

Sant Gadge Baba Amravati University, Amravati
Faculty of Science and Technology
Teaching and Learning scheme for the Degree of B. Tech (Cosmetic)
FIRST YEAR: SEMESTER - I

Mode of Teaching	Ver. No.	The Vertical	Types of Course	Course Code	Course Name	Credit	Workload (Hrs/ weeks)	Workload (Hrs/ weeks)
Classroom Teaching /Outdoor/ Field	A.	Major	Theory-1	399101	Cosmetic Technology -I	2	2	6
			Practical-1	399102	Cosmetic Technology -I Practical	2	4	
	B.	Minor	Theory 2	399103	Fundamentals of HAP-I	2	2	6
			Practical - 2	399104	Fundamentals of HAP-I Practical	2	4	
	C.	Generic Open Elective	Theory-3	399105	Beauty Culture-I	2	2	4
			Theory-4	399106	Herbal Cosmetic	2	2	
	D.	Skill Enhancements Courses	Practical - 3	399107	Beauty Culture-I Practical	2	4	4
	E.	Ability Enhancement courses (AEC - English)	Theory	399108	Communication Skill – English-I	1	1	6
		Ability Enhancement courses- Modern Indian Language (AEC- MIL)	Theory	399109	Communication Skill -Marathi I	1	1	
		Indian Knowledge System (IKS)	Theory	399110	Indian Knowledge System (Generic)	2	2	
		Value Education Courses	Theory	399111	Environmental Studies	2	2	
	F.	Co- curricular Courses (CC) (Health & wellness, yoga education activities, NSS/NCC & Fine/Applied/Visual/Performing Art	Outdoor	399112	Outdoor	2	4	4
		Total				22	30	30

B.TECH. (COSMETIC) SEM I
Vertical –A Major/ Theory 1
Subject code - 399101
Course Name –Cosmetic Technology- I

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal + External)
4.5	1	399101	Cosmetic Technology-I	2	30	2 hrs.	(20+30) Total 50

Course Objective:	1. To introduce students to the fundamentals of cosmetic and personal care products, their classification, and historical development. 2. To familiarize students with basic cosmetic terminologies, ingredients, and formulation concepts used in cosmetic preparations. 3. To develop understanding of various skin care and personal care products along with their applications and functions. 4. To impart knowledge regarding hair care products, their composition, applications, and treatment purposes. 5. To provide foundational knowledge of cosmetic technology required for advanced studies in cosmetic science and formulation development.
Course Outcomes:	After successful completion of the course, students will be able to: CO1: Explain the basic concepts, classification, history, and terminology related to cosmetic and personal care products. CO2: Identify and describe the role of major cosmetic ingredients such as emollients, emulsifiers, surfactants, preservatives, humectants, fragrances, and active ingredients. CO3: Illustrate the theory, formulation basis, and applications of various skin care and personal care products. CO4: Describe the functions and applications of different hair care products including shampoos, conditioners, styling products, and hair treatment formulations. CO5: Analyze the importance of cosmetic products in personal grooming, skin protection, and hair care applications. CO6: Apply fundamental cosmetic technology knowledge for understanding commercial cosmetic formulations and product development concepts.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Introduction to Cosmetic and Personal Care products Definition of Cosmetic and Personal Care products, Classification (base on functions and marketed preparations), History of Cosmetics, Basic Cosmetic terminologies – Emollients, Emulsifiers, Humectants, Active Ingredients, Surfactants, preservatives, pH, Viscosity, Fragrance and Flavors.	8 Hrs	8 Marks
II	Skin Care and Personal Care Products Theory and Applications of : Skin Care Products – Cleansers (Soaps, Facial Cleanser, micellar water), Moisturizers (Creams, Lotions, Gels) For Skin Care Treatments (Serums, Masks, Exfoliants);	7 Hrs.	7 Marks

III	Hair Care Products Theory and Applications of: Cleansers (Shampoos), Conditioners (Rinse-off, Leave-in, deep conditioners), Styling Products (Gels, Mousses, Sprays), For Hair care treatments (Hair Masks, Oils, Serums) Color Treatments (Hair Dyes, Color Protectants).	8 Hrs.	8 Marks
IV	Personal Care Products: Personal Care Products – Sun Care Products (Sunscreens, After Sun-Products), Anti-Aging Products (Creams, Serum, Eye treatment).	7 hrs.	7 Marks

Recommended Books:

1. New cosmetic Science by Takeo Mitsui.
2. Harry's Cosmetology.
3. Cosmetic Science Technology by, Sagrin C.B.
4. Handbook of cosmetic Science & Technology by Marc Paye, Andrro Barel.
5. Textbook of Cosmetic Formulations" Author: B.M. Mithal, R.N. Saha.
6. Cosmetic Science by Author: Dr. R. D. Chaudhary.
7. Handbook of Cosmetic Science and Technology by Authors: H. S. R. Murthy.

B.TECH. (COSMETIC) SEM I
Vertical –A Major / Practical- 1
Subject code -399102
Course Name –Cosmetic Technology- I Practical

Level	Semester	Course Code	Course Name	Credits	Practical Hours	Exam Duration	Max. Marks (Internal + External)
4.5	1	399102	Cosmetic Technology- I Practical	2	60	4 hrs.	(25+25) Total 50

Course Objective:	1. To provide practical knowledge of formulation techniques used in cosmetic product development. 2. To develop laboratory skills for preparation and evaluation of cosmetic emulsions, suspensions, and personal care products. 3. To familiarize students with the formulation and quality assessment of skin care, sun care, and hair care products. 4. To impart hands-on experience in evaluation methods for cosmetic formulations and cosmetic excipients. 5. To enhance understanding of stability, appearance, texture, and performance parameters of cosmetic products.
Course Outcomes:	After successful completion of the course, students will be able to: CO1: Prepare and evaluate different types of cosmetic emulsions including oil-in-water (o/w) and water-in-oil (w/o) systems. CO2: Formulate and assess cosmetic suspensions using standard laboratory procedures. CO3: Develop and evaluate sun care and skin care products based on their functional properties and quality parameters. CO4: Prepare and analyze various hair care formulations such as shampoos, conditioners, and related products. CO5: Perform qualitative and quantitative evaluation of cosmetic excipients used in formulations. CO6: Apply standard laboratory practices, evaluation techniques, and quality control measures in cosmetic product development.

Practical on :	Content
I	Preparation and Evaluation of Emulsions (both o/w and w/o).
II	Preparation and Evaluation of Suspensions.
III	Preparation and evaluation of Sun Care Products.
IV	Preparation and Evaluation of Skin Care products.
V	Preparation and Evaluation of Hair Care products.
VI	Qualitative and quantitative evaluation of Cosmetic Excipients.

Recommended Books:
1. New cosmetic Science by Takeo Mitsui
2. Harry's Cosmetology
3. Cosmetic Science Technology BY Sagrin C.B.
4. Handbook of cosmetic Science &Technology by Marc Paye, Andrro Barel
5.Textbook of Cosmetic Formulations" Author: B.M. Mithal, R.N. Saha
6. Cosmetic Science by Author: Dr. R. D. Chaudhary
7. Handbook of Cosmetic Science and Technology by Authors: H. S. R. Murthy

B.TECH. (COSMETIC) SEM I
Vertical –B Minor / Theory 2
Subject code - 399103
Course Name –Fundamental of Human Anatomy and Physiology-I

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal + External)
4.5	1	399103	Fundamental HAP-I	2	30	2 hrs.	(20+30) Total 50

Course Objective:	1. To introduce students to the basic structure and functions of the human body with emphasis on anatomy and physiology relevant to cosmetic science. 2. To develop understanding of tissue organization and the role of different body tissues in maintaining body functions. 3. To explain the structure, physiology, and biochemical functions of the integumentary system including skin, hair, and nails. 4. To provide knowledge about skin barrier mechanisms, pigmentation, collagen, elastin, and glandular functions related to cosmetic applications. 5. To familiarize students with hair and scalp physiology, common disorders, and cosmetic treatments used in personal care and beauty industries. 6. To enable students to apply scientific concepts of anatomy and physiology in cosmetic formulation, skincare, and hair care practices.
Course Outcomes:	After successful completion of the course, students will be able to: CO1. Explain the basic concepts of human anatomy, physiology, and tissue organization. CO2. Identify and describe the structure and functions of epithelial, muscular, nervous, and connective tissues. CO3. Describe the anatomy and physiological functions of skin, hair, nails, and associated glands. CO 4. Analyze skin physiology including hydration, pigmentation, collagen, elastin, and barrier function in relation to cosmetic products. CO 5. Explain the hair growth cycle, scalp physiology, and common hair and scalp disorders. CO 6. Evaluate cosmetic treatments and products based on scientific understanding of skin and hair biology.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Introduction to Human body Definition and scope of anatomy and physiology, basic anatomical terminology, Tissue level of organization - Classification of tissues, structure, location and functions of epithelial, muscular, nervous and connective tissues.	8 Hrs	8 Marks
II	The Integumentary System (Skin, Hair, and Nails) Structure and functions of the skin, Layers of the skin - epidermis, dermis, and hypodermis, Structure and functions of Skin appendages- hair, nails, and glands, Role of the skin in protection, sensation, and thermoregulation	7 Hrs.	7 Marks

III	Skin Physiology and Biochemistry Skin barrier function, Skin hydration and moisturizing mechanisms, Collagen and elastin - structure and function, Melanin production and skin pigmentation, structure & function of Sweat gland & sebaceous gland	8 Hrs.	8 Marks
IV	Hair and Scalp Physiology Hair growth cycle, Hair structure and function, Common hair conditions - dandruff, hair loss, and scalp disorders, Cosmetic treatments for hair and scalp.	7 hrs.	7 Marks

Recommended Books:

1. Medical physiology by Tortora & Grabowski.

2. Anatomy & Physiology by Ross & Wilson.

3. Grays Anatomy by Kimber & Gray.

4. Concise Medical Physiology by Chaudhary.

5. Human anatomy and Physiology by S.S. Randhawa, Atul Kabra.

B.TECH. (COSMETIC) SEM I**Vertical –B Minor/Practical -2****Subject code - 399104****Course Name- Fundamental Human Anatomy and Physiology-I Practical**

Level	Semester	Course Code	Course Name	Credits	Practical Hours	Exam Duration	Max. Marks (Internal + External)
4.5	1	399104	Fundamental HAP-I Practical	2	60	4 hrs.	(25+25) Total 50

Course Objective:	1. To familiarize students with the use and handling of a compound microscope for histological studies. 2. To study the microscopic structure and characteristics of epithelial, connective, muscular, and nervous tissues. 3. To understand the histological organization of skin and its appendages, including hair follicles, sweat glands, and sebaceous glands. 4. To develop skills in identifying and differentiating various tissues and skin structures using permanent slides. 5. To correlate tissue structure with its physiological functions and relevance in cosmetic science
Course Outcomes:	After successful completion of the practical course, students will be able to: CO1: Operate and handle a compound microscope effectively for observation of biological tissues. CO2: Identify and differentiate various epithelial, connective, muscular, and nervous tissues based on their microscopic features. CO3: Recognize and describe the histological structure of skin, hair follicles, sweat glands, and sebaceous glands. CO4: Analyze the organization of epidermis, dermis, and hypodermis and explain their functional significance in skin health and cosmetic applications. CO5: Interpret microscopic observations and prepare practical records related to tissue identification and skin histology. CO6: Apply anatomical and histological knowledge in understanding cosmetic formulations, skin care products, and dermatological applications.

Practical on :	Content
I	To Study the compound microscope in details.
II	To Study, Identify and differentiate between the different epithelial tissue (e.g., simple squamous, stratified squamous, cuboidal, columnar) by using permanent slide under a microscope.
III	To study the different connective tissue by using permanent slide.
IV	To study the different muscular tissue by using permanent slide.
V	To study the nervous tissue by using permanent slide.

