Australian Government

Department of Education, Employment and Workplace Relations

CUVPHI514A Employ colour management in a digital imaging workplace

Release: 1

CUVPHI514A Employ colour management in a digital imaging workplace

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit describes the performance outcomes, skills and knowledge required to manage colour in a digital imaging workplace.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement.

Application of the Unit

Application of the unit

This unit applies to any digital imaging industry where digital files are captured, acquired, created, manipulated, integrated, enhanced, output, managed and archived to a variety of media in which colour accuracy is integral.

This unit requires the self-directed application of skills and knowledge to research, evaluate, plan, coordinate and manage the accuracy, consistency and integrity of colour in born digital and hybrid (digitised/scanned film or print) workflows.

This work is usually undertaken autonomously (with guidance where required).

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

The following units or demonstrated equivalence are required prior to undertaking this unit:

- CUFDIG303A Produce and prepare photo images
- CUFDIG304A Create visual design components.

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
1 **Research history and apply theory of colour in a digital imaging context**.	1.1 Identify ***colour theories*/*theory*** as it applies to the ***digital imaging context*** using appropriate ***sources of information*** and ***standards***. 1.2 Evaluate currency/credibility of information gathered and ensure research scope is sufficiently broad. 1.3 Examine how colour is created, defined and managed in contemporary ***digital imaging devices***. 1.4 Investigate the areas of capture, display, output and archive spaces in contemporary digital imaging devices where colour management is critical to the production of a ***quality product***. 1.5 Maintain accurate and comprehensive details of sources of information and standards.
2 **Identify appropriate colour management systems and strategies and apply to a workplace**.	2.1 Identify and select appropriate ***colour management systems and strategies*** for specific digital imaging devices. 2.2 Evaluate suitability of selected colour management systems and strategies in terms of relevance and cost efficiency. 2.3 Adopt and adapt selected colour management systems and strategies to digital workplace.
3 **Review and update colour management strategies**.	3.1 Review performance and assess impact of adapted colour management systems and strategies. 3.2 Develop systems to update and respond to future colour management systems and strategies as they arise from emerging technologies and workplace practices.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- research techniques sufficient to access information on colour theory and management
- literacy skills sufficient to interrogate/interpret a broad range of information on colour theory and management
- numeracy skills sufficient to understand numeric values and meaning against colour theory and how RGB, CMYK and LAB colour values are quantified
- communication skills sufficient to:
  - critique and discuss colour theory and management
  - use industry and community networks as sources of information
- critical thinking skills sufficient to identify best practice options and adopt/adapt colour management strategies
- problem solving skills sufficient to:
  - recognise and resolve workplace issues when adopting/adapting colour management systems into digital workplace
  - solve colour issues
- learning skills sufficient to seek expert advice when adopting/adapting colour management strategies
- planning and organising skills sufficient to:
  - develop strategies to respond to future colour theory and management strategies
  - document research findings clearly and concisely
  - plan integration of colour management strategies into digital workplace practice
- technology skills sufficient to coordinate the installation of colour management systems.

Required knowledge:

- colour theories/theory and their application to colour management systems
- commonly used research methodologies
- current trends and emerging technologies in colour management systems
- OHS requirements relating to computer usage.

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.

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

Evidence of the following is essential:

- ability to research colour theory and digital colour management systems/strategies
- ability to evaluate and adapt appropriate digital colour management systems/strategies
- ability to maintain and review digital colour management systems/strategies.

Context of and specific resources for assessment

Assessment must ensure:

- access to appropriate technology and sources of information to research colour theory and digital colour management systems/strategies
- access to an environment where a range of digital imaging devices and colour management systems can be applied
- access to appropriate learning and assessment support when required
- the use of culturally appropriate processes, and techniques appropriate to the oracy, language and literacy capacity of the assessee 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 by candidate
- direct observation of candidate's evaluation, adaptation and management of appropriate colour management practices and strategies
- case studies to assess candidate's ability to evaluate workplaces and their use of digital colour management practices and strategies
- problem solving activities to assess candidate's critical thinking skills.

EVIDENCE GUIDE

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

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.

Colour theories*/*theory may include:

- colour charts, including:
  - colour look-up tables (CLUTs)
  - Indexed Colour
  - Pantone Matching System
  - Web Safe Colour
- colour/light measurement:
  - Angstrom
  - candela
  - colour frequency
  - colour rendering index (CRI)
  - colour temperature
  - Kelvin
  - Lumens
  - Lux
  - Mired
  - nanometres
  - wavelength
- colour spaces, including:
  - Adobe RGB(1998)
  - Atkinson
  - Bruce RGB
  - CMYK spaces
  - ColorMatch RGB
  - Epson RGB(2001)
  - Fraser and EktaSpace
  - greyscale/grayscale spaces
  - HiFi colour spaces (e.g. Hexachrome)
  - LAB

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- ProPhoto RGB
- sRGB
- Wide Gamut RGB
- xvRGB
- xvYCC
- YCbCr

