

EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
Engineering Science

Course: ES 312 Energy Transfer Fundamentals **Term:** Spring 2009

Instructor: Dr. Tom Gally **Office:** AC1-320
<http://pr.erau.edu/gallyt>

Hours: See website **Phone:** 777-3931

Text: *Heat Transfer*, J.P. Holman, Mc-Graw-Hill, 9th Edition.

Supplemental Readings: *Electronics Cooling*, <http://www.electronics-cooling.com>.

Goals: To provide a basic understanding of Energy Concepts, Thermodynamics, and Heat Transfer Mechanisms

Evaluation:

Homework	10%
Exams (3 @ 20% each)	60%
Final (April 25 th , 10:15 am)	30%

Class Attendance:

There will be no role taken, so attendance is up to the discretion of the student, with the following caveats: (1) attendance at exams is mandatory – make up exams will be allowed only in extreme circumstances; (2) the student is solely responsible for assignments, announcements, and lectures provided during class.

Homework:

I have assigned homework solely as a learning aide for the students. Homework will not be graded, but will receive either a 2, 1, or 0 based upon the level of completeness. Homework will be due at the beginning of class on the due date. Late homework will not be accepted for credit.

Course Topics

Thermodynamics:

- Physical Properties
- System Concepts
- Work and Heat Processes
- 1st and 2nd Laws of Thermodynamics
- Entropy Concepts
- Cycles (time permitting)

Heat Transfer:

- Conduction in Solids/Nonmoving Fluids
- Convection in Fluids
- Radiation
- Heat Exchanger Design (time permitting)

All students are expected to be familiar with the regulations, dates and deadlines outlined in the Student Handbook.