minor problems are resolved while those outside operator control is reported via the correct communication channels

1.2.7. PM-01-PS07: Operate various machines in the machining department in laminating, breakout, planing and sanding operations to produce timber components to specifications (cut, drill, shape, edge) in a safe and accurate manner

Scope of Practical Skill

Given different types of machine in the workshop the learner must be able to:

- PA0701 Start the machine according to starting procedures
- PA0702 Feed workpieces to the machine
- PA0703 Use helping aids such as push sticks or a helping fence where appropriate to ensure personal safety
- PA0704 Adjusting the cutting tools to meet product specification
- PA0705 Observe the direction of the grains of the wood as cutting to ensure sure the pattern of grains is right
- PA0706 Check the concave and convex side of the wood when planning
- PA0707 Choose and use the correct laminating procedure
- PA0708 Perform the break-out operation using a radial arm/cross-cut saw or a rip saw
- PA0709 Use planning machines such as the surface planer or the thickness planer as per product specifications
- PA0710 Conduct sawing operations with a panel saw or a band saw as per product specifications

- PA0711 Perform sanding operations using machinery such as a stroke sander, drum sander and an edge sander
- PA0712 Observe the defects of timber such as knots and remove nails or foreign objects in the case of reclaimed timber
- PA0713 Replenish raw material as needed to ensure optimum production efficiency
- PA0714 Perform quality or style changes such as changing form solid wood to board or from soft wood to hard wood paying attention to settings such as speed and cleaning to prevent scratching
- PA0715 Optimise machine efficiencies and down-time, planned and unplanned interruptions such as breaks, power outages, running out of material, break-downs
- PA0716 Stop the machine at the end of use or in case of an emergency
- PA0717 Dispose/store off-cuts safely
- PA0718 Store and label components according to specifications and size
- PA0719 Check samples at set intervals (spot checks) for correctness and consistency of cut components

Applied Knowledge

- AK0701 Understanding of material and defects
- AK0702 Material handling

Internal Assessment Criteria

- IAC0701 Materials and material defects are identified according to their uses, applications and the tolerance standards to which they are subject in order to identify quality raw materials and reject non-conforming materials
- IAC0702 Cutting lists and routing sheets are interpreted in order to ensure components are correct
- IAC0703 Organisational reporting procedures are followed
- IAC0704 Materials are accurately sorted, handled and stacked safely and securely
- IAC0705 Personal protective equipment are selected and used correctly according to Health and Safety regulations and requirements

1.2.8. PM-01-PS08: Produce profiled, shaped and cut components to specifications from timber or board

Scope of Practical Skill

Given set of drawing, cutting list and the machines the learner must be able to:

- PA0801 Perform simple cuts using small pieces of wood, or straight cuts using the radial arm and rip saw cross cut
- PA0802 Produce complex cuts for curved, irregular shapes and deep cuts, long cuts, angle cuts, multi facet cuts and moulding machines
- PA0803 Operate machines and perform straight cuts, drilling, sanding, dowel drilling, dove tail cutting, Mortise and Tenon
- PA0804 Operate a lathe, multi cutter machines, routers, spindle moulders and sanders

- PA0805 Work with different timber such as boards, ply products, soft woods and hard woods.

Applied Knowledge

- AK0801 Chamfer, rebates, grooves, curves, straight cut, turning techniques

Internal Assessment Criteria

- IAC0801 Different profiles, shapes, rebates and grooves are cut according to specification
- IAC0802 Jigs and templates are used to produce components
- IAC0803 Correct machines are selected for the job and confirmed to be in good condition.
- IAC0804 Correct cutting tools are used to produce shapes and profiles.

1.2.9. PM-01-PS09: Inspect the physical product, visually and by feel, checking against specification and applying tolerances to ensure quality and accuracy

Scope of Practical Skill

Given a range of machined timber and boards with faults and defects and different types of paint the learner must be able to:

- PA0901 Inspect the machined product visually and by feel to ensure compliance with product specifications
- PA0902 Check the machined product against specification while applying tolerances
- PA0903 Identify component faults such as squareness of the component, incorrect size, knots causing rejects, smoothness and scratches
- PA0904 Identify process faults such as blade marks, timber moisture content, burn marks, paint contaminated with water, over spraying, running, mixing of wrong paints, wrong viscosity, wrong reaction or inconsistencies in the cut product
- PA0905 Identify machine faults such as blunt blade, wrong sanding grit, wrong nozzle, pressure that is too high or low, balance of air extraction

Applied Knowledge

- AK0901 Different types of faults
- AK0902 Paints and their characteristics

Internal Assessment Criteria

- IAC0901 Faults are rectified or rejects are identified
- IAC0902 Materials are handled and stacked safely and securely
- IAC0903 Finishing materials such as paint are categorised as spirit or oil based

1.2.10. PM-01-PS10: Operate pneumatic machines/tools and compressed air according to manufacturer specifications

Scope of Practical Skill

Given pneumatic machines connected to compressed air the learner must be able to:

- PA1001 Follow safety routines and procedures
- PA1002 Adjust pressure to the required gauge
- PA1003 Identify correct connections (fittings for pipes)
- PA1004 Ensure all settings are correct according to product specifications
- PA1005 Start and stop the machine using standard operating procedures
- PA1006 Run the machine to produce the desired components or effects
- PA1007 Conduct clean-up procedures as required

Applied Knowledge

- AK1001 Different of pressure bar requirement, adjusting pressure gauge.

Internal Assessment Criteria

- IAC1001 The pressure gauge is adjusted to the required pressure
- IAC1002 Water and oil is drained from the system
- IAC1003 Compressed air is used according to standard safety and operating procedures
- IAC1004 Hazards associated with compressed air are identified and rectified

1.2.11. PM-01-PS11: Delicately handle, inspect and store raw material (solid wood and boards) ensuring maintained quality

Scope of Practical Skill

Given range of different types of timber and boards (which could be samples or access to a timber store) the learner must be able to:

- PA1101 Inspect a range of raw materials to identify defects such as cracks, knots, twists, moisture content, insects, wet rot and dry rot, swelling of boards
- PA1102 Handle raw material avoiding damage to edges, chips and using trolleys to cart the raw material to the designated storage areas
- PA1103 Ensure raw material is not stored on the ground to avoid absorption of moisture
- PA1104 Store re-cuts in the designated areas to ensure availability for subsequent use

Applied Knowledge

- AK1101 Lifting and storage

Internal Assessment Criteria

- IAC1101 Faults are rectified or rejects are identified
- IAC1102 Materials are handled and stacked safely and securely
- IAC1103 Personal protective equipment are selected and used correctly according to Health and Safety regulations and requirements

1.2.12. PM-01-PS12: Perform routine cleaning, quality change cleaning and housekeeping in the machining process

Scope of Practical Skill

Given access to a range of machines used in the machine shop and tools the learner must be able to:

- PA1201 Conduct a general cleaning of the work area to ensure safety and efficiency
- PA1202 Clean the machine to remove dust and dirt from the machine
- PA1203 Perform dust extraction procedures using equipment such as cleaning bags and check that the machine is in working condition once the procedures are completed

Applied Knowledge

- AK1201 Reduction of waste, disposal of waste, different types of waste

Internal Assessment Criteria

- IAC1201 Different waste in the workshop is managed and disposed safely and according to company policies and regulation.
- IAC1202 Sawdust is removed regularly to avoid accumulation and the creation of fire hazards
- IAC1203 Waste is minimized during the operations on the machine and offcuts that can be reused are marked and stacked neatly.

1.2.13. PM-01-PS13: Conduct maintenance procedures on sawing machines

Scope of Practical Skill

Given different sawing machines the learner must be able to:

- PA1301 Inspect machine parts for wear and tear and serviceability such as check belts and oil levels
- PA1302 Change cutting tools and nozzles according to the product specifications
- PA1303 Attend to the lubrication of the machine
- PA1304 Drain water or oil manually

Applied Knowledge

- AK1301 Different spanners, blades and machine accessories

Internal Assessment Criteria

- IAC1301 Spanner sizes are identified and used accordingly
- IAC1302 The correct solvents and lubricants are used to clean and lubricate the machine
- IAC1303 Running direction of blades is observed and blades are replaced correctly
- IAC1304 Worn out belts are replaced

1.2.14. PM-01-PS14: Record and report machining production information and prepare machining documentation

Scope of Practical Skill

Given access to production log book, product specification and writing material, the learner must be able to:

- PA1401 Identify the type of information to be recorded in the production document.
- PA1402 Record legibly the hourly production, down time, quality faults, and production history and mother roll specs.
- PA1403 Record any production related problems experienced during the shift.
- PA1404 Hand over to incoming shift following the correct procedure

Applied Knowledge

- AK1401 Record keeping

Internal Assessment Criteria

- IAC1401 The relevant information during the production shift is recorded and reported via the correct reporting channels
- IAC1402 Production problems experienced during shift are recorded correctly, neatly and legibly

1.3 Provider Programme Accreditation Criteria

Physical Requirements:

- The provider must have a work site with all the machines, machine parts, attachments, equipment, control systems, lockout systems, tools, consumables, raw material, utensils, safety equipment, protective clothing, work instructions, internal practical assessment tools and practical training manual specified in the practical skill scope statement

Human Resource Requirements:

- Qualified and accredited facilitator or supervisor with a minimum of 3 years of experience in a furniture manufacturing environment and be NQF 3 qualified in furniture manufacturing processes.
- Supervisor/subordinate ratios = 1:20
- Availability of coaches and mentors = 1:5

Legal Requirements:

- Compliance with all occupational health and safety legislation
- Compliance with Skills Development Act and Regulations
- Compliance with Labour Legislation

1.4 Exemptions

- No exemptions, but the module can be achieved in full through a normal RPL process

2. 682201002-00-PM-02, Operate advanced woodwork machines in a machining department to produce bored, edged, profiled, turned and jointed timber, board or components, NQF Level 3, Credits 30

2.1 Purpose of the Practical Skill Modules

The focus of the learning in this module is on providing the learner an opportunity to acquire skills in operating a range of advanced wood working machines to produce bored, edged, profiled, turned and jointed timber.

