

CBE 40445
Fall 2020
Syllabus

1. Overview/review of chemical engineering fundamentals with applications to the COVID-19 epidemic. (2 classes)
2. Reaction equilibrium, reaction kinetics (4 classes). (D&D chapt. 1,2)
3. Chemical reactor configurations (4 classes). (D&D, chapt. 3)
(hour test 1)
4. Modeling of catalyzed chemical reactions (3 classes) (D&D chapt. 4.)
5. Mechanistic description of heterogeneous catalytic reactions (2 classes). (D&D chapt. 5)
Internal and external transport limitations of catalytic reactions (4 classes) (D&D chapt. 6)
(end of 1/2 semester 1, "**final exam1**")

6. Nonideal flow in chemical reactors (2 classes) (D&D chapt. 8)
7. Nonisothermal reactors (3 classes) (D&D chapt. 9)
8. Other aspects of reactor design (2 classes) (D&D chapt. 10)
9. Polymerization reactions (1.5 classes).
10. Chemical vapor deposition reactions (1.5 classes).
(hour test 2)
11. Fermentation and other biological reactions (4 classes)
12. Applications of reaction engineering to biofilms (3 classes)
13. Applications of reaction engineering to describe environmental processes (3 classes)
14. ("**final exam2**")