

Punyashlok Ahilyadevi Holkar Solapur University, Solapur



NAACAccredited2022
'B⁺⁺'Grade(CGPA2.96)

Name of the Faculty: Science &Technology

Syllabus: M.Tech.III(Semester-V&VI)

**Name of the Course: Five Year Integrated M.Tech.
(Cosmetic Technology)**

(Syllabus to be implemented from w.e.f.June2024)

Punyashlok Ahilyadevi Holkar Solapur University, Solapur.

Syllabus of Five Year Integrated M.Tech. (Cosmetic Technology) (Choice Based Credit System)

Preamble:

In this course, there will be a clear study about the formulation, manufacturing, analysis and marketing of functional products. This area is mainly dependent on the subject of Pharmacy and Chemistry. The cosmetic technology course mainly revolves around industrial training and educational tours. This course includes studying raw materials, testing methods and laboratory procedures that are available worldwide.

Objective of the Course:

- 1) To formulate precise and effective cosmetic formulations by application of gained knowledge.
- 2) To apply new research and development in the field of Cosmetics to reduce environmental impacts.
- 3) To study the subjects which will have the skills, knowledge and scientific temperament for career in the field of cosmetics

Course Outcome:

- 1) Upon completion of programme students will have opportunities to work in cosmetic field related to Research & Development, Marketing & Academics of Cosmetic as well as Pharmaceutical Industries.
- 2) Students will be able to formulate a Research Design and complete a substantial work of new products.
- 3) Students will be familiar with relevant governmental regulations which will help to confirm product compliance in Domestic as well as International Market.
- 4) Programme will provide self employment opportunities.

Eligibility Criteria:

For Five Year Integrated M.Tech. Course in Cosmetic Technology following candidates are eligible.

1. Students with H.S.C. with Science Stream.
2. Students with B.Sc.(B group) subject: Chemistry, Zoology, Botany, Microbiology, Biotechnology, Biochemistry, Bioinformatics etc. are eligible for the direct admission to 3rd year after successful Completion of Orientation/Induction program. Orientation/Induction program will be conducted by the School in V sem. of third year.
3. Students with D.Pharm are eligible for the direct admission to 2nd year.
4. Students with B.Pharm are eligible for the direct admission to 3rd year.
5. Students after completion of fourth year are eligible to award B.Tech.degree.

Title of the Course : Integrated M.Tech.(Cosmetic Technology)

Fees for Course: As per University norms.

StrengthoftheStudents:30

Admission/Selection procedure: As per university norms.

DurationoftheCourse:4+1(Integrated)(4yearsDegree+1YearPost graduation)

Period of the Course:(from June to April each academic Year)

Teacher'squalifications:M.Pharm./M.Tech.(CosmeticTechnology)/M.Sc./PhD.

Standard of Passing: As per University norms.

Nature of question paper with scheme of marking: Each theory paper will have 100 marks out of which 80 marks will be for Term End examination (University Examination) and 20 marks for Internal Assessment. Each practical paper will have 50 marks out of which 40 marks will be for Term End examination and 10 marks for Internal Assessment. The candidate has to appear for internal evaluation of 20 marks and external evaluation (University Examination) of 80 marks for each theory paper. The candidate also has to appear for internal evaluation of 10 marks and external evaluation (University Examination) of 40 marks for each practical paper.

I) Nature of Theory question paper:

- 1) Q nos. 1 and 2 are compulsory
- 2) Attempt any three questions from Q No. 3 to Q No. 7

Q. No.1) A. Choose Correct alternative (MCQ) (10 Marks)
B. Fill in the blanks or write true or false (6Marks)

Q.No.2) Answer the following (16 Marks)

- A)
- B)
- C)
- D)

Q.No.3) Answer the following. (16 Marks)

- A)
- B)

Q. No.4) Answer the following (16 Marks)

- A)
- B)

Q.No.5) Answer of the following (16 Marks)

- A)
- B)

Q.No.6) Answer of the following (16 Marks)

- A)
- B)

Q.No.7) Answer of the following (16 Marks)

- A)
- B)

II) Nature of Practical question paper: Practical examination will be of 2 hours duration carrying 40 marks. VIVA & record book will be for 05 marks each.

List of Laboratory Equipments Instruments, Measurements etc: Potentiometer, Colorimeter, pHmeter, Conductometer, Microscope etc.

