51056: Renewable Energy 1

Full Title:	Renewable Energy 1
Module Code:	51056
Credits:	5
Valid From:	Semester 1 - 2015/16 (September 2015)
Module Delivered in	1 programme(s)
Module Description:	no description provided

Learning Outcomes:

On successful completion of this module the learner should be able to

1. Comprehend why sustainable energy matters.
2. Evaluate the intimate connection between the economics of development, the environment and energy.
3. Differentiate between fundamental thermodynamic principles with respect to re-heating, re-generation and co-generation of energy.
4. Evaluate the technological, economic, environmental and social implications of existing traditional energy generation
5. Analyse the transmission and distribution of energy.
6. Differentiate between inflation, real prices and affordability in terms of energy investment.

Module Content & Assessment

Indicative Content
Module Content 1. Fundamental energy principles; heat; temperature; heat transfer; specific and latent heat; u-values; thermal conductivity; kinetic energy; potential energy. 2. Global warming; air pollution; economic and environmental implications; capturing and sequestering carbon emissions. 3. Energy in a sustainable future; changing patterns of energy use; energy balance within Ireland; International comparisons; Why have these patterns developed?; security and diversity of supply. 4. Fossil fuels; reserves and combustion; traditional thermal power stations; principles of heat engines; combined heat and power generation; Carnot cycle; Rankine cycle; steam turbines. 5. The National Grid; grid connections; ownership of the system; balancing supply and demand; peak demands and pumped storage; energy storage; fuel cells. 6. Energy prices; transport; domestic energy prices; Industrial energy prices; Investing in energy; balancing investment against cash flow; discounted cash flow; energy payback ratio; carbon trading.

Assessment Breakdown	%
Course Work	30.00%
End of Module Formal Examination	70.00%

Full Time

Course Work

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Marks Out Of*	*Pass Marks*	*Assessment Date*	*Duration*
Continuous Assessment	By means of practical projects, as well as visits to, and studies of, systems that are presently in operation.	None	30.00	0	0	n/a	0

No Project

No Practical

End of Module Formal Examination

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Marks Out Of*	*Pass Marks*	*Assessment Date*	*Duration*
Formal Exam	End-of-Semester Final Examination	None	70.00	0	0	End-of-Semester	0

Reassessment Requirement

A repeat examination
Reassessment of this module will consist of a repeat examination. It is possible that there will also be a requirement to be reassessed in a coursework element.

DKIT reserves the right to alter the nature and timings of assessment

Module Workload & Resources

Workload: Full Time

Workload Type	Workload Description	Hours	Frequency	Average Weekly Learner Workload
Lecture	No Description	2.00	Every Week	2.00
Practical	No Description	1.00	Every Week	1.00
Tutorial	No Description	1.00	Every Week	1.00
Directed Reading	No Description	2.50	Every Week	2.50
Independent Study	No Description	2.50	Every Week	2.50
			Total Weekly Learner Workload	9.00
			Total Weekly Contact Hours	4.00

This course has no Part Time workload.

Resources

Recommended Book Resources

Boyle, *Renewable Energy – Power for a sustainable Future*, Oxford University Press

Manwell, McGowen & Rogers, *Wind Energy Explained*, Wiley Interscience

This module does not have any article/paper resources

Other Resources

Website: *SEI*
http://www.sei.ie

Module Delivered in

Programme Code	Programme	Semester	Delivery
DK_EELES_7	Bachelor of Engineering in Electrical and Electronic Systems	5	Group Elective 3