VI	To study the structure of skin, hair, sweat gland, sebaceous gland by using permanent slide.
VII	Observe and identify the different layers and structures within skin tissue samples, focusing on the epidermis, dermis, and hypodermis.

Recommended Books:	
1.	Medical physiology by Tortora & Grabowski.
2.	Anatomy & Physiology by Ross & Wilson.
3.	Grays Anatomy by Kimber & Gray.
4.	Concise Medical Physiology by Chaudhary.
5.	Human anatomy and Physiology by S.S. Randhawa, Atul Kabra.

B.TECH. (COSMETIC) SEM I
Vertical – C Generic Open Elective / Theory-3
Subject code - 399105
Course Name- Beauty Culture-I

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal)
4.5	1	399105	Beauty Culture-I	2	30	2 hrs.	Total 50

Course Objective:	1. To introduce students to the fundamentals of human tissues and their microscopic structure relevant to cosmetology and beauty science. 2. To develop understanding of the structure and functions of epithelial, connective, muscular, and nervous tissues. 3. To provide practical knowledge of the use and handling of compound microscopes for biological studies. 4. To familiarize students with the anatomy and histology of skin, hair, sweat glands, and sebaceous glands. 5. To develop observational and identification skills related to tissue organization and skin structure important in beauty culture and cosmetic applications.
Course Outcomes:	After successful completion of the course, students will be able to: CO1: Explain the working principle, parts, and applications of a compound microscope. CO2: Identify and differentiate various epithelial tissues using permanent microscopic slides. CO3: Describe the structure and characteristics of connective, muscular, and nervous tissues. CO4: Examine and interpret the histological structure of skin, hair, sweat glands, and sebaceous glands. CO5: Identify different layers of skin including epidermis, dermis, and hypodermis through microscopic observations. CO6: Apply basic histological knowledge in understanding cosmetic, skin care, and beauty culture practices.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Skin types, Recognition of skin types, choice of treatment suitable to skin condition and skin types. Skincare in summer & winter season different types of skin blemishes and their treatment.	8 Hrs	8 Marks
II	Basic types of facial muscles of facial expression, steps during facial like cleaning, Toning, face massage, Steaming. Use of different face packs, Face pack ingredients, advantage	7 Hrs.	7 Marks

	of facial. Setting masks, Peel off masks, Thermal type paraffin base mask, non-Setting mask, Hot oil mask.		
III	Treatment of superficial hair waxing - Hot wax treatment, cold wax treatment, Leg waxing, hand waxing, under arm waxing; Bleaching - Preparation of paste, Face bleaching, Hand bleaching, Leg bleaching, Precaution during bleaching.	8 Hrs.	8 Marks
IV	Eye care, eye brow, factors affecting eyebrow setting, determination of correct length of eyebrow, application of false eye lashes, methods, contraindications, different methods for eyebrow shaping – Threading, Tweezing Eye lashes & eye brows, tinting-method contraindication.	7 hrs.	7 Marks

Recommended Books:

1. Malady's Cosmetics.

2. Beauty & Skin care - Indu Puri.

3. Guide for Health & Beauty Therapists - Gayner Winyard.

4. Health & Beauty - Rama Bans.

5. Cosmetics Makeup Manicure - Ann Raton & Furrence Openshaw.

B.TECH. (COSMETIC) SEM I
Vertical –C Generic Open Elective / Theory-4
Subject Code - 399106
Course Name- Herbal Cosmetic

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal)
4.5	1	399106	Herbal Cosmetic	2	30	2 hrs.	Total 50

Course Objective:	1. To introduce the fundamentals, scope, and significance of herbal cosmetics in the cosmetic industry. 2. To familiarize students with commonly used herbal ingredients, their extraction methods, chemical properties, and cosmetic benefits. 3. To develop understanding of formulation principles involved in herbal cosmetic products such as creams, lotions, and shampoos. 4. To impart knowledge regarding safety assessment, regulatory requirements, and Good Manufacturing Practices (GMP) related to herbal cosmetics. 5. To provide knowledge of quality control, storage, preservation, and analytical evaluation techniques for herbal cosmetic products.
Course Outcomes:	After successful completion of the course, students will be able to: CO1: Explain the concepts, history, scope, and advantages of herbal cosmetics. CO2: Identify various herbal ingredients used in cosmetics and describe their properties, extraction methods, and applications. CO3: Describe the formulation principles and preparation methods of herbal cosmetic products such as creams, lotions, and shampoos. CO4: Interpret the importance of safety assessment, GMP, labeling, packaging, and regulatory guidelines for herbal cosmetic products. CO5: Perform quality control evaluation and explain storage and preservation requirements of herbal cosmetics. CO6: Apply analytical and technical knowledge for the development and quality assurance of herbal cosmetic formulations.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Introduction to Herbal Cosmetics and Herbal Ingredients Definition and scope of herbal cosmetics, History and evolution of herbal cosmetics, Benefits of using herbal cosmetics, Classification of herbal ingredients, Commonly used herbs in cosmetics: Aloe Vera, Neem, Turmeric, etc., Extraction and processing of herbal ingredients, Chemical properties and benefits of herbal ingredients	8 Hrs	8 Marks
II	Formulation of Herbal Cosmetics Principles of formulation, Types of herbal cosmetic products: creams, lotions, shampoos, etc., Carriers and Bases in Cosmetic Formulations, Stability and preservation of herbal products	7 Hrs.	7 Marks

III	Safety and Regulatory Aspects Safety assessment of herbal ingredients, Good Manufacturing Practices (GMP), Regulatory frameworks for herbal cosmetics (FDA, EU regulations, etc.), Labelling and packaging requirements for Herbal Products	8 Hrs.	8 Marks
IV	Quality Control and Assurance Quality control tests for herbal cosmetics, Handling and storage of herbal products, Advanced analytical techniques for quality control	7 hrs.	7 Marks

Recommended Books:

1. Natural Excipients – Dr. R.S. Gaud.
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2. Text Book of Pharmacognosy- Trease & Evans.
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3. Text book of Pharmacognosy by Gokhale & Kokate.
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B.TECH. (COSMETIC) SEM I
Vertical –D Skill Enhancement Course Practical- 3
Subject code - 399107
Course Name – Beauty Culture –I Practical

Level	Semester	Course Code	Course Name	Credits	Practical Hours	Exam Duration	Max. Marks (Internal)
4.5	1	399107	Beauty Culture-I Practical	2	60	4 hrs.	Total 50

Course Objective:	1. To provide practical knowledge and skill development in basic beauty culture techniques and personal grooming practices. 2. To develop understanding of eyebrow shaping methods and factors influencing facial aesthetics. 3. To impart hands-on training in hair removal techniques including threading, tweezing, and waxing procedures. 4. To familiarize students with cosmetic bleaching procedures and their applications for skin care treatments. 5. To develop practical skills in manicure procedures including nail care, cuticle treatment, and hand massage techniques.
Course Outcomes:	After successful completion of the course, students will be able to: CO1: Explain the factors affecting eyebrow shaping and determine appropriate eyebrow dimensions according to facial features. CO 2: Perform eyebrow shaping using threading and tweezing techniques safely and effectively. CO 3: Demonstrate hot waxing and cold waxing procedures for removal of superficial hair from different body parts. CO 4: Carry out facial, hand, and leg bleaching treatments using standard cosmetic procedures. CO 5: Perform manicure techniques including nail shaping, cuticle removal, and hand massage. CO 6: Apply hygiene, safety, and professional practices during beauty culture and cosmetic treatment procedures.

Practical on :	Content
I	Eye brows : To study- a) Factors affecting eye brow shaping b) Determination of correct length of eye brow.
I	To Study different method of eyebrow shaping a) Threading b) Tweezing .
IV	To Study Treatment of superficial hair waxing a) Hot Waxing Treatment b) Cold Waxing Treatment - i) Leg waxing ii) Hand Waxing.

V	To Study Bleaching a) Face bleaching b) Hand Bleaching c) Leg Bleaching. To Study Manicure a) Nail Shaping b) Cuticle removing c) Hand Massage
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Recommended Books:
1. Malady's Cosmetics.
2. Beauty & Skin care - Indu Puri.
3. Guide for Health & Beauty Therapists - Gayner Winyard.
4. Health & Beauty - Rama Bans.
5. Cosmetics Makeup Manicure - Ann Raton & Furrence Openshaw.

B.TECH. (COSMETIC) SEM I
Vertical –E Ability Enhancement Course/ Theory
Subject code - 399108
Ability Enhancement Course -English
Course Name – Communication Skill- English

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal)
4.5	1	399108	Communication Skill -English -I	1	15	1 hrs.	Total 25

Course Objective:	1. To develop effective verbal and written communication skills among students. 2. To enhance listening, reading, writing, and presentation abilities required for academic and professional communication. 3. To familiarize students with interview techniques, group discussion skills, and interpersonal communication practices. 4. To strengthen English language proficiency through grammar, vocabulary building, and language functions. 5. To improve confidence and professional etiquette in formal communication situations.
Course Outcomes:	After successful completion of the course, students will be able to: CO1: Explain the fundamentals, importance, barriers, and elements of communication in professional and social contexts. CO2: Demonstrate effective written communication skills through letter writing, summarizing, and reading comprehension exercises. CO3: Apply presentation and interview skills with proper planning, confidence, and communication techniques. CO4: Participate effectively in group discussions using appropriate communication etiquette and interpersonal skills. CO5: Use language functions such as greeting, thanking, apologizing, and self-introduction appropriately in day-to-day communication. CO6: Apply English grammar concepts including articles, prepositions, narration, voice change, prefixes, and suffixes for accurate communication.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Communication Skill Introduction, Definition, Importance, Barriers to communication, Perspectives in Communication, Elements of Communication, Communication Styles, Basic Listening Skills, Written Communication - Letter writing (Customer complaints, general complaints, seeking information, placing orders), Reading skills- Scanning & skimming, reading comprehension, summerising.	4 Hrs	6 Marks
II	Interview Skills Purpose of an interview, Do's and Dont's of an interview, Giving Presentations - Dealing with Fears, Planning your	4 Hrs.	6 Marks

	Presentation, Structuring Your Presentation, Delivering Your Presentation, Techniques of Delivery.		
III	Communication skills Language function (Greeting, Taking leave, Thanking, Apologizing, Introducing Self), Group Discussion - Introduction, Communication skills in group discussion, Do's and Dont's of group discussion.	4 Hrs.	7 Marks
IV	Revisiting English Grammar Articles prepositions, adjectives, Word formation – Prefix and Suffix, Direct and Indirect Narration, Active and Passive Voice.	3 Hrs.	6 Marks

Recommended Book:

1. Strength Your English, OUP by Bhaskaran & Horsbug
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2. English for Practical Purpose by Macmillion, Patil, Walke, Thorat & Merchant.
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3. Macmillan's Foundation English by Dwivedi & Kumar
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B.TECH. (COSMETIC) SEM I
Vertical –E Ability Enhancement Course / Theory
Subject code - 399109
Ability Enhancement Course - Modern Indian Language
Course Name – Communication Skill- Marathi I

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal)
4.5	1	399109	Communication Skill-Marathi -I	1	15	1 hrs.	Total 25