Rules and regulations and ordinance if any: NA

Medium of the language: English

Allotment of workload (Theory/Practical)

Class	Intake Capacity				Subject	No of theory papers	No of lectures per week	Total theory work load	No of practical batches	No of practical per week per batch	Total practical work load	Work load	Total work load
	1 st	2 nd	3 rd	4 th									
Five Year Integrated M. Tech. In Cosmetic Technology	30	30	30	30	Cosmetic Technology	05 (SEM I)	04	20	2	16	32	52 (SEM I)	200
						06 (SEM II)	04	24	2	16	32	56 (SEM II)	
						05 (SEM III)	04	20	2	14	28	48 (SEM III)	
						06 (SEM IV)	04	24	2	14	28	52 (SEM IV)	
						05 (SEM V)	04	20	2	14	28	48 (SEM V)	
						05 (SEM VI)	04	20	2	14	28	48 (SEM VI)	
Class	Intake Capacity				Subject	No of theory papers	No of lectures per week	Total theory work load	No of practical batches	No of practical per week per batch	Total practical work load	Work load	Total work load
Five Year Integrated M. Tech. In Cosmetic Technology	30	30	30	30	Cosmetic Technology	05 (SEMVII)	04	20	2	14	28	48 (SEM VII)	200
						05 (SEM VIII)	04	20	2	14	28	48 (SEM VIII)	

Staffing of pattern: Contract/CHB

Paper duration: 3HrsforTheory/2hrsfor Practical.

To be introduced from: June2024

Structure of the Course:

Third Year syllabus(accordingtotheSemesterPatternExamination)tobeeffectivefromthe Academic Year 2024-25

Semester	Code	TitleofthePaper	Semester Examination			L	T	P	Credits
			Theory	IA	Total				
Sem-V		HardCore							
	HCT5.1	Perfume-I	80	20	100	4	-	--	4
	HCT5.2	Cosmetic Technology-III	80	20	100	4	-	--	4
	HCT5.3	Principles of Cosmecutics- I	80	20	100	4	-	--	4
	HCT5.4	Beauty Culture–I	80	20	100	4	-	--	4
		Soft Core(Anyone)							
	SCT5.1	Cosmetic Engineering-III	80	20	100	4	-	--	4
	SCT5.2	Pharmacology &Interaction-I	80	20	100	4	-	--	4
		Seminar/Tutorial/Industrial Visit/ Field Tour	---	25	25	-	1	--	1
	HCP5.1	Perfume-I-Practical	40	10	50	-	-	4	2
	HCP5.2	Cosmetic Technology-III - Practical	40	10	50	-	-	4	2
	HCP5.3	Principles of Cosmecutics-I- Practical	40	10	50	-	-	4	2
	HCP5.4	Beauty Culture–I- Practical	40	10	50	-	-	4	2
	Total for Semester –V			560	165	725	20	1	16
Sem-VI		Hard Core							
	HCT6.1	Perfume-II	80	20	100	4	-	--	4
	HCT6.2	Cosmetic Technology-IV	80	20	100	4	-	--	4
	HCT6.3	Principles of Cosmecutics -II	80	20	100	4	-	--	4
	HCT6.4	Beauty Culture–II	80	20	100	4	-	--	4
		Soft Core(Anyone)							
	SCT6.1	Cosmetic Engineering-IV	80	20	100	4	-	--	4
	SCT6.2	Pharmacology &Interaction-II	80	20	100	4	-	--	4
		Seminar/Tutorial/Industrial Visit/ Field Tour	---	25	25	-	1	--	1
	HCP6.1	Perfume-II-Practical	40	10	50	-	-	4	2
	HCP6.2	Cosmetic Technology-IV - Practical	40	10	50	-	-	4	2
	HCP6.3	Principles of Cosmecutics-II- Practical	40	10	50	-	-	4	2
	HCP6.4	Beauty Culture–II- Practical	40	10	50	-	-	4	2
	Total for Semester –VI			560	165	725	20	1	16

L=Lecture T=Tutorials P=Practical UA=University Assessment CA =College Assessment HCT=Hard Core Theory SCT=Soft Core Theory, HCP=Hard Core Practical

SEMESTER-V

HCT-5.1Perfumes-I

Learning Objectives:

Upon completion of this course the students will be familiar with:

1. To provide student with the theory, knowledge, and practical skills necessary to enhance their performance as a natural perfumer.
2. To provide support and education on an adaptable worldwide basis.
3. To provide students with the education to effectively navigate the natural perfume industry with confidence.

