# Modeling and Simulation, MC312
# Lab-2
# Compartment Model

Due Date: August 22, 2023

**System dynamics problem with rate proportional to the amount (Drug Dosage)**

Linear differential equation with temporal driving. The objective of this lab is to study and analyze the drug dosage problem (Module 2.5).

1. By going through exercises $1 - 7$ of module 2.5 develop an understanding of the one-compartment model of Dilantin.

2. Further, by refering to Project problems $1 - 3$, extend your understanding to the two compartment model.

3. **Report Writing:** Your report should be in the context of the problem of drug dosage. What is meant by compartment over here, the type of assumptions involved and what can be learnt and predicted from the mathematical model.

4. **[Learning outcomes]**

   - Construct and analyze *complex* problems through simple compartment models.

   - Drawing *meaningful* inferences from numerical experiments.

   - Comparing numerical results with analytical solutions. Develop an understanding of the convolution theorem.

   - Scientific writing and presentation.