Course Objective:	- विद्यार्थ्यांमध्ये प्रभावी वाचन, संभाषण व संवाद कौशल्ये विकसित करणे. - ज्ञान, कौशल्य विकास व आजीवन शिक्षणाची वृत्ती निर्माण करून व्यावसायिक प्रगतीस प्रोत्साहन देणे. - कॉस्मेटिक उद्योगातील विपणन, ग्राहक व्यवस्थापन व डिजिटल मार्केटिंगची मूलभूत संकल्पना समजावून सांगणे. - बौद्धिक संपदा हक्क, गुणवत्ता व्यवस्थापन व कॉस्मेटिक उत्पादनांच्या मानकांबाबत जागरूकता निर्माण करणे. - उद्योगाभिमुख, नैतिक व गुणवत्तापूर्ण व्यावसायिक दृष्टीकोन विकसित करणे.
Course Outcomes:	अभ्यासक्रम पूर्ण झाल्यानंतर विद्यार्थी खालील बाबी आत्मसात करतील : CO1: विद्यार्थी प्रभावी वाचन, संभाषण व संवाद कौशल्यांचा वापर विविध शैक्षणिक व व्यावसायिक परिस्थितींमध्ये करू शकतील. CO2: विद्यार्थी स्वयंअध्ययन, ज्ञानवृद्धी व आजीवन शिक्षणाच्या माध्यमातून बदलत्या तंत्रज्ञानाशी जुळवून घेऊ शकतील. CO3: विद्यार्थी कॉस्मेटिक उत्पादनांचे विपणन, ब्रँडिंग, ग्राहक वर्तन विश्लेषण व ग्राहक व्यवस्थापनाची तत्वे समजून त्यांचा उपयोग करू शकतील. CO4: विद्यार्थी बौद्धिक संपदा हक्क (IPR), पेटंट, कॉपीराइट, ट्रेडमार्क तसेच गुणवत्ता नियंत्रण व गुणवत्ता हमी यांचे महत्त्व स्पष्ट करू शकतील. CO5: विद्यार्थी कॉस्मेटिक उद्योगातील गुणवत्ता मानके, व्यावसायिक नैतिकता व उद्योगाभिमुख कौशल्यांचा अवलंब करू शकतील.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	कौशल्य : वाचन कौशल्य - वाचनाचे महत्व , पूर्वतयारी , वाचन प्रक्रियेतील घटक , वाचनाचे फायदे व प्रकार, संभाषण कौशल्य - संभाषणात भाषेचे महत्व संभाषणाचे प्रकार , संभाषण कौशल्यातील अडचणी , संभाषण कौशल्य सुधारण्याचे उपाय	4 Hrs	6 Marks
II	ज्ञान, कौशल्य विकास व आजीवन शिक्षण : व्यावसायिक विकासासाठी आजीवन शिक्षणाची (Lifelong Learning) वृत्ती , ज्ञान व कौशल्य विकास, स्वयंअध्ययन व कौशल्य वृद्धी, बदलत्या	4 Hrs	6 Marks

	तंत्रज्ञानाशी जुळवून घेणे.		
III	कॉस्मेटिक उद्योगातील विपणन व ग्राहक व्यवस्थापन: विपणन कौशल्ये, कॉस्मेटिक उत्पादनांचे विपणन , ग्राहक वर्तनाचा अभ्यास , ब्रँडिंग व जाहिरात कौशल्ये , डिजिटल मार्केटिंगची मूलतत्त्वे , ग्राहक समाधान व अभिप्राय व्यवस्थापन.	4 hrs.	6 Marks
IV	बौद्धिक संपदा हक्क व गुणवत्ता व्यवस्थापन: बौद्धिक संपदा हक्क (IPR) परिचय, पेटंट, कॉपीराइट व ट्रेडमार्क , गुणवत्ता नियंत्रण व गुणवत्ता हमी , कॉस्मेटिक उत्पादनांची मानके	3 hrs.	7 Marks

Recommended Book:

1. व्यावहारिक मराठी - पुणे विद्यापीठ संभाषण
2. व्यावहारिक व उपयोजित मराठी व प्रसार माध्यमाची कार्यशैली - संपादक डॉ. संदीप सांगळे .
3. व्यावहारिक मराठी - डॉ. सयाजीराजे मोकाशी , डॉ. रंजना नेमाडे .
4. व्यक्तिमत्त्व विकास – डॉ. सुहास भास्कर जोशी
5. संवाद कौशल्ये आणि व्यक्तिमत्त्व विकास – डॉ. अशोक पाटील
6. व्यावसायिक संवाद कौशल्ये – डॉ. उमा कुलकर्णी
7. उद्योजकता विकास – डॉ. एस. एस. खांडेकर
8. पर्यावरण शिक्षण व शाश्वत विकास – डॉ. श्रीकांत कार्लेकर
9. संशोधन पद्धती आणि प्रकल्प लेखन – डॉ. रवींद्र निकम
10. व्यावसायिक नैतिकता व मूल्य शिक्षण – डॉ. वि. रा. करंदीकर
11. वेळ व्यवस्थापन व नेतृत्व विकास – डॉ. स्वाती देशमुख
12. औद्योगिक व्यवस्थापन – डॉ. बी. एस. मोरे

B.TECH. (COSMETIC) SEM I
Vertical –E Indian Knowledge System/ Theory
Subject code - 399110
Course Name – Indian Knowledge System (Generic)

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal)
4.5	1	399110	Indian Knowledge System (Gerneric)	2	30	2 hrs.	Total 50

Course Objective:	1. To introduce students to the foundations of Indian Knowledge System, its philosophical traditions, and epistemological frameworks. 2. To familiarize students with ancient Indian scriptures such as Vedas, Upanishads, Puranas, Ramayana, and Mahabharata along with their cultural significance. 3. To develop understanding of Indian philosophical schools including Shat Darshanas, Buddhist, and Jain philosophies. 4. To impart knowledge of Ayurveda, Yoga, and traditional Indian approaches to health, lifestyle, and well-being. 5. To provide awareness of ancient Indian contributions in science, mathematics, architecture, technology, arts, economics, and ethics.
Course Outcomes:	CO1: Develop an appreciation about the role and importance of Veda, Vedangas, Upanishadas, Ramayana, Mahavharata, Prominent ancient art forms and skills, etc. CO2: Gain Knowledge about the role and importance of Yoga and Ayurveda. CO3: Understand the role and contribution of ancient Indian Science. CO4: Understand the role and contribution of ancient Indian Art & Literature.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Introduction to Indian Knowledge & Philosophy 1. Nature of Knowledge – Difference between information and knowledge. The five sense organs and their respective perceptions. Nature of mind and intellect. True vs. false knowledge. Means of acquiring knowledge – Perception (Pratyaksha), Inference (Anumana), Comparison (Upamana), Verbal testimony (Shabda). Introduction to other means (Pramanas). 2. Introduction to Vedas and Vedangas – Overview of the four Vedas and their six branches (Vedangas). 3. Introduction to the Ten Principal Upanishads 4. Introduction to the Six Classical Philosophical Schools (Shat Darshanas) 5. Introduction to Buddhist and Jain Philosophy 6. Introduction to Puranic Literature – Nature of the Puranas, their definition, major themes, and a basic overview of the 18 Mahapuranas. 7. Introduction to the Ramayana 8. Introduction to the	8 Hrs.	8 Marks

	Mahabharata		
II	Introduction to Ayurveda and Yoga 1. Nature of Ayurveda – Its scope, objectives, applications, and global recognition. 2. Introduction to Ancient Ayurvedic Scholars – Charaka, Sushruta, Vagbhata, etc., their texts and contributions. 3. Ayurvedic Daily Routine (Dinacharya) and Seasonal Regimen (Ritucharya) 4. Diet, Lifestyle, and Thought – Concept of wholesome food, incompatible foods (ViruddhaAahar), and mental hygiene. 5. Introduction to Yoga Shastra – Contributions of Maharshi Patanjali and other sages; their texts and teachings. 6. Surya Namaskar and Important Yogic Postures (Asanas) – Their significance and applications. 7. Introduction to Various Yogic Mudras – Their meanings and benefits.	7 Hrs.	7 Marks
III	concepts, and their modern relevance. 4. Ancient Indian Metallurgy and Physics – Texts, authors, key principles, and comparison with modern science. 5. Ancient Indian Mathematics – Texts, mathematicians, key theories, and comparison with contemporary systems. 6. Ancient Indian Architecture and Vastu Shastra – Ancient texts, authors, principles, and comparison with modern architectural science. 7. Ancient Indian Life Sciences (Botany& Zoology) – Key texts, authors, major principles, and comparison with modern relevance. 8. Ancient Indian Technology: Evidences and Practices of Ancient Technology with special reference to Civil Engineering-Architecture, Metallurgy and Instruments	8 Hrs.	8 Marks
IV	Ancient Indian Art, Economics and Literature 1. Bharatamuni's Natyashastra and the Philosophy of Drama (Rupaka Chintan) 2. Introduction to Sanskrit Epics – Brief overview of the five major epics in Sanskrit literature. 3. Introduction to Ancient Indian Authors – Important literary figures and their key works. 4. Introduction to Kautilya's Arthashastra – Structure of the text, subjects covered, and its relevance in modern times. 5. Introduction to the 14 Vidyas (Branches of Knowledge) 6. Introduction to the 64 Arts (Kalās) 7. Introduction to Ancient Indian Ethics (Niti Shastra) – The ultimate aim of education as ethics. Nature of Indian ethical thought. Introduction to important texts on ethics.	7 Hrs.	7 Marks

Recommended Book:

1. Introduction to Indian Knowledge System: Concepts and Applications by B. Mahadevan, Vinayak R. Bhat and Nagendra P. R. N., PHI Learning Private Limited, 2022. 2. Kapur K and Singh A. K (Eds) 2005).

2. Indian Knowledge Systems, Vol. 1. Indian Institute of Advanced Study, Shimla. Tatvabodh of sankaracharya, Central chinmay mission trust, Bombay, 1995.

3. Collection of Four Vedas (Rigveda Samhita, Yajurveda Samhita, Samveda Samhita, Atharva Veda Samhita), by Pandit ShriRam Sharma Acharya, Motilal Banarasidass

4. Nair, Shantha N. Echoes of Ancient Indian Wisdom. New Delhi: Hindology Books, 2008.

5. SK Das, The education system of Ancient hindus, Gyan publication house, India

6. Reshmi ramdhoni, Ancient Indian Culture and Civilisation, Star publication ,2018

7. BL Gupta, Value and distribution system in India, Gyan publication house, India

B.TECH. (COSMETIC) SEM I
Vertical –E Value Education / Theory
Subject code - 399111
Course Name – Environmental Studies

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal)
4.5	1	399111	Environmental Studies	2	30	2 hrs.	Total 50

Course Objective:	1. To introduce students of all faculties to the basic concepts, scope, and importance of Environmental Studies in contemporary life. 2. To develop understanding of ecosystems, natural resources, biodiversity, and major environmental challenges at local, national, and global levels. 3. To relate environmental issues with sustainable development, ethics, constitutional responsibility, and responsible citizenship. 4. To familiarize students with Indian Knowledge Systems, traditional ecological wisdom, and community-based environmental practices. 5. To introduce the role of modern tools including Artificial Intelligence, digital technologies, and data-based approaches in environmental monitoring and management. 6. To encourage environmentally responsible attitudes, problem-solving ability, and sustainable lifestyle practices among students.
Course Outcomes:	After completion of the course, the student will be able to: CO1. Explain the multidisciplinary nature, scope, and significance of Environmental Studies and sustainable development. CO2. Describe the structure and function of ecosystems, natural resources, biodiversity, and their relevance to human well-being. CO3. Analyze major environmental problems such as pollution, climate change, resource depletion, and biodiversity loss in relation to society and development. CO4. Apply principles of environmental ethics, sustainable living, and ecological citizenship in personal, academic, and community contexts. CO5. Examine the contribution of Indian Knowledge Systems and appropriate modern technologies, including AI-based tools, in environmental conservation and decision making. CO6. Propose simple local solutions or informed actions for environmental improvement based on observation, evidence, and responsible participation.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Environmental Studies: Foundation, Scope and Contemporary Relevance 1.1: Concept, definition, scope and multidisciplinary nature of Environmental Studies. 1.2: Components of environment: physical, biological, social and cultural environment. 1.3: Need and importance of environmental education in	8 Hrs.	8 Marks

