

Liverpool John Moores University

Title: WATER AND WASTEWATER
Status: Definitive
Code: **5029BEUG** (102775)
Version Start Date: 01-08-2016

Owning School/Faculty: Civil Engineering
Teaching School/Faculty: Civil Engineering

Team	Leader
Rafid Al Khaddar	Y

Academic Level: FHEQ5
Credit Value: 12
Total Delivered Hours: 51
Total Learning Hours: 120
Private Study: 69

Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	24
Practical	12
Tutorial	12

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS1	unseen	70	3
Report	AS2	laboratory reports	30	

Aims

To consolidate the students knowledge of the concepts of Hydraulics and Wastewater Treatment.

To study further problems concerning open channel flow.

Learning Outcomes

After completing the module the student should be able to:

- 1 Generate ideas through the analysis of concepts of fluids at motion.
- 2 Analyse the flow of water in open channels and pipes.
- 3 Discuss the nature of sewage and sewerage systems.
- 4 Critically analyse the concepts of Wastewater Treatment and the design of the various plants involved.
- 5 Critically review the concepts of Water Treatment.

Learning Outcomes of Assessments

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

EXAM	1	2	3	4	5
LABORATORY REPORTS	1	2			

Outline Syllabus

gradually varied flow, use of hydraulic structures for flow measurement, rise in bed level, flow Resistance, channel design, unsteady flow in open channels.

Introduction to Public Health Engineering; Sewage, composition, strength and quantity; Sewerage systems; Sewer flows and sizing.

Water Treatment: Introduction; water quality and standards, legislation, water classification and treatment systems. Coagulation, softening, mixing, flocculation, sedimentation, filtration, disinfection, adsorption, water plant waste management.

Wastewater Treatment: legislation, municipal wastewater treatment, pretreatment, primary treatment, secondary treatment, sludge treatment, sludge disposal.

Learning Activities

Lectures, tutorials and practicals.

Notes

The module analyses open channel flow in both steady and unsteady states. The module also includes an introduction to the principles of Municipal Engineering and sewerage systems. Water and Wastewater treatment principles will also be examined