

GUJARAT TECHNOLOGICAL UNIVERSITY
B.E. SEMESTER : VIII
CHEMICAL TECHNOLOGY

Subject Name: Chemical Kinetics & Reaction Engineering

Subject Code: 183502

Teaching Scheme				Evaluation Scheme			
Theory	Tutorial	Practical	Total	University Exam(E)	University Exam(P)	Mid Sem Exam(Theory) (M)	Practical (Internal)
3	0	3	6	70	30	30	20

Sr. No	Course contents
1.	Kinetic interpretation of experimental data using batch and continuous flow reactors for homogeneous reactions.
2.	Reactor types: Batch, Semi-batch and Continuous Reactors and their sizing. Multiple reactors – series – parallel combinations.
3.	Multiple reaction – series – parallel reactions, concept of instantaneous and overall yield, Reactor/reactors selection based on yield of the desired product.
4.	Heat effects: Adiabatic and non-adiabatic operations, strategies for heat transfer for reactors for exothermic reactions.
5.	Introduction to Heterogeneous catalysis

Reference Books:

1. Elements of Chemical Reaction Engineering ,H. Scott Fogler. 4th Ed., 1992
2. Chemical Reaction Engineering Octave Levenspiel, Wiley Eastern Ltd. 3rd Ed.,2006
3. Chemical Process Technology, J Moulign, M Makkee and A Diepen, John Wiley & Sons, 2001
4. Introduction to Chemical Process Technology, P Berg and W Jong, Delft University Press, 1980
5. Introduction to Chemical Process : Principles, analysis and synthesis, R M Murphy, Mc Graw Hill, 2007
6. Industrial Chemical Process Design, Douglas Erwin, Mc Graw Hill, 2002
7. Unit Operations of Chemical Engineering, Warren McCabe, Jubian Smith and Peter Harriot, Mc Graw Hill, 7th Ed., 2004
8. Transport Processes & Unit Operations in Chemical Engineering ,Gean Koplis, Prentice Hall, 2003
9. Coulson and Richardson's Chemical Engineering Volume 1 - Fluid Flow, Heat Transfer and Mass Transfer , Coulson, J.M.; Richardson, J.F.; Backhurst, J.R.; Harker, J.H. Elsevier, 6th Ed., 1999
10. Coulson and Richardson's Chemical Engineering Volume 2 – Particle Technology and Separation Processes, B J Blackhurst & J H Harker, Elsevier, 5th Ed., 2002
11. Coulson and Richardson's Chemical Engineering Volume 3 – Biochemical Reactors & Process Control, B J Blackhurst & J H Harker, Elsevier, 3rd Ed., 1994

12. Coulson and Richardson's Chemical Engineering Volume 4 – Solutions to the Problems in Chemical Engineering from Vol- 1, B J Blackhurst & J H Harker, Elsevier, 2001
13. Coulson and Richardson's Chemical Engineering Volume 5 – Solutions to the Problems in Chemical Engineering from Vol- 2 and Vol-3, B J Blackhurst & J H Harker, Elsevier, 2001
14. Chemical Engineering Design Volume 6, R K Sinnott, Coulson and Richardson's Chemical Engineering Elsevier, 4th Ed, 2005