



UNIVERSITI TEKNOLOGI MARA

EVT715: RENEWABLE ENERGY RESOURCES AND TECHNOLOGY

Course Name (English)	RENEWABLE ENERGY RESOURCES AND TECHNOLOGY APPROVED
Course Code	EVT715
MQF Credit	3
Course Description	This course introduces the global energy scenario and describes the inter-twining relationships between growth, energy consumption and its impact on the environment. As one sustainable solution, the concept of renewable energy (RE) resources and technologies is introduced. The RE resources and technologies are described both qualitatively and quantitatively, so students have a clear understanding of the concepts and a good grasp of selected RE technologies. Some treatment on quantitative problem-solving are covered to provide depth and appreciation of the practical use of RE technologies. The impact of RE use on the environment are elucidated and the challenges for its use are discussed.
Transferable Skills	Students will be able to formulate and solve basic problems in renewable energy.
Teaching Methodologies	Lectures, Problem Based Learning (PBL), Discussion
CLO	CLO1 Understanding of the global overview of sustainable energy CLO2 Explain the problem associated with the use of conventional energy source (i.e fossil fuels) CLO3 Describe the primary and emerging renewable energy resources and technologies CLO4 Discuss the future challenge of using renewable energy resources
Pre-Requisite Courses	No course recommendations
Topics	
1. Overview 1.1) 1.1. Introduction 1.2) 1.2. Present day energy use 1.3) 1.3. Environmental impact 1.4) 1.4. Overview of renewable energy resources	
2. Solar energy 2.1) 2.1 Introduction 2.2) 2.2 Solar-Earth-Collector geometry 2.3) 2.3 Measurements and quantities	
3. Solar thermal energy 3.1) 3.1. Introduction 3.2) 3.2. Applications and examples 3.3) 3.3. Basic principles and technology 3.4) 3.4. Basic design of systems 3.5) 3.5. Environmental impact, issues and challenges	
4. Solar photovoltaics 4.1) 4.1. Introduction 4.2) 4.2. Applications and examples 4.3) 4.3. Basic principles and technology 4.4) 4.4. Basic design of systems 4.5) 4.5. Environmental impact, issues and challenges	

5. Hydroelectricity 5.1) 5.1. Introduction 5.2) 5.2. Applications and examples 5.3) 5.3. Basic principles and technology 5.4) 5.4. Basic design of systems 5.5) 5.5. Environmental impact, issues and challenges
6. Wind energy 6.1) 6.1. Introduction 6.2) 6.2. Applications and examples 6.3) 6.3. Basic principles and technology 6.4) 6.4. Basic design of systems 6.5) 6.5. Environmental impact, issues and challenges
7. Biomass 7.1) 7.1. Introduction 7.2) 7.2. Applications and examples 7.3) 7.3. Basic principles and technology 7.4) 7.4. Basic design of systems 7.5) 7.5. Environmental impact, issues and challenges
8. Nuclear energy 8.1) 8.1. Introduction 8.2) 8.2. Applications and examples 8.3) 8.3. Basic principles and technology 8.4) 8.4. Basic design of systems 8.5) 8.5. Environmental impact, issues and challenges
9. Other 9.1) 9.1. Other RE resources and technologies 9.2) 9.2. Issues and challenges

Assessment Breakdown	%
Continuous Assessment	75.00%
Final Assessment	25.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	Team work skills on current issues of Renewable Energy Resources and Technology	25%	CLO3
	Presentation	Oral presentation on current issues of renewable energy resources and renewable energy technology	25%	CLO4
	Test	Test 1 for managerial	25%	CLO1

Reading List	Recommended Text	Boyle, G. 2012, <i>Renewable energy; power for a sustainable future</i> , 3rd Ed., Oxford University Press Oxford
	Reference Book Resources	<ul style="list-style-type: none"> • Twidell, J. and A. D. Weir 2006, <i>Renewable energy resources</i>, Taylor & Francis London • Kaltschmitt, M., W. Streicher, et al 2007, <i>Renewable energy: technology, economics, and environment</i>, Springer Verlag Berlin
Article/Paper List	This Course does not have any article/paper resources	
Other References	<ul style="list-style-type: none"> • Lecture notes Sulaiman Shaari and Nor Zaini Ikrom Zakaria 2015, <i>Lecture notes on renewable energy technology</i> 	