



Australian Government

ICPPRN395 Set up and produce 3D print

Release: 1

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Modification History

Release	Comments
Release 1	This version first released with ICP Printing and Graphic Arts Training Package Version 2.0.

Application

This unit describes the skills and knowledge required to select and use a printer to produce three-dimensional (3D) objects from low to moderate precision data file sets.

It applies to individuals, employed in a range of industry sectors, who use 3D graphics and scanning data to replicate 3D objects.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Printing

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Determine the print requirements	1.1 Printed object requirements are determined against specifications and confirmed with client 1.2 Appropriate printer and materials are selected to meet client specifications 1.3 Data files are uploaded into the printer software and 3D model is checked to ensure it meets specifications 1.4 Quality of data file is assessed and possible adjustments are discussed with client 1.5 File is adjusted and saved in required printer format
2. Prepare the 3D printer	2.1 Print construction time is determined and client approval obtained

ELEMENT	PERFORMANCE CRITERIA
	2.2 Personal protective equipment (PPE) is selected and fitted in accordance with work health and safety (WHS) procedures 2.3 Prestart checks are conducted on the 3D printer to ensure correct operation 2.4 Printer settings are adjusted for specified tolerances and client specifications 2.5 Printer is charged with specified construction material 2.6 Printer build platform is prepared according to manufacturer's operating procedures
3. Operate and monitor the 3D printer	3.1 Printer is operated in accordance with manufacturer's operating procedures and WHS procedures 3.2 Sensor displays and readings are checked so that they remain within the correct operating parameters throughout the job 3.3 Printed object is monitored to check that it is forming as per client specifications, and adjusted as necessary 3.4 Consumables are monitored and recharged as required 3.5 Errors and faults in operation are reported to relevant personnel for maintenance or repair
4. Remove and prepare model for client	4.1 Printed 3D object is removed from the printer bed according to manufacturer's operating procedures 4.2 Support framework is removed using appropriate tools, chemicals and PPE, according to manufacturer's operating procedures 4.3 3D object is cleaned and prepared against client specifications
5. Finalise the shut down and reset printer	5.1 Printer is reset according to the manufacturer's operating procedures 5.2 Printer and worksite are cleaned according to organisational procedures and manufacturer's operating procedures 5.3 Printer is shut down according to organisational procedures

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2, 2.2, 2.4, 2.6, 3.1, 3.3, 4.1, 4.2, 4.3, 5.1, 5.2, 5.3	Analyses graphics files and other documentation to determine 3D printing requirements
Writing	1.5	Names data files according to specified naming conventions
Oral communication	1.1, 1.4, 2.1, 3.5	Effectively participates in verbal exchanges using active listening and questioning to convey and clarify printing information
Numeracy	2.1, 2.4, 3.2	- Uses mathematical processes to estimate time - Performs mathematical calculations to check and adjust software to reflect appropriate tolerances for printing
Navigate the world of work	2.2, 2.6, 3.1, 3.5, 4.1, 4.2, 5.1, 5.2, 5.3	- Understands roles and responsibilities for tasks and makes basic decisions on work completion parameters - Complies with organisation and manufacturer's procedures
Interact with others	1.1, 1.4, 2.1, 3.5	Understands what to communicate, with whom and how, in routine work situations
Get the work done	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.5, 2.6, 3.1, 3.2, 3.3, 3.4, 4.1, 4.2, 4.3, 5.1, 5.2, 5.3	- Makes routine decisions and implements standard procedures for routine tasks - Accepts responsibility for addressing less predictable problems and initiates standard procedures in response, applying problem solving processes - Uses familiar digital technologies and systems to control equipment, access information, enter data and save files

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICPPRN395 Set up and produce 3D print	Not applicable	New unit	No equivalent unit

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a74b7a0f-a253-47e3-8be0-5d426e24131d>

Assessment Requirements for ICPPRN395 Set up and produce 3D print

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Performance Evidence

Evidence of the ability to:

- communicate with client to ascertain needs
- interpret specifications and confirm client requirements for a three-dimensional (3D) printed object
- prepare data files, printer and materials to suit the requirements of print job
- use a 3D printer to produce a 3D object that meets client specifications
- prepare, operate and shut down a 3D printer according to manufacturer's safety and organisational requirements.

Note: If a specific volume or frequency is not stated, then evidence must be provided at least once.

Knowledge Evidence

To complete the unit requirements safely and effectively, the individual must:

- describe the features of common 3D printers including:
 - files types used
 - level of precision
 - basic operation
 - common applications
 - hazards associated with use
 - construction materials
 - construction technology
- describe the impact that the file type and graphics quality has on the output of the printed object
- identify and describe the printer parameters including:
 - scale and build platform size
 - number of models to output

- print speed
- list and describe work health and safety (WHS) considerations for consumables used in current 3D printers
- list and describe WHS requirements for working with technologies currently used for 3D printing
- explain the purpose and process for using and safely removing structure supports in 3D printing
- describe the steps in cleaning a 3D object.

Assessment Conditions

Gather evidence to demonstrate consistent performance in conditions that are safe and replicate the workplace. Noise levels, production flow, interruptions and time variances must be typical of those experienced in the printing and graphic arts field of work and include access to:

- 3D printer and manufacturers' operating procedures
- 3D printer ready files
- consumables necessary to print 3D models
- relevant personal protective equipment.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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