

A First Course on Kinetics and Reaction Engineering

Unit 18. Lesson Plan

Before Class

- Provide the redacted slides and the handouts to the students and tell them to bring them to class

During Class

- Introduce today's topic and where it fits in the course (Slides 1 and 2)
- Review of Unit 18 (5 to 10 minutes)
 - Slides 3 and 4: go over the key concepts on the slides
- Ask whether the students have any questions from their pre-class preparation and answer them
 - Slide 5
- Learning Activity 18.1 (~20 minutes)
 - Slide 6: Show the problem statement, answer any questions, and have the students work individually to formulate answers for all three parts. Circulate, observe and answer questions as they work. After ~10 minutes have them "pair and share" with a partner. They should attempt to resolve any differences in their responses. For each part, call on a group and have them present their response; then ask if any other groups have a difference of opinion. Let them discuss/debate to resolve the differences; if they move toward an incorrect conclusion, ask questions to guide them to the correct response (or move on to slide 7 or 8).
 - Slides 7 and 8: Use these slides to summarize the discussion. Make sure they understand the response to part c; the A will be completely consumed while B remains, and despite there being no A present, the rate expression predicts a positive rate.
- Learning Activity 18.2 (~20 minutes)
 - Slide 9: Show the problem statement, answer any questions, and have the students work individually or with a partner to prepare their slides. Circulate, observe and answer questions as they work. After ~10 minutes, call on students or take volunteers to make their presentations.
 - Slide 10: Use this slide to summarize key approaches to improving the selectivity. Ask if anyone has any other ideas: someone may suggest slowly adding the S, if they do, tell them that's an excellent idea and mention that that type of operation is known as semi-batch and it will be considered in a later unit.
- Slide 11: Put the material covered in this class into the overall context of the course.

After Class

- Provide the complete slides to the students.