

ChE 325 – JUNIOR LAB I

Type (check one):	Required: X	Elective:
2005-2006 Catalog Data:	ChE 325. Junior Laboratory I. Experimental study of flow of fluids. Flow measurements. Packed and fluidized bed hydraulics. Co-requisite: ChE 323. Offered in Fall semester. <i>One semester; one credit.</i>	
Prerequisites:	None	
Co-Requisites:	ChE 323	
Textbook:	Department Laboratory Manual	
Other Required Materials:	None	
Other References:	McCabe & Smith, <i>Unit Operations of Chemical Engineering</i> , 6 th Edition, McGraw Hill 2001. Robert H. Perry, Don W. Green, <i>Perry's Chemical Engineering Handbook</i> , McGraw-Hill, 1997.	
Instructor:	Dr. Ali Pourhashemi, Assistant Professor	
Course Objectives:	<ol style="list-style-type: none">1. To supplement topics of ChE 323 with laboratory experience.2. To provide each student with limited experience in planning and hands-on experiments.3. To provide an opportunity for each student to supervise others toward a common goal.4. To exercise computer skills through data analysis and report preparation.	
Prerequisites by Topics:	Mass & Energy Balances, Calculus, Differential Equations	
Topics:	<ol style="list-style-type: none">1. Determining viscosity of liquid mixture as a function of composition and temperature.2. Pressure drop and frictional loss study in various pipes and fittings.3. Hydraulics of fluidized bed.4. Hydraulics and hold-up in counter current gas and liquid flow in packed column.5. Efflux time.6. Studying the compressibility of CO₂.	
Class Schedule:	One 2-hour and 50-minute session per week	
Prepared by:	<u>Dr. Ali Pourhashemi</u>	Date: <u>September 2005</u>

**Professional Component:
ChE 325– JUNIOR LABORATORY I**

Category (check one)	<input type="checkbox"/> Math/Basic Science <input checked="" type="checkbox"/> Engineering <input type="checkbox"/> General Education <input type="checkbox"/> Other
Design (check one)	<input type="checkbox"/> Significant <input type="checkbox"/> Some <input type="checkbox"/> None
Realistic Constraints (check all that apply)	<input type="checkbox"/> Economic <input type="checkbox"/> Environmental <input type="checkbox"/> Sustainability <input checked="" type="checkbox"/> Manufacturability <input type="checkbox"/> Ethical <input type="checkbox"/> Health & Safety <input type="checkbox"/> Social <input type="checkbox"/> Political

Relationship to Program Outcomes:

Check all that apply:

- (a) an ability to apply knowledge of mathematics, science, and engineering
- (b) an ability to design and conduct experiments, as well as to analyze and interpret data
- (c) an ability to design a system, component, or process to meet desired needs
- (d) an ability to function on multi-disciplinary teams
- (e) an ability to identify, formulate, and solve engineering problems
- (f) an understanding of professional and ethical responsibility
- (g) an ability to communicate effectively
- (h) the broad education necessary to understand the impact of engineering solutions in a global and societal context
- (i) a recognition of the need for and an ability to engage in life-long learning
- (j) a knowledge of contemporary issues
- (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice