



Australian Government

Department of Education, Employment and Workplace Relations

ICAGAM526A Create complex 3-D characters for games

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 create complex 3-D characters for games.

Application of the Unit

This unit applies to concept artists, game 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 Identify design requirements based on a <i>project brief and documents</i> 1.2 Using the design requirements, conceptualise appropriate characters for the <i>game environments, design, level specifications</i> and <i>genre</i> 1.3 Gather and analyse <i>reference materials</i> to help with design and visualisation of 3-D character models 1.4 Fill in any missing requirements
2. Conceptualise 3-D character design	2.1 Document design decisions that are made before and during the design conceptualisation 2.2 Outline the key attributes for the character 2.3 Discuss <i>design considerations</i> and generate <i>concept art</i> for 3-D characters
3. Identify software tools that can be used to create 3-D characters	3.1 Identify texturing tools, including <i>painting, shading and texturing software</i> and <i>3-D modelling tools</i>
4. Create complex 3-D characters	4.1 Create base 3-D character models 4.2 Refine and polish the character models to a near finalised state 4.3 Create and map textures to apply to the 3-D character models 4.4 Refine the textures and apply <i>shaders</i> 4.5 Check integrity and modify the 3-D characters until they meet design requirements 4.6 Present model to relevant personnel
5. Present the finished 3-D characters to relevant personnel	5.1 Present the finished 3-D characters to relevant <i>personnel</i> 5.2 State how the design decisions have met the 3-D character's design requirements

Required Skills and Knowledge

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

Required skills

- analytical skills to:
 - interpret briefs, work instructions, and technical and conceptual information
 - analyse documentation and images to inform design of environment specifications
- initiative and enterprise skills to visualise and develop concepts
- communication skills to:
 - check and confirm design requirements
 - collect, interpret and communicate in visual and written forms effectively for various audiences, including engineers and artists
 - communicate complex designs in a structured format drawn from industry standards, styles and techniques
 - communicate technical requirements related to software development, graphics requirements and code development to supervisors and other team members
 - contribute to and work in a collaborative team
 - give and receive constructive feedback
 - provide practical advice, support and feedback to colleagues and management
 - realise a unified game-play vision
 - translate design requirements into specifications
- planning and organisational skills to:
 - appropriately refer decisions to a higher project authority for review and endorsement
 - delegate tasks and responsibility appropriately
 - establish clear roles and goals to achieve required game development outcomes
 - meet project deadlines
 - organise equipment and resources to achieve required outcomes
 - organise own time to meet milestones
 - prioritise work and meet critical milestones and deadlines
- problem-solving skills to recognise and address potential quality issues and problems at design development stage
- research skills to undertake practical, technical and desktop research into design requirements and software tools
- learning skills to accept peer feedback and make improvements
- technical skills to:
 - resolve basic hardware, software and other technical issues associated with game production
 - use correct file formats and archiving procedures.

Required knowledge

- budgeting and scheduling considerations for game design
- capabilities and constraints of game engines
- computer game development, including specific terminology

- current game-play hardware and software products
- human resources required in the process of creating a game and their respective skills and technology requirements
- technical constraints that hardware imposes on software development, graphics requirements, code development and creative visual design.

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: - plan and manage the design process for creating 3-D character models - incorporate design specifications and create complex 3-D character models - produce and deliver documentation showing evidence of concepts creation and design decisions.
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 candidate's work samples, such as 3-D models or simulated workplace activities - written or verbal questioning to assess candidate's knowledge of interactive 3-D environments - review of: 3-D design documents - concept art - logbooks - presentations - storyboards - textures.
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.

<i>Project brief and documents</i> may include:	• concept drawings • designer's notes • development environment description • level design document • storyboard • style and design principles • style and medium • target market information • technical design document • technical design review process.
<i>Game environments</i> may include:	• alien • fantasy • foreign • historical • naturalistic, for example: • arctic • desert • jungle • mountainous • post-apocalyptic • urban.
<i>Game design</i> may include:	• background story: • full motion video (FMV) sequence • storyboard for potential introductory • concept illustrations or graphics that enhance the comprehension of the document • design for all level missions • game mechanics • illustrations of level with all significant points of interest • introduction and overview (one page synopsis) • key selling points, including intended audience, genre and platforms • production details • scripts required for level

	• synopsis and scripts for each level • title and cover art (art must be colour and of a reasonable resolution for high quality printing) • walk through for at least one mission or level.
Level specifications may include:	• level-specific components: • allies • base building and location • cinematic, such as cut scenes • colours • enemies • graphics • health • lighting • non-player characters • resources and their harvesting • sounds and music • weapons • location • stages • transportation devices: • buttons • doors • keys • teleporters • tunnels and passageways.
Game genre may include:	• adventure • alternative reality • ancient • casino • cyberpunk • educational • edutainment • fantasy • first person shooter • flight shooter • flight simulation • futuristic • god simulation • massively multi-player online game • massively multi-player online role-playing game • medieval

	• modern • multi-player • post-apocalyptic • puzzle • racing shooter • racing simulation • real-time strategy • role-playing game • science fiction • side-scrolling shooter • single player • sports • strategy, including: • action strategy • turn-based strategy • tactical combat.
Reference materials may include:	• 3-D animations • 3-D movies • games • magazines • media • movies • people • TV shows.
Design considerations may include:	• aesthetics • cultural context • genre • resource limitations and constraints • target market.
Concept art may include:	• illustrations • models • settings • sketches • storyboards.
Painting, shading and texturing software may include:	• 3-D paint • Illustrator • Mudbox • Photoshop • Z Brush.
3-D modelling tools may include:	• 3ds Max • Blender

	• Cinema 4D • Houdini • Lightwave • Maya • Modo • XSI • Z Brush.
Shaders may include:	• Art style • Blinn-Phong • Comic • Cook-Torrance • Drawn look • Gouraud • Lambert • Oren-Nayar • Phong • Toon • Ward anisotropic.
Personnel may include:	• animators • concept artists • game-play designers • graphic designers • instructional designers • modellers • motion capture technicians • other specialist staff • other technical staff • producers • programmers • project manager • sound engineers • team members • technical director • writers.

Unit Sector(s)

Game development