The learner will be required to:

- PM-02-PS01: Identify and prepare advanced machines, machine parts and attachments (tooling) used in the machining department for production
- PM-02-PS02: Delicately handle, inspect and store raw material (solid wood and boards) for quality
- PM-02-PS03: Design, manufacture, repair and modify jigs and templates
- PM-02-PS04: Operate a multiborer to produce bored timber and board product components (different angles and different material)
- PM-02-PS05: Prepare and operate an edge banding machine and material to apply edge banding
- PM-02-PS06: Operate the spindle, moulder and overhead router to produce (wood and composite board) components with different profiles, moulds, rebates, grooves, chamfers, radiuses and bullnoses
- PM-02-PS07: Operate a wood turning machine (lathe and copy lathe) to produce turned components
- PM-02-PS08: Identify and cut joints, select and prepare jointing machine and cutters to be used
- PM-02-PS09: Apply health and safety in a work environment
- PM-02-PS10: Perform minor maintenance tasks for advanced wood work machines to ensure serviceability of the machine
- PM-02-PS11: Produce engineering drawings
- PM-02-PS12: Operate a CNC machine in the wood machining department

2.2 Guidelines for Practical Skills

2.2.1. PM-02-PS01: Identify and prepare advanced machines, machine parts and attachments (tooling) used in the machining department for production

Scope of Practical Skill

Given access to advanced woodwork machines, attachments, tools, equipment, consumables, raw material and work instructions the learner must be able to:

- PA0101 Identify machines according to the functions
- PA0102 Identify and inspect machine parts, attachments and tooling for good working condition and fit to the machine
- PA0103 Conduct pre-start up inspections to confirm serviceability of the machine and check safety guards are in place and operational
- PA0104 Identify, select and fit tooling or attachments appropriate to the machine, operation and raw material

- PA0105 Identify and apply machine settings according to the operation and product requirements taking into account tolerances, angles, depth and diameter
- PA0106 Identify raw material suitable to the machine, machining operation and product specifications
- PA0107 Conduct a quality inspection of the raw materials to confirm conformance with specifications

Applied Knowledge

- AK0101 Tooling, calibration, tension, lubrication

Internal Assessment Criteria

- IAC0101 The machine is accurately set up for the procedure and all attachments and fittings are secured and in place
- IAC0102 Serviceability and safety of the machine is confirmed according to safety requirements

2.2.2. PM-02-PS02: Delicately handle, inspect and store raw material (solid wood and boards) for quality

Scope of Practical Skill

Given a range of types of wood, composite board and components the learner must be able to:

- PA0201 Inspect a range of raw materials to identify defects such as cracks, knots, twists, moisture content, insects, wet rot and dry rot, swelling of boards
- PA0202 Identify and correctly apply techniques to rectify material faults and defects
- PA0203 Handle raw material ensuring not to bump and damage or chip edges and corners and use trolleys to cart it and not drag it
- PA0204 Store raw material according to requirements to maintain the quality of the wood, board or components (not on ground where it can absorb moisture)

Applied Knowledge

- AK0201 Lifting, storage

Internal Assessment Criteria

- IAC0201 Materials are stacked safely and securely for maintaining quality
- IAC0202 Correct techniques of material handling ensuring safety and quality is applied
- IAC0203 Techniques to rectify faults and defects on material are applied

2.2.3. PM-02-PS03: Design, manufacture, repair and modify jigs and templates

Scope of Practical Skill

Given pictures of the product, drawings, samples, or product, tools, equipment and consumables the learner must be able to:

- PA0301 Read and interpret the specifications including drawings, samples or product to determine jig and template requirements

- PA0302 Identify and select the most suitable material to be used for jig and template making
- PA0303 Identify, inspect and use appropriate tools required for jig and template making
- PA0304 Manufacture the jigs and templates ensuring accuracy and providing for secure and safe attachment, accurate calibrators and sizing for their production purpose
- PA0305 Inspect jigs and templates are inspected and confirm accuracy to specification and accurate sample matching
- PA0306 Adjust and modify jigs and templates where it does not meet sample requirements or for different use
- PA0307 Inspect jigs and templates for damage and repair damage in order to maintain quality manufacturing of furniture
- PA0308 Accurately label and store the templates and jigs for future use

Applied Knowledge

- AK0301 Characteristics and uses of different material (MDF board, Perspex, hardboard, ply board)
- AK0302 Different accessories (bearings, toggle clamps)

Internal Assessment Criteria

- IAC0301 Jigs are made according to drawings, samples, pictures and or products accurately meeting specifications
- IAC0302 The most suitable material is selected and used for the jigs and templates taking into consideration the intended use of jig or template
- IAC0303 Secure and safe attachments, accurate calibrators and sizing for their production purpose are provided

2.2.4. PM-02-PS04: Operate a multiborer to produce bored timber and board product components (different angles and different material)

Scope of Practical Skill

Given boring specifications, various types of timber (hard and soft) and composite board, a multiborer machine, tooling and equipment the learner must be able to:

- PA0401 Identify and select the machine, machine parts, tooling and equipment appropriate to the material and instruction and set the machine and fit tooling for the operation taking into account tolerances, angles, depth and diameter
- PA0402 Inspect the material for compatibility with the machine and mark for boring
- PA0403 Adjust clamps and stoppers according to the thickness of the material
- PA0404 Identify correct dowel sizes
- PA0405 Ensure left side drills corresponds with the right hand side components
- PA0406 Set the correct pressure and feed speed of the machine appropriate to the product and the boring task
- PA0407 Operate the machine for face and edge drilling, drilling at various angles, depth and diameter working within tolerances and specifications and complying with safety requirements

Applied Knowledge

- AK0401 Material and machine compatibility
- AK0402 Machine settings and capability

Internal Assessment Criteria

- IAC0401 Jigs, templates and other necessary dimension control aids are correct and fit for the purpose
- IAC0402 Correct tooling for the job is fitted and secured correctly
- IAC0403 Boring machinery is started and stopped correctly and safely
- IAC0404 Materials are drilled at feed speeds suited to materials and machine
- IAC0405 The use of guards and relevant safety procedures and requirements are maintained throughout the operations
- IAC0406 The finished bored products conform to required specification

2.2.5. PM-02-PS05: Prepare and operate an edge banding machine and material to apply edge banding

Scope of Practical Skill

Given different types of composite board, different types of edging, different types of chemicals, machines and equipment the learner must be able to:

- PA0501 Differentiate between types of composite board suitable for edging and types of edging banding materials ensuring compatibility between edging and material
- PA0502 Identify, correctly mix and heat the adhesive pot to the required temperature and apply adhesives such as polyvinyl acetate; urea formaldehyde; phenol formaldehyde used in the edge banding process
- PA0503 Inspect, apply settings and prepare the machine, edge banding material and board for operation
- PA0504 Start the machine and feed (manually and mechanically) boards in a right direction applying the correct feed speed
- PA0505 Stop, isolate and clean the machine after operations

Applied Knowledge

- AK0501 Different edging (thickness and type)
- AK0502 Adhesives and temperature

Internal Assessment Criteria

- IAC0501 The adhesives are prepared according to manufacturer instructions and are ready for use according to the type of edge banding machine to be used and at the required time and correct temperature is achieved and maintained throughout the process
- IAC0502 The quality of material is checked and remedial action taken if there is non-conformity to required quality

- IAC0503 Edge banding machinery is started and stopped correctly and safely and operated at optimum feed speeds
- IAC0504 The use of guards and relevant safety procedures and requirements are maintained throughout the operations
- IAC0505 Edging is selected according to drawing
- IAC0506 Edge banding material is applied according to the correct procedure (short side first)
- IAC0507 The finished edge banded products are inspected to conform to required specification

2.2.6. PM-02-PS06: Operate the spindle, moulder and overhead router to produce (wood and composite board) components with different profiles, moulds, rebates, grooves, chamfers, radiuses and bullnoses

Scope of Practical Skill

Given access to machines such as the spindle, moulder and overhead router the learner must be able to:

- PA0601 Identify the profile and select cutters to be used for the task
- PA0602 Check if the knives and profile match the drawing
- PA0603 Prepare the machine for operation, insert the cutting tools, adjust fence, tools, tables, select correct speed for the cutting tool
- PA0604 Adjust the height of the spindle feeder according to the height of material
- PA0605 Select the correct direction of the cutter
- PA0606 Run a test piece to check if the component corresponds with the specification
- PA0607 Operate the respective machines whilst observing feed speeds, safety to produce various components with different profiles, moulds, rebates, grooves, chamfers, radiuses and bullnoses
- PA0608 Attach pieces to the jig as required (where applicable)
- PA0609 Feed the work piece in correct direction / rotation of the cutting tool.
- PA0610 Check the component for burn marks
- PA0611 Use relevant helping aids on the machine
- PA0612 Isolate the machine, remove all cutters and clean

Applied Knowledge

- AK0601 Different cutters used for making profiles
- AK0602 Jigs and templates selected

Internal Assessment Criteria

- IAC0601 Relevant cutters are selected and used as per specification.
- IAC0602 Profiling machinery is started and stopped correctly and safely
- IAC0603 Materials are fed at optimum feed speeds suited to materials and machines
- IAC0604 Correct tooling for the job is fitted and secured correctly

- IAC0605 Correct routine procedures for the profiling machine are carried out in accordance with all safety regulations
- IAC0606 Jigs, templates and other necessary dimension control aids are correct and fit for the purpose
- IAC0607 The use of guards and relevant safety procedures and requirements are maintained throughout the operations
- IAC0608 The finished profiled products conform to required specifications
- IAC0609 Bearing is set according to the height of the jig to ensure that jig is not damaged

2.2.7. PM-02-PS07: Operate a wood turning machine (lathe and copy lathe) to produce turned components

Scope of Practical Skill

Given access to machines (lathe), timber, equipment and chisels the learner must be able to:

- PA0701 Identify components, select chisels appropriate to the material and instruction and prepare turning machine (lathe and copy lathe) for operation taking into account tolerances, angles, dimensions such as diameter
- PA0702 Take accurate measurements and apply formulae to make accurate calculations
- PA0703 Identify and apply emergency stop procedures
- PA0704 Select and fit relevant chisels for the job
- PA0705 Ensure all safety guards of the machine are in place
- PA0706 Prepare the workstation (easy access to all chisels required)
- PA0707 Obtain all callipers required to check the diameters
- PA0708 Inspect the template to ensure it is not damaged and install
- PA0709 Select and install the correct cutter
- PA0710 Operate the machine safely without causing danger to self and others.

