1. Title	Analyze and assess performance of electrical system and equipment
2. Code	EMCUDE501A
3. Range	Master the theories of electromagnetic field, electromagnetic wave propagation, signal convertion and control circuit, electric motor, etc. with respect to electrical and mechanical engineering design; and apply the knowledge to analyze the performance of the electric motor operation, power transfer and control circuit system.
4. Level	5
5. Credit	9
6. Competency	Performance Requirements 6.1 Performance and operating principles of electric motor ♦ Understand the performance and operating principles of single-phase and three-phase induction motor, including the unbalanced operation, dynamic operation, temperature-rise simulation tests and conditioning monitoring 6.2 Analyze and assess performance of electrical system and equipment ♦ Analyze the harmonic effect of using stepped wave or PWM Inverter for power transfer of the induction motor ♦ Analyze the open-loop control and close-loop control of the motor ♦ Use suitable non-carbon brush DC motor ♦ Apply communication switching technology and mathematical models to analyze and improve the control system • Apply analogue/digital converter and digital/analogue converter to optimize the control system • Apply mathematical model to analyze and improve the control system ♦ Analyze the electromagnetic wave propagation and its effect on surrounding signals • Apply the Maxwell equation and wave equation to calculate and analyze data propagated by waves and the effect on surrounding signals • Project the wave interference and use shields to protect from it
7. Assessment Criteria	The integrated outcome requirements of this unit of competency are: (i) Capable to analyze and assess accurately and effectively the performance of an electro-electronic controlled three-phase variable voltage variable frequency heavy induction motor; and (ii) Capable to analyze accurately and effectively the interference of the current of the above-mentioned motor and its effect on surrounding signals, and advice on the improvement measures.
8. Remarks	The credit value of this unit of competency is set on the presumption that the person already possesses basic electrical knowledge.