GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. SEMESTER : VI

CHEMICAL TECHNOLOGY

Subject Name: Material & Energy Balance Calculations
Subject Code: 163502

Teaching Scheme				Evaluation Scheme			
Theory	**Tutorial**	**Practical**	**Total**	**University Exam(E)**	**University Exam(P)**	**Mid Sem Exam(Theory) (M)**	**Practical (Internal)**
4	1	0	5	70	0	30	50

Sr. No.	Course contents
01.	Units & Dimensions. Applications of Laws of Conservation of Mass & Energy to single & multistage processes. Material & Energy balances for Unit Operations & Processes.
02.	Integrated Balances for manufacturing Processes. Machine Computation Techniques. System of Equations, Mole concept & composition relationship
03.	Stoichiometry. Behavior of gases & vapors. Simple material balances without chemical reactions. Humidity & saturation.
04.	Material balances with chemical reaction. Complex material balances.
05.	Energy balances.
06.	Combined material & energy balances. Combustion balances. Balances in stage wise unit operations. Unsteady state balances. Differential balances. Balances in chemical processes

Reference Books:

1. Basic Principles & Calculations in Chemical Engineering ,D.M.Himmelblau.,6th Ed. ,2004
2. Stoichiometry, B.I.Bhatt & Thakore ,Tata McGraw Hill Book Company, 5th Ed ,2010
3. Chemical Process Principles, Vol.1, O.A.Hougen, K.M.Watson, R.A.Ragatz., Indian print, CBS Publishers,2nd Ed., 1995
4. Stoichiometry & Process Calculations, Narayanan K.V., & Lakshmikutti B., Prentice Hall, 2006
5. Process Calculations, V Venkataramani and N Anantharaman, PHI Learning, 2004
6. Chemical Process Calculations Manual, David Carr Igbinoghene, Mc Graw Hill Professional,2004
7. Optimization of Chemical Processes, T F Edgar, D M Himmelblau and L S Lasden, Tata Mc Graw Hill, 2001