

The Hong Kong University of Science and Technology

Energy Conversion

MECH3300

3 credits

Pre/Co-Requisites: MECH2310

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Course Description:

Thermodynamics of combustion, chemical equilibrium, refrigeration and mixtures of gases. Analysis of power generation, propulsion systems. Performance of modern steam plants, gas turbines, internal combustion engines and refrigeration plants.

Course Topics:

1. Review of Thermodynamics
2. Exergy
3. Gas Power Cycles
4. Jet Propulsion Cycle
5. Thermodynamic property relations
6. Vapor and Combined Power Cycles
7. Refrigeration cycles
8. Gas–vapor mixtures and air-conditioning

Assessments

Assessment Task	Contribution to Overall Course grade (%)
1. Mid-Term	30%
2. Homework	25%
3. In-course visual essay	10%
4. Final examination	35%

Required Texts and Materials

Textbook:

Thermodynamics-An Engineering Approach

Authors: Yunus Cengel and Michael Boles

Publisher: McGraw-Hill Education

Reading materials:

[*Thermodynamics of Heat Engines | Wiley Online Books*](#)

Author(s): Bernard Desmet

Publisher: Wiley (2022)