	higher education; environmental awareness as a lifelong civic responsibility. 1.4: Sustainable development: concept, pillars, intergenerational equity, SDGs and Lifestyle for Environment (LIFE). 1.5: Human-environment relationship and ecological footprint. 1.6: Constitutional, ethical and social responsibility toward environment.		
II	Natural Resources, Ecosystems, Biodiversity and Indian Ecological Wisdom 2.1: Natural resources: forest, water, land, food, mineral and energy resources—use, overexploitation, conservation and sustainable management. 2.2: Ecosystem: concept, structure, functions, food chain, food web, ecological pyramids and energy flow. 2.3: Biodiversity: levels, values, threats and conservation; India as a mega diversity nation. 2.4: In-situ and ex-situ conservation: biodiversity hotspots with special reference to India. 2.5: Traditional ecological knowledge in India: sacred groves, water harvesting traditions, biodiversity-friendly customs and community stewardship. 2.6: Indian Knowledge Systems (IKS) and environmental wisdom in agriculture, water conservation, forestry and harmonious living with nature.	7 Hrs.	7 Marks
III	Environmental Pollution, Climate Change and Technology for Sustainability 3.1: Environmental pollution: air, water, soil, noise, thermal and solid waste pollution—causes, effects and control measures. 3.2: Climate change, global warming, ozone depletion, acid rain and extreme weather events. 3.3: Waste management: biodegradable and non-biodegradable waste, e waste, plastic waste, biomedical waste, 5R principles and circular economy. 3.4: Environmental health, sanitation and sustainable urban living. 3.5: Role of science and technology in environmental management: GIS, remote sensing, sensors, digital dashboards and environmental monitoring tools. 3.6: Introduction to Artificial Intelligence in environment: AI for climate prediction, precision agriculture, disaster forecasting, biodiversity mapping, pollution monitoring and smart resource management. 3.7: Opportunities and limitations of AI: data quality, bias, energy use, ethics and responsible technology deployment.	8 Hrs.	8 Marks
IV	Society, Policy, Ethics and Ecological Citizenship 4.1: Environment and society: population, urbanization, consumerism and environmental justice. 4.2: Environmental ethics, value education and ecological citizenship; individual and collective responsibility. 4.3: Major environmental movements in India and role of	7 Hrs.	7 Marks

	communities, youth and civil society. 4.4: Environmental policies and legal framework: basic introduction to Environment Protection Act, Wildlife Protection Act, Forest Conservation Act, Biological Diversity Act and constitutional provisions. 4.5: Role of institutions, media, education, local self-government and NGOs in environmental protection. 4.6: Sustainable campuses and green practices: water saving, energy conservation, waste segregation, biodiversity-friendly campus, carbon conscious behaviour. 4.7: Local action and future pathways: community participation, citizen science, green entrepreneurship and innovation for sustainability.		
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Recommended Book:

1. Bharucha, Erach. Textbook of Environmental Studies for Undergraduate Courses of All Branches of Higher Education. University Grants Commission, New Delhi.
2. Kaushik, Anubha and Kaushik, C. P. Perspectives in Environmental Studies. New Age International Publishers
3. Rajagopalan, R. Environmental Studies: From Crisis to Cure. Oxford University Press, India.
4. Singh, Y. K. Environmental Science. New Age International Publishers.
5. Chawla, Shashi. A Textbook of Environmental Science. Tata McGraw-Hill.

B.TECH. (COSMETIC) SEM I
Vertical – F Field Project/ Community Engagement and Service (FP/CES)
Co-Curricular (CC)
Subject code – 399112
Course Name – Co-Curricular (CC) / Outdoor

Level	Semester	Course Code	Course Name	Credits
4.5	1	399112	Co-Curricular (CC)	2

Sant Gadge Baba Amravati University, Amravati
Faculty of Science and Technology
B.TECH. (COSMETIC) SEM II

Mode of Teaching	Ver. No.	The Vertical	Types of Course	Course Code	Course Name	Credit	Workload (Hrs/ weeks)	Vertical Workload (Hrs/ weeks)
Classroom Teaching /Outdoor/ Field	A.	Major	Theory-5	399201	Cosmetic Technology -II	2	2	6
			Practical- 4	399202	Cosmetic Technology -II Practical	2	4	
	B.	Minor	Theory 6	399203	Fundamentals of HAP-II	2	2	6
			Practical - 5	399204	Fundamentals of HAP-II Practical	2	4	
	C.	Generic Open Elective (OE)	Theory-7	399205	Beauty Culture-II	2	2	4
			Theory-8	399206	Fundamental Cosmetic Chemistry	2	2	
	D.	Vocational Skill Courses (VSC)	Practical - 6	399207	Computer Skill Practical-I	2	4	8
		Skill Enhancements Courses (SEC)	Practical - 7	399208	Beauty Culture-II Practical	2	4	
	E.	Ability Enhancement courses (AEC-English)	Theory	399209	Communication Skill – English-II	1	1	4
		Ability Enhancement courses- Modern Indian Language (AEC- MIL)	Theory	399210	Communication Skill -Marathi-II	1	1	
		Value Education Courses (VEC)	Theory	399211	Constitution of India	2	2	
	F.	Co- curricular Courses (CC) (Health& wellness, yoga education activities, NSS/NCC & Fine/Applied/Visual/ Performing Art	Outdoor	399212	Outdoor	2	4	4
		Total				22	32	32

B.TECH. (COSMETIC) SEM II
Vertical –A Major/ Theory 5
Subject code - 399201
Course Name –Cosmetic Technology- II

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal + External)
4.5	2	399201	Cosmetic Technology- II	2	30	2 hrs.	(20+30) Total 50

Course Objective:	By the end of the course, students will be able to: 1. Understand the principles, formulation techniques, and stability aspects of biphasic liquid cosmetic formulations such as emulsions and suspensions. 2. Gain knowledge of the composition, preparation, applications, and quality requirements of color cosmetics and personal care products. 3. Understand the selection, characteristics, and functional role of cosmetic containers and packaging systems. 4. Develop awareness of cosmetic product safety, regulatory requirements, and compliance with national and international standards.
Course Outcomes:	Upon successful completion of the course, students will be able to: CO1. Explain the formulation, preparation, evaluation, and stability of emulsions and suspensions used in cosmetic products. CO2. Describe the ingredients, manufacturing principles, applications, and quality aspects of color cosmetics and personal care products. CO3. Select suitable cosmetic containers and packaging systems based on product characteristics, stability, and consumer requirements. CO4. Interpret cosmetic safety requirements, regulatory guidelines, and safety assessment procedures for ensuring product quality and regulatory compliance.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Biphasic Liquid formulations - Emulsion & Suspension Emulsion – types, Identification test of Emulsion preparation & stability, suspension- Flocculated and deflocculated suspensions, selection of wetting suspending and dispersing agents. Preparation and stability of biphasic liquid formulations.	8 Hrs	8 Marks
II	Color Cosmetics and Personal Care Products Theory and Applications of – Color Cosmetics – Face (Foundations, Powders, Blushes), Eyes (Eye Shadows, Eyeliners, Mascaras), Lips (Lipsticks, Glosses, Liners), Nails (Nail Polishes, Treatments, Removers). Personal Care Products – Oral Care (Toothpaste, Mouthwashes), Bath and Shower (Soaps, Body Washes, Bath oils) Deodorants and Anti-perspirants (Roll-ons, Sprays, Sticks) Hand and Foot Care (Creams, Scrubs, Treatments)	7 Hrs.	7 Marks

III	Cosmetics Containers Introduction, Ideal Characteristic for Cosmetic Containers, Types of Cosmetic Containers – (Narrow Mouth bottles, Wide Mouth Bottles, Tubes, Tubular, Powder Containers, Compact containers, Stick containers, pencil containers Applicator containers.)	8 Hrs.	8 Marks
IV	Regulatory Framework and Safety of Cosmetic Products Regulatory Bodies, Safety Assessments (Safety Testing and Regulations) Importance of safety in cosmetics, Restricted and prohibited substances in cosmetics, Safety considerations for different types of cosmetics (e.g., skincare, hair care, makeup, fragrances).	7 hrs.	7 Marks

Recommended Books:

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| 1. Cooper & Gunn Dispensing for Pharmaceutical. |
| 2. Harry's Cosmetology |
| 3. Mittal Test Book of Pharma Formulation B.I.E.T. Pilani. |
| 4. The Pharmacopoeia of India |
| 5. Remington's Pharmaceutical Practices. |

B.TECH. (COSMETIC) SEM II
Vertical –A Major / Practical- 4
Subject code -399202
Course Name –Cosmetic Technology- II Practical

Level	Semester	Course Code	Course Name	Credits	Practical Hours	Exam Duration	Max. Marks (Internal + External)
4.5	2	399202	Cosmetic Technology- II Practical	2	60	4 hrs.	(25+25) Total 50

Course Objective:	By the end of this practical course, students will be able to: 1. Develop skills in the formulation and evaluation of biphasic systems such as emulsions and suspensions used in cosmetic products. 2. Understand the preparation methods, composition, and quality assessment of various ointment, cream, paste, jelly, and stick bases. 3. Gain hands-on experience in the formulation and evaluation of cosmetic products such as cleansing creams, cold creams, lotions, and vanishing creams. 4. Apply good laboratory practices and quality evaluation techniques for the development of stable and effective cosmetic formulations.
Course Outcomes:	Upon successful completion of the course, students will be able to: CO1. Prepare and evaluate emulsions and suspensions using suitable formulation ingredients and techniques. CO2. Formulate and assess different ointment bases, including hydrocarbon, absorption, water-soluble, and water-miscible bases. CO3. Prepare and evaluate cosmetic products such as cleansing creams, cold creams, lotions, vanishing creams, stick bases, pastes, and jelly formulations. CO4. Perform quality evaluation tests and interpret the results to ensure the stability, consistency, and suitability of cosmetic formulations.

Practical on :	Content
I	Preparation and Evaluation of Emulsions (both o/w and w/o).
II	Preparation and Evaluation of Suspensions.
III	Preparation and evaluation of Ointment bases – a. Hydrocarbon b. Absorption c. Water soluble d. Water miscible
IV	Preparation and Evaluation of cosmetics like cleansing cream, Lotion cold cream, vanishing creams at least two examples from each category.
V	Preparation of simple stick bases.
VI	Preparation of paste & Jelly bases.

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Recommended Books:

1. Mittal Test Book of Pharma Formulation B.I.E.T. Pilani.
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2. The Pharmacopoeia of India.

3. Remington's Pharmaceutical Practices.
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4. Cooper & Gunn Dispensing for Pharmaceutical.

5. HUSA: Pharmaceutical Dispensing Mack Publishing.

6. Mittal Test Book of Pharma Formulation B.I.E.T. Pilani.
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7. The Pharmacopoeia of India.

