Australian Government

Department of Education, Employment and Workplace Relations

CUFDIG507A Design digital simulations

Revision Number: 1

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

CUFDIG507A Design digital simulations

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to design digital simulations.
	No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

| Application of the unit | The range of digital simulations covered in this unit is broad, and could include virtual world environments for architecture; virtual instruments and equipment for science and engineering; or natural and technical processes and procedures in medicine, conservation and manufacturing.

As these simulations are based on real world environments and processes, designers need to work closely with experts in the field to understand the dynamics of the processes and to be able to model these in a virtual environment.

The unit also requires working collaboratively with programmers and software authors to ensure the simulation can be technically achieved.

As the application for simulation is broad, including demonstration and training, this unit relates to other design units, including:

- CUFDIG503A Design e-learning resources
- CUFDIG504A Design games. |
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

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.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Identify project requirements	1. Confirm objectives and desired outcomes of briefs in consultation with ***relevant personnel***
	2. Identify target audience and determine format and ***delivery platform*** of simulations through discussion with relevant personnel
Research and plan approach	3. Investigate fully the ***real world environment*** that is to be simulated
	4. Obtain designs, plans and other information that may assist in modelling the real world environment
	5. Determine the ***performance objectives***, task complexity and required levels of user skill
	6. Determine the required depth of physical and functional fidelity, taking into account ***production requirements***
	7. Research and select appropriate simulation ***authoring tools***
	8. Discuss ideas and collaborate, as required, with relevant personnel to ensure contribution of a range of ideas and creative solutions
Draft simulation design documents	9. Identify the ***processes*** that determine the functional behaviour and specify how this behaviour is to be represented by ***control objects***
	10. Define the underlying functionality in a model that specifies the essential settings, states, conditions and parameters
	11. Specify the ***user interface controls*** that enable users to interact with simulations
	12. Identify critical impacts, alerts or costs for incorrect user operation
	13. Specify positive and negative user feedback
	14. Specify the sequencing of levels of difficulty
	15. Present draft ***simulation design documents*** for discussion with and feedback from other team members
Finalise simulation design documents	16. Review designs against required project outcomes and performance objectives
	17. Review designs to ensure they meet creative, technical and legislative requirements
	18. Adjust designs as necessary after discussions with relevant personnel and incorporating user feedback
	19. Save and archive user interface controls for other

ELEMENT	PERFORMANCE CRITERIA
	projects

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 project briefs
  - establish rapport with clients
  - work collaboratively in a team environment to find the best design solutions
  - clearly and concisely document specifications for the design of the digital simulation
- initiative and enterprise in the context of:
  - generating ideas for the design of digital simulations that meet the specified performance objectives
  - thinking laterally when developing ideas
  - maintaining design integrity
- technical skills sufficient to:
  - create storyboards, state-charts and other diagrams to specify the architecture and navigation of digital simulations
  - design simulations that represent a real world environment to the required level of fidelity
- self-management skills sufficient to:
  - meet deadlines
  - provide appropriate and timely documentation

Required knowledge

- industry knowledge, including:
  - roles and responsibilities of project team members, e.g. designers, content creators, information architects, programmers and coders
  - issues and challenges that arise in the context of designing and developing digital simulations
- typical formats and techniques for documenting the design of digital simulations
- OHS standards as they relate to working for periods of time on computers
- way in which algorithms, laws, rules and mathematical formulas can represent real world processes
- intellectual property rights and copyright clearance procedures

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: • design specifications for digital simulations that: • are well documented and clearly presented • meet performance requirements • are technically feasible • ability to work effectively as a member of a design team.
Context of and specific resources for assessment	Assessment must ensure: • practical demonstration of skills through the design of at least two digital simulations • access to briefs for digital simulations on which designs can be based • 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 digital simulation designs documented by the candidate and of their quality in terms of meeting performance requirements • written or oral questioning to test knowledge as listed in the required skills and knowledge section of this unit • case studies to assess ability to develop digital simulations for a range of real world environments.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended,

EVIDENCE GUIDE	
	for example:
	• CUFDIG503A Design e-learning resources
	• CUFDIG504A Design games
	• CUFDIG506A Design interaction.

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.

Relevant personnel may include:	• art director • client • designer • expert • graphic artist • head of department • programmer • publisher • script writer • software engineer • other technical and creative staff.
Delivery platforms may include:	• CD/DVD • games console • internet • mobile phone • personal digital assistant (PDA) • other wireless/mobile devices.
Real world environments may include:	• device • equipment • machine • natural habitat • procedure • process • social environment • spatial environment • system • tool.
Performance objectives may include:	• control • dexterity • judgement • knowledge • memory

RANGE STATEMENT	
	• perception • proficiency • recall • reflection • speed and accuracy of decision making and problem solving • understanding.
Production requirements may include:	• budget • schedules • staff expertise • timelines.

Authoring tools may include:	• authoring software, such as:
	   • Dreamweaver
	   • GoLive
	   • Contribute
	   • Breeze
	   • Captivate
	   • Authorware
	   • Flash
	   • Director
	   • PageMill
	   • RoboDemo
	   • simulation software, such as LabView
	• scripting using languages, such as:
	   • CC++
	   • Java
	   • ActionScript
	   • Lingo.

Processes may include:	• astrological • biological • chemical • electrical • environmental • mechanical • mental • physical • social.
Control objects may include:	• algorithms • forces

RANGE STATEMENT	
	• laws • mathematical formulas • rules.
User interface controls may include:	• buttons • clocks • dials • gauges • handles • joysticks • keyboards • keypads • knobs • lamps • levers • meters • sliders • switches • timers • valves • wheels.
Simulation design documents may include:	• diagrams • flow charts • maps • plans • state-charts • storyboards • technical specifications • user interface mock-ups • wire frames.

Unit Sector(s)

Unit sector	

Innovation and Business Skills Australia

Competency field

Competency field	Visual communication - digital content and imaging

Co-requisite units

Co-requisite units		

Innovation and Business Skills Australia