Applied Knowledge

- AK0701 Different types of chisels
- AK0702 Attaching components to the lathe
- AK0703 Measuring tools for diameters

Internal Assessment Criteria

- IAC0701 Material is correctly selected according to specifications.
- IAC0702 Machine is set-up correctly and prepared for operations
- IAC0703 Material is laminated to form the required size
- IAC0704 The lathe is properly prepared and correctly set to turn timber product components and products
- IAC0705 Material is properly secured to the machine

- IAC0706 Different types of chisels are identified according to their uses
- IAC0707 Jigs, templates and other necessary dimension control aids are correct and fit for the purpose and properly secured
- IAC0708 Production information is checked for accuracy and sufficiency and any incorrect information is reported to the relevant person.
- IAC0709 Machine is used safely and according to instructional manual
- IAC0710 Materials are turned and cut at speeds which are suited to materials and machine using correct gouges
- IAC0711 The use of guards and relevant safety procedures and requirements are maintained throughout the operations
- IAC0712 The lathe is started and stopped correctly and safely
- IAC0713 The finished turned products conform to required specifications
- IAC0714 Correct chisels are selected
- IAC0715 Machine is set-up and safely secured for operation
- IAC0716 Turning is done according to the sample supplied
- IAC0717 Materials are modified to form turned components and products

2.2.8. PM-02-PS08: Identify and cut joints, select and prepare jointing machine and cutters to be used

Scope of Practical Skill

Given access to a jointing machine, timber, tooling and equipment the learner must be able to:

- PA0801 Identify and select the machine, machine parts, tooling and equipment appropriate to the material and instruction and set the machine and fit tooling for the operation taking into account tolerances, angles, depth and diameter
- PA0802 Identify joints to be produce from the drawing
- PA0803 Inspect and ensure that the machines (Mortise-and-Tenon) are clean, free from hazards and ready for operation
- PA0804 Attach cutting tools to the machine
- PA0805 Adjust the machine to obtain the required depth and width of the joints
- PA0806 Start the machine and listen for any unusual noise
- PA0807 Position the components safely on the machine and adjust the clamp according to the size of the component
- PA0808 Start the operation and cut joints according specification and drawing (joints include but not limited to: double end mortise, mitered butt joints, butt joints, tongue and groove, rail and style, dado joint, rabbet joint)
- PA0809 Isolate the machine
- PA0810 Remove all keys and clean the machine

Applied Knowledge

- AK0801 Select different joints, tools and equipment relevant to the machine
- AK0802 Set-up the machine
- AK0803 Change tooling and operating the machine

Internal Assessment Criteria

- IAC0801 Joints are identified and relevant machine is used for manufacturing joints
- IAC0802 The joints are produced as per the drawing requirement
- IAC0803 Relevant tools selected and checked for sharpness and size
- IAC0804 A range of joints are produced according to specifications and drawings and are within tolerances

2.2.9. PM-02-PS09: Apply health and safety in a work environment

Scope of Practical Skill

Given access to a machining workshop, machines, tools and equipment the learner must be able to:

- PA0901 Inspect the workshop, machines, tools and equipment to determine whether these aspects comply with occupational health and safety requirements
- PA0902 Identify, record and report conditions that present a threat to safety, health and the environment
- PA0903 Promptly identify appropriate corrective actions and consult the appropriate parties about these actions
- PA0904 Trace and report ongoing safety concerns in work area ensuring corrective actions are taken
- PA0905 Complete health, safety and environment reports using the required format
- PA0906 Identify, select and apply personal protective clothing and equipment appropriate to the task
- PA0907 Administer first aid in the workplace

Applied Knowledge

- AK0901 Understanding OHSA, reporting procedures, hazards and potential hazards.
- AK0902 First aid administration

Internal Assessment Criteria

- IAC0901 Appropriate inspection techniques are applied
- IAC0902 All breaches in occupational health, safety and environment are identified
- IAC0903 Suggested corrective actions address the situation adequately
- IAC0904 Work practices minimise the risk of injury and damage to machinery, equipment and safety of self and others

2.2.10. PM-02-PS10: Perform minor maintenance tasks for advanced wood work machines to ensure serviceability of the machine

Scope of Practical Skill

Given access to advanced woodwork machines, attachments, tools, equipment, manufacturer specifications, inspection sheet and consumables the learner must be able to:

- PA1001 Read and interpret manufacturer specifications
- PA1002 Isolate machines prior to maintenance and cleaning
- PA1003 Inspect machines and machine parts such as belts and oil levels for damage, wear and tear and serviceability
- PA1004 Inspect tooling to identify damage, wear and tear and serviceability
- PA1005 Conduct fault finding, trouble shooting and problem solving to determine the functionality of the machine (within area of responsibility)
- PA1006 Identify correct tools, spanners, wrenches, sockets for different machines
- PA1007 Sharpen blades and cutting tools
- PA1008 Identify and select the correct lubrication and lubricate the machine where appropriate
- PA1009 Inspect all safety devices and emergency stops
- PA1010 Drain and replace water or oil manually selecting the correct type of oil
- PA1011 Ensure the tension of different belts or moving chains is set properly
- PA1012 Perform machine calibration according to requirements (in area of responsibility)
- PA1013 Clean the machine using the correct solvents or cleaning agents for the task

Applied Knowledge

- AK1001 Tooling, calibration, tension, lubrication
- AK1002 Different spanners, blades and machine accessories

Internal Assessment Criteria

- IAC1001 Correct tools, lubricants, oil, solvents and cleaning agents are selected
- IAC1002 Correct lubrication selected and applied correctly
- IAC1003 Correct tension is set on different machines
- IAC1004 Machine is calibrated as required
- IAC1005 Safety devises are properly fitted on the machine
- IAC1006 Different spanner sizes are identified and used accordingly
- IAC1007 Running direction of blades is observed and blades are replaced correctly
- IAC1008 Worn out belts are replaced

2.2.11. PM-02-PS11: Produce engineering drawings

Scope of Practical Skill

Given drawing and measuring equipment and furniture specifications the learner must be able to:

- PA1101 Use drawing equipment to produce engineering drawing
- PA1102 Interpret and apply hidden details of the drawing
- PA1103 Understand and apply lines
- PA1104 Understand and apply angles and degrees
- PA1105 Take and apply accurate measurements and conduct accurate calculations

Applied Knowledge

- AK1101 Drawing equipment, different lines, and hidden details.

Internal Assessment Criteria

- IAC1101 Engineering drawings correctly interpreted, taking into account line structures and dimensions.
- IAC1102 Interpretation done in a methodical manner.
- IAC1103 Free hand sketches are drawn according to the pictures and or designs
- IAC1104 Cutting list is compiled according to sketches
- IAC1105 Work pieces selected corresponds to engineering drawing
- IAC1106 Different lines are used in the drawing
- IAC1107 All drawing projections are observed
- IAC1108 The drawing layout is according to specification
- IAC1109 Scale of drawing is according to specification
- IAC1110 Hidden details are shown my means of broken lines
- IAC1111 Hidden details are understood and information is applied to the work pieces
- IAC1112 Drawing labels are understood and according to specification, showing all details, chamfers, diameters, radiuses and depths

2.2.12. PM-02-PS12: Operate a CNC machine in the wood machining department

Scope of Practical Skill

Given access to a programmed CNC machine the learner must be able to:

- PA1201 Position suction cup on the machine
- PA1202 Check that the machine is free from any foreign objects
- PA1203 Identify cutters as per the programme
- PA1204 Fit the machine with relevant cutter
- PA1205 Load the material onto the machine

- PA1206 Operate the machine to produce cut components

Applied Knowledge

- AK1201 Different cutters
- AK1202 Suction cup, and their different sizes

Internal Assessment Criteria

- IAC1201 Machine is loaded with relevant cutters
- IAC1202 Machine control mechanisms are identified
- IAC1203 Material is loaded onto the machine
- IAC1204 Machine is operated safety and according to manufacturer specifications

2.3 Provider Programme Accreditation Criteria

Physical Requirements:

- The provider must have a work site with all the machines, machine parts, attachments, equipment, control systems, lockout systems, tools, consumables, raw material, utensils, safety equipment, protective clothing, work instructions, internal practical assessment tools and practical training manual specified in the practical skill scope statement

Human Resource Requirements:

- Qualified and accredited facilitator or supervisor with a minimum of 3 years of experience in a furniture manufacturing environment and be NQF 3 qualified in furniture manufacturing processes.
- Supervisor/subordinate ratios = 1:20
- Availability of coaches and mentors = 1:5

Legal Requirements:

- Compliance with all occupational health and safety legislation
- Compliance with Skills Development Act and Regulations
- Compliance with Labour Legislation

2.4 Exemptions

- No exemptions, but the module can be achieved in full through a normal RPL process

3. 682201002-00-PM-03, Guide teams in a fair and consistent manner to achieve set targets and outputs, NQF Level 3, Credits 2

3.1 Purpose of the Practical Skill Modules

The focus of the learning in this module is on providing the learner an opportunity to acquire the techniques and skills to supervise all activities of a work team to achieve the production targets

The learner will be required to:

- PM-03-PS01 : Supervise a team
- PM-03-PS02 : Allocate tasks, equipment and resources to achieve set targets and give instructions to team members and receive feedback
- PM-03-PS03 : Discipline poor performance
- PM-03-PS04 : Coach members to enhance skills
- PM-03-PS05 : Enforce occupational health and safety plans, policies and procedures

3.2 Guidelines for Practical Skills

3.2.1. PM-03-PS01 : Supervise a team

Scope of Practical Skill

Given case studies related to work performance and achievement of targets, the learner must be able to:

- PA0101 Identify areas of poor time keeping
- PA0102 Identify areas of poor performance
- PA0103 Identify areas of poor quality
- PA0104 Identify opportunities for maximising resource allocation
- PA0105 Identify opportunities for rewarding excellent performance
- PA0106 Identify corrective actions where required

Applied Knowledge

- AK0101 Time keeping skills
- AK0102 Determining quality
- AK0103 Rewarding performance techniques

