

Punyashlok Ahilyadevi Holkar Solapur University, Solapur



NAAC Accredited-2015
'B' Grade (CGPA 2.62)

Name of the Faculty: Science & Technology

CHOICE BASED CREDIT SYSTEM

Syllabus: Cosmetic Technology

Name of the Course: 3rd Year (Sem– V & VI)

(Syllabus to be implemented from w.e.f. June 2020)

Third Year syllabus (according to the Semester Pattern Examination) to be effective from the Academic Year 2020-21

Semester	Code	Title of the Paper	Semester Examination			L	T	P	Credits
			Theory	IA	Total				
Sem-V		Hard Core							
	HCT5.1	Perfume I	70	30	100	4	--	--	4
	HCT5.2	Cosmetic Technology III	70	30	100	4	--	--	4
	HCT5.3	Principles of Cosmeceutics - I	70	30	100	4	--	--	4
	HCT5.4	Beauty Culture – I	70	30	100	4	--	--	4
		Soft Core (Any one)							
	SCT5.1	Cosmetic Engineering III	70	30	100	4	--	--	4
	SCT5.2	Pharmacology & Interaction-I	70	30	100	4	--	--	4
		Seminar/Tutorial/ Industrial Visit/ Field Tour	---	25	25	--	1	--	1
		Minor Project	---	25	25	--		1	1
	HCP5.1	Practical-I	70	30	100	--	--	06	4
	HCP5.2	Practical-II	70	30	100	--	--	06	4
		Total for Semester – V	490	235	725	--	--	--	30
Sem-VI		Hard Core							
	HCT6.1	Perfume II	70	30	100	4	--	--	4
	HCT6.2	Cosmetic Technology IV	70	30	100	4	--	--	4
	HCT6.3	Principles of Cosmeceutics - II	70	30	100	4	--	--	4
	HCT6.4	Beauty Culture – II	70	30	100	4	--	--	4
		Soft Core (Any one)							
	SCT6.1	Cosmetic Engineering IV	70	30	100	4	--	--	4
	SCT6.2	Pharmacology & Interaction-II	70	30	100	4	--	--	4
	Seminar/Tutorial/ Industrial Visit/ Field Tour	---	25	25	--	1	--	1	

		Minor Project	---	25	25	--		1	1
	HCP6.1	Practical-III	70	30	100	--	--	06	4
	HCP6.2	Practical-IV	70	30	100	--	--	06	4
	Total for Semester-VI		490	235	725	--	--	--	30

L=Lecture T=Tutorials P=Practical IA=Internal Assessment, HCT=Hard Core Theory
SCT=Soft Core Theory, HCP=Hard Core Practical

Evaluation Scheme:

Each theory paper will have 100 marks out of which 70 marks will be for Term End examination and 30 marks for Internal Assessment. Each practical paper will have 50 marks out of which 35 marks will be for Term End examination and 15 marks for Internal Assessment. The candidate has to appear for internal evaluation of 30 marks and external evaluation (University Examination) of 70 marks for each **theory** paper. The candidate also has to appear for internal evaluation of 15 marks and external evaluation (University Examination) of 35 marks for each **practical** paper.

Internal Evaluation:

- In case of theory papers internal examinations will be conducted by school.
- In case of practical paper 05 marks shall be for day-to-day journal and internal examination of 10 marks will be conducted by the school.

External Evaluation (End of Term University Examination):**I) Nature of Theory question paper:**

Q.1 Multiple Choice Questions 14

Q.2 A) Answer the following (Any Four) 08

1. 02

2. 02

3. 02

4. 02

5. 02

B) Write Notes on (Any Two) 06

1. 03

2. 03

3. 03

Q.3 A) Answer the following (Any two) 08

1. 04

2. 04

3. 04

B) Answer the following (Any One) 06

1. 06

2. 06

Q.4 A) Answer the following (Any Two) 10

1. 05

2. 05

3. 05

B) Answer the following (Any One) 04

1. 04

2. 04

Q.5 Answer the following (Any two) 14

1. 07

2. 07

3. 07

II) Nature of Practical Question paper: Practical examination will be of 6 hours duration carrying 60 marks. VIVA & record book will be for 05 marks each.

