



ChE 323 - Heat Transfer Lab

Code and Name: ChE 323 – Heat Transfer Lab

Credit Hours: 1 (Lecture: 0, Tutorial: 0, Lab 2)

Textbook:

- Heat Lab Manual, Al- Imam Muhammad Ibn Saud Islamic University

Other References:

- None

Course Description:

Thermal Conductivity, double pipe heat exchanger, free convection, forced convection, extended surface, and film wise and drop wise condensation - nucleate boiling

Pre-requisites: CHE 320 Fluid Mechanics Lab, CHE 321 Heat Transfer, and ENGL201

Course Learning Outcomes:

With relation to ABET Student Outcomes (SOs: 1-7)

1. Compare the counter current and co-current heat transfer in a heat exchanger. (1)
2. Study the effect of some parameter on heat transfer rate such as metal type, (6)
3. contact resistance, cross section area etc. (6)
4. Interpret the experimental data (6)
5. Use some office software for writing the report and making the plots. (6)
6. Operate experimental instrument carefully and cleverly (6)
7. Write effectively a technical report. (2, 3)

Topics to be covered:

- Steady state heat transfer by conduction Drags and drag coefficients
- Determination of overall heat transfer coefficient and thermal conductivity of materials
- Free convection on fin /tube bundle heater
- Forced convection on fin /tube bundle heater
- Combined natural convection and radiation heat transfer
- Combined forced convection and radiation heat transfer
- Steady state heat transfer in heat exchanger (1)
- Steady state heat transfer in heat exchanger (2)
- Film and drop wise condensation
- Nucleate Boiling

Grading Policy:

The grading for the course are 60% coursework and 40% Final Exam. The course work consists of lab reports which account for 30%. It also includes quizzes, homework, for 20% and 10% for participations