Internal Assessment Criteria

- IAC0101 Corrective actions to address poor work performance and non-achievement of targets are proposed and are in line with the incident
- IAC0102 Resource allocation is maximised
- IAC0103 Excellent performance is rewarded

3.2.2 PM-03-PS02 : Allocate tasks, equipment and resources to achieve set targets and give instructions to team members and receive feedback

Scope of Practical Skill

Given a weekly action plan as well as different scenarios related to incorrect interpretation of instructions, monitoring and control, the learner must be able to:

- PA0201 Allocate to each team member a daily task or set of tasks
- PA0202 Allocate equipment and resources
- PA0203 Give clear instructions and ensure that the team member understand it
- PA0204 Apply the correct way of formulating the instruction

- PA0205 Identify areas of poor monitoring, control and poor feedback and identify corrective actions

Applied Knowledge

- AK0201 Planning techniques
- AK0202 Resource allocation
- AK0203 Instructions
- AK0204 Monitoring and controlling techniques

Internal Assessment Criteria

- IAC0201 The task and resource allocation and instructions are clear and in support of the action plan
- IAC0202 Clear, unambiguous and concise instructions are given and tested for the correct understanding thereof
- IAC0203 Corrective actions are appropriate to the identified problem areas

3.2.3. PM-03-PS03 : Discipline poor performance

Scope of Practical Skill

Given information on worker performance, attendance and work policies and procedures, the learner must be able to:

- PA0301 Identify the area of poor work performance
- PA0302 Identify the applicable disciplinary policy and procedure to apply
- PA0303 Conduct a disciplinary procedure
- PA0304 Keep records of the disciplinary procedure and actions

Applied Knowledge

- AK0301 Disciplinary policies and procedures
- AK0302 Performance evaluation

Internal Assessment Criteria

- IAC0301 The disciplinary procedures (verbal warning and first written warning) are correctly applied and are appropriate to the nature of the poor work performance

3.2.4. PM-03-PS04 : Coach members to enhance skills

Scope of Practical Skill

Given occupational health and safety policies and procedures and taken to a site, the learner must be able to:

- PA0401 Identify poor skills leading to poor performance and safety risks
- PA0402 Rectify by demonstrating correct application of the skills or tasks to improve performance or compliance with requirements
- PA0403 Explain efficiency and effectiveness in concise terms
- PA0404 Coach team members to enhance productivity
- PA0405 Conduct job observations for individual team members

Applied Knowledge

- AK0401 Coaching techniques

- AK0402 Communication techniques

Internal Assessment Criteria

- IAC0401 Coaching in furniture making skills is provided to individuals to address incorrect technical skills and enhance quality of product or process (the correct way of doing the task or showing a DVD is demonstrated)
- IAC0402 An engaging approach is applied when interacting with team members

3.2.5. PM-03-PS05 : Enforce occupational health and safety plans, policies and procedures

Scope of Practical Skill

Given case study with relevant information, the learner must be able to:

- PA0501 Complete a risk assessment to determine on-site compliance to occupational health and safety requirements

Applied Knowledge

- AK0501 Risk assessment techniques
- AK0502 Recording of information

Internal Assessment Criteria

- IAC0501 All areas of non-conformance are indicated by the risk assessment, the causes are identified and corrective actions suggested

3.3 Provider Programme Accreditation Criteria

Physical Requirements:

- The provider must have a work site with all the machines, machine parts, attachments, equipment, control systems, lockout systems, tools, consumables, raw material, utensils, safety equipment, protective clothing, work instructions, internal practical assessment tools and practical training manual specified in the practical skill scope statement

Human Resource Requirements:

- Qualified and accredited facilitator or supervisor with a minimum of 3 years of experience in a furniture manufacturing environment and be NQF 4 qualified.
- Supervisor/subordinate ratios = 1:20
- Availability of coaches and mentors = 1:5

Legal Requirements:

- Compliance with all occupational health and safety legislation
- Compliance with Skills Development Act and Regulations
- Compliance with Labour Legislation

3.4 Exemptions

- No exemptions, but the module can be achieved in full through a normal RPL process

SECTION 3C: WORK EXPERIENCE MODULE SPECIFICATIONS

List of Work Experience Module Specifications

- 682201-002-00-WM-01; Furniture Machining Operations; NQF Level 2; Credits 20
- 682201-002-00-WM-02; Crafted Furniture Machining Operations; NQF Level 3; Credits 30

1. 682201002-00-WM-01, Furniture machining operations, NQF Level 2, Credits 20

1.1 Purpose of the Work Experience Modules

The focus of the work experience is on providing the learner an opportunity to:

Produce cut timber components for the manufacturing of furniture using a range of basic machines, power tools, hand tools and equipment.

The learner will be required to:

- WM-01-WE01: Read and interpret work instructions and product specifications for machining operations
- WM-01-WE02: Prepare a workstation for machining operations
- WM-01-WE03: Perform breakout operations by operating a crosscut saw and ripsaw using solid timber by cutting a minimum of 30 components of the required length and width according to the cutting list
- WM-01-WE04: Produced planed timber and board product components and products (planing straight timber, laminated timber) using surface planer and thickness planer for a minimum period of 3 weeks
- WM-01-WE05: Produce sawn timber and board product components and products (producing straight cuts, mitred cuts grooves and half laps) for a minimum period of 5 week using panel saw and radial arm saw
- WM-01-WE06: Produce shaped timber and board product components and products (simple to more complex shapes) using the band saw for a period of 2 weeks
- WM-01-WE07: Produce machine sanded timber and board components and products (sanding solid timber, veneered bards and composite boards) for a minimum period of 2 week using edge sander, stroke sander and wide belt sander
- WM-01-WE08: Produce straight laminated timber and board components
- WM-01-WE09: Apply safety measures and equipment
- WM-01-WE10: Conduct general housekeeping activities to ensure the work area is clean and neat and complying with safety regulations
- WM-01-WE11: Ensure quality of the machined product by identifying machine faults
- WM-01-WE12: Ensure quality of the machined product by identifying raw material faults and handling and storing it correctly
- WM-01-WE13: Ensure quality of the machined product by identifying process faults
- WM-01-WE14: Conduct continuous quality inspection of the machined product throughout the machining operation
- WM-01-WE15: Perform maintenance activities to ensure a well maintain machine and workshop

1.2 Guidelines for Work Experiences

1.2.1. WM-01-WE01: Read and interpret work instructions and product specifications for machining operations

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0101 Interpret a job card, cutting list, production flow/routing chart and identify all job requirements and specifications including machines and operations as well as jigs and templates for specific tasks
- WA0102 Read and interpret basic engineering drawings and identify all aspects relevant to the work specifications

Supporting Evidence

- SE0101 Signed job card

1.2.2. WM-01-WE02: Prepare a workstation for machining operations

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0201 Obtain all required timber and conduct quality checks to ensure the timber quality conforms to specifications
- WA0202 Conduct prestart checks on all machines, equipment and attachments ensuring it complies with safety and working specifications and are in good working order (Inspect that the machine is operational, inspect blade for sharpness and correct blade and v-belts, etc.)
- WA0203 Select and apply personal protective clothing and equipment (PPE and PPC) for the specific machine
- WA0204 Identify and report substandard raw material, machines or PPE

Supporting Evidence

- SE0201 Prestart check list

1.2.3. WM-01-WE03: Perform breakout operations by operating a crosscut saw and ripsaw using solid timber by cutting a minimum of 30 components of the required length and width according to the cutting list

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0301 Conduct the appropriate setting up procedure of the crosscut saw and ripsaw according to the product specifications on the work instruction
- WA0302 Conduct safety checks on the machines, equipment and workstation to ensure compliance with safety requirements
- WA0303 Observe the direction of the grain of the timber before feeding into the saw
- WA0304 Check cut components at set intervals (do spot checks) for correctness and consistency of cut and grain direction
- WA0305 Use measuring equipment to check that the length or width correspond to cutting list
- WA0306 Label or group components on pallets according to the workplace procedures
- WA0307 Identify, mark and report substandard raw material and components

- WA0308 Dispose of off-cuts safely and store re-useable off-cuts according to sizes and type of timber

Supporting Evidence

- SE0301 Completed job card signed by supervisor to confirm work completed

1.2.4. WM-01-WE04: Produced planed timber and board product components and products (planing straight timber, laminated timber) using surface planer and thickness planer for a minimum period of 3 weeks

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0401 Conduct the appropriate setting up procedure of the surface planer and thickness planer according to the product specifications on the work instruction
- WA0402 Conduct safety checks on the machines, equipment and workstation to ensure compliance with safety requirements
- WA0403 Operate the surface planer and thickness planer complying with safety standards
- WA0404 Use vernier calliper to verify if the timber is according to specified width and thickness
- WA0405 Label or group components on pallets according to the workplace procedures
- WA0406 Identify, mark and report substandard raw material and components

Supporting Evidence

- SE0401 Completed job card signed by the supervisor to confirm work completed to company standards

1.2.5. WM-01-WE05: Produce sawn timber and board product components and products (producing straight cuts, mitred cuts grooves and half laps) for a minimum period of 5 week using panel saw and radial arm saw

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0501 Conduct the appropriate setting up procedure of the surface planer and thickness planer according to the product specifications on the work instruction
- WA0502 Conduct safety checks on the machines, equipment and workstation to ensure compliance with safety requirements
- WA0503 Operate a panel saw and radial arm saw to get the required length, and angles that are required.
- WA0504 Check cut components at set intervals (do spot checks) for correctness and consistency of length and angles
- WA0505 Label or group components on pallets according to the workplace procedures
- WA0506 Identify, mark and report substandard raw material and components

Supporting Evidence

- SE0501 Completed job card signed by the supervisor to confirm work completed to company standards

1.2.6. WM-01-WE06: Produce shaped timber and board product components and products (simple to more complex shapes) using the band saw for a period of 2 weeks

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0601 Conduct the appropriate setting up of the band saw
- WA0602 Conduct safety checks
- WA0603 Confirm if the blade is size and thickness is relevant to the work to be produced
- WA0604 Operate band saw safely and produce required shape and size.
- WA0605 Label components according to work procedures
- WA0606 Identify, mark and report substandard raw material and components.

