Course Number/Title: MEC K272 Fluid Mechanics/Thermodynamics

Lecture 4 hrs   Laboratory 0 hrs   Credit 4 hrs   Contact 4 hrs

Course Description: To investigate the behavior of fluids/matter from a fluid mechanics and thermodynamics point of view.

Method/Grading: The Course Grade will include Lecture Attendance, Submitted Homework, (3) In-Class Tests & In-Class Participation. Tests will be Open Book/Notes and will cover the entire Class Period. Digication Requirement: All students are required to maintain an online learning portfolio in Digication that uses the college template.

Text: Applied Fluid Mechanics, Mott; Introduction to Engineering Thermodynamics, Sonntag, & Handouts. TI-89 Calculator is Recommended.

Prerequisites:PHY K115   Co-Requisites:

COURSE TOPICS/CONTENT

	HOURS
A. FLUID PROPERTIES Pressure head, buoyancy, flow velocity	10

B. CONSERVATION OF ENERGY
   Bernoulli's equation, venturi, orifice, flow devices,
   Friction energy loss.
	10

C. CONTINUITY EQUATION Conservation of mass, velocity relationships	10
D. PIPE FLOW Viscosity, Reynold's number, flow losses, branch pipes	10
E. ENERGY EQUATION OF GASES Constant pressure, volume, temperature, adiabatic processes	9

F. BASIC ENGINE CYCLES
   Compressed air, internal combustion cycle, gas turbine, steam
   processes, Carnot cycle.
	11

TOTAL HOURS	60

Date: August 26, 2018

Prepared By: *Robert Lantz*

Program Coordinator: *Mike Gentry*

Department Chairperson: *Mike Gentry*

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Objective:

The Objective of this Course is to Understand and Predict how Matter will Respond when Acted upon by the following Natural Laws:

1) Law of Gravity
2) Force-Mass-Acceleration Law
3) Conservation of Energy Law
4) Conservation of Mass Law
5) Law of Kinetic Energy
6) Law of Potential Energy
7) Law of Internal Energy
8) Law of Flow Energy
9) Law of Work
10) Law of Power
11) Law of Friction Loss
12) Law of Heat
13) Law of Gravity
14) Gas Laws

Measurable Outcomes:

Upon Completion of this Course the Student will:

1. Be able to determine pressures, forces, velocities and Buoyancy of static fluids

2. Be able to apply continuity and energy equations to a variety of flow situations

3. Be able to determine pipe head loss due to friction flow problems

4. Be able to analyze engine cycles that involve constant pressure, temperature, volume or entropy. Also to understand the perfect gas laws.