

## ESC 340 – Heat Transfer Syllabus

### Credit

3 semester hours

### Prerequisites

PHY 151 or PHY 251 and MAT 122

Co-requisite: MAT 352

### Course Description

A one-semester study of the principles of steady state conduction, transient conduction, radiative heat transfer, and forced natural convection.

### Rationale for Course

While thermodynamics predicts energy transfers from one equilibrium state to another, heat transfer predicts the rate at which that energy moves as well as the time-dependent temperature of the bodies involved.

### Learning Objectives

A thorough examination of the principles of heat energy transfer processes; namely: steady state conduction, transient conduction, radiation, and forced and natural convection.

### Academic Integrity

Students are expected to be honest and to submit their own work on exams. Strict adherence to the Mississippi College "Honesty Policy" (2009–2010 *Mississippi College Undergraduate Bulletin*, pg. 60) will be followed. You may collaborate on homework; however, some exams will be take-home, and you are expected to do your own work on all tests.

### Course Outline

- 1-D steady-state conduction
- 2-D steady-state conduction
- Transient conduction
- Forced convection
- Natural convection
- Radiation heat transfer
- Applications
- Mass transfer

### Method of Instruction

Presentation of course material will be accomplished through a combination of lectures (oral and audio-visual), demonstrations, and possibly reading assignments.

### Recommended Text

*Heat Transfer, 10<sup>th</sup> edition*, J. P. Holman, McGraw Hill

**Grading**

Final grades will normally be determined by scores on a number of examinations as well as homework consisting of both analytical and numerical solutions. Topical reports may also be assigned by the instructor. A ten point scale will be used to assign letter grades.

**Makeup Tests**

Makeup tests will be given only under the following circumstances:

- Consent of the instructor has been obtained prior to the test.
- An excused absence is obtained from a doctor or the Vice-President for Academic Affairs.

**Absences**

Mississippi College policies on attendance and academic integrity will be observed. Please see the *2009-2010 Mississippi College Undergraduate Bulletin*, pg. 56-57 for additional details of these policies. Students are responsible for all work missed during absences.

**Special Needs**

Students who need special accommodations due to learning, physical, psychological, or other disabilities should contact Dr. Buddy Wagner in the Counseling and Career Development Center. He may be reached by phone at 601-925-3354.