Supporting Evidence

- SE0601 Completed job card signed by the supervisor to confirm work completed to company standards

1.2.7. WM-01-WE07: Produce machine sanded timber and board components and products (sanding solid timber, veneered bards and composite boards) for a minimum period of 2 week using edge sander, stroke sander and wide belt sander

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0701 Conduct the appropriate setting up procedure of the surface planer and thickness planer according to the product specifications on the work instruction
- WA0702 Conduct safety checks on the machines, equipment and workstation to ensure compliance with safety requirements
- WA0703 Operate the relevant machines to get the required length and angles
- WA0704 Check cut components at set intervals (do spot checks) for correctness and consistency of length and angles
- WA0705 Label or group components on pallets according to the workplace procedures
- WA0706 Identify, mark and report substandard raw material and components

Supporting Evidence

- SE0701 Completed job card signed by the supervisor to confirm work completed to company standards

1.2.8. WM-01-WE08: Produce straight laminated timber and board components

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0801 Use tape measure to verify if the length is according to cutting list
- WA0802 Use hand clamps and or laminating press to laminate timber.
- WA0803 Use correct adhesives for the job.

Supporting Evidence

- SE0801 Completed job card signed by the supervisor to confirm work completed to company standards

1.2.9. WM-01-WE09: Apply safety measures and equipment

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0901 Maintain safe working environment to comply with safety standards
- WA0902 Apply ear and eye protection, dust masks, overall and no loose clothes
- WA0903 Attend regular safety meetings according to the requirements of the workplace
- WA0904 Report inadequate lighting in the machine shop
- WA0905 Participate in simulated fire emergency evacuation procedures

Supporting Evidence

- SE0901 Completed job card signed by the supervisor to confirm work completed

1.2.10. WM-01-WE10: Conduct general housekeeping activities to ensure the work area is clean and neat and complying with safety regulations

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA1001 Clean dust extraction bags where applicable
- WA1002 Check the dust extraction system for working condition
- WA1003 Comply with attendance and time keeping standards as determined by the company
- WA1004 Take necessary actions and measures and to reduce wastage
- WA1005 Produce minimum waste levels as determined by the company within set tolerances
- WA1006 Apply all safety routines and procedures when working with compressed air

Supporting Evidence

- SE1001 Completed job card signed by the supervisor to confirm work completed

1.2.11. WM-01-WE11: Ensure quality of the machined product by identifying machine faults

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA1101 Identify and immediately report any machine defects
- WA1102 Ensure the machine is operated within design specifications
- WA1103 Identify any wrongly fitted attachment and replace
- WA1104 Identify and correct incorrect machine settings
- WA1105 Identify and correct any incorrect speed setting in terms of the rotation of the blade
- WA1106 Conduct calibration routines within the authority of the operator and report any deviations to the supervisor

Supporting Evidence

- SE1101 Job card from the supervisor

1.2.12. WM-01-WE12: Ensure quality of the machined product by identifying raw material faults and handling and storing it correctly

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA1201 Inspect, identify and report all timber defects such as cracks, knots, twists, insects, wet rot and dry rot
- WA1202 Identify the incorrect moisture content of the raw material causing defects such as swelling of boards
- WA1203 Select material correctly according to type as specified on the job card
- WA1204 Handle timber and recuts as delicately as possible avoiding bumping and damaging the edges/chips using trolleys to cart it
- WA1205 Store timber correctly in an area free from moisture
- WA1206 Avoid any misinterpretation of job cards by clarifying information which could be vague or unclear

Supporting Evidence

- SE1201 Job card from the supervisor

1.2.13. WM-01-WE13: Ensure quality of the machined product by identifying process faults

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA1301 Accurately determine the type of material to set the correct working speed of the machine
- WA1302 Accurately determine the type of material to apply the correct feeding of timber to the machine
- WA1303 Ensure the wood is correctly clamped to the jig to avoid damage to machine, unsafe working condition, or not producing the designed product

Supporting Evidence

- SE1301 Job card from the supervisor

1.2.14. WM-01-WE14: Conduct continuous quality inspection of the machined product throughout the machining operation

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA1401 Conduct a quality inspection checking for consistency, accuracy, defects of the product
- WA1402 Conduct a final quality inspection of the machined product before hand over to next process
- WA1403 Record all defects

Supporting Evidence

- SE1401 Quality checklist

1.2.15. WM-01-WE15: Perform maintenance activities to ensure a well maintain machine and workshop

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA1501 Lubricate, clean and service the machine at required intervals as part of routine maintenance activities
- WA1502 Identify and immediately report any machine or machine part or attachment defects
- WA1503 Service the machine at required intervals by replacing belts and applying calibration routines
- WA1504 Check the sharpness of blades, replace cutting tools and inspect v-belts at required intervals

Supporting Evidence

- SE1501 Completed machine maintenance checklist signed by the supervisor to confirm work completed

1.3 Contextualised Workplace Knowledge

1 Company products

2 Various departments and workflow

3 Reporting structures

4 Company standard operating and safety procedures and quality standards

5 Workshop layout and designated areas

6 Personal protective clothing and equipment

1.4 Criteria for Workplace Approval

Physical Requirements:

- Fully equipment wood machining department with advanced wood and board machining machines, tools and equipment and various types of raw material
- Compressed airline and extraction
- Key processes: wood machining processes using advanced machines

Human Resource Requirements:

- Qualified and accredited mentor or supervisor with a minimum of 3 years of experience in a furniture manufacturing environment and be NQF 3 qualified in furniture manufacturing processes
- Supervisor/subordinate ratios = 1:20
- Availability of coaches and mentors = 1:5

Legal Requirements:

- Compliance with occupational health and safety regulations
- Compliance with Labour Legislation
- Bargaining Council Main Agreement

1.5 Additional Assignments to be Assessed Externally

None

2. 682201002-00-WM-02, Crafted furniture machining operations, NQF Level 3, Credits 30

2.1 Purpose of the Work Experience Modules

The focus of the work experience is on providing the learner an opportunity to:

Demonstrate the ability to produce bored, jointed, profiled, moulded and turned wooden components working from drawings and product specifications by operating various machines, taking accurate measurements and calculations, using jigs and templates

The learner will be required to:

- WM-02-WE01: Read, interpret and produce basic engineering drawings
- WM-02-WE02: Prepare for operations in the machining department
- WM-02-WE03: Design, construct and test jigs and templates for back legs of a chair, tempered legs of a server and a curved armrest for one off use, multiple use; short term use; and long term use using a suitable material for the purpose of the jig or template (Masonite, MDF; Perspex; plywood; appropriate new materials or off cuts)
- WM-02-WE04: Repair jigs and templates
- WM-02-WE05: Modify jigs and templates
- WM-02-WE06: Produce bored timber and board product components and products operating a multi-borer at 90 degrees and 45 degrees drilling and different angles
- WM-02-WE07: Operate the edge bander to produce machine banded product for a period of 2 weeks working with solid edging, impact and veneer edging
- WM-02-WE08: Produce profiled timber and board product components and products by operating a spindle, moulder and overhead router to produce components with different profiles, moulds, rebates, grooves, chamfers, radiuses, and bullnoses for a period of 3 weeks
- WM-02-WE09: Produce turned timber components and products by operating a lathe and copy lathe to produce 100 turned components
- WM-02-WE10: Produce jointed timber producing different sizes and angles of Mortise-and-Tenon joints by operating the Mortise-and-Tenon machine for a period of 2 weeks in the machining department
- WM-02-WE11: Conclude operations according to workplace requirements
- WM-02-WE12: Perform routine cleaning and minor maintenance in the workshop to maintain the good working order of the machines, tooling, equipment and safe working conditions
- WM-02-WE13: Apply safety procedures and equipment when operating machines, working with chemicals, handling wood, board and components for the duration of the work experience

2.2 Guidelines for Work Experiences

2.2.1. WM-02-WE01: Read, interpret and produce basic engineering drawings

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0101 Produce engineering drawings for a chair, stool, table, box, cabinet, book shelve
- WA0102 Identify all components to be cut and processed in the machining department and compile a cutting list

- WA0103 Identify the manufacturing processes from the drawing and compile routing sheets
- WA0104 Identify and correctly calculate the raw material needed for the product

Supporting Evidence

- SE0101 Completed drawings
- SE0102 Completed routing sheet
- SE0103 Completed cutting list
- SE0104 Completed raw material list

2.2.2. WM-02-WE02: Prepare for operations in the machining department

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0201 Receive cutting list and other production information and check for accuracy and sufficiency and report any incorrect information
- WA0202 Receive all necessary materials and equipment for the task and confirm that all components are according to sizes, numbers and quality as per cutting list
- WA0203 Prepare the working area for the task ensuring it is clean and free from dust and oil or any foreign material which can contaminate the work piece
- WA0204 Production information is checked for accuracy and sufficiency and any incorrect information is reported to the relevant person
- WA0205 All necessary materials and equipment for the job are identified and accessed, and any non-availability is reported to the relevant person
- WA0206 The quality and quantity of materials is checked and remedial action taken if there is non-conformity
- WA0207 Accurately establish the compatibility of materials with the boring machine to be used and take correct remedial action to address non-conformity
- WA0208 Jigs, templates and other necessary dimension control aids are available, correct and fit for the purpose

Supporting Evidence

- SE0201 Prepared work area

2.2.3. WM-02-WE03: Design, construct and test jigs and templates for back legs of a chair, tempered legs of a server and a curved armrest for one off use, multiple use; short term use; and long term use using a suitable material for the purpose of the jig or template (Masonite, MDF; Perspex; plywood; appropriate new materials or off cuts)

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0301 Read and interpret the requirements and sample for the jigs and templates according to production, quality and organisational requirements
- WA0302 Jigs and templates made, provide for secure and safe attachment, accurate calibrators and sizing for their production purpose
- WA0303 Inspect jigs and templates to confirm specification accuracy and accurate sample match
- WA0304 Correctly label jigs and templates are and place in the designated location
- WA0305 Documentation is completed accurately and according to organisational requirements

Supporting Evidence

- SE0301 Photos of completed jigs
- SE0302 Completed job card confirming completion of work

2.2.4. WM-02-WE04: Repair jigs and templates

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0401 Inspect jigs and templates for damage to maintain accuracy and quality of the operations and identify damage or faults
- WA0402 Plan the repair operation to minimise production downtime
- WA0403 Repair the jig or template confirming accurate sample match

