

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

Subject Name: Processing of Glass & Ceramics – I

Subject Code: 153603

Teaching Scheme				Evaluation Scheme			
Theory	Tutorial	Practical	Total	University Exam(E)	University Exam(P)	Mid Sem Exam(Theory) (M)	Practical (Internal)
3	0	2	5	70	0	30	50

Sr. No.	Course contents
1.	Beneficiation Process: Comminution: - Milling, grinding & particle size reduction, determination & control of size distribution, mixing, filtration, washing, granulation etc.
2.	Forming processes: Dry processing, compaction, ejection & transfer, cold isotactic pressing, compaction of powders.
3.	Plastic forming: Extrusion, jollying etc.
4.	Casting processes: Drying, shaping, surface finishing, glazing
5.	Firing Processes: Pre sintering, sintering, vitrification & cooling
6.	Processing of glass: selection of raw materials, effect of different oxides on properties of glass, batch preparation, melting, glass tank furnaces, refining.
7.	Furnaces: Different furnaces / kilns, temperatures attained, measurement techniques, Major fuels used. Heat economy, waste heat recovery

Reference Books:

1. Introduction to the principles of ceramic processing, Reed J.S., John Wiley & Sons, 1998
2. Rheology of Ceramic Systems, Moore F., Elsevier, 1979
3. Rheology and rheometry of clay-water systems, G W Phelps, S W Maguire, W J Kelly and R K Wood, Cyprus Industrial Minerals Co., 2008
4. Ceramic Processing before Firing, Onoda & Hench, Wiley, 1978
5. Elements of Fuels, Furnaces & Refractories, Gupta O.P, Khanna Publishers, 1996
6. The Science of Flames & Furnaces, Thring M.W, Taylor and Francis, 1962
7. Principles of Blast Furnaces for Iron Making, Biswas A.K., SBA Publications, 1984
8. Elements of ceramics, Norton F.H, Longman higher education, 2nd Ed, 2001
9. Introduction to ceramics, Barsoum, Institute Of Physics Publishing (gb) 2002
10. Introduction to Ceramics, Kingery W.D., Wiley New York :, 2nd Ed, 1976.
11. Material Science, Smith, Mc Graw Hill Higher Education, 4th Ed, 2005
12. Industrial ceramics, Singer & Singer, , Oxford & Ibh (From Technip), 1st Ed., 2008
13. Textbook of physical Geology, Mukherjee, , CBS Publishers & Distributors-New Delhi 1st Ed., 2011
14. Textbook of Mineralogy, Tyrrel, W, , CBS Publishers & Distributors, 4th Ed., 2006
15. Textbook of Geology, J B Mahapatra, CBS Publishers & Distributors, 2nd Ed. , 2008