

SANT GADGE BABA AMRAVATI UNIVERSITY AMRAVATI  
**SYLLABYS FOR M.TECH. COSMETIC SEMESTER III AND IV**

**MASTER OF COSMETIC TECHNOLOGY Semester III**

DSC-I.3 ADVANCED COSMETIC TECHNOLOGY-III

Max. Marks-100

Paper- 60

Sessional - 40

1. Delivery systems – Introduction, Path ways of Delivery, Types of Delivery Systems and Application.
2. Microencapsulation: Liposome, Niosome, Transferosome- techniques of manufacturing, Safety aspects, Application, Formulation in Cosmetics and Regulatory aspects.
3. Nano technology – Nanoparticles manufacturing techniques, Safety aspects, Application, Formulation in cosmetics and Regulatory aspects.
4. Latest trend in delivery system- Microsponges, Microspheres and others

Recommended Books  
1. Cosmetic Nanotechnology Polymers And Colloids in Personal Care; Sarah E. Morgan; Published by A chemical

2. Delivery System Handbook for Personal Care And Cosmetic Product Technology, Applications and Formulations, Edited by Meyer R. Rosen, William Andrew Publishing, NY, 2005.

3. Textbook of Industrial Pharmacy, Drug Delivery Systems and Cosmetic and Herbal Drug Technology, Edited by Shobha Rani R Hiremath, Orient Longman Pvt. Ltd., 2008

**MASTER OF COSMETIC TECHNOLOGY Semester III**

DSCII.3 QUALITY ASSURANCE TECHNIQUES II (QAT II)

Max. Marks – 100

Paper - 60

Sessional - 40

1. Compliance of Drug & Cosmetic Act 1940 with reference to provisions

for packaging and labelling (Rule 150 A, schedule S), permitted colors, flavors etc.

2. Quality Assessment of packaging material, containers and closures as per BIS/IP, Recent trends and alternatives.

3. Skin testing – Study of Structure of Skin, Functions, Types, Color/ Texture/surface studies/ Moisture determination studies, Patch testing as per BIS, Recent trends and alternatives

Hair Testing – Study of Structure of Hair, Functions, Types, Color/ Texture/surface studies, Conditioning and Tensile strength determinations, Recent trends and alternatives.

4. Performance evaluation of cosmetic (skin care and hair care) products Using sophisticated instruments like Cutometer, Corneometer, Mexameter, TEWAmeter, Conductivity meter, Skin pH meter, Elastometer, Sebumeter, Visioscan, Tensile Tester, Trichometer, Reflectance, Combability, Static Charge.

Recommended books:

1. A.O.A.C. (Book published by Association of organic and Analytical Chemistry).
2. W.A. Poucher : Perfumes, Cosmetics and Soap Volume I, II, and III – Chapman and Hall.
3. Balsam et al: Cosmetics Science and Technology Mim I, II and III. Wiley Interscience.
4. Standard methods of Chemical Analysis – Edited by Frant J. Welchar D. Van. Norstrand.
5. Calorimetric methods of Analysis by Z.D. Snell and C.T. – Snell - Van Norstrand Reinhold.
6. Toxicology of Drugs and Chemicals W.B. Deichman and H.W. Gerada, Academic Press.
7. Text Book of Toxicology – Dubols and Getting – Oxford.
8. Practical Cosmetic Microbiology by Kulkarni, Meghare Denett publications.

9. How to practice G.M.P.S. by P.P. Sharma
10. Cosmetic formulation, Management and quality control by P.P. Sharma.
11. How to practice GLP by P.P. Sharma
12. Drug and Cosmetic Act. By GOI

MASTER OF COSMETIC TECHNOLOGY Semester III

DSC-III.3 FOUNDATION / RESEARCH DESIGNING AND  
PLANNING (RDP)

Max.Marks – 100

Paper- 60

Sessional - 40

1 Data Management, Analysis and presentation –Introduction,  
Introduction of SPSS and Features, Menu commands, basic steps in  
data analysis,

Data file management function, Preliminary analysis – six  
characteristics of a data set, data transformation and presentation.

