A First Course on Kinetics and Reaction Engineering

Unit 20. Lesson Plan

Before Class

- Provide the redacted slides to the students and tell them to bring them to class.
- Make arrangements so the students can use computers in class to work on the problem.

During Class

- Introduce today's topic and where it fits in the course (Slides 1 and 2)
- Review of Unit 20 (5 to 10 minutes)
  - Slide 3: go over the key concepts on the slides
- Ask whether the students have any questions from their pre-class preparation and answer them
  - Slide 4
- Learning Activity 20.1 (~40 minutes)
  - Slide 5: Go over the problem statement. You might make this into a contest, or extend it into a a homework assignment.
  - Slide 6: Make sure they understand what it means to program the coolant flow and how that would be implemented in code. Tell them to spend a few minutes brainstorming on the best way to proceed and then get to work.
  - Slide 7: Just before concluding the class, have students describe the strategy they used to approach the problem, then go over the strategy shown on this slide. Note that this strategy gives the largest possible net rate based only upon the processing time, but that when the processing time is added in, it might turn out that a conversion greater than 70% is optimal. The strategy suggested here could be implemented a second time with a conversion of 72% to see whether it gave a larger net rate of production of B. If it did, it could be implemented at several additional conversions to see which one leads to the maximum net production rate.
- Slide 8: Put the material covered in this class into the overall context of the course.

After Class

- Provide the complete slides to the students.

Variations

- If you feel your class needs some extra work on a prior topic, the learning activity can be shortened or replaced and the resulting time dedicated to that topic