SEMESTER – V

HCT – 5.1 Perfumes-I

Unit:1

15 L

A) Essential oils – Production equipment, water distillation, Steam distillation, steam and water distillation, treatment of condensate water after distillation.

B) Flower oils – Extraction with cold fat and hot fat, alcoholic extracts, absolute of enflurages and chassis. Extraction with volatile solvents, selection of solvent and extraction apparatus.

Unit:2

15 L

Resins, Gum&Exedution – Their extraction processes e.g. SoxhletApparatus, Percolation, Maceration. Oleo Resins – Ginger oleoresins.Oleo gum resins – Gum Styrax, Gum Benzion and Balsams – Balsam Peru, Myrrh

Unit:3

15 L

Isolates – Methods of Isolation, properties & uses of following:

Eugenol, Pinene, Linalool, Citral and Geraniol.

Flavours – Sources and properties of Vanilla, Rose, Pineapple, Peppermint, Mango, Raspberry, Orange & Lemon

Unit:4

15 L

Alcohols - Manufacture of ethanol, Purification of Ethanol, Deodorization of ethanol.

Books recommended:

1. Perfumes, Flavours and Essential oil Industries – SBP Board.
2. Manufacture of Perfumes, Cosmetics & Detergents – Giriraj Prasad
3. Perfumes: History & Chemistry Vol-I- Dr. D.D.Wasule
4. Cosmetics: Science & Technology – Sagarin.
5. Essential oils Vol. I by Gunther.
6. Perfumes, soups & Cosmetics – Poucher.

HCT – 5.2 Cosmetic Technology-III

Unit: 1

15 L

Skin Creams : Introduction, classification of skin creams, cleansing creams, Night and massage creams, Moisturizing, vanishing and foundation creams, Pigmented foundation creams, hand creams, hand and body cream, all purpose creams. Manufacturing, Packing and storage of creams.

Unit:2

15 L

I) Humectants – Introduction, drying out, types, hygroscopicity, stability, safety, skin moisturization, Application of humectant

II)Antioxidant : Introduction, General oxidative theory, measurement of oxidation and assessments of oxidant efficiency, choice of antioxidants and Application of antioxidants .

Unit:3

15 L

Soaps –Introduction, ingredients, types of soaps-bathing, toilet soaps, antibacterial soaps transparent soaps, liquid soaps,syndates (synthetic detergent bars), Manufacturing technology, evaluation and uses.

Unit:4

15 L

Bath Preparation: Foam baths, Introduction, formulation and foam baths, types of products, product assessment, bath salts, ingredient and formulations.

Bath Oils: introduction floating and spreading oils, dispersible or blooming oils soluble oils, foaming oils.

Books Recommended:

1. Harry's Cosmetology.
2. Cosmetic Science and Technology by Sagarin E.

HCT 5.3 Principle of Cosmeceutics – I

Unit:1

15 L

Solubility: Mechanism of solute – solvent interaction, ideal solubility and Hildebrand – wood Scatchard equation, salvation and association, quantitative approach to the factors influencing solubility of drugs.

Unit:2

15 L

Interfacial Phenomenon:

- a) Cohesion adhesion and spreading, absorption at solid and liquid interfaces, absorption isotherm's applications.
- b) Electrical properties at interface, origin of charge, electric double layer, Nerst and Zeta potential, effect of electrolyte.

Unit:3

15 L

Suspension: Particle interaction and behaviour, flocculation and deflocculation, sedimentation parameters, Role of wetting, controlled flocculation and structured vehicle in formulation, evaluation of suspension stability.

Unit:4

15 L

Emulsion:

Types, detection, thermodynamic considerations, mechanism of droplet stabilization, theories of emulsification, properties and stability of emulsion, assessment of emulsion self life.

