

1.	Title of the course	Homogeneous Reaction Engineering
2.	Course number	CH3101
3.	Status of the course	Core
4.	Structure of credits	2-1-0-3
5.	Offered to	UG
6.	New course/modification to	New course
7.	To be offered by	Department of Chemical Engineering
8.	To take effect from	July 2020
9.	Prerequisite	Nil
10.	Whether approved by the Department	Yes
11.	Course Objective(s): To determine rate law for a given chemical reaction. To design an ideal reactor using the given rate law for homogeneous reaction(s).	
12.	Course Content: Rate law and stoichiometry; Kinetics of homogeneous reactions; Analysis and interpretation of kinetic data from batch reactors; Ideal reactors: continuous stirred tank reactor (CSTR), plug flow reactor (PFR), analysis and design for single reactions; Series, parallel and multiple reactions in ideal reactors; Temperature and pressure effects; Guidelines for choosing optimum reactor system; Residence time distribution (RTD); Non-ideal reactor models.	
13.	Textbook(s): 1. Fogler S H, <i>Elements of Chemical Reaction Engineering</i> , 4th Edition, Prentice Hall India (2015). 2. Levenspiel O, <i>Chemical Reaction Engineering</i> , 3rd Edition, Wiley India (1999).	
14.	Reference(s): 1. Davis M E and Davis R J, <i>Fundamentals of Chemical Reaction Engineering</i> , 1st Edition, McGraw Hill (2003). 2. Doraiswamy L K and Uner D, <i>Chemical Reaction Engineering: Beyond the Fundamentals</i> , 1st Edition, CRC Press (2013). 3. Froment G F and Bischoff K B, <i>Chemical Reactor Analysis and Design</i> , 2nd Edition, John Wiley & Sons (1990). 4. Schmidt L D, <i>The Engineering of Chemical Reactions</i> , 2nd Edition, Oxford University Press (2005).	