THREE RIVERS COMMUNITY-TECHNICAL COLLEGE
COURSE OUTLINE

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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 from a fluid mechanics and thermodynamics point of view.

Method: Lecture

Text: Applied Fluid Mechanics, Mott; Introduction to Engineering Thermodynamics, Sonntag

Prerequisites: PHY K115 Co-Requisites: _____

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COURSE TOPICS/CONTENT

| | HOURS |
|---|---|
| A. FLUID PROPERTIES<br>Pressure head, buoyancy, flow velocity | 10 |
| B. CONSERVATION OF ENERGY<br>Bernoulli's equation, venturi, orifice, flow devices, falling head | 10 |
| C. CONTINUITY EQUATION<br>Conservation of mass, velocity relationships | 10 |
| D. PIPE FLOW<br>Viscosity, Reynold's number, flow losses, branch pipes | 10 |
| E. ENERGY EQUATION OF GASES<br>Constant pressure, volume, temperature, adiabatic processes | 9 |
| F. BASIC ENGINE CYCLES<br>Compressed air, internal combustion cycle, gas turbine, steam processes, refrigeration | 11 |
| TOTAL HOURS | 60 |

Date: February 12, 2008

Prepared By: *Robert Lantz*

Program Coordinator: *Robert Lantz*

Department Chairperson: *Tony Benoit*

Course Number/Title: MEC K272 Fluid Mechanics/Thermodynamics

Measurable Objectives

THE STUDENT WILL:

1. Be able to determine pressures, 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.