What is Chemical Engineering?

Chemical engineers work in a whole variety of areas from food production to pharmaceuticals to the petroleum industry. One of the easiest ways to explain chemical engineering is to first explain the difference between what a chemist does and what a chemical engineer does. A chemist creates something new on a small-scale, say a can of Mountain Dew. That chemist wants to share it with everyone so he hands it over to a chemical engineer. That chemical engineer then looks at what the chemist does and figures out whether the reactions can feasibly be done on a large-scale. Sometimes reactions may need to be changed because of heat output or amounts of toxic output as well.

The above example is a way that food production and chemical engineering combine together. Another area of chemical engineering is pharmaceuticals. Chemical engineers help create new drugs and mass produce them. The last area within chemical engineering is work within the petroleum industry. Chemical engineering students get a good look at this sort of work in a senior level lab. One of the experiments in the lab deals with the continuous distillation column. In this two semester senior lab, students work with the distillation column to separate out a mixture of methanol and water based on boiling temperatures. This is similar to what is done at oil refineries to produce everything from tar to jet fuel. One neat aspect about this lab is students spend two semesters there. During the 1st semester, everything is done by hand, while the 2nd semester students use an industry computer program to complete the lab. This lab can also be done with an Iowa State professor overseas in a 6 week course in Spain. The continuous distillation experiment is just one of many in a lab that also works with heat transfer, fluid mechanics, chemical separation, and more.

Numbers:

- Undergraduates: 457 students (Spring 2011)
- Graduate Students: 61 students (Spring 2011)
- Average starting salary: $63,400
- 93% In-Profession placement rate within 6 months after graduation

Clubs and Projects:

- American Institute of Chemical Engineers (AIChE) – Student branch of national professional society