Books Recommended:

1. Martin, Swarbrick. Commerate&cuhn Physical Pharmacy.
2. Burger & Lee, Physical and Technical Pharmacy.
3. Rawlins : Bentley's Text Book of Pharmaceutics.
4. Shilton and Ridgway : Physical Pharmaceutic.
5. Remingtons Pharmaceutical Practices.

HCT 5.4 Beauty Culture-I

Unit:1

15 L

Structure of skin and skin blemishes and their treatment.

a) Recognition of skin types. b) Different types of treatments suitable to skin conditions and skin types. c) various methods to remove unwanted hair i) threading ii) waxing. d) Skin care in different seasons. d) Diet and Exercises for healthy skin. Different types of skin blemishes and their treatment.

i. Black heads ii. White heads iii Acne iv. Open pores.
v. Freckles vi. Treatment for curing wrinkles.

Unit:2

15 L

Muscles of facial expression.

a) Bones of the Cranium and face (Only labeled diagrams)
b) Face pack ingredients and their effects
c) Facial: i. Cleaning ii. Toning, iii. Face Massage techniques
iv. Different types of facial

Unit:3

15 L

Mask Therapy

i. Setting masks. ii. Peel off masks.
iii. Thermal types- paraffin wax masks iv. Non-setting masks. v. Hot oil marks

Unit:4

15 L

Introduction to aroma therapy.

a) Methods of extraction of essential oils.
b) Blending & precautions. Properties of essential oils & carrier oils
c) Patch testing, safety & precautions.
d) Different aroma therapy formulations for skin and hair care.

Books recommended:

1. Ann Eaton and Florence Openshaw, Cosmetic Make – Up and Manicure.
2. A Professional Guide to Hair Dressing and Beauty Therapy by Veena Pitre
3. The Science of Cosmetics by John V. Simmons
4. Complete Beauty Book by Helen Foster
5. Vogue- Body and Beauty Book by Bronwen Meredith
6. A Guide for Health & Beauty Therapist Vol.-1 Face, hands and feet by Gaynor Winyard

SCT 5.1 Cosmetic Engineering-III

Unit:1:

Size reduction: Introduction to Size reduction, theory of size reduction, energy for size reduction, factors influencing size reduction, mechanism, classification of size reduction equipment's with construction , working and uses. (5 Periods)

Unit:2:

Size separation:Introduction, official standards, Types of screening equipment, Air separation method, cyclone separators, bag filters, classifiers, simple and mechanical classifiers, size separation by setting and difference in density. (10 Periods)

Unit:3:

Filtration: Introduction, theory and mechanism of filtration, factors affecting filtration, filter media and aids, classification of filtration equipments, selection of filters, study of filter press, Rotary, drum leaf filters, meta filters, disc filters, membrane filters. (15 Periods)

Unit:4:

Mixing: Introduction, mechanism, factors affecting, classification of equipments, mixing of solids, liquids, immiscible liquids and semisolids.

Book Recommended:

1. Introduction to Chemical Engineering – Badger & Banchero.
2. Unit Operation in Chemical Engineering Mc-cabe& Smith.
3. Chemical Engineering Vol. I & II – Richarson & Coulson.

SCT 5.2 - Pharmacology & Interaction-I

Unit:1

15 L

Introduction to scope of pharmacology in cosmetics: Introduction, terminologies, pharmacokinetics, pharmacodynamics. pharmacology of cosmeceuticals: antiaging, antiwrinkle, antiacne, antiinflammerty, antidandruff, fairness- bleaching and sunscreen

Unit:2

15 L

Study of side effects of cosmetic ingredients & products coming in contact with below body parts-
i) Nails ii) Hair iii) Sweat gland iv) Sebaceous gland

Unit:3

15 L

a) Study of disorders of skin and treatment
b) Skin pigmentation, disorder of pigmentation, various pigmentary and depigmentary agents used on above disorders

Unit:4

15 L

Study of disorders and treatment of teeth. Study of side effects of dentifrices mouth wash & gargals.

