



Australian Government

ICPPTD302 Set up and produce 3D prints

Release: 1

ICPPTD302 Set up and produce 3D prints

Modification History

Release	Comments
Release 1	This version first released with ICP Printing and Graphic Arts Training Package Version 3.0.

Application

This unit describes the skills and knowledge required to produce three-dimensional (3D) objects for internal and external clients using a 3D printer.

It applies to individuals employed in a range of industry sectors who use 3D files and scanning data to produce 3D objects for a range of applications.

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

Unit Sector

Three-Dimensional 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. Identify the print requirements	1.1 Determine object requirements against client specifications and confirm with client 1.2 Evaluate available printer and materials to determine preferred options to meet client specifications 1.3 Calculate print construction time and cost and obtain client approval to proceed with preferred options 1.4 Upload data files into the printer software and check 3D model to ensure it meets specifications 1.5 Assess quality of data file and discuss possible adjustments with client 1.6 Adjust file as required and save in required printer format

ELEMENT	PERFORMANCE CRITERIA
2. Prepare the 3D printer	2.1 Select personal protective equipment (PPE) and fit in accordance with work health and safety (WHS) procedures 2.2 Conduct pre start checks on the 3D printer to ensure correct operation according to manufacturer operating procedures 2.3 Adjust printer settings for specified tolerances and in accordance with client specifications 2.4 Load printer with specified construction material in accordance with client specifications 2.5 Install and prepare printer build platform according to manufacturer operating procedures
3. Operate and monitor the 3D printer	3.1 Operate printer in accordance with manufacturer operating procedures and WHS procedures 3.2 Check sensor displays and readings to ensure that they remain within the correct operating parameters specified in the manufacturer operating procedures 3.3 Monitor printing process to check that object is forming as per client specifications, and adjust as necessary 3.4 Monitor consumables and recharge as required 3.5 Report errors and faults in operation to relevant personnel for maintenance or repair
4. Remove and prepare model for client	4.1 Remove printed 3D object from the printer bed according to manufacturer operating procedures 4.2 Remove support framework using appropriate tools, chemicals and PPE, and according to manufacturer operating procedures 4.3 Clean and prepare 3D object in accordance with client specifications
5. Reset printer ready for next job or shutdown	5.1 Clean printer and worksite in accordance with organisational policies and procedures and manufacturer operating procedures after each print 5.2 Determine reset or shutdown requirements based on print queue, and reset or shutdown printer according to organisational and manufacturer operating procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	Analyses graphics files and other documentation to determine 3D printing requirements
Writing	Names data files according to specified naming conventions
Oral communication	- Participates in verbal exchanges using active listening and questioning to convey and clarify printing information - Presents complex information using clear and persuasive language, and appropriate tone and pace for the audience and purpose
Numeracy	- 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	- Understands roles and responsibilities for tasks and makes basic decisions on work completion parameters - Complies with organisational and manufacturer procedures and in accordance with work health and safety (WHS) procedures
Interact with others	Understands what to communicate, with whom and how, in routine work situations
Get the work done	- 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
ICPPTD302 Set up and produce 3D print	ICPPRN395 Set up and produce 3D print	Updates to elements, performance criteria and assessment requirements	Not equivalent

Links

Companion Volume Implementation Guides are available from VETNet -

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

Assessment Requirements for ICPPTD302 Set up and produce 3D prints

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Performance Evidence

The candidate must demonstrate they can perform the following according to the standards defined in the elements, performance criteria and foundation skills of this unit.

The candidate must demonstrate the ability to produce at least two 3D prints in accordance with work health and safety requirements and workplace procedures to meet required outcomes. This includes demonstrating the ability to:

- communicate with client to identify 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
- prepare, operate and shut down a 3D printer according to manufacturer and organisational requirements.

Knowledge Evidence

The candidate must be able to demonstrate the following knowledge to effectively complete the tasks outlined in the elements and performance criteria of this unit, and to manage tasks in the context of the work role:

- features of common 3D printers including:
 - files types used
 - level of precision
 - basic operation
 - common applications
 - hazards associated with use
 - construction materials
 - printing technologies
- features of common materials for 3D prints including:
 - properties
 - performance

- durability
- cost
- required processing time
- post processing required
- colour quality
- types of post processing including:
 - curing
 - sanding
 - spray painting
 - gluing
 - assembling
 - inserting threads
- the impact that the file type and graphics quality has on the output of the printed object
- printer parameters including:
 - scale and build platform size
 - number of models to output
 - print speed
- work health and safety (WHS) considerations for consumables used in current 3D printers
- work health and safety (WHS) requirements for working with technologies currently used for 3D printing
- purpose and process for using and safely removing structure supports in 3D printing
- steps in cleaning a 3D object
- intellectual property and copyright laws and requirements in relation to 3D printing.
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Assessment Conditions

Assessment must be conducted in a safe environment where evidence gathered demonstrates consistent performance. 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:

- a 3D printer
- organisational and manufacturer operating procedures
- 3D printer ready files
- consumables necessary to print 3D models
- relevant personal protective equipment (PPE).

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

Links

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