ECH 4323L: Process Control Lab

**Laboratory 2**

Objective: To suggest hardware for automating the unit operations laboratory.

Procedure:

An experiment from the unit operations laboratory has been assigned to your team (please see Table 1). Based on your experience with this experiment, please suggest the necessary hardware to automate this experiment. You may use the following resources to get the necessary information:

1. The website for Omega Engineering, Inc. (www.omega.com)
2. Perry's Handbook of Chemical Engineers
3. Any reference from the library or the web on measurement and control devices

In each experiment, there are two different aspects (1) how to measure process variables and (2) how to do feedback control. Since there are six experiments and twelve teams, each experiment is assigned to two teams. One team will focus on measurement and sensing devices and the other will focus on feedback control devices.

Lab Report: There is no written report required; however you need to make a 15 minute *oral* presentation on the date assigned to you in Table 1. Your presentation should cover the following aspects.

1. Brief Description of Current Experiment with a block flow diagram of the process.
2. Suggested hardware for automating the experiment.
3. Detailed description of what each piece of suggested hardware does in the experiment
4. A process flow diagram with the process control hardware in place.
5. Cost of the hardware.

The two teams that are assigned to particular experiment are allowed to collaborate; however, they have to make separate presentations.

**Table 1**

| Team | Experiment | Focus | Presentation |
|---|---|---|---|
| Getz, Golston, Robinson | Membrane Separation | Measurement | March 29 |
| Doyle, Griffin, Tart | Membrane Separation | Control | March 29 |
| Guilloty, Shaba, Stallworth | Heat Exchanger | Measurement | March 29 |
| Bostian, Lewis, T. Williams | Heat Exchanger | Control | March 29 |
| Cornell, Daley, Davey | Extraction | Measurement | March 31 |
| Carpenter, Hemingway, Schuknecht | Extraction | Control | March 31 |
| Grossman, Kurpe, Ordetx | Absorption | Measurement | March 31 |
| Estaso, Garcia-Tunon, Maly | Absorption | Control | March 31 |
| Chin-Fook, H. Williams | Reactor | Measurement | April 5 |
| Hughes, Sunderhaus, Wilson | Reactor | Control | April 5 |
| George, Pace, Trotman | Distillation | Measurement | April 5 |
| Decoteau, Nwabuzor, Quarles | Distillation | Control | April 5 |