



Australian Government

ICPPRP495 Manipulate 3D graphics files in preparation for 3D printing

Release: 1

ICPPRP495 Manipulate 3D graphics files in preparation for 3D printing

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 assess and rectify manifold errors and convert graphics files to a usable format for three-dimensional (3D) printing.

It applies to individuals with higher technical skills in 3D printing technologies who provide 3D printing services to internal or external clients.

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

Unit Sector

Pre-Press

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. Assess image quality	1.1 Graphics file is received and requirements for precision, quality and materials are determined from specifications and confirmed with client 1.2 Graphics file is assessed to select software required to perform adjustments 1.3 File is opened and faults, imperfections and manifold errors are identified against client specifications 1.4 Time and cost of work required to rectify identified faults, imperfections and errors are calculated 1.5 Client is informed of work requirements and approval obtained for planned work

ELEMENT	PERFORMANCE CRITERIA
2. Prepare a precision 3D print file	2.1 File is manipulated to remove imperfections and manifold errors 2.2 Output file is prepared according to specifications 2.3 Graphics file quality is reviewed with client and sign off is obtained 2.4 File is saved in a format appropriate for 3D printing

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, 1.3, 2.2	Analyses graphic files and specifications to determine requirements
Writing	2.2	Names data files using appropriate naming convention
Oral communication	1.1, 1.5, 2.3	Presents complex information using clear and convincing language, tone and pace appropriate for the audience and purpose
Numeracy	1.4, 2.1, 2.2	- Performs mathematical calculations appropriate to graphics software to ensure accuracy, scale and tolerances are being met - Estimates works requirements
Interact with others	1.1, 1.5, 2.3	Understands what to communicate, with whom and how, in routine work situations
Get the work done	1.1-1.5, 2.1-2.4	- Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with client - Uses problem solving techniques to evaluate errors and manipulate graphics images - Uses digital technologies and applications to manage and manipulate data

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICPPRP495 Manipulate 3D graphics files in preparation for 3D printing	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 ICPPRP495 Manipulate 3D graphics files in preparation for 3D printing

Modification History

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

Performance Evidence

Evidence of the ability to:

- communicate with client to ascertain needs
- confirm client requirements for three-dimensional (3D) print output
- determine work requirements and obtain client approvals
- recognise faults, imperfections and manifold errors in 3D printer files
- use software to rectify errors in 3D printer files
- save files in required format.

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 common manifold errors in 3D printer graphics, including the effect on:
 - proposed printed material
 - printing technology
 - wall thickness
 - file resolution limits
 - conversion between software
 - support structure
- explain the relationship between 3D graphics modelling software and 3D graphics image software, including:
 - file types
 - function of the software
 - main image editing tools
 - scale and units

- describe “Cartesian coordinate system” and how it relates to 3D graphics file manipulation
- describe the purpose of “slicing” in the preparation of G-Code for 3D object build
- describe the effect of setting resolution and deposition thickness in 3D graphics on 3D print output quality.

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 **pre-media** field of work and include access to:

- a range of graphics model files and graphics image files with errors
- a computer with industry-standard 3D graphics software packages
- a 3D printer or 3D printer specifications.

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

Links

Companion Volume implementation guides are found in VETNet -

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