B.TECH. (COSMETIC) SEM II**Vertical –B Minor / Theory 6****Subject code - 399203****Course Name –Fundamental of Human Anatomy and Physiology-II**

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal + External)
4.5	2	399203	Fundamental HAP-II	2	30	2 hrs.	(20+30) Total 50

Course Objective:	By the end of this course, students will be able to: 1. Understand the structure and function of the skin, common dermatological conditions, and the role of cosmetic ingredients in maintaining skin health. 2. Gain knowledge of sensory systems and their significance in the development, evaluation, and consumer acceptance of cosmetic products. 3. Understand the principles of skin management, including wound healing, scar management, environmental effects, and nutritional factors influencing skin health. 4. Develop awareness of toxicological principles, cosmetic safety assessment methods, and regulatory requirements for safe cosmetic product development.
Course Outcomes:	Upon successful completion of the course, students will be able to: CO1. Explain skin physiology, common skin disorders, and the role of active cosmetic ingredients in dermatological and skincare preparations. CO2. Describe the anatomy and physiology of sensory organs and evaluate the influence of sensory attributes such as texture, fragrance, and appearance on cosmetic product performance. CO3. Analyze factors affecting skin health, including wound healing processes, environmental exposure, and nutritional influences, for effective skin management. CO4. Interpret toxicological data, safety assessment procedures, patch testing results, and regulatory guidelines to ensure the safety and compliance of cosmetic products.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Cosmetic Dermatology Different skin types, Common skin conditions (acne, eczema, psoriasis), Impact of UV radiation on the skin, Principles of cosmetic dermatology, Interaction between cosmetics and skin, Role of vitamins, antioxidants, and peptides in Dermatological preparations.	8 Hrs	8 Marks
II	Sensory Systems Anatomy and physiology of sensory organs – (eyes, nose, and skin.), Sensory perception in the skin, Role of the olfactory system in cosmetics, Texture, scent, and visual appeal in product development,	7 Hrs.	7 Marks
III	Essentials of Skin Management Wound Healing and Scar Management (Stages of wound healing, role of growth factors, and scar prevention and treatment), Impact of Environmental Factors on Skin, Nutritional Influence on Skin Health (vitamins, minerals, and antioxidants)	8 Hrs.	8 Marks

IV	Toxicology and Safety in Cosmetics Introduction to toxicology, Assessing the safety of cosmetic ingredients, Regulatory aspects of cosmetic safety, Patch testing and clinical trials	7 hrs.	7 Marks
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Recommended Books:			
1. Medical physiology by Tortora & Grabowski.			
2. Anatomy & Physiology by Ross & Wilson.			
3. Grays Anatomy by Kimber & Gray.			
4. Concise Medical Physiology by Chaudhary .			
5. Human anatomy and Physiology by S.S. Randhawa, Atul Kabra.			

B.TECH. (COSMETIC) SEM II**Vertical –B Minor / Theory 5****Subject code - 399204****Course Name –Fundamental of Human Anatomy and Physiology-II Practical**

Level	Semester	Course Code	Course Name	Credits	Practical Hours	Exam Duration	Max. Marks (Internal + External)
4.5	2	399204	Fundamental HAP-II Practical	2	60	4 hrs.	(25+25) Total 50

Course Objective:	By the end of this practical course, students will be able to: 1. Develop skills in microscopic examination and identification of hair, nail, and tissue structures relevant to cosmetic science. 2. Understand the principles and applications of sensory evaluation techniques for assessing cosmetic products. 3. Gain practical knowledge of staining methods, microscopy, and laboratory techniques used in cosmetic and dermatological studies. 4. Understand the anatomy and physiology of sensory organs and skin through model-based and microscopic observations.
Course Outcomes:	Upon successful completion of the course, students will be able to: CO1. Perform microscopic examination and prepare reports on hair and nail samples, identifying their structural features and abnormalities. CO2. Conduct sensory evaluation of cosmetic products and interpret the results based on sensory attributes and consumer perception. CO3. Apply staining techniques and microscopy methods, including the use of a Neubauer slide, for the visualization and analysis of biological samples. CO4. Describe and identify the structural features and functions of the eye, ear, tongue, and skin through practical observation and model studies.

Practical on :	Content
I	Examine and Report Hair Samples under microscope
II	Conduct sensory evaluation of cosmetic products
III	Examine and Report Nail Clippings under microscope to identify different layers and any abnormalities.
IV	Learn and apply different staining techniques to enhance the visualization of tissue structures.
V	To demonstrate & setup neubar slide under the microscope.
VI	To study the structure (model) of Eye, Ear, Tongue, Skin.

Recommended Books:

1. Principles of Anatomy and Physiology" by Gerard J. Tortora and Bryan H. Derrickson
2. Textbook of Human Physiology" by A.K. Jain
3. Handbook of Cosmetic Science and Technology" by B. S. Madhuri
4. Principles of Anatomy and Physiology" by Gerard J. Tortora and Bryan H. Derrickson

B.TECH. (COSMETIC) SEM II
Vertical – C Generic Open Elective / Theory-7
Subject code - 399205
Course Name- Beauty Culture-II

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal)
4.5	2	399205	Beauty Culture-II	2	30	2 hrs.	Total 50

Course Objective:	By the end of this course, students will be able to: 1. Understand the principles, procedures, and techniques involved in manicure, pedicure, nail care, and application of artificial nails. 2. Gain knowledge of beauty treatments for common skin, nail, and hair problems and their appropriate cosmetic management. 3. Develop proficiency in makeup techniques, product selection, and corrective makeup practices for different occasions and client requirements. 4. Understand professional ethics, client communication skills, and the essentials of beauty parlour management for delivering quality beauty services.
Course Outcomes:	Upon successful completion of the course, students will be able to: CO1. Perform manicure, pedicure, nail shaping, cuticle care, massage techniques, and application of nail cosmetics and artificial nails. CO2. Identify common cosmetic concerns related to skin, nails, and hair and recommend suitable beauty treatments and care practices. CO3. Apply appropriate makeup techniques, cosmetic products, and corrective procedures for day, evening, party, and bridal makeup. CO4. Demonstrate professional ethics, client-handling skills, and knowledge of beauty parlour setup to ensure client satisfaction and service quality.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Pedicure and Medicure: Pedicure - Requirement of pedicure, Pedicure methodology, Massage for pedicure, Applications of False Nails Electric manicure- Requirement of manicure, Nail shaping, Cuticle removing, hand massage, Application of Varnish, Application of false nails.	8 Hrs	8 Marks
II	Beauty Treatments Treatment for crack hands, dry hands, tanned hands, Freckles on hand, Allergies, Rough elbow, Cracked Nails, General problems of hair, Treatment of hair – (Heena dye, Heena conditioning, Black dye, Hair styles, & hair setting, diet & exercise).	7 Hrs.	7 Marks

III	Makeup Pre make up skin care, Make up technique, Complexion planning, Use of cosmetics during Makeup (Cleanser, Toner, Astringent, Moisturiser, Foundation, Powder, Blusher, Lipsticks) Eye Make-up – (Use of Eye Shadow, Eye Liners, Mascara, Eye brow grooming), Day make up, Evening makeup, party make up, Bridal make up, corrective make up, Precaution during & after make up.	8 Hrs.	8 Marks
IV	Beautician & Aptitude to Client & Professional Ethics, Set up of beauty parlor for Clients Comfort.	7 hrs.	7 Marks

Recommended Books:

1. Malady's Cosmetics.

2. Beauty & Skin care - Indu Puri.

3. Guide for Health & Beauty Therapists - Gayner Winyard.

4. Health & Beauty - Rama Bans.

5. Cosmetics Makeup Manicure - Ann Raton & Furrence Openshaw.

B.TECH. (COSMETIC) SEM II
Vertical –C Generic Open Elective / Theory-8
Subject Code - 399206
Course Name- Fundamental Cosmetic Chemistry

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal)
4.5	2	399206	Fundamental Cosmetic Chemistry	2	30	2hrs.	Total 50

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Course Objective:	By the end of this course, students will be able to: 1. Understand fundamental chemical principles, including chemical bonding, molecular structure, acid-base concepts, pH, buffer systems, and solubility relevant to cosmetic science. 2. Gain knowledge of sources of impurities in cosmetic raw materials and methods used for their detection and control. 3. Develop an understanding of basic chemical analysis techniques, preparation and standardization of solutions, and factors affecting analytical accuracy. 4. Understand qualitative and quantitative analytical methods used for the evaluation and quality control of cosmetic products and raw materials.
Course Outcomes:	Upon successful completion of the course, students will be able to: CO1. Explain fundamental chemical concepts and apply them to the formulation and evaluation of cosmetic products. CO2. Identify common impurities in cosmetic raw materials and perform limit tests for assessing their quality and safety. CO3. Prepare and standardize analytical solutions and evaluate the accuracy, precision, and sources of error in chemical analysis. CO4. Differentiate between qualitative and quantitative analytical methods and apply titrimetric techniques for the analysis of cosmetic ingredients and formulations.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Fundamental Chemistry Concepts Chemical bonding and molecular structure, Types of chemical reactions, Acid-base theory, concept of pH, Buffer solutions, Solutions and solubility.	8 Hrs	8 Marks
II	Impurities in Cosmetic Preparations Sources of Impurities in cosmetic raw materials, Limit Test, Limit test of Chlorides, Sulphates, Lead, Arsenic and Heavy Metals.	7 Hrs.	7 Marks
III	Basics of Chemical Analysis Definition and scope of Different techniques of Analysis, Methods of expressing concentration, Primary and Secondary Standards, Preparation and Standardization of various molar and normal solutions- Oxalic acid, Sodium Hydroxide, Hydrochloric acid, Errors - Types of errors, methods of minimizing errors, Accuracy and Precision.	8 Hrs.	8 Marks

IV	Qualitative and Quantitative Analysis Introduction to Qualitative and Quantitative Analysis, Instrumental and Non Instrumental Methods of Analysis, Titrimetric Methods for analysis – Aqueous Titration and Non-Aqueous Titrations.	7 hrs.	7 Marks
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Recommended Books:

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| 1. A.H. Beckett & J.B. Stenlake's, Practical Pharmaceutical Chemistry Vol I & II, Stahlone Press of University of London. |
| 2. A.I. Vogel, Text Book of Quantitative Inorganic analysis. |
| 3. John H. Kennedy, Analytical chemistry principles. |
| 4. Indian Pharmacopoeia. |

B.TECH. (COSMETIC) SEM II
Vertical –D Vocational Skill Course Practical- 6
Subject code - 399207
Course Name –Computer Skill–I Practical

Level	Semester	Course Code	Course Name	Credits	Practical Hours	Exam Duration	Max. Marks (Internal)
4.5	2	399207	Computer Skill-I Practical	2	60	4 hrs.	Total 50

Course Objective:	By the end of this practical course, students will be able to: 1. Develop proficiency in the use of office productivity software for creating, editing, and managing professional documents, spreadsheets, and presentations. 2. Understand the fundamentals of database creation, management, and data handling using MS Access. 3. Gain practical knowledge of web technologies through the creation of basic HTML web pages and data export techniques. 4. Apply digital tools for effective communication, data organization, reporting, and information management in academic and professional environments.
Course Outcomes:	Upon successful completion of the course, students will be able to: CO1. Create and format professional documents, presentations, spreadsheets, and mailing labels using MS Word, MS PowerPoint, and MS Excel. CO2. Design, manage, and manipulate databases using MS Access, including the creation of tables, queries, forms, and reports. CO3. Export and integrate database objects into web and XML formats for information sharing and reporting purposes. CO4. Develop basic HTML web pages and utilize office automation tools for effective digital communication and data management.

Practical on :	Content
I	Creating Document, Structure of MS word window.
II	Creating Power Point presentations.
III	Creating and working with MS access.
IV	Creating and working MS- Excel.
V	Exporting Tables, Queries, Forms and Reports to web pages.
VI	Exporting Tables, Queries, Forms and Reports to XML pages.
VII	Create a HTML web page to show personal information.
VIII	Creating mailing labels Using Label Wizard, generating label in MS WORD

Recommended Books:

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| 1. Computer Application in Pharmacy – William E. Fassett –Lea and Febiger, 600 South Washington Square, USA, (215) 922-1330. |
| 2. Computer Application in Pharmaceutical Research and Development –Sean E kins –Wiley Inter science, A John Willey and Sons, INC., Publication, USA |
| 3. Bioinformatics (Concept, Skills and Applications) – S.C. Rastogi -CBS Publishers and Distributors, 4596/1- A, 11 Darya Gani, New Delhi – 110 002 (INDIA) |
| 4. Microsoft office Access - 2003, Application Development Using VBA, SQL Server, DAP and Info path – Cary N. Prague – Wiley Dream tech India (P) Ltd., 4435/7. |

B.TECH. (COSMETIC) SEM II
Vertical –D Skill Enhancement Course Practical- 7
Subject code - 399208
Course Name –Beauty Culture–II Practical

Level	Semester	Course Code	Course Name	Credits	Practical Hours	Exam Duration	Max. Marks (Internal)
4.5	2	399208	Beauty Culture - II Practical	2	60	4 hrs.	Total 50

Course Objective:	By the end of this practical course, students will be able to: 1. Develop practical skills in performing pedicure and facial massage techniques for personal grooming and beauty care. 2. Acquire proficiency in facial makeup application for different skin types, facial features, and occasions. 3. Understand and apply hair coloring, styling, and setting techniques using appropriate beauty products and tools. 4. Demonstrate professional grooming practices, hygiene standards, and client-oriented beauty care services.
Course Outcomes:	Upon successful completion of the course, students will be able to: Co1.Perform pedicure and facial massage procedures using appropriate techniques to enhance skin and nail care. Co2.Apply facial makeup professionally by selecting suitable cosmetic products and techniques for various occasions. Co3.Carry out hair coloring, hair styling, and formal and informal hair setting procedures following standard beauty practices. Co4. Demonstrate professional ethics, hygiene, safety measures, and effective client-handling skills while delivering beauty care services.

