APPLY WORKSHOP TECHNOLOGY

UNIT CODE:ENG/OS/CE/CC/6/6

UNIT DESCRIPTION

This unit describes the competencies required by a technician in order to apply a wide range of workshop technology practices in their work. It includes Observing safety precautions, taking material measurements, performing basic metal works, performing heat treatment, analysing common workshop materials and testing workshop materials.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the key outcomes which make up workplace function.	**PERFORMANCE CRITERIA** These are assessable statements which specify the required level of performance for each of the elements. ***Bold and italicized terms are elaborated in the Range.***
1. Observe safety precautions	1.1 ***PPEs*** are gathered and used 1.2 safety rules are adhered to according to workplace procedures 1.3 tools are handled correctly according to manufacturer's manual 1.4 firefighting equipment is used where appropriate
2. Take material measurements	2.1 measuring instruments are identified 2.2 measuring instruments are used according to manufacturer's manual 2.3 measuring instruments are maintained according to manufacturer's guide
3. Perform basic metal works	3.1 materials, tools and equipment are selected 3.2 metals are marked out 3.3 metals are cut using appropriate ***cutting tools*** 3.4 patterns are developed in the sheet metal work 3.5 joints are prepared in the metal work 3.6 ***metal joining*** is performed as per the workshop manual 3.7 drilling operations are performed as per the workshop manual 3.8 grinding operations are performed as per the workshop manual
4. Perform heat treatment	4.1 PPEs are gathered and used as per the workplace procedure 4.2 heat treatment equipment is operated and maintained 4.3 heat treatment is performed 4.4 tests on heated workpieces are performed

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5. Analyse common workshop materials	5.1 ***common workshop materials*** are identified and classified 5.2 metal types are analysed as per SOPs
5. Test workshop materials	5.1 test piece is prepared 5.2 tensile testing machine is operated 5.3 materials' tensile and compressive strength is tested 5.4 material hardness is tested

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

Variable	Range
1. PPE include but not limited to:	1.1 Goggles 1.2 Gloves 1.3 Boots 1.4 Overall 1.5 Helmet 1.6 Hand shield 1.7 Respirators 1.8 Ear muffs
2. Cutting tools include but not limited to:	2.1 Lathe machine 2.2 Hacksaws 2.3 Guillotine machine
3. Metal joining include but not limited to:	3.1 Soft soldering 3.2 Hard soldering 3.3 Riveting 3.4 Gas welding 3.5 Arc welding
4. Common workshop materials include but not limited to:	4.1 Cast iron 4.2 Carbon steels 4.3 Alloy steels 4.4 Non-ferrous metals 4.5 Plastics

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required Skills

The individual needs to demonstrate the following skills:

- Measuring
- Heating metals and plastics
- Cutting metals
- Joining metals
- Drilling metals
- Grinding
- Testing materials
- Planning and organizing
- Housekeeping
- Time management

Required knowledge

- Safety precautions
- Workshop tools' operations and handling
- Properties of materials
- Structures of materials
- Prevention of corrosion
- Types of metals
- Types of metal works
- Plastics

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1 adhered to safety rules as per workplace procedures 1.2 used measuring instruments according to manufacturer's manual 1.3 metals are marked out 1.4 cut metals using appropriate cutting tools 1.5 developed patterns in the sheet metal work 1.6 Prepared joints in the metal work 1.7 Performed metal joining as per the workshop manual 1.8 Performed drilling operations as per the workshop manual 1.9 Performed grinding operations as per the workshop manual 1.10 Identified, classified and analysed ***common workshop materials***

	1.11 Tested workshop materials
2. Resource Implications	The following resources should be provided: 2.1 PPEs 2.2 Access to relevant workplace or appropriately simulated environment where assessment can take place 2.3 Measuring tools and equipment 2.4 Relevant tools and equipment for metal works 2.5 Sample materials to be tested
3. Methods of Assessment	Competency in this unit may be assessed through: 3.1 Direct Observation 3.2 Demonstration with Oral Questioning 3.3 Case studies 3.4 Written tests
4. Context of Assessment	Competency may be assessed individually in the actual workplace or through accredited institution
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.