

GUJARAT TECHNOLOGICAL UNIVERSITY

Diploma in Ceramic Technology

Semester : 4

Subject Name: FUEL AND FURNACES

Sr. No.	Course Content
1.	INTRODUCTION 1.1 Details regarding various types of fuels. 1.2 Importance of fuels in ceramic industry. 1.3 Properties required for the fuels. 1.4 Principles of combustion.
2.	CLASSIFICATION PF FUELS 2.1 Various types of fules, Solid, Liquid, Gaseous, Electricity. 2.2 Method of manufacturing of various types synthetic fuels.
3.	PROPERTIES OF FUELS 3.1 Properties of solid fuels. 3.2 Properties of liquid fuels. 3.3 Properties of gaseous fuels. 3.4 Properties of synthetic and electric fuels. 3.5 Method of determining calorific value of fuels. 3.6 Efficiency of fuels. 3.7 Suitability of fuels for ceramic industries.
4.	HISTORICAL DEVELOPMENT OF KILNS & FURNACES FOR CERAMIC INDUSTRIES 4.1 Kilns & furnaces used in the ancient age 4.2 Importance of kilns and furnaces 4.3 Present status of kilns & furnaces in the ceramic industries
5.	CLASSIFICATION OF FURNACES 5.1 Classification of kilns & furnaces 5.2 Details of Hoffman's kilns 5.3 Construction and function of ball-hose type of furnaces for structural wares 5.4 Types of pottery kilns
6.	INTERMITTENT AND CONTINUOUS KILNS FOR POTTERY INDUSTRIES 6.1 Construction and function of up draft kilns and down draft kilns 6.2 Construction and function a circular and rectangular tunnel kilns 6.3 Muffle type tunnel kilns & open flame tunnel kilns 6.4 Construction and functions of modern type of shuttle kilns and roller kilns

	6.5 Construction and functions of electrical decorative kilns 6.6 Merits and demerits of various types of kilns and furnaces
7.	GLASS AND ENAMELING FURNACES 7.1 Construction and function of pot furnace 7.2 Construction and function of tank furnaces 7.3 Construction and function of recuperative and regenerative type of furnaces 7.4 Construction and function of muffle furnace for enameling 7.5 Construction and function of frit furnace, muffle type and rotary types of frit furnace
8.	TEMPERATURE AND ITS MEASUREMENT 8.1 Detail study of method of measurement of temperature inside the kilns 8.2 Details of various equipments for measurements to such as thermo couple pyrometers, pyroscopes, thermo-couple, 8.3 Details of optical pyrometer, resistance pyrometer and radiation pyrometer

Reference Books:

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|----------------------------------|----------------------------|
| 1. Fuels | Brame and king |
| 2. Fuels furnaces and refractory | O.P.Gupta |
| 3. Kilns & Furnaces | Vol. I & Vol. II W. Trinks |
| 4. Industrial Ceramics | Singer & singer |
| 5. Elements of ceramics | F.H.Norton |