Enclosure - IV

Semester - I		
Course Code	**Course Title**	**Course Credit**
	Core 1: DSE-ID-1 CHEMICAL TECHNOLOGY	**3 Credits**

Course Description:
A chemical or process plant is required to carry out transformation of raw material into desired products effectively, economically and safely. Therefore, this course deals with the fundamental concepts of chemical technology comprising various chemical industries like ceramics, soap, paints, pigments and sugar etc.This course also deals with the new technologies and new developments in chemical technology.

Course Purpose:

1. To apply Knowledge of fundamentals of process industries.
2. To understand the technology used in various chemical industries.
3. To understand scientific literature, new technologies and new developments in chemical technology.
4. To design process flow diagrams/process block diagrams for the manufacture of various chemicals from process description.

Course Outcomes: Upon completion of this course, the learner will be able to		
CO No.	**CO Statement**	**Blooms taxonomy Level (K_1 to K_6)**
CO_1	Understand the concepts of ceramic industries.	K1, K2
CO_2	Understand the basic technology of soap industries.	K1, K2
CO_3	Understand the fundamental technology of paint industries.	K1, K2
CO_4	Understand the concepts of pigment industries.	K1, K2, K3
CO_5	Understand the basic concepts and technology of sugar industries.	K1, K2, K3

Course Content	**Hours**
Module-I : Ceramic:	5 hrs
• Introduction, Classification based on reduction in porosity, Raw Materials, Manufacturing process, Glazing, Decoration, Methods of applying colours.	
Module-II :Soaps:	5 hrs

• Introduction, Raw Materials, Manufacturing process, Classification, Cleaning action, Recovery of glycerin from spent lye.	
Module-III :Paints:	5 hrs
• Introduction, Classification based on application, raw materials for paint, requirements of good paint, paint failure, Paint removers, Special applications of paints.	
Module-IV : Pigments:	5 hrs
• Introduction, Classification, Manufacturing processes and Uses of Various types of pigments ○ Blue Pigment : Ultramarine blue, Cobalt Blue, Iron Blue. ○ Green Pigment : Chrome green, Guignet green, Chromium oxide.	
Module-V :Sugar:	4 hrs
• Introduction, Manufacture of cane sugar, Extraction of juice, Purification of juice, Defection, Sulphitation and Carbonation, Refining, Grades, • Manufacture of sucrose from beet root.	

Suggested laboratory experiments:
• Not Applicable

Pedagogic tools:
• Chalk and Board
• LCD and Videos.

Text books

1. Kirk, R. E. (2004), Encyclopedia of chemical technology, 5th Edition, NY: Wiley-blackwell ISBN-13: 9780471484943.
2. Sharma, B. K. (2011), Industrial chemistry,16th Edition, India: Krishna Prakashan Media (P) Ltd., ISBN-13: 978-81-8283-120-9.
3. Poucher, W. A. (1991), Perfumes, Cosmetics & Soaps, 9th Edition, London: Chapman & Hall, ISBN-0-412-27340-3.
4. Stanburry, P. F. Whitaker A., HALLS. J., (2003), Principles of Fermentation technology, 2nd Edition, UK: Elsevier, ISBN: 0-7506-4501-6.
5. Austin, G. T, (1998) Shreve's Chemical Process Industries, 4th Edition NY: McGraw Hill, ISBN 13: 9780070571457.
6. B.K. Sharma, Industrial Chemistry,2014, ISBN: 978-93-86901-54-5, 1-1800.

Laboratory Manual/ Book

- .Not Applicable

Suggested reading / E-resources

1. Goldschmidt, Streitberger, Basics of coating Technology, BASF Handbook, ISBN-13: 978-3866309036.
2. Paints and pigments, https://nzic.org.nz/ChemProcesses/polymers/10D.pdf.
3. Entire Functions of Sugar Industryhttp://shodhganga.inflibnet.ac.in/bitstream/10603/11

3307/10/chapter_-5.pdf

Suggested MOOCs
• Process Technology&Process • Chemical TechnologybyCoastline Community College, Community college in Fountain Valley, California.http://www.coastline.edu/academics/process-technology.

Methods of assessing the Course Outcomes The COs of the course will be assessed through
• CIE • SEE • Assignments • Quiz • Seminar