Parametric test and non parametric test

Statistical analysis system (SAS)

2 Understanding the Technical terms and project overview Preparing the  
Research Proposal

3 The Project/Dissertation Report: Basic Components

4 Preparing the manuscript and assessment.

Recommended books

1. Edwards: Experimental Design in Psychological Research.
2. Garrett, Henry E. (1971): Statistics in Psychology and Education, David  
Haley & Co.
3. Kerlinger: Foundation of Educational Research.
4. SPSS / PC for the IBM PC / XT, SPSS Inc.
5. Bandarkar, P.L. and Wilkinson T.S. (2000): Methodology and  
Techniques of Social Research, Himalaya Publishing House, Mumbai.
6. Curriculum guidelines from IGNOU

MASTER OF COSMETIC TECHNOLOGY Semester III

DSEIII(Elective) COSMETICS MICROBIOLOGY (CM)

Max. Marks – 100

Paper - 60

Sessional - 40

1 Microorganisms in raw materials, Risk assessment

Microorganisms in manufacturing environment, current GMP, concept of HACCP,

2 Microbial contaminations in cosmetic products.

Microbial considerations in product formulation.

Microbiological evaluation: Various methods for microbial assay of raw materials and finished Products. Preservative efficacy tests, factors affecting preservative efficacy, modulation of preservative efficacy by G+ and G- organisms.

Total microbial count, Isolation and identification of microorganisms specified in BIS guidelines from cosmetic products and raw materials.

3 sanitary practices in cosmetic manufacturing

Microbial environment of manufacturing plant

Hazard Analysis and critical control point (HACCP) protocols in cosmetic Microbiology.

4 Validation of Microbial testing methods

5 I- Global regulations of cosmetics preservatives

II- Common cosmetic preservatives (monograms)

Benzalkonium chloride, Benzoic Acid, Ethanol, Parabens, salicylic acid, zinc pyrithione.

Recommended books

1) Cosmetic Microbiology – Philip A Geis

2) Text book of Microbiology – Peltzer and Reid

3) Practical Cosmetic Microbiology – Meghre, Kulkarni

MASTER OF COSMETIC TECHNOLOGY Semester III

DSC-I.3L ADVANCED COSMETIC TECHNOLOGY-III

Max. Marks – 50

Uni. Exam - 25

Sessional-- 25

1 Preparation of cosmetic products based on following (minimum two products of each category)

Study of different techniques for preparation of Microencapsulation - Liposomes, Nanoparticals, Neosomes by Injection, Pan coating, any other techniques (as reported in research papers, reviews, patents)

DSCII.3L QUALITY ASSUARANCE TECHNIQUES

Max. Marks – 50

Uni. Exam - 25

Sessional-- 25

1 Determination of the effect of skin preparation of skin elasticity using cutometer

2 Determination of the effect of moisturizing cream on skin hydration using corneometer

3 Determination of skin melanin content using mexameter

4 Determination of thermal conductivity and effiusivity of cosmetic emulsion using conductivity meter

5 Determination of water loss using tewameter

6 Determine the effect of skin cosmetic on ph of skin using Ph meter

7 determine theeffect of anti-wrinkle cream on skin using elastometer

8 determination of the effect of anti-dandruff shampoo on sebum level by using sebumeter

9 determination of the effect of hair preparation on hair growth using trichometer

10 Determination of the hair formulation on tensile strengthof hair using tensiometer

### DSCIII.3L FOUNDATION / RESEARCH DESIGNING AND PLANNING (RDP)

Max.Marks – 50

UNIT EXAM. - 25

Sessional - 25

1 Identification of the type of research problem ,Swot analysis of the existing literature in the area identified

2 Generate research questions and hypothesis for a problem from your area of interest

3 Design a questionnaire for the data collection on the topic of interest

4 identification of population and selection of sample for the study using different technique for a problem from your area of interest

5 Design a questionnaire for designing the manuscript of your interest

6 Statistical analysis of data collected from the Questionnaire for the problem of interest using statistical package for the social sciences(SPSS),mini tab etc

7 Preparing a research paper for the problem of interest

### **DSEIII(Elective) COSMETICS MICROBIOLOGY (CM)**

#### **DSCIII.3L / MOOC LAB.**

Max.Marks – 50

UNIT EXAM. - 25

Sessional - 25

PRACTICAL 1. To study the equipments/apparatus used in the micro-biology Laboratory.

PRACTICAL 2. To perform the sterilization of glassware and sterilization of Nutrients agar media, sutures and tubes by moist heat sterilization.

PRACTICAL 3. To perform sterilization of glassware by hot air sterilization Method.

PRACTICAL 4. To Prepare nutrient slant/slab for subculturing of different Micro-organisms.

PRACTICAL 5. To perform the sterility testing of given Sample.

PRACTICAL 6. To study the Morphology of given sample of microbial culture by Simple staining method.

PRACTICAL 7. To study the Motility of given sample Of Micro-organisms by Hanging drop method.