Books Recommended:

1. Human Physiology – by C.C. Chatterjee.
2. Roxburis Common Skin Diseases.
3. Clinical Dermatology – An individual approach by John T. Ingrans.
4. The merck manual of Diagnosis and Therapy.
5. Unwanted Effects of Cosmetics and Drugs used in Dermatology By. J. P. Nater, Groot & Liem.
6. Harry's Cosmetology.

HCP 5.1: Practical I

Perfumes-I

- 1] Distillation of water, alcohol or any other liquid and estimate boiling range before & after distillation.
- 2] Isolation of essential oil – Extraction (from bark, leaves, flowers, seeds etc.) distillation.
- 3] Study of soxhlet apparatus & its use.
- 4] Preparation of water extracts of turmeric (Haldi), Shikaki, Ritha, Ginger.
- 5] Preparation of alcoholic extract of above herb.
- 6] Deodorization of alcohol.
- 7] Identification of perfumes.
- 8] Identification of flavors.

Cosmetic Technology-III

Preparation of :

1. Cleansing Creams.
2. Cold Cream.
3. Vanishing Cream.
4. Emollient Cream.
5. Hand Cream.
6. Soaps and bath preparation.

HCP 5.2: Practical II

Principles of Cosmeceutics-I

- 1] Determination of surface tension.
- 2] Determination of Interfacial Tension and spreading Coefficient.
- 3] To find critical micellar concentration (cmc) of the given surfactants.
- 4] Effect of phase – volume ratio on stability of emulsion.
- 5] Evaluation of Emulsion stability and shelf life.
- 6] To study and verify Freundlich Adsorption Isotherm.
- 7] To calculate sedimentation parameters of suspension.
- 8] Determination of globule size of emulsion- effect of emulgent

Beauty Culture –I

- 1) methods for eyebrow shaping
- 2) treatment for superfluous hair waxing
- 3] Facial
 - a) Skin analysis
 - b) Facial massage techniques
 - c) Use of different face pack ingredients .
- 4] General facial treatment.
- 5] Herbal facial treatment.
- 6] Fruit Facial
- 7] Different types of facial treatments
 - a) Facial for Mature skin
 - b) Facial for sensitive skin
 - c) Facial for acnified skin
- 8] Aroma Therapy
 - a) Aroma Facial for different skin type

SEMESTER -VI

HCT 6.1 Perfumes-II

Unit:1

15 L

- A) Fixatives – Sources, Classification, Chemical composition and uses -i) Animal Source – Civet, Musk, Ambergris.
ii) Resinous Fixatives – Benzoin, Balsam, Myrrh.
iii) Essential oil Fixatives – Sandalwood, Lemon, Cinnamon.
iv) Synthetic Fixatives. Diethyl Phthalate, Benzyl Benzoate, alcohols.
B) Selection and uses of fixatives.
C) Building of perfumes and body of the perfumes.

Unit:2

15 L

- Odorous materials manufactured synthetically by (Reaction and flow diagrams)
a) Condensation – Coumarin, Diphenyl oxide and cinnamic aldehyde and Esterification – Benzyl acetate, Benzyl Benzoate.
b) Nitration – Musk ambrette, musk xylene and Musk Ketone.

Unit:3

15 L

- Odorous materials manufactured synthetically by (Reaction and flow diagrams) Oxidation – Vanillin, Heliotropins, anisaldehyde, Benzaldehyde

Unit:4

15 L

- Odorous materials manufactured synthetically by (Reaction and flow diagrams) Grignard's Process – Phenyl ethyl alcohol and Hydrogenation – Citronellal from citronellal.

Books recommended:

1. Perfumes, Flavours and Essential oil Industries – SBP Board.
2. Manufacture of Perfumes, Cosmetics & Detergents – Giriraj Prasad
3. Perfumes: History & Chemistry Vol-I- Dr. D.D. Wasule
4. Cosmetics: Science & Technology – Sagarin.
5. Essential oils Vol. I by Gunther.
6. Perfumes, soaps & Cosmetics – Poucher.

