



Australian Government

UEEEEC0045 Modify digital signal processing (DSP) based sub-systems

Release: 1

UEEEEC0045 Modify digital signal processing (DSP) based sub-systems

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to modify electronic digital signal processing (DSP) based sub-systems.

It includes following design brief, applying knowledge of digital and analogue devices, interpreting device specifications, constructing prototypes, testing developed sub-system prototype operation, and documenting design and development work.

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

Pre-requisite Unit

Not applicable

Competency Field

Electronics and Communications

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Identify DSP based system modification requirements

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

1.1 Work health and safety (WHS)/occupational health and safety (OHS) processes and workplace procedures for a given work area are identified, obtained and applied

1.2 Hazards are identified, WHS/OHS risks are assessed,

		and control measures and workplace procedures are implemented in preparation for work
	1.3	Scope of proposed electronic DSP based sub-system is determined from design brief in consultation with relevant person/s
	1.4	Design development work is planned to meet scheduled timelines in consultation with persons/s involved on the worksite
	1.5	Materials and devices/components required to modify sub-system are determined on compatibility of design specifications with DSP based sub-system requirements and project budget constraints
2	Modify DSP based sub-system prototype	
	2.1	WHS/OHS risk control measures and workplace procedures are followed
	2.2	Digital and analogue elements used in DSP based systems and industry compliance standards are applied to the sub-system design
	2.3	Alternative design modifications are considered based on the design brief
	2.4	Safety, functional and budget considerations are incorporated in the design
	2.5	Prototype devices and circuits are constructed, programmed and tested for compliance with the design brief and regulatory requirements
	2.6	Prototype faults are rectified and retested to ensure effective operation of design
	2.7	DSP based system modification is documented for submission to appropriate person/s for approval
	2.8	Solutions to unplanned situations are implemented in accordance with workplace policy
3	Obtain design approval for electronic DSP based sub-system modification	
	3.1	DSP based sub-system modification is presented and explained to client representative and/or relevant person/s
	3.2	Alterations to the design are negotiated with relevant person/s within the constraints of workplace policy, as required

- 3.3 Final sub-system design is documented and approval obtained from appropriate person/s
- 3.4 Quality of work is monitored against performance agreement and/or workplace or relevant industry standards

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UEENEEH184A Modify digital signal processing (DSP) based sub-systems.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEEEC0045 Modify digital signal processing (DSP) based sub-systems

Modification History

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - implementing workplace procedures and practices
 - using of risk control measures
- constructing digital signal processing (DSP) based sub-system prototypes
- dealing with unplanned events/situations in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- obtaining design approval for final modification
- developing the DSP sub-system design modification within the safety and functional requirements and budget limitations
- documenting action/s justification to be implemented in accordance with relevant industry standards
- documenting and presenting design effectively
- negotiating design alteration requests successfully
- planning to modify DSP based system
- reading and interpreting design brief.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- design brief specifications and work requirements
- digital and analogue devices
- digital processing steps in practical DSP applications
- DSP requirements
- DSP current industry practices and technologies, including:
 - currently available DSP support chips
 - relevant materials and devices/components

- DSP development technologies, including:
 - concept of complex signals
 - data-rate conversion
 - discrete Fourier transform (DFT) to a signal
 - DSP system
 - fast Fourier transform (FFT)
 - finite impulse response (FIR) filtering using FFT
 - high-order infinite impulse response (IIR) filter
 - IIR filter
 - modulation and de-modulation techniques
- prototype devices and circuit construction/build requirements
- relevant job safety assessments or risk mitigation processes
- relevant manufacturer specifications
- relevant industry standards, regulations, codes of practice and WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in similar workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated similar workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or simulations
- relevant and appropriate materials, tools, facilities and equipment currently used in industry
- resources that reflect current industry practices in relation to modifying DSP based systems
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

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