



UNIVERSITI TEKNOLOGI MARA

EPO626: SUSTAINABLE ENERGY MANAGEMENT

Course Name (English)	SUSTAINABLE ENERGY MANAGEMENT APPROVED
Course Code	EPO626
MQF Credit	3
Course Description	The course focuses on the methodology of setting up a sustainable energy management system, proper measurement and verification option.
Transferable Skills	Electrical Energy Load Management
Teaching Methodologies	Lectures, Case Study, Discussion, Presentation, Small Group Sessions , Problem-based Learning
CLO	CLO1 Demonstrate the concepts and working principle of Sustainable Energy Management System CLO2 Outline a project management structure and control to promote Sustainable Energy Management System CLO3 Analyze the performance of Energy Conservation Methods to improve Sustainable Energy Management System
Pre-Requisite Courses	No course recommendations
Topics	
1. Energy Policies and Legislation 1.1) Energy Policies in Malaysia 1.2) National Green Technology Policy 1.3) Legislation Related to Energy Management 1.4) Electricity Act and Regulation 1.5) Efficient Management of Electrical Energy Regulations 2008 1.6) Factories and Machinery Act 1967 1.7) Global & Local Energy Trends 1.8) Energy Efficiency Standard & Labelling	
2. Introduction to Sustainable Energy Management 2.1) MS ISO 50001 2.2) Definition and role of Energy Manager 2.3) Responsibilities of Energy Manager 2.4) Recommended Code of Practice for Energy Manager 2.5) Energy Price 2.6) Energy Audit	
3. Setting up a Sustainable Energy Management System 3.1) Energy Policy 3.2) Effective Energy Management Committee 3.3) Energy Efficiency Index 3.4) Energy Management Matrix 3.5) Working manual tools for Energy Management 3.6) Energy Management Working Procedures 3.7) Investment Appraisal for Energy Efficient Projects 3.8) Human resource development in Energy Management 3.9) Budget and Resource Management 3.10) Integration with other quality or standard system	
4. Measurement and Verification 4.1) Purpose and Principles of M&V 4.2) Measurement Options in IPMVP 4.3) M&V Planning 4.4) Uncertainty and Statistic	

Assessment Breakdown	%
Continuous Assessment	100.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	Related to describing the concept of Sustainable Energy management System to demonstrate the knowledge and need of Sustainable Energy Management	20%	CLO1
	Final Project	Mini Project related to design the Sustainable Energy Management for selected facilities to emphasis on design of complex engineering solution.	50%	CLO2
	Test	Test related to analyze the performance of Energy Conservation Methods to create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling that would be covered in Test and assignment.	30%	CLO3

Reading List	Recommended Text	<ul style="list-style-type: none"> Mirjana Radovanovic (Golusin), Stevan Popov, Sinisa Dodic, <i>Sustainable Energy Management</i>, 1st edition Ed., Academic Press [ISBN: 978-012415978]
	Reference Book Resources	<ul style="list-style-type: none"> Mehmet Kanoglu, Yunus A. Cengel, Dr. 2020, <i>Energy Efficiency and Management for Engineers</i>, McGraw-Hill Education [ISBN: 9781260459098] Michael Krutwig, Adrian Dumitru Tan??u 2021, <i>Energy Audits</i>, Springer Gabler [ISBN: 9783658331665] Taylor & Francis Group, <i>Solutions Manual for the Guide to Energy Management</i> [ISBN: 9788770224512] Gregor Weber 2017, <i>Sustainability and Energy Management</i>, Springer [ISBN: 9783658202224]
Article/Paper List	Reference Article/Paper Resources	<ul style="list-style-type: none"> Connor McGookin, Brian Ó Gallachóir and Edmond Byrne 2021, An innovative approach for estimating energy demand and supply to inform local energy transitions., <i>Energy</i>, vol. 229, issue C Yunyang Ye, Kathryn Hinkelman, Yingli Lou, Wangda Zuo, Gang Wang & Jian Zhang 2021, Evaluating the energy impact potential of energy efficiency measures for retrofit applications: A case study with U.S. medium office buildings., <i>Building Simulations</i>, 14
Other References	<ul style="list-style-type: none"> Website 2012 <i>Efficiency Valuation Organization, International Performance Measurement and Verification (IPMVP) Concept and Options for determining Energy and Water Savings</i> , EVO-10000 Website <i>Malaysian Standards, Energy Management Systems-Requirements with guidance for use MS-ISO 50001-2011</i> 	