

Liverpool John Moores University

Title: ELECTRICAL POWER SYSTEMS NETWORKS
Status: Definitive
Code: **7504ENGEA** (106393)
Version Start Date: 01-08-2016

Owning School/Faculty: Maritime and Mechanical Engineering
Teaching School/Faculty: EA Technology

Team	Leader
Christian Matthews	Y

Academic Level: FHEQ7 **Credit Value:** 10 **Total Delivered Hours:** 20
Total Learning Hours: 100 **Private Study:** 80

Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	12
Tutorial	6

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS1	Examination	70	2
Essay	AS2	Case study analysis relating to regulation, legislation, industry standards and current industrial practice	30	

Aims

To give an introduction to the UK power networks industry, economics, legislation, technical frameworks and future direction.

Learning Outcomes

After completing the module the student should be able to:

- 1 Demonstrate an understanding of the structure of the industry.
- 2 Demonstrate an understanding of electricity economics, including regulation and its impact on the industry operators.
- 3 Demonstrate an understanding of the legislative regimes and licensing arrangements governing the industry.
- 4 Demonstrate an understanding of the technical standards and regulations.
- 5 Demonstrate an understanding of the changing face of power networks and how regulation is changing to deliver the UK's energy policy.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

EXAM	1	2	5
CASE STUDY ANALYSIS	2	3	4

Outline Syllabus

- *Review of the UK power industry today and the roles and responsibilities of respective parties*
 - o *Bulk Generation*
 - o *Transmission*
 - o *Distribution (including Independent Distribution Network Operators)*
 - o *Distributed Generation*
 - o *Energy Supply and Services*
- *Overview of the key interactions between parties, including*
 - o *Electricity Trading*
 - o *British Electricity Trading Transmission Arrangements (BETTA)*
 - o *NGC exit arrangements*
 - o *DUoS charging*
- *Overview of the development of regulation to 2010*
 - o *Role of Ofgem*
 - o *Network regulation up to and including DPCR4*
 - o *Markets regulation, including what Ofgem can/can't do*
- *Review of key Legislation and its implications on power asset managers*
- *Reviewing of licensing arrangements and their impact on the industry*
- *Technical standards and regulations:*
 - o *Electrical Safety Quality and Continuity Regulations (ESQCR)*
 - o *Engineering standards*
 - o *Safety, Health and Environment rules and requirements*
 - o *Development of industry standards by GB and/or EU*
- *The Changing face of Power Networks*
 - o *UK energy policy to 2020 and beyond*
 - o *How is regulation changing to facilitate this policy*
- *DPCR5*

- *RIO*
- *Electricity Market Reform proposals (including Liquidity and Energy Supply proposals)*
 - o *Impacts on Future Power Asset Management*

Learning Activities

Lectures supported by tutorials and case studies.

Notes

This M level module introduces the student to the UK power industry from generation through to the end user. It looks at the structure of the industry then explains the legislative and regulatory frameworks that govern the companies operating within the industry and how their respective business models operate. It concludes by reviewing how the industry is changing and the implications of this change for power asset management.