

Liverpool John Moores University

Title: ENVIRONMENTAL SCIENCE
Status: Definitive
Code: **4015BEUG** (102737)
Version Start Date: 01-08-2011

Owning School/Faculty: Built Environment
Teaching School/Faculty: Built Environment

Team	Leader
Derek King	Y

Academic Level: FHEQ4 **Credit Value:** 12.00 **Total Delivered Hours:** 48.00
Total Learning Hours: 120 **Private Study:** 72

Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	24.000
Practical	12.000
Tutorial	12.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Test	AS1	In class assessment	50.0	
Report	AS2	Assignment	50.0	

Aims

To provide an introduction to steady state heat transmission, acoustics and light in order to evaluate building, thermal, acoustic and visual performance and its influence upon energy consumption, condensation incidences, human comfort and the environment

Learning Outcomes

After completing the module the student should be able to:

- 1 Describe factors which influence human comfort and the thermal, acoustic and visual environment in buildings.
- 2 Evaluate heat losses and gains, condensation risk and compliance with Building Regulations (thermal requirements) and energy rating schemes.
- 3 Evaluate comfort criteria and sound and illuminance levels in buildings.

Learning Outcomes of Assessments

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

TEST	1	2	3
REPORT	1	2	3

Outline Syllabus

Thermal effects in buildings; thermal insulation, insulation values, thermal bridging, structural temperatures.

Energy use in buildings; energy use, thermal comfort, heat losses and gains, energy balance, energy regulations.

Air control in buildings; ventilation, humidity, condensation in buildings, refrigeration and heat pumps.

Properties of lighting; measurement of lighting, colour.

Artificial lighting; lamps, luminaires, lighting design.

Natural lighting; natural light sources, daylight factors, combined lighting.

Aspects of sound; measurement of sound levels, attenuation of sound, nature of hearing.

Noise and sound insulation; measurement of noise, noise control, noise transfer, sound insulation.

Room acoustics; acoustic principles, reflection, absorption, reverberation. sound insulation.

Learning Activities

Lectures, tutorials and practicals.

References

Course Material	Book
Author	McMullan, R.
Publishing Year	2007
Title	Environmental Science in Buildings

Subtitle	
Edition	6th Edition
Publisher	Palgrave
ISBN	9780230525368

Course Material	Book
Author	Race,G
Publishing Year	2006
Title	Comfort
Subtitle	
Edition	
Publisher	CIBSE
ISBN	1903287677

Course Material	Book
Author	DETR
Publishing Year	2007
Title	www.detr.gov.uk
Subtitle	
Edition	
Publisher	
ISBN	

Course Material	Book
Author	BRE
Publishing Year	2007
Title	www.bre.co.uk
Subtitle	
Edition	
Publisher	
ISBN	

Course Material	Book
Author	BSI
Publishing Year	2007
Title	www.bsi-global.com
Subtitle	
Edition	
Publisher	
ISBN	

Course Material	Book
Author	Smith,B.J.,Peters,R.J. & Owens S
Publishing Year	1996
Title	Acoustics and Noise Control
Subtitle	
Edition	1996

Publisher	
ISBN	0582088046

Course Material	Book
Author	CIBSE
Publishing Year	2004
Title	Guide F:Energy Efficiency in Buildings
Subtitle	
Edition	
Publisher	CIBSE
ISBN	1903287340

Course Material	Book
Author	Phillips,D
Publishing Year	2004
Title	Daylighting ; Natural Light in Architecture
Subtitle	
Edition	
Publisher	Architectural Press
ISBN	0750663235

Course Material	Book
Author	CIBSE
Publishing Year	2002
Title	Code for Lighting
Subtitle	
Edition	
Publisher	CIBSE
ISBN	0750656379

Course Material	Book
Author	Beggs, C
Publishing Year	2002
Title	Energy: Management,Supply and Conservation
Subtitle	
Edition	
Publisher	Butterworth-Heinemann
ISBN	0750650966

Notes

The module provides an introduction to the application of steady state heat transfer, acoustics and light in buildings. Buildings heat losses and gains, sound and illuminance levels are calculated. Compliance with Building Regulations (thermal) and energy rating schemes and condensation risk are determined.