

Liverpool John Moores University

Title: Management of Power Systems and Networks
Status: Definitive
Code: **7007ENGEAT** (117623)
Version Start Date: 01-08-2016

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

Team	Leader
Christian Matthews	Y

Academic Level: FHEQ7 **Credit Value:** 20 **Total Delivered Hours:** 38
Total Learning Hours: 200 **Private Study:** 162

Delivery Options

Course typically offered: Non Standard Year Long

Component	Contact Hours
Lecture	30
Tutorial	5

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	Exam		70	3
Essay	Essay		30	

Aims

To deliver an advanced course relating to the latest developments in the technical management of electrical power network assets, facilities and resources.

Learning Outcomes

After completing the module the student should be able to:

- 1 Propose ways in which the condition of assets in a power network can be monitored and recorded for the purposes of asset management.
- 2 Analyse ways in which the status and availability of key assets will affect the level of service of a network.
- 3 Compare and contrast the infrastructural, regulatory and managerial requirements of emerging smart grid systems with those of conventional power grid systems.
- 4 Identify and critically appraise the impact of emerging threats and technologies upon the management of power industry systems and networks.

Learning Outcomes of Assessments

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

Exam	1	2	3	4
Coursework	2	3		

Outline Syllabus

Determining the current status of assets:

Diagnostics and fault finding

Condition monitoring (In both conventional and smart grid systems)

Level of service and standard of service:

Strategies for the maintenance of quantifiable standards of service.

Strategies for changing the standard of service through managed expansion of network capacity.

Case studies on the cause and effect of blackouts.

Information Management:

Life-cycle history tracking and tracing.

Data storage and reporting.

The Smart Grid:

Concept and architecture of the smart grid

Emerging developments in the smart grid

The role of IEC TC57 – Power System Management and Associated Information Exchange. WG17 - Communications Systems for Distributed Energy Resources

Emerging threats and technologies in the power industry

The effect of geopolitical threats upon the management of existing and future power networks.

The effect of emerging technologies (renewable and micro-generation) on the management and maintenance of power networks. The networks. The social impact of emerging threats and technologies.

Learning Activities

Lectures, tutorials and private study

Notes

This module is delivered in a block release format and will require full-time attendance from all students for the duration of the scheduled delivery period.