Learning Outcomes:

At the end of the course

1. Students will learn to recognize perfumery ingredients and study classic formulas before beginning to create their own perfumes.
2. Students will learn various extraction processes for the extraction of perfumery compound present in various part of the plant, so that would be used in perfumes preparation as well as in various cosmetic products.

Unit:1

- A) Raw materials: study of essential oil, Aroma chemicals and natural extracts used in perfumery. (15L)
- B) Essential oils – Production equipment, water distillation, Steam distillation, steam and water distillation.
- C) 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

(15L)

- A) Definition and types of resins, resin materials commonly used in perfumery
- B) Resins, Gum & Exudation – Their extraction processes: Soxhlet Apparatus, Percolation, Maceration.
- C) Factor influencing extraction efficiency and quality of resin.
- D) Oleo Resins – Ginger oleoresins and balsam of peru, Oleo gum resins – Myrrh, Gum Styrax, Elemi resin

Unit:3

(15L)

- A) Isolates–Methods of Isolation, properties &uses of following:
Eugenol, Pinene, Linalool, Citral and Geraniol.
- B) Flavours – Sources and properties of Vanilla, Rose, Pineapple, Peppermint, Mango, Raspberry, Orange, Lemon and Bergamot
- C) Factor influencing fragrance composition and quality

Unit:4

(15L)

- A) Definition and classification of alcohols
- B) Manufacture of ethanol- Fermentation: Principles and process; Distillation: Techniques and equipments; Modern production methods
- C) Purification of Ethanol
- D) 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, soaps & Cosmetics –Poucher.
7. Perfume: The Art and Craft of Fragrance- Karen Gilbert
8. Alcohol and Its Biomedical Effects- John Brick

HCT– 5.2CosmeticTechnology-III

Learning Objectives:

Upon completion of this course the students will be familiar with:

1. The students will be familiar with specific actives used in cosmetic formulations, their technical aspects and evaluation methods.
2. Students will be familiar with chemistry involved in cosmetic formulations.
3. They will know common natural raw materials, especially the basic functional group involved, their physical and chemical properties and their applications.

Learning Outcomes:

At the end of the course students will be

1. Able to formulate different kinds of skin cosmetics.
2. Able to select correct humectants and antioxidant for cosmetics.
3. Able to formulate bath preparation.

Unit:1

(15L)

Skin Creams: Introduction, classification of skin creams, cold cream cleansing creams, Night and massage cream, Moisturizing cream, vanishing, foundation cream: Pigmented foundation cream, hand and body cream, all purpose cream. Ingredients, manufacturing and packing of creams.

Unit:2

(15L)

I) Humectants: Introduction, drying out, types ,hygroscopicity, stability and safety of glycerin, sorbitol, propylene glycol, polyethylene glycol, butylene glycol, hyaluronic acid and urea ,skin moisturization, Application of humectants.

II) Antioxidant: Introduction, Definitions: oxidation, free radicals, oxidative stress and antioxidant, free radical formation chain reaction, sources for generation of free radicals, mechanism of tissue damage by free radicals, ideal characteristics of antioxidants, types of antioxidants, functions of antioxidants antioxidant activity determination by invitro method: DPPH, Total phenol content, superoxide anion radical scavenging, hydrogen peroxide radical scavenging and nitric oxide radical scavenging, invivo method: Lipid peroxidation and reduced glutathiol, choice of antioxidants and Application of antioxidants.

Unit:3

(15L)

Soaps: Introduction, cleansing action of soap, ingredients, types of soaps-bathing: toilet soaps, antibacterial soaps, liquid soaps, syndet (synthetic detergent bars) synthetic detergent: classification with the examples and their preparations, Manufacturing of soap: cold process, semi boiled process, full boiled or hot process, modern continuous hydrolysis and soap formation process ,distinguish between soaps and detergents, evaluation and uses.

Unit:4

(15L)

Bath Preparation: Foam baths: Introduction, ingredients, types of products and their formulation, product assessment, Bath salts: Introduction, ingredients and formulations (preparation, colouring and perfuming).

Bath Oils: Introduction, ingredients, types of bath oils: floating or spreading oils, dispersible or blooming oils and soluble oils.