Supporting Evidence

- SE0401 Photos of repaired jigs and templates (before and after)
- SE0402 Completed job card confirming completion of work

2.2.5. WM-02-WE05: Modify jigs and templates

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0501 Determine the feasibility of the intended modification
- WA0502 Identify the modification requirement and confirm with the relevant person
- WA0503 Plan the modification process to minimise production downtime
- WA0504 Conduct the modification accurately to specification and inspect the jig or template to confirm an accurate sample match is obtained
- WA0505 Perform the modification safely and within the optimum time scales
- WA0506 Correctly mark modified jigs and templates for identification and return to their correct location

Supporting Evidence

- SE0501 Photos of modified jigs and templates (before and after)
- SE0502 Completed job card confirming completion of work

2.2.6. WM-02-WE06: Produce bored timber and board product components and products operating a multi-borer at 90 degrees and 45 degrees drilling and different angles

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0601 Set out, measure and mark material for boring applying the correct dimensions and calculations
- WA0602 Inspect and set up the machine for boring by inserting cutters, adjusting clamps and stoppers ensuring left side drills corresponds with the right hand side components
- WA0603 Identify correct dowel sizes
- WA0604 Set the correct pressure of the machine and run a test piece and correct all deviations
- WA0605 Drill materials at feed speeds suited to materials and machine applying guards and relevant safety procedures and requirements throughout the operations
- WA0606 Inspect the bored components to confirm quality and meeting product specifications
- WA0607 Identify and report substandard raw material and components
- WA0608 Label or group components on pallets for dispatch to the next operation

Supporting Evidence

- SE0601 Photos of bored timber and bored board products or components
- SE0602 Completed job card confirming accurate completion of work

2.2.7. WM-02-WE07: Operate the edge bander to produce machine banded product for a period of 2 weeks working with solid edging, impact and veneer edging

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0701 Set out, measure and mark material for edging applying the correct dimensions and calculations
- WA0702 Inspect and set up the machine for edging by adjusting cutters, rollers, pressure and height of the machine cutting unit
- WA0703 Ensure that temperature of the glue is according to edging and machine specification
- WA0704 Run and inspect a test piece to confirm correct settings
- WA0705 Edge band materials at feed speeds suited to materials and machine applying guards and relevant safety procedures and requirements throughout the operations
- WA0706 Inspect the edge banded components to confirm quality and meeting product specifications
- WA0707 Identify and report substandard raw material and components

- WA0708 Label or group components on pallets for dispatch to the next operation

Supporting Evidence

- SE0701 Photos of edge banded timber and bored board products or components
- SE0702 Completed job card confirming accurate completion of work

2.2.8. WM-02-WE08: Produce profiled timber and board product components and products by operating a spindle, moulder and overhead router to produce components with different profiles, moulds, rebates, grooves, chamfers, radiuses, and bullnoses for a period of 3 weeks

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0801 Set out, measure and mark material for profiling applying the correct dimensions and calculations
- WA0802 Inspect and set up the machine for profiling operations
- WA0803 Adjust the spindle feeder to correct height
- WA0804 Select the correct feeding speed and direction
- WA0805 Adjust cutting tools to correct angles, width and length and depth
- WA0806 Run and inspect a test piece to confirm correct settings
- WA0807 Operate the spindle, moulder and overhead router to produce components with different profiles, moulds, rebates, grooves, chamfers, radiuses, and bullnoses at feed speeds suited to materials and machine applying guards and relevant safety procedures and requirements throughout the operations
- WA0808 Inspect the profiled components to confirm quality and meeting product specifications
- WA0809 Identify and report substandard raw material and components
- WA0810 Label or group components on pallets for dispatch to the next operation

Supporting Evidence

- SE0801 Photos of profiled timber board products or components
- SE0802 Completed job card confirming accurate completion of work

2.2.9. WM-02-WE09: Produce turned timber components and products by operating a lathe and copy lathe to produce 100 turned components

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA0901 Set out, measure and mark material for profiling applying the correct dimensions and calculations
- WA0902 Inspect and set up the machine for wood turning operations
- WA0903 Adjust the lathe and copy lathe to required adjustments

- WA0904 Fit components securely to the machines
- WA0905 Select and fit the correct chisels
- WA0906 Secure the templates and jigs to the machine
- WA0907 Operate a lathe and copy lathe to produce 100 turned components using the lathe and copy lathe
- WA0908 Inspect the profiled components to confirm quality and meeting product specifications
- WA0909 Identify and report substandard raw material and components
- WA0910 Label or group components on pallets for dispatch to the next operation

Supporting Evidence

- SE0901 Photos of turned timber products or components
- SE0902 Completed job card confirming accurate completion of work

2.2.10. WM-02-WE10: Produce jointed timber producing different sizes and angles of Mortise-and-Tenon joints by operating the Mortise-and-Tenon machine for a period of 2 weeks in the machining department

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA1001 Set out, measure and mark timber and composite board for profiling applying the correct dimensions and calculations
- WA1002 Inspect and set up the machine for cutting joints
- WA1003 Set-up correct shoulder sizes and adjust cutting tools to correct angles, width and length and depth
- WA1004 Set the correct pressure of the machine
- WA1005 Run and inspect a test piece to confirm correct settings
- WA1006 Start, stop and control the Mortise-and-Tenon producing different sizes and angles of Mortise-and-Tenon joints
- WA1007 Cut joints according specification (joints include but not limited to: double end mortise, mitered butt joints, butt joints, tongue and groove, rail and style, dado joint, rabbet joint)
- WA1008 Inspect the jointed components to confirm quality and meeting product specifications
- WA1009 Identify and report substandard raw material and components
- WA1010 Label or group components on pallets for dispatch to the next operation

Supporting Evidence

- SE1001 Photos of jointed timber products or components
- SE1002 Completed job card confirming accurate completion of work

2.2.11. WM-02-WE11: Conclude operations according to workplace requirements

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA1101 Unused materials are returned to appropriate storage
- WA1102 Apply time and self-management to achieve the operation in compliance with safety requirements and within the time allocated
- WA1103 Perform the process according to health and safety requirements within the allocated time
- WA1104 Record and submit all production information and processes
- WA1105 Faulty and/or defective equipment is tagged and reported in accordance with workplace practices
- WA1106 Waste and scrap materials are dealt with following workplace procedures in compliance with environmental requirements

Supporting Evidence

- SE1101 Completed job card confirming accurate completion of work

2.2.12. WM-02-WE12: Perform routine cleaning and minor maintenance in the workshop to maintain the good working order of the machines, tooling, equipment and safe working conditions

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA1201 Inspect, clean and conduct minor maintenance tasks on machines (such as lubrication, belt tension, etc.) to maintain serviceability of the machines
- WA1202 Inspect, clean and conduct minor maintenance tasks on tooling and equipment such as sharpening to maintain the good working order
- WA1203 Faulty and/or defective equipment is tagged and reported in accordance with workplace practices
- WA1204 Clean the working environment and inspect for compliance with safety requirements

Supporting Evidence

- SE1201 Completed checklists and reports

2.2.13. WM-02-WE13: Apply safety procedures and equipment when operating machines, working with chemicals, handling wood, board and components for the duration of the work experience

Scope of Work Experience

The person will be expected to engage in the following work activities:

- WA1301 Operate machines ensuring work practices minimise the risk of injury and damage to machinery, equipment and safety of self and others
- WA1302 Inspect the workshop, machines, tools and equipment to determine whether these aspects comply with occupational health and safety requirements

- WA1303 Identify, record and report conditions that present a threat to safety, health and the environment
- WA1304 Promptly identify appropriate corrective actions and consult the appropriate parties about these actions
- WA1305 Trace and report ongoing safety concerns in work area ensuring corrective actions are taken
- WA1306 Complete health, safety and environment reports using the required format
- WA1307 Identify, select and apply personal protective clothing and equipment appropriate to the task
- WA1308 Participate in a fire evacuation drill

Supporting Evidence

- SE1301 Completed checklists and reports

2.3 Contextualised Workplace Knowledge

1 Company products

2 Various departments and workflow

3 Reporting structures

4 Company standard operating and safety procedures and quality standards

5 Workshop layout and designated areas

6 Personal protective clothing and equipment

2.4 Criteria for Workplace Approval

Physical Requirements:

- Fully equipment wood machining department with advanced wood and board machining machines, tools and equipment and various types of raw material
- Compressed airline and extraction
- Key processes: wood machining processes using advanced machines

Human Resource Requirements:

- Qualified and accredited facilitator or supervisor with a minimum of 3 years of experience in a furniture manufacturing environment and be NQF 3 qualified in furniture manufacturing processes
- Supervisor/subordinate ratios = 1:20
- Availability of coaches and mentors = 1:5

Legal Requirements:

- Compliance with occupational health and safety regulations
- Compliance with Labour Legislation
- Bargaining Council Main Agreement

2.5 Additional Assignments to be Assessed Externally

None

SECTION 4: STATEMENT OF WORK EXPERIENCE

Curriculum Number:	682201002
Curriculum Title:	Crafted Furniture Machinist

Learner Details	
Name:	
ID Number:	

Employer Details	
Company Name:	
Address:	
Supervisor Name:	
Work Telephone:	
E-Mail:	

682201002-00-WM-01, Furniture machining operations, NQF Level 2, Credits 20

WM-01-WE01	Read and interpret work instructions and product specifications for machining operations		
	Scope Work Experience	Date	Signature
WA0101	Interpret a job card, cutting list, production flow/routing chart and identify all job requirements and specifications including machines and operations as well as jigs and templates for specific tasks		
WA0102	Read and interpret basic engineering drawings and identify all aspects relevant to the work specifications		
	Supporting Evidence	Date	Signature
SE0101	Signed job card		
WM-01-WE02	Prepare a workstation for machining operations		
	Scope Work Experience	Date	Signature
WA0201	Obtain all required timber and conduct quality checks to ensure the timber quality conforms to specifications		
WA0202	Conduct prestart checks on all machines, equipment and attachments ensuring it complies with safety and working specifications and are in good working order (Inspect that the machine is operational, inspect blade for sharpness and correct blade and v-belts, etc.)		
WA0203	Select and apply personal protective clothing and equipment (PPE and PPC) for the specific machine		
WA0204	Identify and report substandard raw material, machines or PPE		
	Supporting Evidence	Date	Signature
SE0201	Prestart check list		
WM-01-WE03	Perform breakout operations by operating a crosscut saw and ripsaw using solid timber by cutting a minimum of 30 components of the required length and width according to the cutting list		

