

Liverpool John Moores University

Title: FLUID MECHANICS
Status: Definitive
Code: **4507NCCG** (129426)
Version Start Date: 01-08-2021

Owning School/Faculty: Engineering
Teaching School/Faculty: Nelson Campus

Team	Leader
Christian Matthews	Y

Academic Level: FHEQ4
Credit Value: 20
Total Delivered Hours: 60
Total Learning Hours: 200
Private Study: 140

Delivery Options

Course typically offered: S1, S2, Sum, NS2 (S2 for Jan)

Component	Contact Hours
Lecture	48
Practical	12

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	Assignment	Assignment	100	

Competency	NCC Group Pass/Fail
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Aims

This module introduces students to the fluid mechanics techniques used in mechanical engineering. The hydraulic devices and systems that incorporate the transmission of hydraulic pressure and forces exerted by a static fluid on immersed surfaces. Topics included in this module are: pressure and force, submerged surfaces, fluid flow theory, aerodynamics, and hydraulic machinery.

Learning Outcomes

After completing the module the student should be able to:

- 1 Determine the behavioural characteristics of static fluid systems.
- 2 Examine the operating principles and limitations of viscosity measuring devices.
- 3 Investigate the behaviours of different types of fluid flow including laminar and turbulent flow, and Newtonian and non-Newtonian fluids.

Learning Outcomes of Assessments

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

Assignment	3	
NCC Group Pass/Fail	1	2

Outline Syllabus

Pressure and force: Pascal's laws, measurement of pressure, hydraulic devices
Submerged surfaces: thrust, centre of pressure, moments of area and parallel axis theorem
Viscosity: dynamic and kinematic, Newtonian and non-Newtonian fluids, effect of temperature, measurement of viscosity
Fluid flow: Bernoulli's equation, laminar and turbulent flow, Reynolds number, head loss in pipelines, drag on surfaces
Hydraulic machines: turbines, reciprocating machines

Learning Activities

Lectures

These will not normally be traditional didactic lectures in which the student plays little active part, but will be delivered in small groups of up to 20 students in which their interaction with their tutor is a key ingredient of their learning experience. Students will receive approximately 30 hours of taught material, supported by in-class exercises and discussions designed to help student assimilate learning and to provide early informal feedback on their progress.

Seminars (inc workshops)

Student will have the opportunity to test theoretical learning through practical work, some of which will be formally assessed.

Independent Study

Students are expected to undertake personal reading and research into topic areas that have been stimulated from the lectures and seminars. This reading will enhance their academic work and enable valid contribution to lectures and seminars.

VLE support

This will provide links to academic web-sites and on-line journals, facilitate group

discussion outside of the classroom, access to outline lecture notes, and provide students with assessment details.

Notes

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