Books Recommended:

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

HCT5.3 Principle of Cosmeceutics –I

Learning Objectives:

Upon completion of this course the students will be familiar with:

1. State the physicochemical properties like solubility and interfacial phenomena.
2. They will know physicochemical concepts to be considered during formulation of solution, emulsion and suspension.
3. Students will be familiar with evaluation method and assessment of emulsion shelf life of solution, emulsion and suspension.

Learning Outcomes:

At the end of the course students will be able to

1. Explain the role of surfactants and interfacial phenomenon.
2. Understand the physical properties of solutions and disperse systems.
3. Understand of physicochemical properties of drugs including solubility.
4. Gain basic knowledge of pharmaceutical suspensions and emulsions.

Unit:1 (15L)

Solubility: Mechanism of solute – solvent interaction, ideal solubility and Hildebrand solubility parameter (HSP)– wood Scatchard equation, solvation and association, quantitative approach to the factors influencing solubility of drugs Critical solution temperature.

Unit:2 (15L)

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 (15L)

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

Unit:4 (15L)

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 Pharmaceutics.
5. Remington's Pharmaceutical Practices.

HCT5.4BeautyCulture-I

Learning Objectives:

Upon completion of this course the students will be familiar with:

1. Introduction of Structure of skin and skin blemishes and their treatment
2. Introduction to common skin problems like blackhead, whiteheads, methods for removal of unwanted hairs.
3. Basic concept behind mask therapy, aromatherapy.

Learning Outcomes:

At the end of the course students will be able to explain

1. The basic procedures of mask therapy including their types, extraction of essential oils for aromatherapy.
2. Recognition of skin type.

Unit:1

(15L)

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 indifferent seasons.
- e) Diet and Exercises for healthy skin. Different types of skin blemishes and their treatment.
 - i.Blackheads
 - ii.Whiteheads
 - iii.Acne
 - iv.Open pores.
 - v.Freckles
 - vi.Treatment for curing wrinkles.

Unit:2

(15L)

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

(15L)

Mask Therapy

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

Unit:4

(15L)

Introduction to aromatherapy.

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

Books recommended:

1. Ann Eaton and Flurence Openshaws, Cosmetic Make –Upand 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.-1Face,handsandfeet by Gaynor Winyard

SCT5.1 Cosmetic Engineering-III

Learning Objectives:

Upon studying of the subject Cosmetic Engineering III student shall be able gain:

- 1 Handy knowledge on various processes undergoing in pharmaceuticals as well as cosmetic industries such as size separation, size reduction, Filtration, Mixing
2. To know various mechanical devices/equipment's used in processes mentioned above.

Learning Outcomes:

At the end of the course students will be able to explain

1. Various unit operations used in Pharmaceutical industries and Cosmetic Industry.
2. Working principle of equipment's used in size separation, size reduction, filtration and mixing.
3. Advantages and Disadvantages, Classification, various factors affecting the processes mentioned above.

Unit:1: (15 L)

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.

Unit:2: (15L)

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.

Unit:3: (15L)

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.

Unit:4: (15L)

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

Book Recommended:

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

SCT5.2-Pharmacology&Interaction-I

Learning Objectives:

Upon studying of the subject pharmacology & toxicology– I student shall be able to:

1. Understand the Pharmacodynamics and Pharmacokinetics of drug molecule (concept of Absorption, Distribution, Metabolism and Excretion)
2. To know basic cause and pathogenesis of certain disease that effect skin, teeth, hair and sweat gland etc.

Learning Outcomes:

Students will get familiar with:

1. Exact etiology and pathogenesis of various diseases related to skin appendages.
2. Treatments available for such disease.
3. Basics Mechanism of action of drug molecule utilized to treat diseases related to Skin, teeth, hair, sweat gland, inflammation etc.

Unit:1

(15L)

Introduction to scope of pharmacology in cosmetics: Introduction, terminologies, pharmacokinetics, pharmacodynamics. Pharmacology of cosmeceuticals: anti-aging, anti-wrinkle, anti-acne, anti-inflammatory, antidandruff, fairness- bleaching and sunscreen

Unit:2

(15L)

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

(15L)

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

(15L)

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

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.

HCP5.1: Perfume-I-Practical

- 1] Distillation of water and alcohol
- 2] Isolation of essential oil–Extraction (from bark, flowers 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.

