1. Title	Design advanced and highly-efficient air-conditioning systems	
2. Code	EMACDE702A	
3. Range	Apply highly specialized technical research and scholastic skills, and make complex information analysis, planning and judgement, so as to design advanced and highly-efficient air-conditioning systems in design studios.	
4. Level	7	
5. Credit	36	
6. Competency		Performance Requirements
	6.1 Knowledge of advanced and highly-efficient air-conditioning system design	♦ Understand the factors affecting the energy consumption of air-conditioning systems, including: • Thermal conductivity of building enclosure • Outdoor meteorological parameters and psychrometric conditions • Outdoor design parameters • Performance and efficiency of various air-conditioning system equipment • Overall performance of air-conditioning systems • Ways of operation and operation management status of air-conditioning systems ♦ Understand the impact of the selection of refrigerants on environmental protection and energy saving ♦ Understand the impact of different types of refrigeration systems on energy saving ♦ Understand the working principles and selection criteria for different types of air-conditioning and refrigeration energy-saving equipment ♦ Understand various types of energy-saving methods for air-conditioning systems, including: • Energy-saving methods for air-handling units • Energy-saving methods for air-conditioning water systems • Energy-saving methods for variable air-volume air-conditioning systems • Energy-saving methods for heat recovery of air-conditioning system

	6.2 Methods and procedures of designing advanced and highly-efficient air-conditioning systems	♦ Design advanced and highly-efficient air-conditioning systems, including: • Select a reasonable design • Select the best type of air-conditioning system and air flow pattern • Select advanced and highly-efficient equipment • Design highly-efficient operation mode for the system • Design energy recovery system • Design advanced and highly-efficient CCMS of air-conditioning system
	6.3 Professionalism in designing advanced and highly-efficient air-conditioning systems	♦ Understand the legal requirements and code of practice, analyze and evaluate a wide range of information, and apply highly specialized knowledge and skills to design advanced and highly-efficient air-conditioning systems which are innovative, reliable, reasonably-priced and with good control in system operation
7. Assessment Criteria	The integrated outcome requirement of this unit of competency is: (i) Capable to apply highly specialized technical research and scholastic skills, and make complex information analysis, planning and judgement, so as to complete the design of advanced and highly-efficient air-conditioning systems which are innovative, reliable, reasonably-priced and with good control in system operation.	
8. Remarks	The credit value of this unit of competency is set on the presumption that the person already possesses professional knowledge of air-conditioning and refrigeration systems.	