Practical on :	Content
I	Pedicure Massage.
II	Facial Massage
III	Facial Make-up
IV	Hair Color
V	Hair Styling
VI	Hair Setting formal & Informal

Recommended Books:
1. Malady's Cosmetics.
2. Beauty & Skin care - Indu Puri
3. Guide for Health & Beauty Therapists - Gayner Winyard.
4. Cosmetics Makeup Manicure - Ann Raton & Furrence Open shaw.

B.TECH. (COSMETIC) SEM II
Vertical –E Ability Enhancement Course / Theory
Subject code - 399209
Course Name – Communication Skill- English-II

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal)
4.5	2	399209	Communication Skill English -II	1	15	1 hr.	Total 25

Course Objective:	By the end of this course, students will be able to: 1. Strengthen their understanding and application of English grammar, including modal auxiliaries, adverbs, and adverbial phrases for effective communication. 2. Develop professional written communication skills required for preparing job applications, resumes, and responses to advertisements. 3. Enhance reading and comprehension abilities through note-making and critical evaluation of information. 4. Improve interpersonal communication skills by using appropriate language functions in academic, professional, and social situations.
Course Outcomes:	Upon successful completion of the course, students will be able to: Co1. Apply grammatical structures accurately in written and spoken English for effective communication. Co2. Prepare professional documents such as job applications, resumes, and responses to employment advertisements. Co3. Analyze written information by making notes and distinguishing facts from beliefs and opinions. Co4. Demonstrate effective communication skills by appropriately requesting information, expressing agreement or disagreement, complimenting others, and responding to complaints.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Revisiting English Grammar: Model Auxiliaries, adverbs& adverbial Phases.	4 Hrs.	6 Marks
II	Written communication: Job application, Resumes, Responding to advertisements.	4 Hrs.	6 Marks
III	Reading Skills: Note making, Distinguishing facts from beliefs, Opinions.	4 Hrs.	6 Marks
IV	Communication Skills: Language functions (asking for information, requesting, agreeing & disagreeing complimenting& responding to complaints	3 Hrs.	7 Marks

Recommended Book:

1. Bhaskaran & Horsbug, Strength Your English.
2. Patil, Walke, Thorat & Marchant. English for Practical Purpose Macmillion.
3. Dwivedi & Kumar Macmillon foundation English.

B.TECH. (COSMETIC) SEM II
Vertical –E Ability Enhancement Course (Modern Indian Language)/ Theory
Subject code -399210
Course Name – Communication Skill- Marathi II

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal)
4.5	2	399210	Communication Skill-Marathi -II	1	15	1 hr.	Total 25

Course Objective:	या अभ्यासक्रमाच्या अध्ययनानंतर विद्यार्थी: - विद्यार्थ्यांना आधुनिक तंत्रज्ञान, डिजिटल साधने, संशोधन व नवोपक्रम यांचे ज्ञान देऊन कॉस्मेटिक उद्योगातील तांत्रिक प्रगतीशी सुसंगत राहण्यास सक्षम करणे. - उद्योजकता, शाश्वत विकास (Sustainability) आणि हरित (Green) कॉस्मेटिक्स यांच्या संकल्पनांची जाणीव करून देऊन उद्योगाभिमुख दृष्टिकोन विकसित करणे. - व्यावसायिक नैतिकता, गुणवत्ता, ग्राहकाभिमुखता आणि सामाजिक उत्तरदायित्व यांचे महत्त्व समजावून देणे. - व्यक्तिमत्त्व विकास, नेतृत्व, टीमवर्क, संवाद कौशल्ये आणि वेळ व्यवस्थापन यांद्वारे विद्यार्थ्यांचे सर्वांगीण व्यक्तिमत्त्व घडवणे.
Course Outcomes:	अभ्यासक्रम पूर्ण केल्यानंतर विद्यार्थी: Co1. आधुनिक डिजिटल तंत्रज्ञान, संशोधन पद्धती आणि नवोपक्रमांचा वापर करून कॉस्मेटिक क्षेत्रातील समस्या सोडविण्यास सक्षम होतील. Co2. शाश्वत आणि पर्यावरणपूरक सौंदर्यप्रसाधनांच्या विकासासाठी आवश्यक तांत्रिक व उद्योजकीय कौशल्ये आत्मसात करतील. Co3. व्यावसायिक नैतिकता, सामाजिक उत्तरदायित्व, गुणवत्ता व्यवस्थापन आणि ग्राहककेंद्री दृष्टिकोन यांचे पालन करतील. Co 4. प्रभावी संवाद, नेतृत्व, संघभावना, स्वयंशिस्त आणि वेळेचे व्यवस्थापन यांचा उपयोग करून उद्योग व समाजामध्ये यशस्वीपणे कार्य करतील.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	आधुनिक तंत्रज्ञान, संशोधन व नवोपक्रम: आधुनिक तंत्रज्ञान व डिजिटल साधनांचा वापर , संशोधन व नवोपक्रमाची संकल्पना, जागतिक कॉस्मेटिक ट्रेंड्स व तांत्रिक प्रगतीशी सुसंगत राहणे , उद्योगाच्या गरजांनुसार तांत्रिक कौशल्यांचा विकास.	4 Hrs.	7 Marks
II	उद्योजकता, शाश्वतता व सामाजिक उत्तरदायित्व: उद्योजकीय कौशल्ये विकसित करून स्टार्टअप संघांचा शोध घेणे, पर्यावरणपूरक व शाश्वत (Sustainable) सौंदर्यप्रसाधनांच्या विकासासाठी योगदान , पर्यावरणीय परिणामांचा विचार करून	4 Hrs.	6 Marks

	हरित (Green) कॉस्मेटिक्स विकसित करणे.		
III	व्यावसायिक नैतिकता व कार्यसंस्कृती: व्यावसायिक नैतिकतेची संकल्पना, कार्यस्थळी शिस्त व जबाबदारी , उद्योगातील नैतिक मूल्ये गुणवत्ता व ग्राहकाभिमुखता, सामाजिक उत्तरदायित्वाची जाणीव.	4 hrs	6 Marks
IV	व्यक्तिमत्त्व विकास व संवाद कौशल्ये: टीमवर्क व संघभावना , नेतृत्व कौशल्ये, प्रभावी संवाद कौशल्ये, वेळेचे व्यवस्थापन व स्वयंशिस्त.	3 Hrs.	6 Marks

Recommended Book:

1. सुगम मराठी व्याकरण व लेखन - मो. रा. वाळंबे , नितीन प्रकाशन २०१६.
2. सुबोध मराठी व्याकरण : नवनीत प्रकाशन.
3. व्यक्तिमत्त्व विकास – डॉ. सुहास भास्कर जोशी
4. संवाद कौशल्ये आणि व्यक्तिमत्त्व विकास – डॉ. अशोक पाटील
5. व्यावसायिक संवाद कौशल्ये – डॉ. उमा कुलकर्णी
6. उद्योजकता विकास – डॉ. एस. एस. खांडेकर
7. पर्यावरण शिक्षण व शाश्वत विकास – डॉ. श्रीकांत कार्लेकर
8. संशोधन पद्धती आणि प्रकल्प लेखन – डॉ. रवींद्र निकम
9. व्यावसायिक नैतिकता व मूल्य शिक्षण – डॉ. वि. रा. करंदीकर
10. वेळ व्यवस्थापन व नेतृत्व विकास – डॉ. स्वाती देशमुख
11. औद्योगिक व्यवस्थापन – डॉ. बी. एस. मोरे
12. संशोधन पद्धती आणि प्रकल्प लेखन – डॉ. रवींद्र निकम
13. संवाद कौशल्ये आणि व्यक्तिमत्त्व विकास – डॉ. अशोक पाटील
14. व्यावसायिक संवाद कौशल्ये – डॉ. उमा कुलकर्णी
15. उद्योजकता विकास – डॉ. एस. एस. खांडेकर
16. पर्यावरण शिक्षण व शाश्वत विकास – डॉ. श्रीकांत कार्लेकर

B.TECH. (COSMETIC) SEM II
Vertical –E Value Education / Theory
Subject code - 399211
Course Name – Constitution of India

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal)
4.5	2	399211	Constitution of India	2	30	2 hrs.	Total 50

Course Objective:	1. Distinguish between values and skills, and understand the need, basic guidelines, content and process of value education. 2. To help students initiate a process of dialog within themselves to know what they 'really want to be' in their life and profession. 3. To help students understand the meaning of happiness and prosperity for a human being. 4. To facilitate the students to understand harmony at all the levels of human living and live accordingly. 5. To facilitate the students in applying the understanding of harmony in existence in their profession and lead an ethical life.
Course Outcomes:	After completion of the course, the student will be able to: Co1. The significance of value inputs in a classroom and start applying them in their life and profession Co2. Distinguish between values and skills, happiness and accumulation of physical facilities, the Self and the Body, Intention and Competence of an individual, etc.. Co3. Understand the value of harmonious relationship based on trust and respect in their life and profession Co4. Understand the role of a human being in ensuring harmony in society and nature. Co5. Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Introduction to Value Education: Right Understanding, Relationship and Physical Facility (Holistic Development and the Role of Education) Understanding Value Education, Self exploration as the Process 07 12 Lectures, Discussions for Value Education, Continuous Happiness and Prosperity — the Basic Human Aspirations, Happiness and Prosperity — Current Scenario, Method to Fulfil the Basic Human Aspirations Understanding Harmony in the Human Being: The understanding human being as a co-existence of the sentient 'T' and the material 'Body, Understanding the needs of Self ('T') and 'Body' — Sukh and Suvidha, Understanding the Body as an instrument of 'T' (I being the doer, seer, and	7 Hrs.	7 Marks

	enjoyer), Understanding the characteristics and activities of 'T' and harmony in T, Understanding the harmony of I with the Body: Sanyam and Swasthya; correct appraisal of Physical needs, meaning of Prosperity in detail, Programs to ensure Sanyam & Swasthya.		
II	Understanding Harmony in the Family & Society: Understanding harmony in the Family- the basic unit of human interaction, Understanding values in human-human relationship; meaning of Nyaya and program for its fulfillment to ensure Ubhay tripti; Trust (Vishwas) and Respect (Samman) as the foundational vales of relationship, Understanding the meaning of Vishwas; Difference between intention and competence, Understanding the meaning of Samman, Difference between respect and differentiation; the Case Studies, Group Work other salient values in relationship. Understanding the harmony in the society (society being an extension of family): Samadhan, Samridhi, Abhay, Sah-astitva as comprehensive Human Goals, Visualizing a universal harmonious order in society, Undivided Society (Akhand Samaj), Universal Order (Sarvabhaum Vyawastha) — from family to world	7 Hrs.	7 Marks
III	Understanding Harmony in the Nature & Existence: Understanding the harmony in the Nature, Interconnectedness and mutual fulfillment among the four orders of nature — recyclability and self- regulation in nature, Understanding Existence as Co-existence (Sah-astitva) of mutually interacting units in all-pervasive space, Holistic perception of harmony at all levels of existence.	8 Hrs.	8 Marks
IV	Understanding of Harmony on Professional Ethics Competence in professional ethics: a. Ability to utilize the professional competence for augmenting universal human order b. Ability to identify the scope and characteristics of people-friendly and eco-friendly production systems c. Ability to identify and develop appropriate technologies and management patterns for above production systems. Case studies of typical, Presentations holistic technologies, management models and production systems Strategy for transition from the present state to Universal d. Human Order: a. At the level of individual: as socially and responsible ecologically engineers, technologists and managers b. At the level of society: as mutually enriching institutions and organizations	8 Hrs.	8 Marks

Recommended Book:

1. R R Gaur, R Sangal, G P Bagaria, 2009, A Foundation Course in Human Values and Professional Ethics.

2. A Nagraj, 1998, Jeevan Vidya Ek Parichay, Divya Path Sansthan, Amarkantak.

3. P L Dhar, RR Gaur, 1990, Science and Humanism, Commonwealth Publishers.
4. A N Tripathy, 2003, Human Values, New Age International Publishers.
5. Subhas Palekar, 2000, How to practice Natural Farming, Pracheen (Vaidik) Krishi Tantra Shodh, Amravati.

