

**CEN 3311 HEAT TRANSFER**  
**2020-2021 Fall Semester**

**Instructor:** Assoc. Prof. Dr. Hakan KAYI

**Lectures:**

Wednesday (10:30-11:30) online

**Text Book:**

Geankoplis CJ, *Transport Processes and Separation Process Principles*, 4<sup>th</sup> Edition, Pearson, 2013.

**Supplementary Reference Books:**

1. McCabe WL, Smith JC, Harriott P, Unit Operations of Chemical Engineering, 7<sup>th</sup> Ed., 2005.
2. Holman JP, Heat Transfer. McGraw-Hill, NY, 10th Ed., 2009.
3. Incropera FP, De Witt DP, Fundamentals of Heat and Mass Transfer. 5<sup>th</sup> Ed., J.Wiley&Sons, NY, 2002
4. Perry RH, Green D, Perry's Chemical Engineers' Handbook, 7th Ed., McGraw Hill, 1997.

**Course Content:**

1. Concept of heat transfer
2. Heat transfer by conduction
3. Principles of heat flow in fluids, typical heat exchange equipment, energy balances, heat transfer coefficients
4. Thermal boundary layer, heat transfer to fluids by forced convection in laminar and turbulent flows, analogy between transfer of momentum and heat
5. Heat transfer by natural convection
6. Heat transfer to fluids with phase change; heat transfer from condensing vapors, heat transfer to boiling fluids
7. Radiation heat transfer
8. Heat transfer equipment; types, analysis

**Grading:**

Midterm	15%
Homeworks+ Projects	15%
Final examination	80%