

Liverpool John Moores University

Title: LIGHTING INSTALLATIONS
Status: Definitive
Code: **4609BEFDL** (123922)
Version Start Date: 01-08-2016

Owning School/Faculty: Built Environment
Teaching School/Faculty: City of Liverpool College

Team	Leader
Alfred Leung	Y

Academic Level: FHEQ4 **Credit Value:** 10 **Total Delivered Hours:** 50
Total Learning Hours: 100 **Private Study:** 50

Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	38
Tutorial	12

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	AS1	DESIGN PROJECT	100	

Aims

The aim of this module is to develop the students' understanding of the main principles and practices for the design, operation and commissioning of lighting systems in medium sized public sector, commercial or industrial buildings. The module provides students with the knowledge and skills necessary to interpret the needs and requirements of buildings and develop and evaluate a range of practical, efficient and sustainable schemes.

Learning Outcomes

After completing the module the student should be able to:

- 1 Analyse buildings, identify their electrical and lighting needs, and establish design criteria to relevant standards and legislation.
- 2 Assess daylight levels within buildings and utilise appropriate mechanisms for maximising daylight availability and distribution.
- 3 Assess the lighting requirements of complex buildings to select appropriate lighting and emergency lighting equipment.
- 4 Produce and evaluate designs for lighting and emergency lighting schemes for complex buildings.

Learning Outcomes of Assessments

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

DESIGN PROJECT	1	2	3	4
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Outline Syllabus

Requirements of specialised lighting situations. Interpretation and application of lighting design standards, publications, legislative constraints and energy targets for complex public sector commercial and industrial buildings. Co-ordination of lighting with other mechanical and electrical services.

Daylighting: Features, significance, advantages & disadvantages of daylight in buildings. Components of the daylight factor. Daylight in buildings with atria, advantages and disadvantages.

Effect of daylighting on VDU equipment. Use of sun-pipes, fibre optic systems and other techniques for increasing daylight levels and penetration into buildings.

Average daylight factors. Manual and Computer calculation/modeling of distribution of daylight in buildings. Climate based daylight modelling.

Methods of control (DALI, DSI, DimX512)

Design of general lighting systems: for complex and specialised buildings. Layout, specification and control of interior lighting. Exterior lighting, car parks and walkway lighting, integration of lighting with other services installations, integration of artificial lighting with natural day-lighting. LED luminaire technology

Design of specialised lighting systems: general for complex buildings requiring specialised lighting solutions. eg laboratories, art galleries, museums, hospitals and operating theatres, retail display, theatre, concert hall and conference lighting etc.

Specialised lighting fittings, colour correction and enhancement lighting, integration of artificial lighting with natural lighting etc. Control of lighting levels and lighting systems. Point-to-point illuminance level calculations and computer aided lighting

design modeling software

Evaluation: evaluation of viability, performance and appropriateness of proposed schemes for meeting building needs.

Emergency lighting specification and requirements: identification of current legislation and standards for emergency lighting

Design of emergency lighting schemes: escape lighting, standby lighting, lighting levels and locations, speed of operation, maintenance and testing requirements, external escape lighting, test/self test systems.

Control of emergency lighting: co-ordination of emergency lighting schemes with Other services and emergency systems.

Learning Activities

Lectures, tutorials, laboratory practical sessions

Notes

This module is a key component for those students wishing to complete the programme following an 'electrical' building services pathway. It aims to develop an understanding of the principles and processes of lighting installations in commercial and industrial buildings, emphasising the need for energy efficient, sustainable, safe, innovative design strategies whilst recognising the creative nature of lighting design.