

THREE RIVERS COMMUNITY COLLEGE  
COURSE OUTLINE - Spring 2012  
CRN-10290&CRN-11288 W 8:00 - 9:40a B111&D122 & W 10:00-11:40a B108/B111  
Robert Lantz (rlantz@trcc.comnet.edu)

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Course Number/Title: MEC K275 Thermal Science Lab

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Lecture 0 hrs      Laboratory 2 hrs      Credit 1 hrs      Contact 2 hrs

Course Description: Selected labs from the fields of fluid mechanics, thermodynamics, and heat transfer

Method / Grading: Laboratory experiments & Reports are required, Attendance is required, Reports that are duplicates of each other will not be accepted, Students with disabilities should consult with instructor.

Text: Hand-out material

Prerequisites: MAT-K254 Co-Requisites: MEC-K241 or MEC-K270 or MEC-K272

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COURSE TOPICS/CONTENT	HOURS
1. Tank Flow	3
2. Flow Meter Calibration	3
3. Pump Efficiency	3
4. Pump Lab	3
5. Steam Turbine	3
6. Orifice Calibration	3
7. Orifice Flow Theoretical	3
8. Venturi Flow Theoretical	3
9. Counter flow Heat Transfer	3
10. Conduction Heat Transfer	3
TOTAL HOURS	30

Date: Jan 22, 2012

Prepared By: Robert Lantz

Program Coordinator: Patrick Knowles

Department Chairperson: David Fuha

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Objective

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The objective of this course is to demonstrate and calculate the principles of fluid flow. The net Objective is to prove that fluids adhere to the following mathematical rules and laws.

- 1) Law of Gravity
- 2) Force-Mass-Acceleration Law
- 3) Conservation of Energy Law
- 4) Conservation of Mass Law
- 5) Electro-Magnetic Laws
- 6) Kinetic Energy Law
- 7) Potential Energy Law
- 8) Internal Energy Law
- 9) Flow Energy Law
- 10) Heat / Work Laws
- 11) Friction Loss Laws
- 12) Heat Transfer Laws

Measurable Outcomes

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Upon completion of this course the student will be able to predict and calculate:

- 1) Mass Flow Rate (Lbm/Sec)
- 2) Volumetric Flow Rate (GPM)
- 3) Pressure, Temperature, Velocity & Height Values
- 4) Power Requirements (HP / Watts)
- 5) Efficiency of Processes (%)
- 6) Nusselt Number, Reynolds Number and Coefficient of Convection
- 7) Heat Transfer (Watts)
- 8) Heat & Friction Loss of Process (BTU / Watts)