HCT 6.2 Cosmetic Technology-IV

Unit:1 **15 L**

- a) Productive creams and hand cleansers: Introduction; barrier material; protective cream and gels and formulation aspects.
- b) Skin lightener of bleaches: Formulation aspects.

Unit:2 **15 L**

Face packs and Masks: Introduction; water based systems, Rubber – Based systems, vinyl – based systems, hydrocolloid – based systems, Earth based systems, anti-wrinkle preparation and their formulation aspects.

Unit:3 **15 L**

Skin Products for Babies: introduction, skin problems in babies, functions, requirement of body products, safety of baby products, example, formulatrions.

Unit:4 **15 L**

- a) Coloured Make-up Preparations: Lipstick- Introduction. Ingredients of lipstick, Example formulation. Manufacture of lipsticks, Treatment lipstick, lip salves, liquid lipsticks. Rouge Introduction, Dry rouge, Wax based rouge, cream rouge, liquid rouge.
- b) Eye make-up, Introduction, Mascara, Eyeshadow, Eyeliner, Eyebrow pencil.

Books Recommended:

1. Harry's Cosmetology.
2. Cosmetic Science and Technology by Sagarin E.

HCT 6.3 Principles of Cosmeceutics-II

Unit:1:

15 L

Distribution phenomenon: Distribution of solute between immiscible liquids, ionic dissociation and molecular association influencing partitioning, Applications of distribution phenomenon.

Unit:2

15 L

Colloidal Dispersion: Properties of colloids – Optical, kinetic and electrical and their applicability in determining molecular weight of polymer, stability of colloidal systems mechanism of peptization.

Unit:3

15 L

Rheology: Types of flow behaviour, thixotropy and thixotropic co-efficient measurement of various rheological properties, factors influencing rheology of dispersed systems.

Unit:4

15 L

Micromeritics: Particle size, size distribution, shape and surface area and their determination in heterogeneous systems. Porosity density and packaging arrangements in flow properties and their influence on processing of solid preparations.

Books Recommended:

1. Martin, Swarbrick. Commerate&cuhn Physical Pharmacy.
2. Burger & Lee, Physical and Technical Pharmacy.
3. Rawlins : Bentley's Text Book of Pharmaceutics.
4. Shilton and Ridgway : Physical Pharmaceutic.
5. Remingtons Pharmaceutical Practices.

HCT 6.4 Beauty Culture-II

Unit:1 **15 L**

- a) Beautician's attitude to client and professional ethics
- b) Different shapes of faces

Unit:2 **15 L**

Make – up :

- a) i. Pre Make-up skin care. ii. Make-up Techniques – Complexion planning.
- b) Application of cosmetics
 - i. Cleanser ii. Toner iii. Astringent. iv. Moisturizer v. Foundation. vi. Powder.
 - vii. Blusher. viii Lipsticks.
- c) Different types of make-ups
 - i) Day Make-up ii) Evening Make-up. iii) Party Make-up. iv) Bridal Make-up

Unit:3 **15 L**

- I) Corrective Make-up for
 - a) Face shapes b) Eyes c) Lips c) Nose
- II) Application of false eye lashes method and contraindication.

Unit:4 **15 L**

Hair and nail care:

- Structure and types of hair, a) General problems and care for hair. b) Natural Dyes and Chemical Dyes c) Shampoo & Conditioner.
- Nail care: manicure, pedicure.

Books recommended:

1. Ann Eaton and Florence Openshaw, Cosmetic Make – Up and Manicure.
2. A Professional Guide to Hair Dressing and Beauty Therapy by Veena Pitre
3. The Science of Cosmetics by John V. Simmons
4. Complete Beauty Book by Helen Foster
5. Vogue- Body and Beauty Book by Bronwen Meredith
6. A Guide for Health & Beauty Therapist Vol.-1 Face, hands and feet by Gaynor Winyard.

SCT 6.1 Cosmetic Engineering-IV

Unit:1

15 L

Distillation :Raoult's law & Henry's law, theory of distillation of binary mixtures of miscible, immiscible and partially miscible liquids, study of distillation equipment used for simple vacuum steam, reflux & molecular distillation.

