

Liverpool John Moores University

Title: HYDRAULICS
Status: Definitive
Code: **5019BEHN** (102326)
Version Start Date: 01-08-2016

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

Team	Leader
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Academic Level: FHEQ5 **Credit Value:** 12 **Total Delivered Hours:** 50
Total Learning Hours: 120 **Private Study:** 70

Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	24
Practical	12
Tutorial	12

Grading Basis: BTEC

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS1	Examination (unseen)	70	2
Presentation	AS2	Laboratory based assignment and report.	30	

Aims

*To introduce the learner to the concepts, theory and application of fluid dynamics.
To demonstrate and explore key hydraulic phenomena through experimentation.
To study engineering design principles of closed conduit networks.*

Learning Outcomes

After completing the module the student should be able to:

- 1 Evaluate the energy possessed by a fluid in motion.
- 2 Analyse the flow of water in pipelines and undertake the design of simple pipe networks.
- 3 Identify and select appropriate pump characteristics to suit a given hydraulic situation.
- 4 Perform the analysis of fluid flow in open channels and the use of hydraulic structures for flow measurement and control.
- 5 Present and communicate the appropriate findings of experimental work.

Learning Outcomes of Assessments

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

EXAM	1	2	3	4
PRESENTATION	1	2	4	5

Outline Syllabus

Fluid dynamics; continuity of flow, energy of a fluid, Bernoulli's equation for frictionless flow, energy losses, design of pipelines, pipe network analysis. Hydraulic machines; pump characteristic curves, suitability of pumps for given conditions, pumps in series and parallel, energy considerations and power consumption. Open channel flow; flow classification, hydraulic structures, flow measurement.

Learning Activities

Lectures, tutorials and laboratory practicals.

Notes

The module provides the learner with an introduction to the nature of and energy possessed by fluids in motion. Through experimentation the learner shall develop a knowledge of the application of hydraulic structures to control and measure fluid flow, predominately water.