

## **ChBE 4510: Process and Product Design and Economics (2-0-2)**

### **Context**

The ChBE 4510 course is taken as the lecture portion of capstone senior design by all chemical & biomolecular engineering students. This course is a prerequisite for taking the design project courses ChBE 4520 or ChBE 4530.

### **Text**

Sieder, Seader, Lewin, and Widagdo, "Product and Process Design Principles", Wiley, 3<sup>rd</sup> Edition.

### **Topical outline**

1. Introduction
2. Production routes and profit upper bound
3. Flowsheet preparation
4. Process design heuristics
5. Integration of reactors and separators
6. Accounting
7. Equipment sizing and design
8. Chemical plant economics
9. Pumps and compressors
10. Heat and energy integration
11. Optimization of chemical processes