

Liverpool John Moores University

Title: MECHANICAL FIRE AND PUBLIC HEALTH SERVICES
INSTALLATIONS
Status: Definitive
Code: **4607BEFDL** (123919)
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: 42
Total Learning Hours: 100
Private Study: 58

Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	36
Tutorial	6

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Artefacts	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 mechanical building services systems in medium sized public sector, commercial or industrial buildings. Among the services included are fire protection and cold and hot water supply, these are approached with a view to sustainability of design and future.

Learning Outcomes

After completing the module the student should be able to:

- 1 Produce and evaluate detailed designs for cold and hot water supply systems for complex buildings.
- 2 Produce and evaluate detailed designs for fire fighting and fire suppression/protection installations.
- 3 Produce and evaluate detailed designs for fuel gas, industrial & medical gas and compressed air installations.
- 4 Produce data and documentation necessary to facilitate the commissioning of water supplies, gas distribution, fire fighting and fire protection installations.

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

Specification and requirements for heating, ventilation and air conditioning: analysis Cold & Hot Water Installations: Design and specification of cold and hot water storage and distribution systems for complex and multi-storey commercial buildings.

Control systems and valve arrangements. Booster and pumping systems, pressure reduction and control. Integration of rainwater harvesting, grey water recycling and solar thermal hot water within standard hot and cold water installations. Application of legislation, standards and guides for the design, maintenance and commissioning of hot and cold water installations.

Hot & Cold Water Plant: sizing, selection and specification of hot and cold water pipework, plant and equipment for; cold water installations, hot water storage, semi storage and non-storage installations, rainwater harvesting, grey-water recycling and solar thermal hot water installations. Space requirements for storage plant. Use of manufacturers data, sizing and selection software.

Water systems commissioning maintenance and treatment: water analysis, water treatment for hot and cold water installations. Commissioning and testing of cold and hot water storage and distribution systems. Specific health & safety design and maintenance requirements and compliance standards for control of Legionella and pathogenic bacteria growth.

*Mechanical fire fighting and fire protection systems:
Fire dynamics: ignition, fire growth, fire parameters, flash over, limiting fire development, smoke hazards, smoke plumes, smoke filling*

Legislation and standards: for fire engineering analysis, current legislation documents, standards and codes of practice, design implications, fire safety strategy.

Fire compartments & Means of escape: behaviour of people, occupancy types, travel distances and times, requirement of compartments,

Fire risk: risk assessment, building designation factors and classification, fire precaution standards.

Mechanical fire engineering systems: design of mechanical fire fighting systems and other mechanical fire protection systems for various commercial buildings containing. Sizing and selection of pipework, plant and equipment for fire fighting installation.

Testing and maintenance procedures Fuel gas, industrial gases, medical gas and compressed air installations

Properties and application: range, properties and usage of fuel gases, industrial and medical gases, vacuum and compressed air

Legislation and standards: current legislation documents, standards and codes of practice, design and safety implications Installation design: design of fuel gas, industrial and medical gas, vacuum and compressed air installations for industrial and commercial buildings. Sizing and selection of materials, plant and equipment, and components use of manufacturers' data, sizing and selection software

Testing and commissioning: procedures for the testing, commissioning and purging of systems.

Learning Activities

Lectures, tutorials, case studies, workshops, site visits.

Notes

This module is a key component for those students wishing to complete the programme following a 'mechanical' building services pathway. It develops a detailed understanding of the principles and procedures associated with energy efficient within commercial buildings.