

Liverpool John Moores University

Title: FLUIDS
Status: Definitive
Code: **4025BEHN** (102297)
Version Start Date: 01-08-2016

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

Team	Leader
Clare Harris	Y

Academic Level: FHEQ4
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
Report	AS2	Coursework Laboratory based assignment	30	

Aims

To introduce the learner to fundamental hydrostatics and establish the underlying principles in relation to civil engineering applications.
To provide the learner the opportunity to explore the behaviour of fluids at rest through experimentation.

Learning Outcomes

After completing the module the student should be able to:

- 1 State and define engineering units and dimensions of quantities applicable to fluids.
- 2 Identify the properties and nature of a fluid.
- 3 Evaluate the forces of equilibrium in a fluid at rest.
- 4 Apply the theory of hydrostatic pressure to calculate magnitude and location of hydrostatic pressure forces on civil engineering structures.
- 5 Identify and select appropriate pressure measuring devices for the determination of pressure and pressure differentials.
- 6 Analyse the buoyancy and stability of floating bodies.
- 7 Present and communicate 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	5	6
CW	1	2	3	4	6	7

Outline Syllabus

Engineering units and dimensions.

Properties of fluids: Density, viscosity, surface tension, compressibility.

Hydrostatic pressure: Relationship between pressure and head, pressure at a point, Pascal's Law, pressure variation with depth.

Fluid pressure measurement devices, piezometer, manometer, measurement of pressure differentials.

Fluid pressure on submerged planes, centre of pressure, vertical planes, inclined planes, pressure diagrams and application to solution of engineering problems.

Buoyancy and stability of floating bodies, Principle of Archimedes, upthrust, conditions of equilibrium, metacentric height.

Learning Activities

Lectures, tutorials and laboratory practicals.

Notes

The module provides the learner with an introduction to hydrostatic principles in relation to engineering applications. The learner shall undertake experimental procedures to verify the fundamental concepts.