



Australian Government

Department of Education, Employment and Workplace Relations

ICAGAM413A Design and create 3-D digital models

Release: 1

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Modification History

Release	Comments
Release 1	This Unit first released with <i>ICA11 Information and Communications Technology Training Package version 1.0</i>

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to design and create 3-D models.

Application of the Unit

The unit applies to concept artists, games designers, games programmers, animators and other personnel working in the game development industry.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement but users should confirm requirements with the relevant federal, state or territory authority.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Element	Performance Criteria
<i>Elements describe the essential outcomes of a unit of competency.</i>	<i>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.</i>

Elements and Performance Criteria

1. Clarify work requirements	1.1 Clarify requirements and purpose for design and creation of 3-D digital models, with reference to production documentation 1.2 Clarify work flow sequences to ensure that production schedule deadlines are met with relevant personnel 1.3 Select software that best suits the type of production and delivery platform for which 3-D digital models are being designed and created 1.4 Gather and analyse reference materials to help with design and visualisation of 3-D models
2. Design 3-D digital models	2.1 Design and sketch concept drafts of 3-D model 2.2 Create concept art of 3-D model 2.3 Create prototypes of 3-D model
3. Create 3-D digital models	3.1 Use software features to block out models to determine correct proportions related to reference materials 3.2 Manipulate software features to apply basic lighting and shaders as required 3.3 Ensure that models' topology allows appropriate deformation, as required 3.4 Progressively refine and check integrity of models until they meet design requirements 3.5 Submit models to relevant personnel for comment on whether production requirements have been met and make final adjustments as required 3.6 Render and output models in required format and submit to relevant personnel by agreed deadlines 3.7 Make backup copies of files and complete workplace documentation according to enterprise procedures

Required Skills and Knowledge

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

Required skills

- communication, teamwork and literacy skills to:
 - complete workplace documentation
 - interpret and clarify written or verbal instructions
 - respond constructively to feedback received from other team members
 - work as a member of a production team, both independently on assignment and under direction
- initiative and creativity skills to design, visualise and create 3-D digital models of a range of inanimate objects
- self-management and planning skills to:
 - meet deadlines
 - prioritise work tasks
 - seek expert assistance when problems arise
- technical skills to:
 - make backup copies of files and store appropriately
 - manage files and directories using standard naming conventions and version control protocols
 - use industry-current software applications to design and create 3-D models to specifications.

Required knowledge

- 3-D digital model design techniques
- 3-D digital modelling techniques
- basic knowledge of the stages in the production process from initial design through to finished product
- common issues and challenges that arise in the context of designing and creating 3-D digital models
- features of a range of delivery platforms
- geometry as it applies to the design and creation of realistic 3-D digital models
- OHS standards as they relate to working for periods of time on computers
- roles and responsibilities of project team members in the relevant industry sector
- scale, form, weight and volume.

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 ability to: - design and create 3-D digital models that: - demonstrate efficient use of geometry and attention to detail - meet creation design parameters - work collaboratively with development team and meet deadlines.
Context of and specific resources for assessment	Assessment must ensure access to: - computer hardware, software, games engines and file storage - copyright and intellectual property legislation - OHS legislation and enterprise policy - appropriate learning and assessment support when required - modified equipment for people with special needs.
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: - evaluation of work samples or simulated workplace activities - verbal or written questioning of the candidate's knowledge of the stages in the production process from initial design through to finished product - analysis of fault-finding exercises - evaluation of reports and logbooks.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, where appropriate. Assessment processes and techniques must be culturally appropriate, and suitable to the communication skill level, language, literacy and numeracy capacity of the candidate and the work being performed. Indigenous people and other people from a non-English speaking background may need additional support. In cases where practical assessment is used it should be combined

	with targeted questioning to assess required knowledge.
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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.

Requirements may include:	• assets for integration • collaboration with other team members • creative expectations • design specifications • output format • technical specifications • time lines.
Purpose of 3-D digital models may include:	• animations • digital simulations: • architectural models • demonstration of processes and procedures • e-learning resources.
Production documentation may include:	• animatics • brief • storyboard • technical specifications.
Production may include:	• animated productions • commercials • digital media products: • e-learning resources • games • simulations • virtual worlds or environments • documentaries • feature films • filmed events or performances • music video • short films • television productions.
Relevant personnel may include:	• 3-D designer or concept artist • 3-D modeller • art director • director

	• head of department • matte painter • producer • project manager • storyboard artist • supervisor • technical director • other technical and specialist personnel.
Software may include:	• 3-D: • 3-D Studio Max • Maya • Softimage • graphics: • Illustrator • Photoshop.
Delivery platform may include:	• broadcast television • CD • DVD • film • internet • kiosk • mobile phone • personal digital assistant (PDA) • other digital devices.
Reference materials may include:	• books • concept drawings and designs • direct observation of actions to be simulated in 3-D models • real object on which models are to be based • still images • videos.
Progressively refine may relate to:	• achieving required shape • achieving required topology.
Integrity may include checking aspects of:	• double faces • isolated vertices • pivot points • resetting transform • scale of models relative to other components in final sequences.
Format may include:	• AVI • IFF

	• JPEG • MPEG • PNG • Quicktime • Targa • TIFF.
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Unit Sector(s)

Game development