MECH 7006 ADVANCED THERMAL AND FLUID ENGINEERING

Credit Points 10

Legacy Code 301021

Coordinator Mariam Darestani (https://directory.westernsydney.edu.au/search/name/Mariam Darestani/)

Description This unit covers fundamental principles in the thermal and fluid engineering. While the main focus will remain on incompressible fluids, effects of compressible fluids will also be discussed. The contents of this unit include fluid mechanics, thermodynamics and heat transfer. Students will learn the engineering applications of thermal and fluid principles.

School Eng, Design & Built Env

Discipline Mechanical Engineering

Student Contribution Band HECS Band 2 10cp

Level Postgraduate Coursework Level 7 subject

Restrictions

Students must be enrolled in a postgraduate program

Assumed Knowledge

Fundamental knowledge of fluid mechanics, theory of thermodynamics, knowledge of heat transfer including conduction, convection.

Learning Outcomes

On successful completion of this subject, students should be able to:

1. Apply fundamental knowledge of fluid kinematics and dynamics to solve problems in the fluid engineering.
2. Apply the energy equation to solve the energy and mass flow.
3. Analyse the thermodynamics process and heat transfer of a system.
4. Apply heat transfer principles to the design and evaluation of industrial device.
5. Evaluate heat engine and refrigeration cycles using the thermodynamics principles.

Subject Content

1. Fluid statics and kinematics
2. Steady incompressible flow in pressurised pipe system
3. Forces on bodies immerged in fluid flow
4. Laws of thermodynamics
5. Energy analysis
6. Fundamental mechanisms of heat transfer

Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are regularly updated, where there is a difference your Learning Guide takes precedence.

Item	Length	Percent	Threshold	Individual/ Group Task
Practical report 1	2500-word practical report	25	N	Individual
Practical report 2	2500-word written report	25	N	Individual
Mid-term in-class quiz	1-hour closed book	25	N	Individual
End-term quiz	1-hour closed book	25	N	Individual

Prescribed Texts

- C'engel, YA, Cimbala, JM & Turner, RH 2012, Fundamentals of thermal-fluid sciences, 4th edn, McGraw-Hill Higher Education, Boston.

Teaching Periods

Spring

Parramatta City - Macquarie St

Day

Subject Contact Mariam Darestani (https://directory.westernsydney.edu.au/search/name/Mariam Darestani/)

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=MECH7006_22-SPR_PC_D#subjects)