	Scope Work Experience	Date	Signature
WA0301	Conduct the appropriate setting up procedure of the crosscut saw and ripsaw according to the product specifications on the work instruction		
WA0302	Conduct safety checks on the machines, equipment and workstation to ensure compliance with safety requirements		
WA0303	Observe the direction of the grain of the timber before feeding into the saw		
WA0304	Check cut components at set intervals (do spot checks) for correctness and consistency of cut and grain direction		
WA0305	Use measuring equipment to check that the length or width correspond to cutting list		
WA0306	Label or group components on pallets according to the workplace procedures		
WA0307	Identify, mark and report substandard raw material and components		
WA0308	Dispose of off-cuts safely and store re-useable off-cuts according to sizes and type of timber		
	Supporting Evidence	Date	Signature
SE0301	Completed job card signed by supervisor to confirm work completed		
WM-01-WE04	Produced planed timber and board product components and products (planing straight timber, laminated timber) using surface planer and thickness planer for a minimum period of 3 weeks		
	Scope Work Experience	Date	Signature
WA0401	Conduct the appropriate setting up procedure of the surface planer and thickness planer according to the product specifications on the work instruction		
WA0402	Conduct safety checks on the machines, equipment and workstation to ensure compliance with safety		

	requirements		
WA0403	Operate the surface planer and thickness planer complying with safety standards		
WA0404	Use vernier calliper to verify if the timber is according to specified width and thickness		
WA0405	Label or group components on pallets according to the workplace procedures		
WA0406	Identify, mark and report substandard raw material and components		
	Supporting Evidence	Date	Signature
SE0401	Completed job card signed by the supervisor to confirm work completed to company standards		
WM-01-WE05	Produce sawn timber and board product components and products (producing straight cuts, mitred cuts grooves and half laps) for a minimum period of 5 week using panel saw and radial arm saw		
	Scope Work Experience	Date	Signature
WA0501	Conduct the appropriate setting up procedure of the surface planer and thickness planer according to the product specifications on the work instruction		
WA0502	Conduct safety checks on the machines, equipment and workstation to ensure compliance with safety requirements		
WA0503	Operate a panel saw and radial arm saw to get the required length, and angles that are required.		
WA0504	Check cut components at set intervals (do spot checks) for correctness and consistency of length and angles		
WA0505	Label or group components on pallets according to the workplace procedures		
WA0506	Identify, mark and report substandard raw material and components		

	Supporting Evidence	Date	Signature
SE0501	Completed job card signed by the supervisor to confirm work completed to company standards		
WM-01-WE06	Produce shaped timber and board product components and products (simple to more complex shapes) using the band saw for a period of 2 weeks		
	Scope Work Experience	Date	Signature
WA0601	Conduct the appropriate setting up of the band saw		
WA0602	Conduct safety checks		
WA0603	Confirm if the blade is size and thickness is relevant to the work to be produced		
WA0604	Operate band saw safely and produce required shape and size.		
WA0605	Label components according to work procedures		
WA0606	Identify, mark and report substandard raw material and components.		
	Supporting Evidence	Date	Signature
SE0601	Completed job card signed by the supervisor to confirm work completed to company standards		
WM-01-WE07	Produce machine sanded timber and board components and products (sanding solid timber, veneered bards and composite boards) for a minimum period of 2 week using edge sander, stroke sander and wide belt sander		
	Scope Work Experience	Date	Signature
WA0701	Conduct the appropriate setting up procedure of the surface planer and thickness planer according to the product specifications on the work instruction		
WA0702	Conduct safety checks on the machines, equipment and workstation to ensure compliance with safety		

	requirements		
WA0703	Operate the relevant machines to get the required length and angles		
WA0704	Check cut components at set intervals (do spot checks) for correctness and consistency of length and angles		
WA0705	Label or group components on pallets according to the workplace procedures		
WA0706	Identify, mark and report substandard raw material and components		
	Supporting Evidence	Date	Signature
SE0701	Completed job card signed by the supervisor to confirm work completed to company standards		
WM-01-WE08	Produce straight laminated timber and board components		
	Scope Work Experience	Date	Signature
WA0801	Use tape measure to verify if the length is according to cutting list		
WA0802	Use hand clamps and or laminating press to laminate timber.		
WA0803	Use correct adhesives for the job.		
	Supporting Evidence	Date	Signature
SE0801	Completed job card signed by the supervisor to confirm work completed to company standards		
WM-01-WE09	Apply safety measures and equipment		
	Scope Work Experience	Date	Signature
WA0901	Maintain safe working environment to comply with safety standards		

WA0902	Apply ear and eye protection, dust masks, overall and no loose clothes		
WA0903	Attend regular safety meetings according to the requirements of the workplace		
WA0904	Report inadequate lighting in the machine shop		
WA0905	Participate in simulated fire emergency evacuation procedures		
	Supporting Evidence	Date	Signature
SE0901	Completed job card signed by the supervisor to confirm work completed		
WM-01-WE10	Conduct general housekeeping activities to ensure the work area is clean and neat and complying with safety regulations		
	Scope Work Experience	Date	Signature
WA1001	Clean dust extraction bags where applicable		
WA1002	Check the dust extraction system for working condition		
WA1003	Comply with attendance and time keeping standards as determined by the company		
WA1004	Take necessary actions and measures and to reduce wastage		
WA1005	Produce minimum waste levels as determined by the company within set tolerances		
WA1006	Apply all safety routines and procedures when working with compressed air		
	Supporting Evidence	Date	Signature
SE1001	Completed job card signed by the supervisor to confirm work completed		
WM-01-WE11	Ensure quality of the machined product by identifying machine faults		

	Scope Work Experience	Date	Signature
WA1101	Identify and immediately report any machine defects		
WA1102	Ensure the machine is operated within design specifications		
WA1103	Identify any wrongly fitted attachment and replace		
WA1104	Identify and correct incorrect machine settings		
WA1105	Identify and correct any incorrect speed setting in terms of the rotation of the blade		
WA1106	Conduct calibration routines within the authority of the operator and report any deviations to the supervisor		
	Supporting Evidence	Date	Signature
SE1101	Job card from the supervisor		
WM-01-WE12	Ensure quality of the machined product by identifying raw material faults and handling and storing it correctly		
	Scope Work Experience	Date	Signature
WA1201	Inspect, identify and report all timber defects such as cracks, knots, twists, insects, wet rot and dry rot		
WA1202	Identify the incorrect moisture content of the raw material causing defects such as swelling of boards		
WA1203	Select material correctly according to type as specified on the job card		
WA1204	Handle timber and recuts as delicately as possible avoiding bumping and damaging the edges/chips using trolleys to cart it		
WA1205	Store timber correctly in an area free from moisture		
WA1206	Avoid any misinterpretation of job cards by clarifying information which could be vague or unclear		

	Supporting Evidence	Date	Signature
SE1201	Job card from the supervisor		
WM-01-WE13	Ensure quality of the machined product by identifying process faults		
	Scope Work Experience	Date	Signature
WA1301	Accurately determine the type of material to set the correct working speed of the machine		
WA1302	Accurately determine the type of material to apply the correct feeding of timber to the machine		
WA1303	Ensure the wood is correctly clamped to the jig to avoid damage to machine, unsafe working condition, or not producing the designed product		
	Supporting Evidence	Date	Signature
SE1301	Job card from the supervisor		
WM-01-WE14	Conduct continuous quality inspection of the machined product throughout the machining operation		
	Scope Work Experience	Date	Signature
WA1401	Conduct a quality inspection checking for consistency, accuracy, defects of the product		
WA1402	Conduct a final quality inspection of the machined product before hand over to next process		
WA1403	Record all defects		
	Supporting Evidence	Date	Signature
SE1401	Quality checklist		
WM-01-WE15	Perform maintenance activities to ensure a well maintain machine and workshop		
	Scope Work Experience	Date	Signature

WA1501	Lubricate, clean and service the machine at required intervals as part of routine maintenance activities		
WA1502	Identify and immediately report any machine or machine part or attachment defects		
WA1503	Service the machine at required intervals by replacing belts and applying calibration routines		
WA1504	Check the sharpness of blades, replace cutting tools and inspect v-belts at required intervals		
	Supporting Evidence	Date	Signature
SE1501	Completed machine maintenance checklist signed by the supervisor to confirm work completed		

	Contextualised Workplace Knowledge	Date	Signature
1	Company products		
2	Various departments and workflow		
3	Reporting structures		
4	Company standard operating and safety procedures and quality standards		
5	Workshop layout and designated areas		
6	Personal protective clothing and equipment		

	Additional Assignments to be Assessed Externally	Date	Signature

682201002-00-WM-02, Crafted furniture machining operations, NQF Level 3, Credits 30

WM-02-WE01	Read, interpret and produce basic engineering drawings		
	Scope Work Experience	Date	Signature
WA0101	Produce engineering drawings for a chair, stool, table, box, cabinet, book shelve		
WA0102	Identify all components to be cut and processed in the machining department and compile a cutting list		
WA0103	Identify the manufacturing processes from the drawing and compile routing sheets		
WA0104	Identify and correctly calculate the raw material needed for the product		
	Supporting Evidence	Date	Signature
SE0101	Completed drawings		
SE0102	Completed routing sheet		
SE0103	Completed cutting list		
SE0104	Completed raw material list		
WM-02-WE02	Prepare for operations in the machining department		
	Scope Work Experience	Date	Signature
WA0201	Receive cutting list and other production information and check for accuracy and sufficiency and report any incorrect information		
WA0202	Receive all necessary materials and equipment for the task and confirm that all components are according to sizes, numbers and quality as per cutting list		

