



Australian Government

Department of Education, Employment and Workplace Relations

CUFANM401A Prepare 3D digital models for production

Revision Number: 1

CUFANM401A Prepare 3D digital models for production

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to prepare 3D digital models for a range of contexts. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.
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Application of the Unit

Application of the unit	This unit requires the application of 3D digital modelling skills to prepare 3D models (including character models) to a high level of finish so they are ready for use in animations, high-end games, virtual worlds or specialist digital resource materials in areas such as medicine, architecture, engineering and aeronautics. On small-scale productions, modellers also rig, build textures and create lighting. On larger projects, they may be required to liaise with riggers, texture and lighting artists. Even though work at this level is undertaken with minimum supervision, modellers are members of a production team and close collaboration with other team members is essential, as is an ability to deliver on schedule and to work under pressure. As they develop their skills and interests, modellers may concentrate on different areas, such as characters, objects, environments and special effects. Aspects of these skills are covered in: • CUFANM402A Create digital visual effects • CUFANM501A Create 3D digital character animation • CUFANM502A Create 3D digital environments.
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units	• CUFANM310A Create 3D digital models

Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Clarify work requirements	1. With reference to production documentation, clarify requirements and purpose for 3D digital models 2. In consultation with relevant personnel, clarify work flow sequences to ensure that production schedule deadlines are met 3. Select software that best suits the type of production and delivery platform for which 3D digital models are being prepared 4. Gather and analyse reference material to help with visualisation of final models
Prepare 3D models	5. Build and modify shaders to achieve required outcome 6. Apply texture coordinates or UV mapping as required 7. Paint required texture maps 8. Use appropriate lighting techniques to light the 3D models as required 9. Rig 3D models as required, ensuring that controls are logical and easy to use, and that rigs are robust and perform to specifications 10. Set up model deformations as required 11. Use scripting language as required to enhance the functionality of rigs 12. Create morph targets or blend shapes as required
Finalise 3D digital models	13. Test models to identify faults, and adjust as required 14. Submit final models to relevant personnel by agreed deadlines 15. Make back-up copies in accordance with enterprise procedures 16. Complete workplace documentation as required 17. Render final models as required 18. Review process of constructing 3D digital models and note areas for future improvement

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- communication, teamwork and literacy skills sufficient to:
 - interpret and clarify written or verbal instructions
 - work collaboratively with other team members
 - respond constructively to feedback received from other team members
 - complete workplace documentation
- technical skills sufficient to:
 - use the full range of features of industry-current software applications to prepare 3D digital models to specifications
 - follow design reference accurately and work in a range of styles
 - manage files and directories using standard naming conventions and version control protocols
 - make back-up copies of files on a continuous basis and store appropriately
- initiative and creativity in the context of:
 - visualising and modelling 3D characters, props and environments to a high level of finish
 - analysing and solving problems as they arise during the modelling process
- self-management, learning and planning skills sufficient to:
 - prioritise work tasks
 - meet deadlines
 - continuously improve skills and knowledge by keeping up to date with industry developments and new software features
 - seek expert assistance as required

Required knowledge

- industry knowledge, including:
 - roles and responsibilities of project team members in the relevant industry sector
 - sound understanding of the relationship between the technical and creative aspects and requirements of productions in which 3D digital models are used
 - issues and challenges that arise in the context of preparing 3D digital models
- well-developed drawing skills, including use of light and shadow
- good understanding of anatomy
- modelling techniques with polygons and NURBS
- strong sense of scale, form, weight and volume
- strong understanding of light, colour, composition and mood

REQUIRED SKILLS AND KNOWLEDGE

- technical parameters of various platforms and how these impact on the process of preparing 3D digital models
- OHS standards as they relate to working for periods of time on computers

Evidence Guide

EVIDENCE GUIDE

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Critical aspects for assessment and evidence required to demonstrate competency in this unit

Evidence of the following is essential:

- 3D digital models created to a high level of finish that:
 - are robust and perform to specifications
 - demonstrate attention to detail
 - meet design and aesthetic requirements
- collaborative approach to work
- ability to meet deadlines.

Context of and specific resources for assessment

Assessment must ensure:

- access to a selection of industry-current software as listed in the range statement
- access to simulated or real production situations that require the preparation of 3D digital models
- access to appropriate learning and assessment support when required
- use of culturally appropriate processes and techniques appropriate to the language and literacy capacity of learners and the work being performed.

Method of assessment

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:

- direct questioning combined with review of portfolios of evidence and third-party workplace reports of on-the-job performance
- evaluation of a range of 3D digital models prepared by the candidate to determine ability to create models in a range of styles
- written or verbal questioning to test knowledge as listed in the required skills and knowledge section of this unit.

Guidance information for assessment

Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:

EVIDENCE GUIDE

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| | <ul style="list-style-type: none">• BSBCRT402A Collaborate in a creative process• CUFANM402A Create digital visual effects• CUFANM501A Create 3D digital character animation• CUFANM502A Create 3D digital environments. |
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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Production documentation may include:

- animatics
- brief
- storyboard
- technical specifications.

Requirements may include:

- assets for integration
- collaboration with other team members
- creative expectations
- design specifications
- output format
- technical specifications
- timelines.

Purpose of 3D digital models may be for:

- animations
- digital simulations, e.g.:
 - architectural models
 - e-learning resource
 - demonstration of processes and procedures.

Relevant personnel may include:

- 3D designer or concept artist
- 3D modeller
- art director
- director
- head of department
- matte painter
- producer
- project manager
- storyboard artist
- supervisor
- technical director
- technical/specialist personnel.

Software may include:

- graphics, e.g.
 - Illustrator
 - Photoshop
 - 3D

RANGE STATEMENT	
	• 3D Studio Max • Maya • Softimage.
<i>Delivery platform</i> may include:	• broadcast television • CD • DVD • film • games console • internet • kiosk • mobile phone • mobile phone or other digital devices • personal digital assistant (PDA) • video.
<i>Reference material</i> may include:	• books • concept drawings and designs • direct observation of actions to be simulated in 3D models • maquette • real objects on which models are to be based • still images • videos.
<i>Application of texture coordinates</i> involves:	• efficient use of texture space • logical layout to facilitate ease of painting textures • minimal texture distortion • minimal texture seams.
<i>Texture maps</i> may include:	• bump • colour • normal • reflection • specular • transparency.
<i>Lighting techniques</i> may include:	• global illumination • image-based lighting • radiosity • simple lighting set-ups • vertex lighting.
<i>Model deformations</i> may include:	• corrective morph targets

RANGE STATEMENT	
	• muscle simulations • skinning of model to rig • weighting of vertices • wrap deformers.
<i>Scripting languages</i> may include:	• MAX • MEL • Python.

Unit Sector(s)

Unit sector	
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Competency field

Competency field	Visual communication - animation and digital effects
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Co-requisite units

Co-requisite units		