Unit:2

15 L

Separation of Azeotropes (Binary & Ternary) and liquids of similar volatility. Rectification & fractionation.

Unit:3

15 L

Evaporation: factors affecting evaporation, study of short tube long tube, agitated, film, evaporator performance of tubular evaporator, improving efficiency of evaporation.

Unit:4

15 L

Drying : Definition purpose of drying, theory of drying / loss on drying, moisture content and equilibrium moisture content, classification of dryers, study of tray, Rotary, Vacuum, fluidized bed dryers.

Book Recommended:

4. Introduction to Chemical Engineering – Badger & Banchero.
5. Unit Operation in Chemical Engineering Mc-cabe & Smith.
6. Chemical Engineering Vol. I & II – Richardson & Coulson.

HCT 6.2 Pharmacology & Interaction-II

Unit:1 **15 L**
Allergy and antigen – antibody reaction, types of Hypersensitivity reaction and disorders due to hyper sensitivity reactions and a topic dermatitis.

Unit:2 **15 L**
a)Dermatitis – various types and their clinical feature.
Acute Toxic contact dermatitis, Allergic contact dermatitis, Irritant contact dermatitis, Phototoxic contact dermatitis.
b) Dermatological testing as per BIS specification patch testing, repeated insult patch testing cumulative irritation test photoallergic test phototoxicity test.

Unit:3 **15 L**
Disorders and treatment of feet, foot cosmetics.

Unit:4 **15 L**
Methods for animal testing for safety evaluation of cosmetics

Books Recommended:

- 1 Human Physiology – by C.C. Chatterjee.
- 2 Roxburgs Common Skin Diseases.
- 3 Clinical Dermatology – An individual approach by John T. Ingrans.
- 4 The Merck Manual of Diagnosis and Therapy.
- 5 Unwanted Effects of Cosmetics and Drugs used in Dermatology By. J. P. Nater, Groot & Liem.
- 6 Harry's Cosmetology.

HCP 6.1 Practicals – I

Perfumes-II

- 1] Synthesis of odorous material (Any one) by following methods
a) Condensation (Coumarin /Diphenyl oxide / cinnamic aldehyde)
- b) Esterification (Benzyl acetate/ Benzyl Benzoate.
- c) Hydrogenation (Citronellal from citronellal)
- d) Nitration (Musk ambrette/ musk xylene /Musk Ketone)
- e) Oxidation (Vanillin/ Heleotropins/ anisaldehyde/ Benzaldehyde)
- 2] Peppermint oil – Assay – for esters and ketones
- 3] Clove oil – determination of phenol contents
- 4] Wintergreen oil – determination of methyl salicylate content
- Test for acidity.

Cosmetic Technology-IV

- 1] Rouge.
- 2] Lipstick
- 3] Deodorant preparations
- 4] Lotions – Cleansing and mustering
- 5] Bath oils and bath foam
- 6] Eye shadow, mascara
- 7] Soap Preparation

HCP 6.2 Practical – II

Principles of Cosmeceutics-II

1. Evaluation of suspension stability
2. To find out the partition coefficient & distribution of drug between two phases.
3. To determine molecular weight by viscosity measurement method
4. To verify the Hofmeister series for the flocculation of colloids.
5. Determination of globule size of emulsion – effect of internal phase.
6. To study Krafft point and Cloud point
7. Determination of Angle of repose and study the flow properties of powders.
8. To study the bulk density and porosity of powders.

Beauty Culture - II

1. Make-up.

Different make-up Techniques.

- i. Use of different make-up cosmetics
 - ii. Day make-up
 - iii. Party make-up
 - iv. Bridal make-up
 - v. Make-up interview
 - vi. Corrective make-up
 - vii. Application of false eye lashes.
2. Different formulations for Nail and Hair care Hair
 - a)Nail: manicure, pedicure
 - b)Hair: i. General hair care. ii. Treatment for hair falling and dandruff
 3. Hair styles & Hair setting :
 - i. Formal ii. Informal
 - iii. Treatment for Hair.