DESIGN PRODUCTS AND STRUCTURES

UNIT CODE: ENG/OS/WEF/CR/10/6/A

UNIT DESCRIPTION

This unit specifies competencies required for developing models and prototypes of products and structures, developing jigs and fixtures and planning production process.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA *(Bold and italicized terms are elaborated in the Range)*
1. Develop models and prototypes of products and structures	1.1. Models and prototypes of products and structures are designed as per the standard procedures 1.2 Working drawings are developed as per ***standard procedures*** 1.3 Models and prototypes are tested according to standard operating procedures 1.4 ***Models and prototypes*** are developed as per drawing specifications
2. Develop jigs and fixtures	2.1 Designed jigs and fixtures as per the job specifications. 2.2 Developed jigs and fixtures as per job specifications
3. Plan production process	3.1 Performed Job costing as per job specifications. 3.2 Scheduled for production as per the costing plan 3.3 ***Controlled production*** as per the schedule

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. Standard procedures may include but is not limited to:	• ISO Technical Drawing standards • BS4500 limits and fits
2. Models and prototypes may include but is not limited to: .	• Metallic chairs • Metallic doors • Metallic girders • Metallic windows • Trusses and portal frames
3. Controlled production may include but is not limited to:	• Material control • Production flow • Quality control • Material handling

Required knowledge

The individual needs to demonstrate knowledge of:

- BS and ISO drawing standards.
- Reading of tolerance and dimension charts
- Scale drawing
- Use of jigs and fixtures
- Features of a quality design
- Computer aided design software
- Simulation software
- Cost analysis
- Work scheduling
- Methods of product control
- Features of quality control
- Material handling control

Required skills

The individual needs to demonstrate the following skills:

- Interpret working drawing

- Apply tolerance and dimensioning
- Apply scale drawing
- Design jigs and fixtures
- Apply jigs and fixtures
- Apply scale drawing
- Design models and prototypes
- Job costing
- Plan for production

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 Developed working drawings 1.2 Developed models and prototypes 1.3 Simulated models and prototypes 1.4 Designed prototypes of jigs and fixtures 1.5 Developed jigs and fixtures 1.6 Prepared production plan
2. Resource implications	The following resources must be provided: 2.1 Fully equipped drawing room meeting OSHA standards 2.2 Drawing software (Solid works, AutoCAD and Inventor) 2.3 Simulation software
3. Methods of assessment	Competency may be assessed through: 3.1 Observation 3.2 Oral questioning 3.3 Written tests 3.4 Projects
4. Context of assessment	Candidate will be assessed 4.1 On job 4.2 Off job 4.3 During industrial attachment
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.