

NVCC COLLEGE-WIDE COURSE CONTENT SUMMARY
MEC 295 - TOPICS IN THERMODYNAMICS (1 CR.)

COURSE DESCRIPTION

Provides a computational study in the practical application of thermodynamic and fluid systems concepts. Includes a brief case study of a fluid system and an on-site visit to an operational fluid system plant. Lecture 1 hour per week.

GENERAL COURSE PURPOSE

This course will provide the student a basic understanding of the application of thermodynamic and fluid systems

ENTRY LEVEL COMPETENCIES

This course is taken concurrently with MEC 255. Requires proficiency in solving multi-variable algebraic expressions, engineering statics problems, and using dimensional analysis. Prerequisite is MTH 115 and demonstrated proficiency with logarithmic functions.

COURSE OBJECTIVES

The student will understand applications of thermodynamic and fluid systems concepts and be able to explain differences between theoretical calculations and real applications.

MAJOR TOPICS TO BE INCLUDED

- A. Fluid Statics
- B. Fluid Dynamics (Bernoulli's Equation)
- C. Temperature and Thermal Expansion
- D. Heat Energy and Phase Change
- E. Ideal Gas Law and Kinetic Theory
- F. 0th, 1st, 2nd, 3rd, Laws of Thermodynamics
- G. Steady Flow Energy Equation
- H. Non-Flow Energy Equation
- I. Reversible Non-Flow Processes
- J. Carnot, Otto, and Diesel Engines
- K. Brayton Cycle
- L. Reverse Heat Engines
- M. Incompressible Fluid Flow
- N. Pumps and Pumping Power
- O. Heat Exchangers
- P. Fluid Systems Analysis (General Energy Equation)
- Q. Losses in Fluid Systems