Australian Government

Department of Education, Employment and Workplace Relations

ICAGAM520A Create and combine 3-D digital games and components

Release: 1

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Modification History

Release	Comments
Release 1	This Unit first released with *ICA11 Information and Communications Technology Training Package version 1.0*

Unit Descriptor

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

Application of the Unit

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

From specific reference material and established parameters, modellers or artists are called to create moderately complex compound models with current recognised industry software applicable to the animation production process.

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
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.*

Elements and Performance Criteria

1. Determine model creation requirements	1.1 Analyse design requirements and ***production documentation*** 1.2 Select ***3-D modelling software tools*** that best suit the type of production for which ***3-D digital models*** are being created
2. Create 3-D digital models using a variety of modelling techniques	2.1 Determine most efficient modelling methodology 2.2 Apply a variety of ***modelling techniques*** 2.3 Create 3-D digital models 2.4 ***Progressively refine*** and check ***integrity*** of models
3. Combine 3-D models to create a scene	3.1 Combine 3-D models to create a scene based on design requirements 3.2 Submit models to relevant ***personnel*** for comment on whether production ***requirements*** have been met and make final adjustments if required
4. Render 3-D digital models using appropriate render engine	4.1 Test rendering scene and adjust settings 4.2 Render final 3-D scene 4.3 Submit final model renders to relevant personnel
5. Back up work	5.1 Make backup copies of files 5.2 Complete workplace documentation according to predetermined procedures

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 implementation of game specifications
- 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 clearly using speech and text
  - communicate complex designs in a structured format drawn from industry standards, styles and techniques
  - communicate technical requirements related to graphics requirements to supervisors and other team members
  - provide practical advice, support and feedback to colleagues and management
  - translate design requirements into specifications
- initiative and enterprise skills to exercise a high level of creative ingenuity in 3-D design and innovation
- literacy and numeracy skills to develop 3-D design and technical design documents
- planning and organisational skills to:
  - refer decisions to a higher project authority for review and endorsement
  - balance talent, experience and budget
  - 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
- problem-solving skills to recognise and address potential quality issues and problems at design development stage
- technical skills to:
  - use correct file formats and archiving procedures
  - resolve basic hardware, software and other technical issues associated with game production
  - use reference material
  - use storyboard and script production.

Required knowledge

- basic knowledge of 3-D software interfaces
- anatomy and physical movement
- budgeting and scheduling considerations for game design
- capabilities and constraints of game engines

- client communication
- computer game development, including specific terminology
- current game-play hardware and software products
- environmental impact and sustainability considerations
- graph curve editor
- human resources required in the process of creating a game and their respective skills and technology requirements
- OHS requirements for:
  - electrical safety
  - ergonomics
- physical attributes to create effects, such as weight and anticipation
- risk and critical path management
- scheduling production components
- shading and texturing
- techniques for applying concept development skills
- techniques for applying concept visualisation skills
- time management
- transfer methodology, e.g. rotoscope, hand key and motion capture.

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: • create and combine 3-D components to build a scene • produce final render of the scene.
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: • review of the nominated techniques applied to selected subject matter • direct observation of the candidate using 3-D modelling software • review of work activities that show research and reference sourcing to gain best modelling effect • review of written and verbal reports or documentation showing modelling plan • evaluation of portfolios of evidence • evaluation of 3-D scene render.
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.

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 • concept art • storyboard • technical specifications.
3-D modelling software tools may include:	• 3ds Max • Blender • Cinema 4D • Houdini • Lightwave • Maya • Modo • XSI • ZBrush.
3-D digital models may include:	• any 3-D composite models within the used 3-D software space.
Modelling techniques may include:	• Array • Boolean • Cloning • Connect object • Extrude • Instance • Lathe • Loft • NURB • Sweep • Symmetry.
Progressively refine may include:	• achieving required object topology.
Integrity may include:	• combine • scale of models relative to other components in final required shape • transform.

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.
Requirements may include:	• assets for integration • collaboration with other team members • creative expectations • design specifications • output format • technical specifications • time lines.

Unit Sector(s)

Game development