B.TECH. (COSMETIC) SEM II
Vertical –F Co-Curricular (CC) Health &wellness, yoga education activities, NSS/NCC
& Fine /applied /Visual /Performing Art
Subject code – 399212
Course Name – Co-Curricular (CC) / Outdoor

Level	Semester	Course Code	Course Name	Credits
4.5	2	399212	Co-Curricular (CC)	2

Sant Gadge Baba Amravati University, Amravati
Faculty of Science and Technology
Teaching and Learning scheme for the Degree of B. Tech (Cosmetic)
SECOND YEAR: SEMESTER – III

3	Ver. No.	The Vertical	Types of Course	Course Code	Course Name	Credit	Workload (Hrs/ weeks)	Workload (Hrs/ weeks)
Classroom Teaching /Outdoor/ Field	A.	Major	Theory - 9	399301	Cosmetic Technology -III	2	2	10
			Practical -8	399302	Cosmetic Technology-III Practical	2	4	
			Theory - 10	399303	Perfume and Colors-I	2	2	
		Indian Knowledge system (IKS)- Major Specific	Theory - 11	399304	Indian Herbal Cosmetic	2	2	
	B.	Minor	Theory - 12	399305	Cosmetic Chemistry-I	2	2	06
			Practical-9	399306	Cosmetic Chemistry-I Practical	2	4	
	C.	Generic Open Elective	Theory - 13	399307	Science of Nutraceutical	2	2	02
	D.	Vocational Skill courses (VSC)	Practical - 10	399308	Perfume and Colors -I Practical	2	4	04
	E	Ability Enhancement courses (AEC- English)	Theory	399309	Communication Skill-English-III	1	1	02
		Ability Enhancement courses-Modern Indian Language (AEC- MIL)	Theory	399310	Communication Skill-Hindi- I	1	1	
	F.	Field Project / community Engagement and Service (FP/ CES)	Project	399311	Project	2	4	08
		Co- curricular Courses (CC) (Health& wellness, yoga education activities, NSS/NCC & Fine/Applied /Visual/Performing Art	Outdoor	399312	Outdoor	2	4	
		Total				22	32	32

B.TECH. (COSMETIC) SEM III
Vertical –A Major/ Theory 9
Subject code - 399301
Course Name –Cosmetic Technology- III

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal + External)
5	3	399301	Cosmetic Technology- III	2	30	2 hrs.	(20+30) Total 50

Course Objective:	1. Understand the role of cosmetic ingredients and formulation building blocks used in skin care and makeup products. 2. Gain knowledge of skin structure, functions, and skin-related cosmetic concerns. 3. Learn formulation principles, manufacturing methods, and evaluation of skin care products. 4. Develop understanding of makeup cosmetic formulations and their quality assessment.
Course Outcomes:	Co 1. Explain the functions and properties of cosmetic formulation ingredients. Co 2. Describe skin structure, functions, and common skin-related problems. Co 3. Formulate and evaluate skin care products such as creams, lotions, and cleansing foams. Co 4. Analyze the formulation and quality characteristics of makeup cosmetics.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Cosmeceutical Formulation Building Blocks Physical and Chemical properties of cosmetic agents. (Emollients and Preservatives)	8 Hrs	8 Marks
II	Skin Care Cosmetics Basic structure and function of skin. Roles of Skin care cosmetics. Skin-related problems.	7 Hrs.	7 Marks
III	Skin Care Cosmetic Formulations Cleansing Foams: Classification of Cleansing Foams, Raw materials for cleansing Foams, formulation and evaluation of cleansing Foams. Lotion: Classification of lotion, Raw materials for lotion, Formulation and Evaluation of lotion. Cream: Classification of cream, Raw materials for cream, Formulation and Evaluation of creams. (Moisturizing cream, Cold cream, Vanishing cream, Night and Massage cream)	8 Hrs.	8 Marks
IV	Make Up Cosmetics: Types and functions of Makeup cosmetics. Eye Cosmetics: Classification of Eye Cosmetics, Raw	7 hrs.	7 Marks

	materials for Eye cosmetics, Formulation and Evaluation of Eye cosmetics. (Eye Shadows, Eye Mascara, Eye Liners). Face Powders: Classification of Face powders, Raw materials for Face powders, Formulation and Evaluation of Face powders. (Loose Powder, Liquid face powder, Dusting powder, Talcum powder). Lipsticks: Raw materials for Lipsticks, Formulation and Evaluation of Lipsticks.		
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Recommended Books:

1. New Cosmetic Science by Takeo Mitsui.
2. Textbook of Cosmetology by Harry's.
3. A Handbook of Cosmetics by B. M. Mithal.
4. Soap, Detergent And Perfume Industry by S.B. Srivastava.
5. Handbook of Cosmetic Science and Technology by Andre O'Barel.

B.TECH. (COSMETIC) SEM III
Vertical –A Major / Practical- 8
Subject code - 399302
Course Name –Cosmetic Technology- III Practical

Level	Semester	Course Code	Course Name	Credits	Practical Hours	Exam Duration	Max. Marks (Internal + External)
5	3	399302	Cosmetic Technology- III Practical	2	60	4 hrs.	(25+25) Total 50

Course Objective:	1. Develop practical skills in preparing cosmetic formulations. 2. Understand evaluation methods for cosmetic products. 3. Gain experience in formulating skin, hair, lip, and eye care products. 4. Apply quality control principles in cosmetic product development.
Course Outcomes:	Co1. Prepare and evaluate various cosmetic formulations using standard procedures. Co2. Perform quality assessment of skin, hair, lip, and eye cosmetic products. Co3. Select suitable ingredients for desired cosmetic applications. Co4. Interpret evaluation results to improve product quality and stability.

Practical on	Content
1	Preparation and Evaluation of Face Powder.
2	Preparation and Evaluation of Dry Shampoo.
3	Preparation and Evaluation of Skin care product night & massage cream.
4	Preparation and Evaluation of Hair care products (Hair lotion, cream, Mask)
5	Preparation and Evaluation of Lip bam, Lipstick.
6	Preparation and Evaluation of base on Gels.
7	Preparation and Evaluation of Eye shadows, Mascara, Liners.
8	Preparation and Evaluation of Nail remover, Bleach.

Recommended Books:
1. Soap, Detergent And Perfume Industry by S.B. Srivastava.
2. Handbook of Cosmetic Science and Technology by Andre O'Barel.

B.TECH. (COSMETIC) SEM III
Vertical –A Major / Theory 10
Subject code - 399303
Course Name –Perfume and Color-I

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal + External)
5	3	399303	Perfume and Color-I	2	30	2 hrs.	(20+30) Total 50

Course Objective:	1. Understand the history, classification, and significance of fragrances. 2. Study natural and synthetic fixatives used in perfumery. 3. Learn alcohol processing and its application in perfume manufacturing. 4. Understand flavoring agents and their cosmetic applications.
Course Outcomes:	1. Classify fragrances based on their origin and characteristics. 2. Explain the composition and applications of various fixatives. 3. Describe manufacturing and purification methods of alcohol used in perfumes. 4. Identify flavoring agents and their applications in cosmetic products.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Role of Fragrance in Cosmetics - History of perfume, Olfaction and its role, Classification of Fragrance on the basis of their sources.	8 Hrs	8 Marks
II	Fixatives: - Introduction, Classification, Chemical composition, and Uses of the following- Animal Source: - Civet, Musk, Ambergris Plant Source: - Eucalyptus, Mint, Rose Resinous Fixatives:- Benzoin, Balsams, Myrrh, Cinnamon, Alcohol, Orris, Vanillin. Essential Oil Fixatives: - Sandalwood, Lemon, Cinnamon, Patchouli Oil, Phenyl Synthetic Fixatives: - Diethyl phthalate, Benzyl Benzoate, Alcohols, Acetophenone, Musk ketone, Musk Ambrette, Heliotropin, Hydroxy Citronellal, Indole.	7 Hrs.	7 Marks
III	Method of Manufacturing of Alcohols: Method and General names, Compounding, Safety Manufacturing of Ethanol Purification of Ethanol Deodorization of Ethanol	8 Hrs.	8 Marks
IV	Flavors: Sources and Properties of Following; vanilla, rose, pineapple, peppermint, mango, raspberry, orange, lemon, eugenol, citral, nerol.	7 hrs.	7 Marks

Recommended Books:

1) Perfume soaps& cosmetics by Poucher.
2) Essential oil vol.I by Guanter.
3) Perfumes, flavours & Essential Oils, Industries SBP Board.
4) Manufacture of perfumes, cosmetics and detergents by Prasad.
5) Cosmetic Science & Technology By Sagarin.

B.TECH. (COSMETIC) SEM III
Vertical –A Major Specific IKS/ Theory -11
Subject code - 399304
Course Name- Indian Herbal Cosmetic

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal + External)
5	3	399304	Indian Herbal Cosmetic	2	30	2 hrs.	(20+30) Total 50

Course Objective:	1. Understand natural resources and herbal ingredients used in cosmetics. 2. Study extraction methods employed in herbal cosmetic preparations. 3. Learn formulation and evaluation of herbal cosmetic products. 4. Develop awareness of regulatory requirements governing herbal cosmetics.
Course Outcomes:	1. Classify and identify herbal cosmetic raw materials and their sources. 2. Explain conventional and modern extraction techniques. 3. Formulate herbal cosmetic products using suitable plant materials. 4. Interpret regulatory guidelines applicable to herbal cosmetic industries.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Natural Resources in Indian Cosmetic Classification of drugs: Alphabetical, Morphological, Taxonomical, Chemical, Pharmacological, Sources of Drug-plant, Animal, Marine used in cosmetic preparation, Organized and Unorganized drug, Different method used for extraction – Maceration, percolation and decoction and modern method of extraction.	8 Hrs	8 Marks
II	Cosmetic Crude Drug Apricot, Aloe, Almond oil, Amal , Brahmi, Bhringaraja, Bawachi, Coconut oil, Heena, Hibiscus, Manjistha, Jatamansi, Olive oil, Tulsi, Neem, Wheat Gram Oil, Safflower Ritha, Shikakai, Manjistha, Jatamansi.	7 Hrs.	7 Marks
III	Herbal Formulations Creams, lotions, Powders, Shampoo, lipstick, other cosmetics, formulations. A brief account of plant based cosmetic industries and its evaluations.	8 Hrs.	8 Marks
IV	Regularly Aspect Good Manufacturing Practices of Indian cosmetic industry, Cosmetic rules of 2020, Trade Marks Act1999, Consumer protection Act 1986. Other Regulation -The Bureau of Indian standards sets for cosmetic.	7 hrs.	7 Marks

Recommended Books:
1. Pharmacognosy by S. B. Gokhale, C. K. Kokate, A. P. Purohit, Nirali Prakashan.
2. Indian Cosmetics and Perfumes by Dr. S. K. Sharma.
3. Articles and research papers rules and regulation in Indian cosmetic.
4. Quality Control of Herbal Drugs by Dr. Pulok K. Mukherjee, Horizons Pharmaceutical Publishers.
5. Trease and Evans Pharmacognosy, by William C. Evans, Elsevier.