HCP5.2: Cosmetic Technology-III -Practical

Preparation of:

1. Cleansing Cream.
2. Cold Cream.
3. Vanishing Cream.
4. Emollient Cream.
5. Hand Cream.
6. Bath Preparations -Bath oils and bath foam
7. Soap

HCP5.3: Principles of Cosmeceutics-I-Practical

- 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

HCP5.4: Beauty Culture–I- Practical

- 1) Methods for eye brow 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 acned skin
- 8] Aroma Therapy
 - a) Aroma Facial for different skin type

SEMESTER-VI

HCT6.1 Perfumes-II

Learning Objectives:

Upon completion of this course the students will be familiar with:

1. The source, basic structure of a fragrance along with commonly used ingredients, fragrance strengths, notes and the role of perfumers.
2. The typical approach to fragrance selection, by notes or classification.
3. To know the manufacturing method (Types of reaction) involved in preparation of fragrance.

Learning Outcomes:

At the end of the course students will be:

1. Able to recognize perfumery ingredients.
2. Able to identify Source, role or uses, note will know that will be helpful in selecting fragrance.
3. Recognition and Utilization of proper manufacturing methods (Types of reaction) for preparation of fragrance substance.

Unit:1

(15L)

- A) Fixatives– Introduction, Definition: Fixative, Resinous Fixatives, Essential Oil, Fixatives, Synthetic Fixatives.
- B) 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.
- C) Selection and uses of fixatives.
- D) Building of perfumes and body of the perfumes.

Unit:2

(15L)

Odorous materials manufactured synthetically by(Reaction and flow diagrams)

- A) Introduction, Definition and mechanism of following reactions
 - i) Coumarin: - Perkin reaction, Knoevenagel reaction, Pechmann reaction
 - ii) Cinnamic aldehyde - aldol condensation reaction
- B) Introduction, Definition and mechanism of following reactions
 - i) Benzyl acetate- Fischer esterification
 - ii) Benzyl Benzoate

Unit:3

(15L)

Odorous materials manufactured synthetically by(Reaction and flow diagrams)

Introduction, Definition and mechanism of following reactions

- A) Nitration – Musk ambrette, musk xylene and musk Ketone.
- B) Acetylation -Acetylated fruit notes and Acetylated floral notes, Acetylated Citrus Notes

Unit:4

(15L)

Odorous materials manufactured synthetically by (Reaction and flow diagrams)

Introduction, Definition and mechanism of following reaction

- Grignard's Process –Phenyl ethyl alcohol
Hydrogenation – Citronellal, limonene, Eugenol

Books recommended:

1. Perfumes, Flavours and Essential oil Industries– SBPBoard.
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

Learning Objectives:

Upon completion of this course the students will be familiar with:

1. The students will be familiar with specific actives used in cosmetic formulations, their technical aspects and evaluation methods.
2. Students will be familiar with chemistry involved in cosmetic formulations.
3. They will know common natural raw materials, especially the basic functional group involved, their physical and chemical properties and their applications.

Learning Outcomes:

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course, are described:

1. Able to formulate different Productive creams and hand cleansers.
2. Able to select correct Skin Products for Babies.
3. Able to formulate Face packs and Masks.
4. Able to formulate Coloured Make-up Preparations

Unit:1 (15L)

a) Protective creams and hand cleansers: Introduction, barrier creams and formulation aspects; hand cleanser: Introduction and formulation aspects.

b) Skin lightener or bleaches: Introduction, skin bleaching/whitening agents used in skin lightener formulation: Hydroquinone, ascorbic acid, kojic acid, mercury compound and other agents. Skin lightning cream ingredients and their preparation.

Unit:2 (15L)

Face packs and Masks: Introduction, distinguish between face pack and face mask, ingredients, introduction to clay based systems, wax based systems, Rubber based systems, vinyl based systems, and hydrocolloid based systems along with their preparation.

Unit:3 (15L)

Skin Products for Babies: Introduction, skin problems in babies, requirement of baby products, safety of baby products, introduction to types of baby products: Bath preparation, baby powder, baby soap, baby shampoo, baby cream and lotion, examples and formulations of baby products.

