

PANJAB UNIVERSITY, CHANDIGARH

SYLLABI

FOR

SOAPS AND DETERGENTS

ADD-ON-COURSE

CERTIFICATE, DIPLOMA AND ADVANCED DIPLOMA

FOR

B.A./B.Sc./B.Com.

FOR

THE EXAMINATION OF 2011-12

PANJAB UNIVERSITY, CHANDIGARH

SOAPS AND DETERGENTS – A CERTIFICATE COURSE

Outlines of Tests, syllabi and courses of reading for an add-on Certificate course in Soaps and Detergents during B.A./B.Sc./B.Com.

Outline of Tests

Paper Code	Paper	Paper Name	Lectures and Practicals/week	University Exam. marks
	Theory	Soaps & Detergents-1	4	150
	Practical	-do-	4	50

ADD-ON CERTIFICATE COURSE IN SOAPS AND DETERGENTS
SYLLABUS

Unit I

1. Introduction of oils and fats, their sources, structure and composition of oils and fats, glycerides and fatty acids, their nomenclature, classification.
2. Natural sources of oils and fats, Position in India in relation to the world production of oils and fats.

Unit II

3. Introduction of soaps, synthetic detergents, raw materials for soaps and their selection, selection of other auxiliary raw materials.
4. General principles of soap making, chemistry of soap boiling and saponification reaction, manufacture of soap (cold, hot and semi boiled process), bleaching of soap, manufacture of toilet soap.

Unit III

5. Various types of detergents, classification of detergents (anionic, cationic, nonionic, amphoteric), biodegradability.
6. Inorganic compounds of detergents (builder & other additives, phosphates, silicates, zeolites, etc)

Unit IV

7. Synthetic detergents (raw materials)

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

ADD-ON CERTIFICATE IN SOAPS AND DETERGENTS

LIST OF BOOKS

S.No.	Author	Title	Edition	Publisher
1.	K.S. Parasuram	Soaps & detergents		
2.	NIIR Board	Handbook on Soaps, Detergents & Acid Slurry		Asia Pacific Business Press
3.	J.G. Kane	Soaps: Their Chemistry & Technology	First	Dr. R. Sarkarar
4.	Anthony M. Schwartz, James W. Perry & Julian Berch	Surface Active Agents & Detergents	Vol. II	Interscience Publishers
5.	Benjamin Levitt	Oils, Detergents & Maintenance		Chemical Publishing Company
6.	NIIR Board	The Complete Technology Book on Soaps		Asia Pacific Business Press
7.	NIIR Board	The Complete Technology Book on Detergents		Asia Pacific Business Press
8.	George T. Austin	Shreve's Chemical Process Industries	Fifth	McGraw-Hill

ADD-ON CERTIFICATE COURSE IN SOAPS AND DETERGENTS
LIST OF EXPERIMENTS

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

PANJAB UNIVERSITY, CHANDIGARH
SOAPS AND DETERGENTS – A DIPLOMA COURSE

Outline of Tests, syllabi and courses of reading for an add-on Diploma course in Soaps and Detergents during B.A./B.Sc./B.Com.

Outline of Tests

Paper Code	Paper	Paper Name	Lectures and Practicals/week	University Exam. marks
	Theory	Soaps & Detergents-2	4	150
	Practical	-do-	4	50

DIPLOMA IN SOAPS AND DETERGENTS

SYLLABUS

Unit I

Introduction of soaps and detergents, classification and chemistry of soaps, classification and chemistry of non soapy detergents, manufacture of soaps (cold, semi boiled, hot process).

Unit II

Fatty raw materials for soaps:

Oils for soap making, pretreatment and upgradation of oils & fats, technology of fat splitting and distillation, handling and storage of oils and fats.

Unit III

Technology of soap manufacturing:

Soap manufacture, glycerine recovery, manufacture of laundry and toilet soaps.

Unit IV

Technology of manufacturing of synthetic detergents

Manufacture of detergents powders (dry mixing, spray drying, agglomeration, combination of spray drying with other processes), manufacture of detergent cakes and liquid products.

ADD-ON DIPLOMA COURSE IN SOAPS AND DETERGENTS**LIST OF BOOKS**

S.No.	Author	Title	Edition	Publisher
1.	K.S. Parsuram	Soaps & Detergents		
2.	NIIR Board	Handbook on Soaps, Detergents & Acid Slurry		Asia Pacific Business Press
3.	J.G. Kane	Soaps: Their Chemistry & Technology	First	Dr. R. Sarkarar
4.	Anthony M. Schwartz James W. Perry & Julian Berch	Surface Active Agents & Detergents	Vol II	Interscience Publishers
5.	Benjamin Levitt	Oils, Detergents & Maintenance		Chemical publishing company
6.	NIIR Board	The Complete Technology Book on Soaps		Asia Pacific Business Press
7.	NIIR Board	The Complete Technology Book on Detergents		Asia Pacific Business Press
8.	George T. Austin	Shreve's Chemical Process Industries	Fifth	McGraw-Hill

ADD-ON DIPLOMA COURSE IN SOAPS AND DETERGENTS

LIST OF EXPERIMENTS

- 1) Determination of total fatty matter, free caustic alkali, chloride & moisture and volatile matter in the soaps.
- 2) Manufacture of detergents.
- 3) Identification test and detection of adulteration of oils and fats.
- 4) An industrial tour will be arranged in autumn break. Short tours may be arranged at other times.

PANJAB UNIVERSITY, CHANDIGARH

SOAPS AND DETERGENTS – AN ADVANCED DIPLOMA COURSE

Outline of tests, syllabi and courses of reading for an add-on Advanced Diploma course in Soaps and Detergents for B.A./B.Sc./B.Com.

Outline of Tests

Paper Code	Paper	Paper Name	Lectures and Practicals/week	University Exam. marks
	Theory	Soaps & Detergents-3	4	150
	Practical	-do-	4	50

ADVANCED DIPLOMA IN SOAPS AND DETERGENTS

SYLLABUS

Unit I

1. General principles of soap making, chemistry of soap boiling, saponification reaction, raw materials and their selection, soap making by continuous process.

Unit II

2. Glycerine recovery: Introduction, glycerine recovery process, refining of crude glycerine.
3. Manufacture of shaving soaps, liquid soaps, medicated soaps, laundry soaps.

Unit III

4. Detergents classification, raw materials for synthetic detergents, manufacture of detergent powders, liquid detergents, detergent bars, fabric softeners, additives to detergents, finishing of detergents.
5. Introduction of various surface cleansers e.g. glass cleansers, oven cleansers, dish washing agents.

Unit IV

6. Packaging of soaps and detergents, management of soaps and detergents, safety, pollution and effluents, conditioning.

ADD-ON ADVANCED DIPLOMA COURSE IN SOAPS AND DETERGENTS**LIST OF BOOKS**

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1.	K.S. Parsuram	Soaps & Detergents		
2.	NIIR Board	Handbook on Soaps, Detergents & Acid slurry		Asia Pacific Business Press
3.	J.G. Kane	Soaps: Their Chemistry &Technology	First	Dr. R. Sarkarar
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ADD-ON ADVANCED DIPLOMA COURSE IN SOAPS AND DETERGENTS

LIST OF EXPERIMENTS

1. Determination of active matter, moisture of detergent powders and cakes, pH of the solution.
2. Manufacture of soaps like caustic soap, medicated soap, shaving soap and soft soap.
3. Manufacture of detergents.