Course Specifications

General Information

Course name	Industrial Chemistry(1)
Course number	CHEM3206
Faculty	
Department	
Course type	Major Needs
Course level	3
Credit hours (theoretical)	2
Credit hours (practical)	0
Course Prerequisites	

Course Objectives

1 - - The students will understand the fundamental chemistry of industrial processes in the field of glass, cement, ceramic and paper industries.

2 - - Students will be accquaited with the leading philosophies of Quality and able to relate the concepts of quality and productivity and understand that quality improvement generally lead to productivity improvements.

3 - - Students will be able to integrate their skills and knowledge with information gain in this course for making wise decision in their trade that can result in benefit to the society

Intended Learning Outcomes

Knowledge and Understanding

* - Define, describe and apply basic chemical processes involved in the production of major commercial products used in society as glass, ceramic, cement and paper.
* - Develop critical skills of formulation and analysis of the industrial products

Course Contents

1 - The study involves a general survey of chemical industries as glass, ceramic, cement and paper industries.

2 - Glass Industry Nature of glass, physical and chemical properties of glass, Raw material, Chemical reactions during the manufacturing, processes of manufacture, Types of glass, special glass, analysis and quality control in the manufacturing.

3 - Ceramic Industry Composition of ceramic, Raw material and its specifications, chemical reactions, processes of manufacturing, classification, application and methods of testing.

4 - Cement Industry Raw material process: Wet and Dry process, clinker burning process: Wet, Dry and semi-dry process, cement chemistry Manufacturing process: Crushing, Raw milling and Blending, Pyro processing, burning and cooling, cement Milling, storage and backing , types of cement, physical properties of porrland cement Fineness, Soundness, Consistency, Setting time, compressive strength, density and sulfate expansion, Additives and specification on cement.

5 - Pulp and paper Industries Manufacturing of pulb, Raw material, pulbing processes, kraft pulping, soda pulbing, sulfite pulbing, and semichemical pulbing, Manufacturing of paper and paperboard: screening, cleaning, Bleading, Beating, loading, Sizing, coloring and refining processes, classification and uses of paper, testing and Q.C. of paper.

Books and References

Essential books	1. Industrial Chemistry , Inorganic and organic" R.K. Dass, Kalyani Publishers, New Delhi, India, 1982. 2. Shreves chemical process Industries" 5th . Edition, George, T. Austin, Mc Craw- Hill Book company, 1984 3. Handbook of Glass Manufacture", Volume 2, Fay Vansile Tooley, Ashlee Publishing Company, 1984. 4. Cement Manufacturer Handbook" Peray, Kurt E, Chemical Publisher company Inc. 1979. 5. The Cement Plant operations Handbook" Six Edition, Philp A, Alsop, Hung Chen, Herman Tseng, International cement review, 2007. 6. Pulp and paper Industry" 1st Edition P. Bajpai, Elsevier, 2015 7. Papermaking Science and Technology" Book Series: a) Papermaking chemistry", Volume (4) Raimo Alen, Dr. Tech, 2007. B) Chemical pulping, Part 1, Fibre chemistry and Technology Pedro Farelin 8. Rigels Handbook of Industrial Chemistry" 9th , Edn (1992), Chapman, Hill