

THREE RIVERS COMMUNITY COLLEGE  
COURSE OUTLINE  
CRN-10289 M 9:00 - 10:40a D-126  
Robert Lantz (rlantz@trcc.comnet.edu)

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Course Number/Title: MEC K274 Heat Transfer

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

Course Description: This course will include one and two dimension flow, principles of convection, conduction, and radiation. Steady state conditions will be investigated.

Method / Grading: Lecture attendance, homework submitted, and (2) in-class tests will provide basic grade. Students with disabilities should consult with instructor. Cheating on tests will not be permitted.

Text: Heat Transfer, Holman, 10<sup>th</sup> Edition, McGraw Hill

Prerequisites: PHY-K115;MAT-K254;MEC-K272 Co-Requisites: MEC-K275

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COURSE TOPICS/CONTENT

|  | HOURS |
|--|-------|
| 1. STEADY STATE CONDUCTION               | 5     |
| 2. STEADY STATE FREE CONVECTION          | 5     |
| 3. STEADY STATE FORCED CONVECTION        | 4     |
| 4. BOILING                               | 4     |
| 5. CONDENSATION                          | 4     |
| 6. RADIATION                             | 4     |
| 7. OVERALL HEAT TRANSFER AND APPLICATION | 4     |
| TOTAL HOURS                              | 30    |

Date: Jan 22, 2012

Prepared By: Robert Lantz

Program Coordinator: Patrick Knowles

Department Chairperson: David Fuka

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Objectives

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The objective of this course is to demonstrate and calculate the principles of Heat Transfer. The basic laws of Heat Transfer include:

- 1) Always from High Temperature to Low Temperature
- 2) Flows into or out of matter
- 3) Includes Convection
- 4) Includes Conduction
- 5) Includes Radiation
- 6) It is a Transient Energy

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Measurable Outcomes

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

- 1) Heat Transfer analogy to Electrical Current Flow
- 2) The Resistance of Conduction to Heat Flow
- 3) The Resistance of Convection to Heat Flow
- 4) The Resistance of Radiation to Heat Flow
- 5) The parameters of Convection such as Coefficient of Convection
- 6) Reynolds Number, Nusselt Number, Coefficient of Conduction
- 7) The Radiation concept of Radiosity.