Liverpool John Moores University

Title:	PRINCIPLES OF THERMODYNAMICS AND FLUID MECHANICS
Status:	Definitive
Code:	**4027ENG** (105214)
Version Start Date:	01-08-2016
Owning School/Faculty:	Maritime and Mechanical Engineering
Teaching School/Faculty:	Maritime and Mechanical Engineering

Team	Leader
Jack Mullett	Y

Academic Level:	FHEQ4	**Credit Value:**	12	**Total Delivered Hours:**	44
Total Learning Hours:	120	**Private Study:**	76		

Delivery Options
Course typically offered: Semester 2

Component	Contact Hours
Lecture	24
Practical	6
Tutorial	12

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS1	Examination	50	2
Essay	AS2	Fluid Mechanics Laboratory Class	10	
Essay	AS3	Thermodynamics Laboratory Class	10	
Essay	AS4	Tutorial class homeworks	30	

Aims

To introduce the student to the fundamental concepts of Thermodynamics and Fluid Mechanics and their application to engineering problems.

Learning Outcomes

After completing the module the student should be able to:

1	Analyse thermodynamic processes involving gases and vapours in closed and open systems and calculate work and heat transfer.
2	Use property tables and charts for vapours.
3	Evaluate the properties of mixtures of gases.
4	Solve problems in hydrostatics.
5	Solve problems in ideal steady fluid flows.

Learning Outcomes of Assessments

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

EXAM	1	2	3	4	5
CW	5				
CW	1				
CW	1	2	3	4	5

Outline Syllabus

Thermodynamic definitions
The first law of thermodynamics
Thermodynamic properties of fluids
Application of the first law to steady flow and non-flow processes for gases, vapours and liquids
Properties of mixtures
Physical properties of fluids
Hydrostatic equation with application to manometry, forces on immersed surfaces and buoyancy
Continuity, Bernoulli and momentum equations with application to flow measuring devices

Learning Activities

Combination of lectures, tutorials, laboratories and assignments.

Notes

This module is designed to provide an introduction to the subjects of Thermodynamics and Fluid Mechanics.