Module Synopses

1. Integrated Building Management System for Energy Efficiency (IBMSEE)

The module provides an integrated system approach to understanding Building Automation and Facility Management Systems and their applications to energy efficiency for building services. It covers the system architectures, hardware and software integration, digression, communication methods, and application software of modern building automation systems. It also provides good working knowledge of how to specify, design, install, commission, operate, and maintain an Integrated Building Management System (IBMS). Application areas will include air-conditioning systems, fire detection and alarm systems, security systems and other essential building services like sanitary and domestic water systems. Hands-on training sessions, case studies and mini-projects for energy efficiency in building carried out through IBMS will also be conducted extensively.

2. Air-Conditioning, Compressed Air and Boiler Systems (ACCABS)

The module aims to provide students with an understanding of the design principles and operation of air-conditioning systems used in commercial and industrial buildings. Various types of air-conditioning systems and opportunities in energy saving for the systems will be discussed. Relevant acts and regulations covering the operation and maintenance of such systems will also be covered. Components, uses and how to enhance the performance of an industrial compressed air system will be covered. Analysing needs, potential inappropriate use, leaks, pressure drop, system control, storage, maintenance of compressed air system for peak performance, cost effectiveness, heat recovery and base-lining are also included. It also provides the general principles, construction rules and components of the boiler systems and factors that would affect the optimization of the steam boiler system

3. Power Quality and Energy System (PQES)

This module furnishes participants on the causes of power quality issues, voltage dips and their effects on sensitive process and facilities, harmonics distortion and its effects on power system equipment, mitigation methods and power quality monitoring. Participants will learn the principles of different energy resources, including stand-alone and grid connected system, how to implement fuel cell technology in a variety of applications. The module also covers lighting technology principles and efficient lighting practices. The working principles/configurations of DC, AC and Chopper drives and various application areas of electrical drives will be covered.

4. Energy Management, Appraisal and Economics (EMAE)

The objective of this module is to impart participants with the knowledge to lead an energy audit, perform energy performance diagnosis and analysis, prepare and provide sound recommendation and report. This module will identify the main energy intensive areas within a facility resulted from chillers, fans, blowers and water pumps. Thereby suggest appropriate energy conservation measures to reduce the operating cost of the facility while improving efficiency. The various ways to reduce energy cost of the facility, understanding & assessing the historical energy usage pattern, and types of audit tools instrument used

will be outlined. The module will also train the students to understand how to set up a successful energy management program. It will also address the relevant pertinent rules and impact on facilities. An overview of the New Electricity Market NEM in Singapore and students will be exposed to the fundamentals of energy economic and life cycle cost concept & calculation. The knowledge to carry out financial analysis and cost prediction for energy saving assessment will be shared through various case studies &/or application examples.