

## CHE311 HEAT TRANSFER

2017-2018 Fall Semester (B)

19.9.2017

Instructor : Prof. Dr. Gülay Özkan ,Prof. Dr. Zekiye Serpil Takaç

Lectures : Tuesday 8:30-10:15 OGD ; Wednesday: 10:30-12:15 OGD

Reference Books:

W.L. McCabe, J.C. Smith, P. Harriott., Unit Operations of Chemical Engineering, McGraw Hill, N.Y., (7th Ed.) 2005

J.P. Holman, Heat Transfer, McGraw-Hill, N.Y., 1989.

F.P. Incropera, D.P. de Witt, Fundamentals of Heat and Mass Transfer, John Wiley & Sons, N.Y., (3th Ed.) 1990.

C.J. Geankoplis, Transport Processes and Unit Operations, Prentice-Hill Inc., N.J., (3th Ed.) 1993

R.H. Perry, D. Green, Perry's Chemical Engineers' Handbook, 7th ed., McGraw Hill, 1997

Çengel, Yunus A., "Heat Transfer A Pract.cal Approach", McGraw\_Hill, 2004

Course Content

- Heat concept and transport phenomena
- Heat transfer by conduction (steady-state)
- Heat transfer by conduction (unsteady-state)
- Principles of heat flow in fluids, heat exchange equipment
- Energy balances in heat exchangers
- Individual and overall heat transfer coefficients
- Heat transfer by forced convection, thermal boundary layer
- Heat transfer by convection in different flow regimes (laminar, turbulent and transient regimes )
- Analogy between transfer of momentum and heat
- Heat transfer by natural convection
- Heat transfer to fluids with phase change
- Radiation heat transfer
- Vertical and horizontal heat condensers, heat transfer to boiling fluids
- Heat transfer in shell and tube exchangers

Grading: Midterm1 (20%); Midterm 2 (20%) ; Quiz (10%); Final examination (50%)