ICTTEN827 Produce engineering solutions

Release: 1

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Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to design and evaluate systems and networks to resolve specialised network problems.

It applies to individuals who analyse, calculate and solve complex mathematical engineering problems for advanced network systems requiring numerical simulation.

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

Unit Sector

Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Use advanced engineering mathematics for a range of complex engineering solutions	1.1 Solve mathematical functions using complex trigonometric ratios 1.2 Solve mathematical functions using manipulation of matrices and determinants 1.3 Solve trigonometric functions using operations on complex numbers 1.4 Solve complex functions using integral and differential calculus 1.5 Solve mathematical functions using ordinary differential equations (ODE) 1.6 Solve mathematical equations using Laplace transforms 1.7 Solve mathematical problems using algorithmic control structures 1.8 Produce simulated calculations in required engineering solutions 1.9 Analyse results from simulated solutions and compare to derived

ELEMENT	PERFORMANCE CRITERIA
	solutions
	1.10 Adjust variables in the calculation process required to improve engineering solutions
2. Design a simulation control system with queues	2.1 Design simple control systems using simulation software
	2.2 Design queuing systems using simulation software
	2.3 Design stochastic systems using simulation software
	2.4 Document and present all numerical software simulations for the engineering problems

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Uses a range of advanced mathematical skills to perform a variety of complex engineering solutions and interpret complex measurement data
Writing	• Prepares workplace documentation that incorporates technical language to communicate complex information clearly and effectively
Planning and organising	• Uses a mix of informal and formal processes to identify key information and issues, evaluate alternative strategies, anticipate consequences and consider implementation issues and contingencies • Takes responsibility for high-impact decisions in complex situations involving many variables and constraints
Technology	• Uses main features and functions of digital tools to complete work tasks

Unit Mapping Information

Supersedes and is equivalent to ICTTEN813 Produce engineering solutions using numerical computations and simulation.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2