WA0203	Prepare the working area for the task ensuring it is clean and free from dust and oil or any foreign material which can contaminate the work piece		
WA0204	Production information is checked for accuracy and sufficiency and any incorrect information is reported to the relevant person		
WA0205	All necessary materials and equipment for the job are identified and accessed, and any non-availability is reported to the relevant person		
WA0206	The quality and quantity of materials is checked and remedial action taken if there is non-conformity		
WA0207	Accurately establish the compatibility of materials with the boring machine to be used and take correct remedial action to address non-conformity		
WA0208	Jigs, templates and other necessary dimension control aids are available, correct and fit for the purpose		
	Supporting Evidence	Date	Signature
SE0201	Prepared work area		
WM-02-WE03	Design, construct and test jigs and templates for back legs of a chair, tempered legs of a server and a curved armrest for one off use, multiple use; short term use; and long term use using a suitable material for the purpose of the jig or template (Masonite, MDF; Perspex; plywood; appropriate new materials or off cuts)		
	Scope Work Experience	Date	Signature
WA0301	Read and interpret the requirements and sample for the jigs and templates according to production, quality and organisational requirements		
WA0302	Jigs and templates made, provide for secure and safe attachment, accurate calibrators and sizing for their production purpose		
WA0303	Inspect jigs and templates to confirm specification accuracy and accurate sample match		

WA0304	Correctly label jigs and templates are and place in the designated location		
WA0305	Documentation is completed accurately and according to organisational requirements		
	Supporting Evidence	Date	Signature
SE0301	Photos of completed jigs		
SE0302	Completed job card confirming completion of work		
WM-02-WE04	Repair jigs and templates		
	Scope Work Experience	Date	Signature
WA0401	Inspect jigs and templates for damage to maintain accuracy and quality of the operations and identify damage or faults		
WA0402	Plan the repair operation to minimise production downtime		
WA0403	Repair the jig or template confirming accurate sample match		
	Supporting Evidence	Date	Signature
SE0401	Photos of repaired jigs and templates (before and after)		
SE0402	Completed job card confirming completion of work		
WM-02-WE05	Modify jigs and templates		
	Scope Work Experience	Date	Signature
WA0501	Determine the feasibility of the intended modification		
WA0502	Identify the modification requirement and confirm with the relevant person		
WA0503	Plan the modification process to minimise production downtime		

WA0504	Conduct the modification accurately to specification and inspect the jig or template to confirm an accurate sample match is obtained		
WA0505	Perform the modification safely and within the optimum time scales		
WA0506	Correctly mark modified jigs and templates for identification and return to their correct location		
	Supporting Evidence	Date	Signature
SE0501	Photos of modified jigs and templates (before and after)		
SE0502	Completed job card confirming completion of work		
WM-02-WE06	Produce bored timber and board product components and products operating a multi-borer at 90 degrees and 45 degrees drilling and different angles		
	Scope Work Experience	Date	Signature
WA0601	Set out, measure and mark material for boring applying the correct dimensions and calculations		
WA0602	Inspect and set up the machine for boring by inserting cutters, adjusting clamps and stoppers ensuring left side drills corresponds with the right hand side components		
WA0603	Identify correct dowel sizes		
WA0604	Set the correct pressure of the machine and run a test piece and correct all deviations		
WA0605	Drill materials at feed speeds suited to materials and machine applying guards and relevant safety procedures and requirements throughout the operations		
WA0606	Inspect the bored components to confirm quality and meeting product specifications		
WA0607	Identify and report substandard raw material and components		

WA0608	Label or group components on pallets for dispatch to the next operation		
	Supporting Evidence	Date	Signature
SE0601	Photos of bored timber and bored board products or components		
SE0602	Completed job card confirming accurate completion of work		
WM-02-WE07	Operate the edge bander to produce machine banded product for a period of 2 weeks working with solid edging, impact and veneer edging		
	Scope Work Experience	Date	Signature
WA0701	Set out, measure and mark material for edging applying the correct dimensions and calculations		
WA0702	Inspect and set up the machine for edging by adjusting cutters, rollers, pressure and height of the machine cutting unit		
WA0703	Ensure that temperature of the glue is according to edging and machine specification		
WA0704	Run and inspect a test piece to confirm correct settings		
WA0705	Edge band materials at feed speeds suited to materials and machine applying guards and relevant safety procedures and requirements throughout the operations		
WA0706	Inspect the edge banded components to confirm quality and meeting product specifications		
WA0707	Identify and report substandard raw material and components		
WA0708	Label or group components on pallets for dispatch to the next operation		
	Supporting Evidence	Date	Signature

SE0701	Photos of edge banded timber and bored board products or components		
SE0702	Completed job card confirming accurate completion of work		
WM-02-WE08	Produce profiled timber and board product components and products by operating a spindle, moulder and overhead router to produce components with different profiles, moulds, rebates, grooves, chamfers, radiuses, and bullnoses for a period of 3 weeks		
	Scope Work Experience	Date	Signature
WA0801	Set out, measure and mark material for profiling applying the correct dimensions and calculations		
WA0802	Inspect and set up the machine for profiling operations		
WA0803	Adjust the spindle feeder to correct height		
WA0804	Select the correct feeding speed and direction		
WA0805	Adjust cutting tools to correct angles, width and length and depth		
WA0806	Run and inspect a test piece to confirm correct settings		
WA0807	Operate the spindle, moulder and overhead router to produce components with different profiles, moulds, rebates, grooves, chamfers, radiuses, and bullnoses at feed speeds suited to materials and machine applying guards and relevant safety procedures and requirements throughout the operations		
WA0808	Inspect the profiled components to confirm quality and meeting product specifications		
WA0809	Identify and report substandard raw material and components		
WA0810	Label or group components on pallets for dispatch to the next operation		

	Supporting Evidence	Date	Signature
SE0801	Photos of profiled timber board products or components		
SE0802	Completed job card confirming accurate completion of work		
WM-02-WE09	Produce turned timber components and products by operating a lathe and copy lathe to produce 100 turned components		
	Scope Work Experience	Date	Signature
WA0901	Set out, measure and mark material for profiling applying the correct dimensions and calculations		
WA0902	Inspect and set up the machine for wood turning operations		
WA0903	Adjust the lathe and copy lathe to required adjustments		
WA0904	Fit components securely to the machines		
WA0905	Select and fit the correct chisels		
WA0906	Secure the templates and jigs to the machine		
WA0907	Operate a lathe and copy lathe to produce 100 turned components using the lathe and copy lathe		
WA0908	Inspect the profiled components to confirm quality and meeting product specifications		
WA0909	Identify and report substandard raw material and components		
WA0910	Label or group components on pallets for dispatch to the next operation		
	Supporting Evidence	Date	Signature
SE0901	Photos of turned timber products or components		

SE0902	Completed job card confirming accurate completion of work		
WM-02-WE10	Produce jointed timber producing different sizes and angles of Mortise-and-Tenon joints by operating the Mortise-and-Tenon machine for a period of 2 weeks in the machining department		
	Scope Work Experience	Date	Signature
WA1001	Set out, measure and mark timber and composite board for profiling applying the correct dimensions and calculations		
WA1002	Inspect and set up the machine for cutting joints		
WA1003	Set-up correct shoulder sizes and adjust cutting tools to correct angles, width and length and depth		
WA1004	Set the correct pressure of the machine		
WA1005	Run and inspect a test piece to confirm correct settings		
WA1006	Start, stop and control the Mortise-and-Tenon producing different sizes and angles of Mortise-and-Tenon joints		
WA1007	Cut joints according specification (joints include but not limited to: double end mortise, mitered butt joints, butt joints, tongue and groove, rail and style, dado joint, rabbet joint)		
WA1008	Inspect the jointed components to confirm quality and meeting product specifications		
WA1009	Identify and report substandard raw material and components		
WA1010	Label or group components on pallets for dispatch to the next operation		
	Supporting Evidence	Date	Signature
SE1001	Photos of jointed timber products or components		

SE1002	Completed job card confirming accurate completion of work		
WM-02-WE11	Conclude operations according to workplace requirements		
	Scope Work Experience	Date	Signature
WA1101	Unused materials are returned to appropriate storage		
WA1102	Apply time and self-management to achieve the operation in compliance with safety requirements and within the time allocated		
WA1103	Perform the process according to health and safety requirements within the allocated time		
WA1104	Record and submit all production information and processes		
WA1105	Faulty and/or defective equipment is tagged and reported in accordance with workplace practices		
WA1106	Waste and scrap materials are dealt with following workplace procedures in compliance with environmental requirements		
	Supporting Evidence	Date	Signature
SE1101	Completed job card confirming accurate completion of work		
WM-02-WE12	Perform routine cleaning and minor maintenance in the workshop to maintain the good working order of the machines, tooling, equipment and safe working conditions		
	Scope Work Experience	Date	Signature
WA1201	Inspect, clean and conduct minor maintenance tasks on machines (such as lubrication, belt tension, etc.) to maintain serviceability of the machines		
WA1202	Inspect, clean and conduct minor maintenance tasks on tooling and equipment such as sharpening to maintain the good working order		

WA1203	Faulty and/or defective equipment is tagged and reported in accordance with workplace practices		
WA1204	Clean the working environment and inspect for compliance with safety requirements		
	Supporting Evidence	Date	Signature
SE1201	Completed checklists and reports		
WM-02-WE13	Apply safety procedures and equipment when operating machines, working with chemicals, handling wood, board and components for the duration of the work experience		
	Scope Work Experience	Date	Signature
WA1301	Operate machines ensuring work practices minimise the risk of injury and damage to machinery, equipment and safety of self and others		
WA1302	Inspect the workshop, machines, tools and equipment to determine whether these aspects comply with occupational health and safety requirements		
WA1303	Identify, record and report conditions that present a threat to safety, health and the environment		
WA1304	Promptly identify appropriate corrective actions and consult the appropriate parties about these actions		
WA1305	Trace and report ongoing safety concerns in work area ensuring corrective actions are taken		
WA1306	Complete health, safety and environment reports using the required format		
WA1307	Identify, select and apply personal protective clothing and equipment appropriate to the task		
WA1308	Participate in a fire evacuation drill		
	Supporting Evidence	Date	Signature
SE1301	Completed checklists and reports		

	Contextualised Workplace Knowledge	Date	Signature
1	Company products		
2	Various departments and workflow		
3	Reporting structures		
4	Company standard operating and safety procedures and quality standards		
5	Workshop layout and designated areas		
6	Personal protective clothing and equipment		

	Additional Assignments to be Assessed Externally	Date	Signature