Unit:4 (15L)

a) Coloured Make-up Preparations: Lipstick- Introduction, ingredients of lipstick, Manufacturing of lipsticks, formulation and moulding defects in lipsticks, transparent lipstick, liquid lipsticks, lip salves. Rouge: Introduction, Dry rouge- ingredients and manufacturing of dry rouge, cream rouge.

b) Eye make-up, Introduction, ingredients/ raw materials.

Mascara: Definition, quality characteristics, introduction to cake mascara, cream mascara, liquid mascara.

Eye shadow: Definition, quality characteristics, introduction to Cream eye shadow, Stick eye shadow, Liquid eye shadow and Powder eye shadow and their manufacturing.

Eyeliner: Definition, quality characteristics, ingredients and preparation of liquid eye liner, cake eyeliner

Eyebrow pencil: Definition, quality characteristics and manufacturing of Eyebrow pencil.

Books Recommended:

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

HCT 6.3 Principles of Cosmeceutics-II

Learning Objectives:

Upon completion of this course the students will be familiar with:

1. State the physicochemical properties like particle size, distribution phenomenon and rheology.
2. They will know physicochemical concepts to be considered during formulation of Colloidal Dispersion.
3. Students will be familiar with the evaluation method and assessment of distribution phenomenon, Colloidal Dispersion, micromeritics and Rheology.

Learning Outcomes:

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course, are described:

1. Explain the role of distribution phenomenon and Rheology.
2. Understand the physical properties of colloidal dispersion.
3. Understand of physicochemical properties of drugs including particle size.

Unit:1:

(15L)

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

Unit:2

(15L)

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

(15L)

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

Unit:4

(15L)

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 Pharmaceutics.
5. Remington's Pharmaceutical Practices.

HCT6.4 Beauty Culture-II

Learning Objectives:

Upon studying of the subject Beauty Culture II student shall be able gain:

1. Different types of Make ups along with pre-makeup, and its techniques.
2. Concept of corrective makeup.
3. Information regarding the general problems related with hair, nail along with its care.

Learning Outcomes:

At the end of the course students will be

1. Able to learn the different types and techniques of makeup
2. Able to utilize applications of cosmetics
3. Able to learn about proper hair and snail care procedure.

Unit:1 (15L)

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

Unit:2 (15L)

Make- up :

- a) i. Pre Make-up skincare 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 (15L)

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

Unit:4 (15L)

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 and pedicure.

Books recommended:

1. Ann Eaton and Flurence 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

Learning Objectives:

Upon studying of the subject Cosmetic Engineering IV student shall be able gain:

1. Handy knowledge on various processes undergoing in pharmaceutical as well as cosmetic industries
Distillation, Separation of azeotropes, Evaporation and Drying.
2. To know various mechanical devices/equipment's used in processes mentioned above.

Learning Outcomes:

Students will get familiar with:

1. Various unit operations used in Pharmaceutical industries and Cosmetic Industry.
2. Working principle of equipment's used in Distillation, Evaporation and Drying.
3. Advantages and Disadvantages, Classification, various factors affecting the processes mentioned above.

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 (15L)

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:

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

SCT 6.2 Pharmacology & Interaction-II

Learning Objectives:

Upon studying of the subject pharmacology & toxicology– II student shall be able to:

1. Pharmacology of various topical applications (The preparations applied on skin surface)
2. Explain the mechanism of drug action.

Learning Outcomes:

Students will get familiar with:

1. Mechanism of action of various drugs such as Anti-infective, Antidandruff, Antiaging, Anti-inflammatory etc.
2. Applying the basic pharmacological knowledge in the prevention and treatment of various diseases.

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 photo allergic test phototoxicity test.

Unit:3 (15L)

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.

HCP6.1 Perfume-II-Practical

1] Synthesis of odorous material (Anyone) by following methods

- a) Condensation(Coumarin/Diphenyloxide/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.

HCP6.2 Cosmetic Technology-IV - Practical

1] Rouge: Powder rouge, cream rouge, liquid rouge

2] Lipstick

3] Deodorant preparations

4] Lotions: Cleansing and moisturizing

5] Eye shadow: Cream eye shadow and powder eye shadow.

6] Mascara : Cream mascara and liquid mascara

7] Skin lightening cream

8] Hand cleanser

9] Face pack

10] Face mask

HCP6.3 Principles of Cosmeceutics-II-Practical

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 Kraft 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.

HCP6.4 Beauty Culture—II- Practical

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 eyelashes.

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.