UNIVERSITY of BRADFORD

Module Descriptor

Module Details	
Module Title	Sustainable Energy
Module Code	ENG6005-B
Academic Year	2020/1
Credits	20
School	Department of Mechanical and Energy Systems Engineering
Subject Area	Mechanical and Automotive Engineering
FHEQ Level	FHEQ Level 6
Pre-requisites	N/A
Co-requisites	N/A

Contact Hours	
Type	Hours
Online Lecture (Synchronous)	12
Online Seminar (Synchronous)	8
Online Tutorials (Synchronous)	10
Laboratories	6
Directed Study	164

Availability	
Occurrence	Location / Period
BDA	University of Bradford / Semester 2

Module Aims

The main aim of this module is to provide an understanding of the fundamental commercial and management diversity of the renewables/sustainable low-carbon technologies portfolio. The module will examine the business opportunities of low-carbon energies including the industry structure, regulatory mechanisms and technologies, energy policy and risk management.

Outline Syllabus
1) An overview of renewable and sustainable energy sources, technologies and industry structures. 2) A critical review of the energy management challenges including energy economics, energy drivers, business drivers and energy priorities. 3) Appraisal of business opportunities for players in the energy environment including corporate funding and the skills landscape. 4) An introduction to energy policy within the UK, EU and International context. 5) Case study analysis of renewable energy business opportunity appraisal and development. 6) An introduction to societal implications of sustainable energy systems including privacy (consumer usage), security (individual and national) and equity (access and cost). 7) Introduction to energy market and smart grid infrastructure.

Learning Outcomes	
Outcome Number	Description
01	Evidence comprehensive understanding of different forms of energy and the various definitions of "Sustainable" energy.
02	Critically evaluate and analyse understanding of the relevance of sustainability to the design and implementation of energy systems.
03	Evidence understanding of critical evaluation of the principal sources of primary energy in use today, their development over the past century, and the general patterns of world, regional and national energy consumption.
04	Critically review and understand the basic principles underlying the design and use of energy supply systems.
05	Understand the implication of health & safety, ethics and sustainability and articulate this in the context of sustainable energy.
06	Develop advanced skills in problem definition, problem solving techniques, group work, project management skills and technical report writing.
07	Communicate the results and conclusion on sustainable energy systems analysis

Learning, Teaching and Assessment Strategy

This module will be delivered through a combination of lectures, tutorials, seminars and software-based lab sessions. Concepts, principles & theories are explored in formal lectures and reinforced through a significant amount of laboratory based project and practical work.

A combination of learning and teaching methods involving a combination of synchronous and asynchronous lectures, tutorials and laboratories.

Portfolio of lab report, Coursework ? practical labs with results and analysis.

Summative assessment:

-A formal examination will assess the learning outcomes LO1, LO3, LO4 and LO6. The weighting of the summative exam is 50%.

-Group seminar presentation will be used to assess the application of knowledge to a given problem. The group presentation will assess LO6 and LO7 and the weighting is 20%.

-A portfolio of laboratory and reports up to approximately 3000 words and software based simulation will be used as coursework. The lab report will assess the learning outcomes LO2, LO5 and LO7 and the weighting is 30%.

Formative assessment:

-An interim portfolio of laboratory report will be assessed and feedback will be given to each student.

Mode of Assessment

Type	Method	Description	Length	Weighting
Summative	Presentation	Group Seminar Presentation	15 mins	20%
Summative	Examination - Open Book	Examination Open Book - Online	2 hour	50%
Summative	Coursework	Portfolio of laboratory write-up technical report (3000 words)	N/A	30%

Reading List

To access the reading list for this module, please visit https://bradford.rl.talis.com/index.html

Please note:
This module descriptor has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but minor changes may occur given the interval between publishing and commencement of teaching. Upon commencement of the module, students will receive a handbook with further detail about the module and any changes will be discussed and/or communicated at this point.

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