

### Overview

This standard identifies a range of basic competences that you need to make use of text, numerical and graphical information, by interpreting and using technical information extracted from a range of documentation, such as engineering drawings, technical manuals, technical specifications, reference tables and charts, electronic displays, planning and quality control documentation.

This will prepare you for entry into the engineering or manufacturing sectors, creating a progression between education and employment, or it will provide a basis for the development of additional skills and occupational competences in the working environment.

You will be required to extract the necessary data from the various specifications and related documentation, in order to establish and carry out the work requirements, and to make valid decisions about the quality and accuracy of the work carried out. You will also need to be able to communicate and record technical information, using a range of different methods such as producing detailed sketches, preparing work planning documentation, producing technical reports and recording data from testing activities.

Your responsibilities will require you to comply with organisational policy and procedures for obtaining, using and communicating the technical information applicable to the activity. You will need to report any difficulties or problems that may arise with the information, and carry out any agreed actions. You will work under a high level of supervision, whilst taking responsibility for your own actions and for the quality and accuracy of the work that you carry out.

Your underpinning knowledge will provide an understanding of the types of documentation available for use, and will provide an informed approach to applying and communicating engineering instructions and procedures. You will be able to read and interpret the documentation available, and will know about the conventions, symbols and abbreviations to the required depth to provide a sound basis for carrying out the activities to the required specification.

# SEMPEO1-03 - Unit H4R3 04

## Using and communicating technical information

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### Performance criteria

- You must be able to:*
- P1 use the approved sources to obtain the required data, documentation or specifications
  - P2 extract and interpret information from engineering drawings and other related documentation
  - P3 report any inaccuracies or discrepancies in the drawings and specifications
  - P4 use the information obtained to establish work requirements
  - P5 record and communicate the technical information, using appropriate means
  - P6 report any difficulties or problems that may arise with using or communicating the information, and carry out any agreed actions

# SEMPEO1-03 - Unit H4R3 04

## Using and communicating technical information

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### Knowledge and understanding

*You need to know and understand:*

- K1 the information sources used for the data and documentation that you use in your work activities (such as verbal, written, electronic)
- K2 why technical information is presented in different forms (such as drawings, job instructions, data sheets and national and international standards)
- K3 how and where to obtain the various documents that you will be using (such as safety handouts, drawings, planning documentation, work instructions, maintenance records, technical manuals and reference tables/charts), and how to check that they are current and valid
- K4 the types of engineering drawings used and how they interrelate (such as isometric and orthographic drawings; assembly, sub-assembly and general arrangement drawings; circuit and wiring diagrams, block and schematic diagrams; fluid power and instrumentation and control diagrams)
- K5 the meaning of the different symbols and abbreviations found on the documents that you use (such as surface finish to be achieved, linear and geometric tolerances, electronic components, weld symbols and profiles, pressure and flow characteristics, torque values, imperial and metric systems of measurement, tolerancing and fixed reference points)
- K6 how to use other sources of information to support the data (such as electronic component pin configuration specifications, standard reference charts for limits and fits, tapping drill reference charts, bend allowances required for material thickness, electrical conditions required for specific welding electrodes, mixing ratios for bonding and finishing materials, metal finishing specifications and inspection requirements)
- K7 the procedures for reporting any discrepancies in the data or documents, and for reporting lost or damaged drawings and documents
- K8 care and control procedures for the documents, how damage or graffiti on drawings can lead to scrapped work and the importance of returning them to the designated location on completion of the work activities
- K9 typical ways of communicating technical information (such as sketches, test and inspection reports, work planning documents), and the amount of detail that should be included
- K10 the need to ensure that sketches are of a suitable size, use appropriate drawing conventions, are in proportion and are legible to others
- K11 when to act on your own initiative to find, clarify and evaluate information, and when to seek help and advice from others
- K12 why you should always seek clarification if you are in any doubt as to the validity or suitability of the information that you have gathered
- K13 to whom you should report in the event of problems that you cannot resolve

# SEMPEO1-03 - Unit H4R3 04

## Using and communicating technical information

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### Additional Information

#### Scope/range related to performance criteria

*You must be able to:*

1. Use approved sources to obtain the necessary data and related specifications, and carry out **all** of the following:
  - 1.1 exercise care and control over the documents at all times
  - 1.2 correctly extract all necessary data in order to carry out the required tasks
  - 1.3 seek out additional information where there are gaps or deficiencies in the information obtained
  - 1.4 deal with or report any problems found with the data
  - 1.5 return all documentation to the approved location on completion of the work
  - 1.6 complete all necessary production documentation
  
2. Use information extracted from engineering documentation, to include **one** or more of the following:
  - 2.1 detailed component drawings
  - 2.2 illustrations
  - 2.3 welding drawings
  - 2.4 general assembly drawings
  - 2.5 visual display screens
  - 2.6 casting drawings
  - 2.7 repair drawings
  - 2.8 modification drawings
  - 2.9 operational diagrams
  - 2.10 fluid power drawings
  - 2.11 sub-assembly drawings
  - 2.12 physical layouts
  - 2.13 wiring/circuit diagrams
  - 2.14 schematic diagrams
  - 2.15 manufacturers' manuals/drawings
  - 2.16 installation drawings
  - 2.17 fabrication drawings
  - 2.18 photographic representations
  - 2.19 approved sketches
  - 2.20 pattern drawings
  - 2.21 contractual specifications
  
3. Use information extracted from related documentation, to include **one**

## SEMPEO1-03 - Unit H4R3 04

### Using and communicating technical information

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- from the following:
- 3.1 job instructions
  - 3.2 material specifications
  - 3.3 planning documentation
  - 3.4 drawing instructions
  - 3.5 finishing specifications
  - 3.6 quality control documents
  - 3.7 test schedules
  - 3.8 reference tables/charts
  - 3.9 operation sheets
  - 3.10 manufacturers' instructions
  - 3.11 national, international and organisational standards
  - 3.12 process specifications
  - 3.13 welding procedure specifications
4. Extract information that includes **three** of the following:
- 4.1 materials or components required
  - 4.2 surface texture requirements
  - 4.3 surface finish required
  - 4.4 dimensions
  - 4.5 location/orientation of parts
  - 4.6 weld type and size
  - 4.7 tolerances
  - 4.8 process or treatments required
  - 4.9 operations required
  - 4.10 build quality
  - 4.11 assembly sequence
  - 4.12 shape or profiles
  - 4.13 installation requirements
  - 4.14 inspection requirements
  - 4.15 test points to be used
  - 4.16 connections to be made
  - 4.17 part numbers for replacement parts
  - 4.18 circuit characteristics (such as pressure, flow, current, voltage, speed)
5. Record and communicate technical information, to include **two** of the following:
- 5.1 producing fully detailed sketches of work/circuits completed or required
  - 5.2 recording data from testing activities
  - 5.3 producing reports on activities that you have completed
  - 5.4 completing material and tool requisition documentation
  - 5.5 producing a list of replacement parts required for a maintenance activity
  - 5.6 completing training records or portfolio references

## **SEMPEO1-03 - Unit H4R3 04**

### Using and communicating technical information

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#### 5.7 completing quality documentation

# SEMPEO1-03 - Unit H4R3 04

## Using and communicating technical information

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