

# UNIVERSITY OF PLYMOUTH MODULE RECORD

<b>Module Code:</b> THER 103	<b>Credits:</b> 10	<b>Level:</b> 1
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**Module Title :** Introduction to Thermo Fluids

**Pre-Requisites :**

**Co - Requisites :**

**If Linked, Module linked to :**

**Short Module Descriptor -** (Maximum four lines 9pt print):  
This module introduces the basic concepts relating to the interaction between systems and there surroundings.

**Elements of Assessment**  
COURSEWORK 50%      EXAMINATION 50%

**Module Aims :**  
To convey an understanding of basic engineering principles as applied to  
a) Fluid Systems b) Thermodynamic Systems.

**Skills Elements :**  
The development of written, group working, numeracy, independent study and practical skills.

**Objectives / Learning Outcomes: Students who have successfully completed this module should be able to:**  
1. identify and evaluate the forces and energy components associated with the flow of fluids through engineering systems.  
2. understand and to evaluate the Thermodynamic interactions between a system and its surroundings.

**Indicative Syllabus Content :**  
1. Hydrostatics – variation of pressure with depth, force on plane and curved immersed surfaces, Centre of Pressure, Atmosphere, Manometry, Buoyancy.  
Fluid Dynamics – Continuity, Momentum and Energy equations, force on fixed and moving vanes, power transmission and Efficiency.  
Measurement of Velocity and Flow Rate  
Flow in tubes – Laminar and Turbulent flow, boundary layer, Viscosity, fluid friction, Friction Factor, Moody Chart, Minor losses, ‘ K ‘ factor for various fittings.  
2. Temperature. Equation of State. System, Work and Heat transfer, Internal Energy, Specific Heat Capacities, Enthalpy  
First Law – Closed Systems, Adiabatic and Isothermal processes, displacement work transfer, ‘ p – v ‘ diagram, Cycles.  
Open Systems – Steady Flow Energy Equation. Application to various processes including compressors.  
Turbines,  
Description of Plant – Refrigeration. Steam , Gas and Hydraulic turbines.

**Please complete the information below**

<b>Faculty:</b> Technology	<b>Dept:</b> SoE	<b>Partner Institution:</b> N/A
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<b>Module Leader:</b> M A Bell	<b>Subject Group:</b> ANA	<b>Term:</b> Spring
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Registry Use Only

VALIDATION- DATE OF APPROVAL:      DATE OF IMPLEMENTATION :  
DATES(S) OF APPROVED CHANGES:

ASC:	FEEBAND :	RESOURCE UNITS :
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