

**APPLIED CHEMISTRY (BS-ADP 5<sup>th</sup> Semester)**

<b>Module Code:</b>	<b>Chem-313</b>
<b>Module title:</b>	<b>Unit Operations &amp; Chemicals</b>
<b>Name of Scheme:</b>	<b>BS-ADP 5<sup>th</sup> Semester</b>
<b>Department:</b>	<b>School of Chemistry</b>
<b>Faculty:</b>	<b>Science</b>
<b>Module Type:</b>	<b>Optional</b>
<b>Module Rating:</b>	<b>2 credits</b>

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**OBJECTIVES**

This course will help the students in assessing the Unit Operations in Chemical Industry, Basic Chemical Industries and Cement Industries. The students will learn about the basic concepts of chemical industries.

**SYLLABUS OUTLINE:**

1. **Unit Operations in Chemical Industry:**  
Introduction to chemical industry with reference to Pakistan, Chemistry vs Chemical Engineering, Flow sheet Diagrams, Brief Introduction of different unit operations used in chemical industry. Heat Flow, Convection, Conduction, Heat Exchangers, Distillation, Evaporation, Size Reduction and Size Separation and Filtration.
2. **Basic Chemical Industries:**  
Raw materials; Chemical processes involved; flow sheet diagrams with all the important parameters concerned with the manufacturing of Phosphoric acid; caustic Soda; Calcium oxychloride; Phenol, Phthalic anhydride, Oxalic acid, Paracetamol, and Aspirin, Applications of these chemicals in industry.

**RECOMMENDED BOOKS:**

1. Applied Chemistry, Haq Nawaz Bhatti and Muhammad Salman, 2017, Caravan Book Publisher, Pakistan.
2. Unit operations in Chemical Engineering, Chattopadhyay, Khanna Publishers, Delhi-6.(1993).
3. Hand Book of Industrial Chemicals, By SIRI Board of Consultants and Engineers,
4. Small Industries Research Institute, New Delhi (1995)
5. Small Medium and large Scale Industries, A.K. Sirivastawa, Small Industries Research Institute, New Delhi (1996).
6. The Chemistry of Cement, H.F.W. Taylor, Academic Press, London, 1964.
7. Shereve's Chemical Process Industries, 5th Ed.1975 by G.T.Austin McGraw Hill Book Co. New York.
8. Industrial chemistry, B. K. Sharma Krishna Prakashan Media (P) Ltd., Ed-15 (2006).