

CHE 435: Unit Operations Laboratory Spring Semester 2004

**2003 Catalog
Description**

Unit Operations Laboratory (3: 1, 5)

Experimental study of unit operations using pilot size equipment. Safety considerations. Data analysis. Selected topics related to unit operations such as membrane separation and mechanical separation, etc.

Prerequisites: ChE 334

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ChE 331 Momentum transfer
ChE 332 Heat Transfer
ChE 333 Mass Transfer
ChE 334 Separation Processes.

Textbook:

Laboratory Manual: ChE 435 Unit Operations Laboratory Manual.
King AbdulAziz University, Jeddah.

References:

Course texts for ChE -311, ChE-312, ChE - 313.

Experimental Methods for Engineers by Holman J.P. (1989)

Goals

1. To reinforce the student's understanding of momentum, heat and mass transfer, which he was exposed to in transfer operations, heat transfer, separation processes.
2. To develop a student's ability to apply standard methods for conducting experimental analysis.
3. To train the student on how to write a technical report containing their findings on each experiment.

**Prerequisites by
Topic:**

Heat transfer
Mass transfer
Fluid mechanics
Thermodynamics

Topics:

Important of ancillary and presentation techniques.
Data collection, analysis and presentation techniques.
Gas diffusion.
Liquid diffusion.
Tracer responses analysis.
Sedimentation.

Drying.
Double pipe heat exchanger.
Liquid – liquid extraction.
Binary distillation using plate and packed column.
Tracor response analysis
Size reduction analysis

Computer Usage:

Students use computer in data analysis such as regression analysis and report writing. In some experiments the students are encourage to match their experimental findings with design packages such as CHEMCHAD.

Laboratory Project

The course is based mainly on experiments, which apply to the principles of heat, mass and momentum transfer operations, which are covered in other chemical engineering courses.

ABET category contents as estimated by the faculty member who prepared this course description:

Engineering science: 1 credit hour (or 50%)
Engineering Design : 1 credit hour (or 50 %)

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