EGR 232 - INTRODUCTORY THERMODYNAMICS

Course Description

This course introduces concepts of energy, energy conversion, and mechanisms of heat and work transfer in processes and in cycles. It also covers the first and the second laws of thermodynamics. Group 2 course.

Credit Hours

3

Contact Hours

3

Lecture Hours

3

Required Prerequisites

MTH 141, PHY 221, PHY 221L, PHY 221R

General Education Outcomes supported by this course

Critical Thinking - Direct

Course Learning Outcomes

Knowledge:
- Identify and explain the different systems/subsystems; indicate where there is work, heat transfer; understand temperature, pressure and density in assessing thermodynamic state.
- Identify the fundamentals of heat transfer mechanisms: Conduction, convection, and radiation.
- Find a process and compute associated work/heat transfer that is the most reasonable approximation.
- Evaluate performance and power for simple heat engines, refrigerators and HP's.

Application:
- Compute the work and heat transfer in applying the first law of thermodynamics.
- Formulate the ideal approximation to the behavior and compute the corresponding work and heat transfer through the application of the second law of thermodynamics.
- Analyze the corresponding ideal device applying both laws to determine heat transfer, work, and property changes.

Integration:
- Find the correct phase and remaining properties for substances (integration of physics and chemistry).

Human Dimension:
- Demonstrate an appreciation of how thermodynamic principles govern day to day life through open ended studies.

Caring - Civic Learning:
- Relate contemporary issues to energy and impact of engineering solutions on society and environment.

Learning How to Learn:

- Methodical approaches to problem solving will be introduced and utilized throughout the course.