PRACTICAL 8. To perform microbiological assay of crystalline, Sodium salt of Benzyl penicillin by cupplate method.

PRACTICAL 9. To perform the bacteriological examination of Potable water

PRACTICAL 10. To detect the presence of Starch hydrolyzing micro-organisms Using biochemical test.

## **MASTER OF COSMETIC TECHNOLOGY SEMESTER IV**

DSCI.4- PERFUMES IN COSMETICS (PC)

Max. Marks – 100

Paper - 60

Sessional- 40

1 Perfume matching and creation.

2 Application of Perfumes in personal care products Antiperspirants and Deodorants ,Alcoholic preparation ( After shave

lotion, eua de cologne), Cream (Hand cream, Sunscreen), Personal

Fragrances, Masculine fragrance, Bath products (Foam bath, Bath

salts, Bath oil, Toilet soaps, Shampoos), Powders -( Talcum powder),

Lotions (Suntan lotion), Baby products.

3 Natural perfumes – Volatile oil, Essential oil, their sources extraction techniques, incorporation and application.

4 Evaluation of perfumes –

Design of evaluation, Statistic and judgment

Recommended books

1)Perfumery : The Psychology and Biology of Fragrance – Toller and Dodd

2)An introduction to Perfumery – 2nd ed. Tony Curtis and D.G. Williams

3) Perfumes Cosmetics & Soaps –W. A . Poucher

4) The Formulation & preparation of Cosmetics, Fragrance and Flavors

DSCII.4 COLOR COSMETICS (CC)

Max. Marks – 100

Paper - 60

Sessional - 40

1 Classification of Colors- synthetic and natural permitted color as per schedule of D & C act and IS4707, selection and preparation of color solutions.

2 Appropriate use of Natural colours / Pigments / Dyes in Formulation

and development of colored Products, Powders and Compacts, Lipsticks, Eye shadow, Rouge, Mascara, Nail lacquers, Shampoo, Hair oil, Hair gel, Hair colorants, After shave lotions, Toothpaste, Mouthwash, Soaps.

3 Safety and Toxicity of colors

4 Stability study and Evaluation of Color cosmetic products.

Recommended books

1.The Chemistry and Manufacture of Cosmetics by-Mitchell Schlossman

2. Cosmetic Science and Technology by –M Balsam and E. Sagarin.

MASTER OF COSMETIC TECHNOLOGY SEMESTER IV

DSCIII.4 FOUNDATION/ Cosmetics Validation (CV)

Max. Marks – 100

Paper - 60

Sessional - 40

1 Raw Material Selection

Functionality based that contribute to the

(A) Identified Characteristics of the Finished Product (Emollient, Thickener, Binder etc).

(B) Organoleptic Characteristics (Flavour, Color, Aroma, Texture etc).

(C) Safety Characteristics (pH, Heavy metals, Microbiological, GRAS (Generally Recognised as Safe) listing, EU CosIng (Cosmetic Ingredient) status, PCPC (Personal Care Product Council) listing, EWG Environmental Working Group status, GMO Genetically Modified status, CFR Code of Federal Regulation listing etc). Toxicity Profile. Allergen Listing and Disclosure. Naturality Index. Sustainability

(D) Shelf life

2 Specification Creation for raw materials



(A) International Regulation Based – Regionwise characterisation of the Regulations (Americas, EU, UAE, ASEAN, Japan). Certifications – COSMOS, KOSHER, HALAL' Impurity Profile.

(B) Supplier Based – Identification of the Supplier, TDS (technical data sheets) from the supplier, the standard of identity, comparison of different suppliers' specifications. Sustainability. Multiple Vendor Development

3 Packaging Material –

Specific composition (MoC) material of construction. Glass, polyethylene (PET) / (MET), polypropylene (PPE), Polypropylene (PP), Nylon etc. Biodegradability. Sustainability.

4 Finished Product

(A) Prototype Development and Stress Stability studies

(B) Protocol Batches and Accelerated Stability

(C) Pilot batches

(D) Commercial Batches and Real time stability

(E) Licensing under Ayush / FDC

5 Claim Substantiation and Validation

(A) In-vitro active efficacy

(B) Stability Studies Stress, Prototype, Protocol, Pilot, Commercial batches, Toxicity study on cell lines

(C) Clinical – PIPT, HRIPT, Efficacy Studies (Diagnostic Equipments / Clinical evaluation / Consumer Response based)

6 Plant Selection

(A) OSHA Considerations, MSDS reference, Potential biological, chemical, and physical hazards affiliated with the raw material, HACCP Hazard analysis and critical care points

(B) Facility and Equipment Capabilities (Material handling, Processing, Storage facility, Production cost / Conversion cost (In-house testing, time for changeovers, CIP)

7 IPR Benefits, EPC European Patent Convention, PCT Patent Cooperation Treaty, WIPO World Intellectual Property Organisation.