- colour synthesis (additive and subtractive colour)
- colour systems and models, including:
  - CCIC - Chamber of Commerce Colour Chart
  - CIE - Commission Internationale de l'Eclairage (Lab, Luv, XYZ)
  - Herring's Opponent processes model
  - HSL
  - HSV
  - Munsell colour atlas
  - NCS - Natural Colour System
  - Ostwald surface-colour system
  - PCCS - Practical Colour Coordinate System
  - subjective vs. objective
  - Young-Helmholtz's tri-pigments model
- colour theorists, including:
  - Isaac Newton - Opticks
  - Johann Wolfgang von Goethe - Theory of Colours
  - Michel-Eugène Chevreul - The Law of Simultaneous Colour Contrast
  - Hermann Günther Grassmann - Grassmann's Law
  - Hermann Ludwig Ferdinand von Helmholtz - Handbook of Physiological Optics
  - Ewald Hering - color opponency or opponent process theory
  - Ogden Rood - Modern Chromatics
  - Albert Munsell - Munsell Book of Color
  - Wilhelm Ostwald - Color Atlas
  - Wassily Kandinsky, Johannes Itten, Faber Birren, Josef Albers
  - Chenguang Lu - Decoding Model: A Symmetrical Zone Model of Color Vision

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- human vision
- nature of light (e.g. electromagnetic spectrum, natural light phenomena).

Digital imaging context may include:

- any digital imaging workplace where colour management is required, including:
  - designer's studio
  - digital media studio
  - film and television studio
  - photography studio
  - photoimaging lab or bureau
  - pre-press bureau.

Sources of information may include:

- discussions with industry practitioners
- electronic/print media (news, reviews, articles)
- events (industry functions, conferences, trade fairs, expositions)
- government bodies and associated publications
- industry association digital standards
- internet
- libraries/archives (text, film, video, sound, graphic)
- national/international journals (e.g. artist, computing and design journals)
- personal observations and experience
- retail/wholesale suppliers of products and services
- technical publications/reference books
- training programs, seminars, conferences, competitions, awards, exhibitions, symposiums, workshops, master classes and other professional development opportunities.

Standards may include:

- ISO 15076-1:2005 Image technology colour management - Architecture, profile format and data structure - Part 1: Based on ICC.1:2004-10 (Profile version 4.2.0.0) Image technology colour management - Architecture, profile format, and data structure
- ISO 12646:2004 Graphic technology - Displays for colour proofing - Characteristics and viewing

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	conditions • ISO 3664:2000 Viewing conditions - Graphic technology and photography • IEC 61966-9 Multimedia systems and equipment - Colour measurement and management - Part 9: Digital cameras • IEC 61966-8 Multimedia systems and equipment - Colour measurement and management - Part 8: Multimedia colour scanners • IEC 61966-7-1 Multimedia systems and equipment - Colour measurement and management - Part 7-1: Colour printers - Reflective prints - RGB inputs • IEC 61966-4 Multimedia systems and equipment - Colour measurement and management - Part 4: Equipment using liquid crystal display panels • IEC 61966-3 Multimedia systems and equipment - Colour measurement and management - Part 3: Equipment using cathode ray tubes • IEC 61966-2-1 and IEC 61966-2-1-am1 Multimedia systems and equipment - Colour measurement and management - Part 2-1: Colour management - Default RGB colour space - sRGB • IEC 61966-2-2 Multimedia systems and equipment - Colour measurement and management - Part 2-2: Colour management - Extended RGB colour space - scRGB • IEC 61966-2-4 Multimedia systems and equipment - Colour measurement and management - Part 2-4: Colour management - Extended-gamut YCC colour space for video applications - xvYCC • ISO 22028-1:2004 Photography and Graphic Technology - Extended colour encodings for digital image storage, manipulation and interchange - Part 1: Architecture and requirements (ISO TC42) • ISO 12234-4: Photography - Electronic still-picture imaging - Part 4: Exchangeable image file format (Exif 2.2) (ISO TC42) • IEC 61966-5 -Multimedia systems and equipment - Colour measurement and management - Part 5: Equipment using plasma display panels.
Digital imaging devices may	• cameras

RANGE STATEMENT

include:

- computers (hardware and software)
- output devices:
  - data projectors
  - desktop printers
  - film writers
  - graphic arts printers
  - imagesetters
  - lab or bureau printers
  - output to screen based display
- scanners
- self-contained capture backs (microscopes and telescopes)
- video.

Quality product may include:

- computer or game software
- digital images
- documents for output via:
  - CMYK printing presses
  - desktop printers
  - film writers
  - LED and CRT printers
  - wide format inkjet printers
- interactive sequences
- videos
- websites.

Colour management systems or strategies may include:

- calibration devices
  - colourimeters
  - devices for camera, screen, scan and output calibration
  - spectrophotometer
- profiling
  - canned and custom profile
  - colour and resolution targets for scanning and/or digital camera capture
  - device-dependent and device-independent
  - embed/apply/discard/convert profile options
  - ICC Profiles

RANGE STATEMENT

- reference cards and printer colour reference swatch books
- workplace environment:
  - air borne pollutants
  - ambient lighting
  - controlled viewing conditions
  - temperature and humidity
- WYSIWYG and closed loop system:
  - colour management policies
  - colour picker
  - colour space gamut and gamut warnings
  - dynamic range
  - gamma
  - hue and saturation
  - rendering intents
  - soft proofing
  - white and grey balance and black point.

Unit Sector(s)

Not Applicable

Competency field

Competency field Design and Visual Communication - Photoimaging