Pre class activity: Conversion and reactor sizing

Lecture notes for chemical reaction engineering

Ranjeet Utikar

2024-03-04

- Read chapter 2 of Elements of Chemical Reaction Engineering (Fogler 2016).

- In this lecture we will be using python/ jupyter to solve problems related to reactor sizing. It is therefore essential that you bring a laptop for the lectures/ workshops this week.

  We will be working through online jupyter notebooks hosted on Google colab. You can possibly work with iPads or other tablets, but I haven't tested it so you are on your own.

  If you haven't already,

  - Watch Get started with Google Colaboratory (Coding TensorFlow)

  - Visit Google colab. Go through the overview

  - Check out following examples:

    Overview of Colaboratory Features

    Markdown Guide

    Charts in Colaboratory

- Revisit the concept of interpolation and polynomial fitting

  - We will be using `CubicSpline` interpolation function from the `scipy.interpolate` library. Go through documentation for 1-D interpolation

  - For curve fitting, we will use polynomial fitting function `polyfit` from `numpy`. Go through the documentation for `numpy.polyfit`

- Refresh numerical integration concepts such as trapezoid, Simpson's 1/3 or 5/8 rule etc.

  - We will be using general purpose quad function from the `scipy.integrate` library. Go through documentation for Integration (`scipy.integrate`)

Fogler, H. Scott. 2016. *Elements of Chemical Reaction Engineering*. Fifth edition. Boston: Prentice Hall.