

Skill Enhancement Course: Soap and Detergent Making

Faculty: Science	Title: Soap and Detergent Making
Program: B.Sc. (Hons)	Total Credit: 3
Semester: 1	Type: Skill Enhancement Course

1. Student Learning Outcomes (SLOs):

- Skill development for detergent cake and liquid soap, shampoo, handwash making.
- Knowledge of basic concepts and techniques of soap and detergent industry.
- Understanding of oil, fat and their sources in India.

2. References and Textbooks:

- Ajay Kr. Gupta, Handbook on Soaps, Detergents & Acid Slurry , 3rd revised edition; NIIR Board publication. ISBN: 9789381039472
- P. K. Chattopadhyay, Modern Technology of Soaps, Detergents & Toiletries (with Formulae & Project Profiles) 4th Revised Edition, NIIR Board publication; ISBN: 9789381039700
- H. Panda, Herbal Soaps & Detergents Handbook, NIIR Board publication; ISBN: 9789381039007

Unit-1: Introduction to oil and fats:

(6 hours)

- 1.1 Classification, structure and sources of oil and fats
- 1.2 Natural sources of oils and fats in India

Unit-2: Soaps:

(7 hours)

- 2.1 introduction to soaps, synthetic detergents, raw materials and its selection
- 2.2 principles of soap making and chemistry of soap
- 2.3 Boiling, saponification process

Unit-3: Detergents:

(7 hours)

- 3.1 Types of detergents, classification of detergents (anionic, cationic, nonionic, amphoteric), biodegradability.
- 3.2 Inorganic compounds of detergents (builder & other additives, phosphates, silicates, zeolites, etc)

Unit-4: Synthetic detergents:**(10 hours)**

- 4.1 Organic raw materials for manufacturing of fatty acids, olefins, alkylbenzene, methyl esters, fatty amines, ethylene oxide, propylene oxide sources and manufacture.
- 4.2 Inorganic raw material for sulphonation viz; sulphuric acid, sulphonic acid, oleum, sulphur trioxide, chlorosulphonic acid.
- 4.3 Sulphonation of organic raw materials like fatty acids, fatty acids ethoxylates plants and processes.
- 4.4 Sulphonation of alkylbenzene, olefins & vegetable oils, plants and processes.

Practicals:

- 1. Determination of physico-chemical characteristics of oil and fats
 - 1. Moisture content
 - 2. Acid value
 - 3. Iodine value
 - 4. Saponification reaction and Saponification value
- 2. Manufacture of liquid soap (shampoo) and laundry soap.
- 3. Project Work: Industrial training for one month duration.