

**EMBRY-RIDDLE AERONAUTICAL UNIVERSITY**  
**Engineering Science**

**Course:** ES 312 Energy Transfer Fundamentals      **Term:** Spring 2010

**Instructor:** Dr. Tom Gally      **Office:** KETC 107  
<http://mercury.pr.erau.edu/gallyt>

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

**Text:** *Heat Transfer*, J.P. Holman, Mc-Graw-Hill, 10<sup>th</sup> 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 (May 4 <sup>th</sup> , 8 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.*