

## Liverpool John Moores University

Title: Energy Generation and Supply  
Status: Definitive  
Code: **5511ENGSBC** (119418)  
Version Start Date: 01-08-2016

Owning School/Faculty: Maritime and Mechanical Engineering  
Teaching School/Faculty: The Sino-British College

Team	Leader
Russell English	Y

**Academic Level:** FHEQ5  
**Credit Value:** 12  
**Total Delivered Hours:** 37  
**Total Learning Hours:** 120  
**Private Study:** 83

### Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	20
Tutorial	15

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	Investigat		40	
Exam	Exam		60	2

### Aims

*This module will allow students to apply their engineering knowledge to issues related to safe energy production while understanding other considerations such as future demand for energy and availability of fuel supplies.*

### Learning Outcomes

After completing the module the student should be able to:

- 1 analyse and evaluate the risks associated with all power generation and specify criteria for safe design
- 2 explain nuclear power generation including reactor control, the nuclear fuel cycle and reprocessing option
- 3 discuss waste handling for all power generation including environmental and safety issues involved
- 4 identify future trends in the energy market and their impact on present selection of power plant

### **Learning Outcomes of Assessments**

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

Investigate Waste Handling	3			
2 hrs; 3 from 5 questions	1	2	4	

### **Outline Syllabus**

*Risk and Reliability associated with Power Generation, Adherence to International Standards of Design, Materials and Construction, Identification of critical components and estimation of critical loading e.g. earthquakes, Safety Control Systems and Back-up in case of first system failure.*

*Nuclear options, reactor types and operation. Nuclear fuel cycles, fuel production and reprocessing. Waste management, decommissioning, environmental and security issues.*

*Demand-side modeling, Deregulate versus Regulated Market, Size of fossil fuel reserves and the effect on production costs and selection of plant*

### **Learning Activities**

Delivered with a range of lectures, tutorials, and case studies.

### **Notes**

The module covers risk analysis of power generation methods so students are able to specify criteria for safe design of plant. In addition, nuclear power generation is looked at in detail. Waste handling, environmental and safety issues of plant as well as future trends in the energy market are investigated with respect to power plant selection.