## Recommended books

1) Analytical method validation and instrument performance verification

CHUNG CHAW CHAN et al. –Wiley Blackwell

2) Rhcology Essentials of Cosmetic and food emulsions -Brummer, Rudiger

3) Analysis of Cosmetic Products, Edited by –Ampro solvatro and Alberto Chisvrnt

4) Harry's cosmeticology, Edited by – Dr. Martin M. Rieger.

MASTER OF COSMETIC TECHNOLOGY Semester IV

DSE IV.4 PRODUCTION AND MARKETING MANAGEMENT (PMM)

Max. Marks – 100

Paper - 60

Sessional - 40

1 Production Management: Objectives & Policies, Types of production, Plant Location, decision Plant Layout, Types of Layouts.

2 Production planning and control, Industrial quality control, statistical quality control methods, TQM m ISO systems Job evaluation.

3 Materials Management, Scientific Purchasing, Inventory control, EOG model, inventory classification, ABC analysis, cost elements inventory Selection of vendors and vendor rating.

4 Maintenance Management, Material handling systems, sanitation and plant utilities, stores management.

5 Marketing : Meaning, Philosophies of marketing functions scope and evolution. Different demand states and formal marketing tasks, Marketing environment,

6 concept of product, product line and mix. New products, development and launch. Pricing - different methods, under different market conditions. Distribution, different channels of distribution - factor affecting channels choice, direct marketing multilevel marketing, telemarketing.

7 Promotion – Different elements of promotion, personal selling, advertising, sales promotion and public relations. Supply chain management, customer relationship management.

8 International Marketing and E-commerce activities. Packaging, Importance of packaging in marketing cosmetics, latest trends.

Branding.

Market Segmentation - Different methods of segmenting market.

Recommended books:

1. Barat Nikhil "Production Management and Control.
2. Moore F.G. "Manufacturing Management"
3. Ammer D.S. "Manufacturing Management and Control"
4. Cundiff E.Q. and Still R.R. "Basic Marketing"
5. Griffin M.C. "Drug and Cosmetic Packaging"
6. Journals:
  - i. Manufacturing Chemist and Aerosol News.
  - ii. Drug and Cosmetic Industry.
  - iii. Journal of Association of Cosmetic Chemists.
7. Marketing Management by Dr. Philip Kotler – PHI
8. Marketing Management by Stanton
9. Marketing Management by Rajan Saksena , TMH
10. Production Management by Chunnawala, H.Pals.
11. Marketing Management by Puffa
12. Marketing Management M. Telsang.

MASTER OF COSMETIC TECHNOLOGY SEMESTER IV

DSCI.4 Lab - PERFUMES IN COSMETICS (PC)

Max. Marks – 50

Uni. Exam - 25

Sessional - 25

1. Matching and Creation of perfume
2. Preparation of following products using appropriate perfumes.  
Alcoholic preparation (After shave lotion, eau de cologne), Cream,

Personal Fragrances, Masculine fragrance, Bath products (Foam bath/  
Bath salts/Bath oil/Toilet soaps/ Shampoos), Powders, Lotions, Baby  
products.

DSCII.4 lab COLOR COSMETICS (CC)

Max. Marks – 50

Uni. Exam - 25

Sessional - 25

1 Preparation of color solutions.

2 Extraction from various sources and incorporation of natural colour  
and pigments in cosmetics products (creams, liquids, oils, Powders)

3 Evaluation of above colors as ingredient and products

4 Toxicity testing of above products.

DSC III.4 LAB COSMATIC VALIDATION

Max. Marks – 50

Uni. Exam - 25

Sessional - 25

Formulation and validation of following products for organoleptic and safety characteristics, shelf life

Moistering cream

Tooth paste

Shampo

Hair oil

Lip balm

Petrolium jelly

DSC IV / MOOC LAB.

Max.Marks – 50

UNIT EXAM. - 25

Sessional - 25

SEM IV RESEARCH PROJECT PHASE II

TOTAL 150 MARKS

INTERNAL-75

EXTERNAL 75

Internal assesement marks should be allotted on the basis of at least three seminar /reviews during project work