

Thermodynamics 1

Module Code:	MAE4010-A
Academic Year:	2018-19
Credit Rating:	10
School:	(OUT OF USE FROM 2018/9) School of Engineering
Subject Area:	Mechanical and Automotive Engineering
FHEQ Level:	FHEQ Level 4
Module Leader:	Professor Adrian Kelly
Additional Tutors:	

Pre-requisites:

Co-requisites:

Contact Hours

Type	Hours
Lectures	24
Tutorials	12
Laboratory	3
Directed Study	59.5
Examinations DO NOT USE	1.5

Availability Periods

Occurrence	Location/Period
BDA	University of Bradford / Semester 2 (Feb - May)

Module Aims

To provide an introduction to Thermodynamics as the science of energy conversion; to introduce the concept heat transfer; to review mechanisms of heat transfer; to apply the principles of heat transfer to the design of simple processes.

Outline Syllabus

- 1) Introduction to energy and the First Law of Thermodynamics.
- 2) Systems, energy, work, heat, properties.
- 3) First Law of Thermodynamics.
- 4) Processes: constant volume, constant pressure, adiabatic, isothermal, cycles.
- 5) Properties of Fluids, Liquids and vapours including use of steam tables.
- 6) Ideal gases & equations of state.
- 7) Mixtures of gases and vapours.

Module Learning Outcomes

On successful completion of this module, students will be able to...

- 1 Apply the fundamental principles of thermodynamics and heat transfer to the application to the analysis of simple processes.
- 2 measure and evaluate energy balances; apply the principles of heat transfer to the design of heat exchangers.
- 3 collate and manage data, and apply scientific method; solve problems systematically using scientific method.

Learning, Teaching and Assessment Strategy

Theory, implementation, application, and critical analysis is gained through lectures, tutorials, case studies and directed study, assessed by examination. Engineering application and evaluation is gained from lab sessions, assessed by coursework.

The 'Directed Study' is the number of hours students need to spend on average, in their own time, researching deeper into the subject matter. This would also include reading about the unit operations used in the laboratory and preparing the lab reports.

Mode of Assessment

Type	Method	Description	Length	Weighting	Final Assess'
Summative	Laboratory Report	Individual laboratory report on Ideal Gas Expansion, Heat Conduction		30%	No
Summative	Examination - closed book	Examination - closed book. Students to answer 3 questions from 5	1.5 hours	70%	Yes

Legacy Code (if applicable)

ENG1304M

Reading List

To view Reading List, please go to [rebus:list](#).