B.TECH. (COSMETIC) SEM III
Vertical – B Minor / Theory-12
Subject code - 399305
Course Name- Cosmetic Chemistry-I

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal + External)
5	3	399305	Cosmetic Chemistry-I	2	30	2 hrs.	(20+30) Total 50

Course Objective:	1. Understand pharmacopoeias and their significance in quality standards. 2. Study physical states of matter and their relevance to cosmetics. 3. Learn physicochemical properties of cosmetic materials. 4. Understand analytical methods used in cosmetic quality control.
Course Outcomes:	Co1. Explain the role of pharmacopoeias in cosmetic quality assurance. Co2. Describe the properties of solids, liquids, and gases relevant to cosmetics. Co3. Evaluate physicochemical properties of cosmetic ingredients. Co4. Apply qualitative and quantitative analytical techniques for cosmetic analysis.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Pharmacopoeia Introduction, History of Indian Pharmacopoeia, British Pharmacopoeia, United States Pharmacopoeia, Introduction of Monograph.	8 Hrs	8 Marks
II	States of Matter Intermolecular forces and their impact on states of matter Gaseous state: Behavior of gases ideal and real gases, Liquefaction of gases, Liquids: Surface tension, Viscosity. Solid Amorphous and crystalline solids, geometry, symmetry of crystals and physical properties of crystals, X-ray, Crystallography, Polymorphism its types and uses.	7 Hrs.	7 Marks
III	Physical Properties of Materials Potentially used in Cosmetic Dielectric constant, Refractive index, Molar refraction, optical activity, interfacial tension, adhesion and spreading adsorption at solid/Liquid, solid -gas interfaces and their application in cosmetics.	8 Hrs.	8 Marks
IV	Qualitative and Quantitative Titration: Aqueous Titration and Non-aqueous titration, Complexometric, Redox and Precipitation Different techniques of analysis. Errors, Types of errors, Methods of minimizing error, accuracy and Precision.	7 hrs.	7 Marks

Recommended Books:
1. Indian Pharmacopoeia.
2. Martin, Physical Pharmacy and Pharmaceutical Science, Wolters Kluwer.
3. Organic Chemistry by R. T. Morrison, R. N. Boyd and Bhattacharjee.
4. Physical Chemistry A. J. Mec.
5. Pharmaceutical Drug Analysis, by M. Zaffer Ahmad, Mohammed Ali.
6. A. I. Vogel Text book of Quantitative Inorganic Analysis.
7. Physical Pharmaceutics-I by CVS Subramanyam.

B.TECH. (COSMETIC) SEM III
Vertical –B Minor /Practical- 9
Subject Code – 399306
Course Name-Cosmetic Chemistry-I Practical

Level	Semester	Course Code	Course Name	Credits	Practical Hours	Exam Duration	Max. Marks (Internal + External)
5	3	399306	Cosmetic Chemistry-I Practical	2	60	4 hrs.	(25+25) Total 50

Course Objective:	1. To understand the fundamental physicochemical properties. 2. To develop practical skills in the operation and handling of analytical instruments. 3. To train students in qualitative and quantitative evaluation techniques. 4. To provide hands-on experience in titrimetric methods. 5. To enable students to interpret experimental results.
Course Outcomes:	Co 1: Measure viscosity, surface tension, interfacial tension, and refractive index of cosmetic materials using standard instruments. Co 2: Evaluate purity and physical characteristics of cosmetic-grade chemicals and materials. Co 3: Perform standardization and titrimetric analysis using aqueous and non-aqueous methods. Co 4: Analyze and interpret physicochemical data for quality assessment of cosmetic formulations. Co 5: Apply laboratory safety and good analytical practices in cosmetic testing and evaluation.

Practical on	Content
1.	Determination of viscosity of cosmetic liquids using Ostwald viscometer/Brookfield viscometer.
2.	Determination of surface tension cosmetic liquid using Stalagmometer.
3.	Identification of crystalline and amorphous materials.
4.	Determination of purity of cosmetic-grade chemicals.
5.	Determination of refractive index of oils and cosmetic ingredients using refractometer
6.	Demonstration for liquefaction of gases.
7.	Determination of interfacial tension between oil and water phases.
8.	Evaluation of spreading properties of creams and lotions.
9.	Standardization of NaOH solution.
10.	Aqueous acid-base titration.

11.	Non-aqueous titration of benzoic acid or weak base.
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Recommended Books:
1. Alfred Martin – Physical Pharmacy
2. Vogel's Textbook of Practical Organic Chemistry.
3. B. M. Mithal – Cosmetic Science and Technology.
4. Pharmacopoeia – IP, BP, USP (Latest Edition).
5. Gurdeep R. Chatwal – Instrumental Methods of Chemical Analysis.

B.TECH. (COSMETIC) SEM III
Vertical –C Generic Open Elective/ Theory-13
Subject code - 399307
Course Name – Science of Nutraceutical

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal)
5	3	399307	Science of Nutraceutical	2	30	2 hrs.	Total 50

Course Objective:	By the end of this course, students will be able to: 1. Understand the fundamental concepts, classification, sources, and applications of nutraceuticals in promoting health and preventing diseases. 2. Gain knowledge of the structure, functions, biological roles, and health benefits of various nutraceutical compounds, vitamins, and dietary supplements. 3. Understand the significance of water, vitamins, antioxidants, and functional foods in maintaining physiological functions and overall well-being. 4. Develop awareness of nutraceutical-rich supplements and their applications in health management, disease prevention, and nutritional enhancement.
Course Outcomes:	Upon successful completion of the course, students will be able to: Co1. Explain the classification, sources, properties, functions, and therapeutic applications of nutraceuticals and functional foods. Co2. Describe the structure, biological functions, sources, and deficiency disorders associated with essential vitamins and their role in human health. Co3. Analyze the role of free radicals, antioxidants, and antioxidant-rich nutraceuticals in disease prevention and health promotion. Co4. Evaluate the nutritional and therapeutic significance of nutraceutical-rich supplements such as bee pollen, green tea, spirulina, aloe vera, wheat grass, and other natural health products.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Introduction to Nutraceuticals as Science: Historical perspective, classification, scope & future prospects. Applied aspects of the Nutraceutical Science. Sources of Nutraceuticals: Properties, structure and functions of various Nutraceuticals Glucosamine, Octacosanol, Lycopene, Carnitine, Melatonin and Ornithine alpha ketoglutarate. Use of proanthocyanidins, grape products, flaxseed oil as Nutraceuticals.	8 Hrs	8 Marks
II	Vitamins and Water: Vitamins their Structure Classification, Plant Animal sources, vitamins as coenzymes, deficiency of vitamins (Choline, Carnitine , Vitamin B₁₂, C, D, Folic Acid) Water: Functions of water in body and its regulation. Solution interactions.	7 Hrs.	7 Marks

III	Antioxidants Concept of free radicals and antioxidants; antioxidants role as nutraceuticals and functional Foods.	8 Hrs.	8 Marks
IV	Nutraceutical Rich Supplements Bee Pollen, Caffeine, Green Tea, Grape Tea, Wheat Grass, Lecithin, Mushroom Extract, Chlorophyll, Kelp and Spirulina, Garcinia Cambogia, Aloe Vera and Blue Tea4.	7 Hrs.	7 Marks

Recommended Books:
1. Nutraceutical , Vikas R. Publishing House Pvt.
2. Robert E.C. Wildman; Handbook of Nutraceuticals and Functional Foods, Second Edition; CRC Press.
3. Susan Sungsoo Cho, Mark L. Dreher; Marcel; Dekker Handbook of Dietary Fibre.
4. Handbook of Nutraceuticals and Natural Products: Biological, Medicinal, and Nutritional Properties and Applications, Preetha Balakrishnan, Sreerag Gopi, 2022.
5. Dietary Supplements and Nutraceuticals Technical Publications.
6. Lehninger Principles of Biochemistry, <u>Albert L. Lehninger</u> , <u>David L. Nelson</u> , Michael M. Cox W. H. Freeman, 2005.

B.TECH. (COSMETIC) SEM III
Vertical –D Vocational Skill Course /Practical - 10
Subject code - 399308
Course Name – Perfume and Color -I Practical

Level	Semester	Course Code	Course Name	Credits	Practical Hours	Exam Duration	Max. Marks (Internal)
5	3	399308	Perfume and Color -I Practical	2	60	4 hrs.	Total 50

Course Objective:	1. Develop practical skills in extraction of fragrances and essential oils. 2. Understand distillation and solvent extraction techniques. 3. Learn identification methods for perfumes and flavors. 4. Gain experience in handling perfumery laboratory equipment.
Course Outcomes:	Co1. Perform extraction of essential oils using suitable methods. Co2. Operate distillation and Soxhlet extraction apparatus effectively. Co3. Identify perfumes and flavoring agents based on their characteristics. Co4. Demonstrate safe laboratory practices in perfumery operations.

Practical on	Content
1	To carry out distillation of Ethyl alcohol and determine its boiling point.
2	To carry out extraction of Clove oil by distillation Method.
3	To carry out extraction of Rose oil by distillation Method.
4	To carry out extraction of Orange peel oil by distillation Method.
5	To carry out of extraction of Curcumin by Soxhlet apparatus.
6	To carry out of extraction of Ginger by Soxhlet apparatus.
7	To carryout Identification of given samples of Perfumes.
8	To carryout Identification of given samples of Flavors.

Recommended Book:

- 1) Perfume soaps & cosmetics by Poucher.
- 2) Essential oil vol. I by Guanter.
- 3) Perfumes, flavours & Essential Oils, Industries SBP Board.
- 4) Manufacture of perfumes, cosmetics and detergents by Prasad.
- 5) Cosmetic Science & Technology by Sagarin.

B.TECH. (COSMETIC) SEM III
Vertical –E Ability Enhancement Course / Theory
Subject code - 399309
Course Name – Communication Skill- English-III

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal)
5	3	399309	Communication Skill English -III	1	15	1hr.	Total 25

Course Objective:	1. Improve reading and comprehension skills through prose study. 2. Develop professional writing abilities. 3. Enhance digital communication skills. 4. Build confidence in written expression.
Course Outcomes:	Co1. Analyze and appreciate the leadership qualities, innovation, and professional contributions of renowned personalities. Co2. Prepare professional E-mails, Blogs, and Resumes effectively for academic and career purposes. Co3. Demonstrate confidence and competence in group discussions, interviews, presentations, and public speaking situations. Co4. Apply leadership skills, teamwork, time management, and professional ethics in personal and professional environments.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Prose: RataTata, Sundar Pichai, Ram Chandra Rao and Laxman Kirloskar.	4 hrs.	6 Marks
II	Writing Skills E- mail writing, Blog writing, Resume writing.	4 hrs.	6 Marks
III	Communication Skills: Group Discussion, Interview Skills, Presentation Skills, Public Speaking.	4 hrs.	6 Marks
IV	Personality Development: Leadership Qualities, Team Building, Time Management, Professional Ethics.	3 hrs.	7 Marks

Recommended Book:

1. Boarde of Editors : Orient Black Swan Publication

B.TECH. (COSMETIC) SEM III
Vertical –E Ability Enhancement Course /Theory
Subject code – 399310
Course Name – AEC-Hindi-I Modern Indian Language

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal)
5	3	399310	AEC- Hindi -I MIL	1	15	1 hr.	Total 25

Course Objective:	1. हिंदी भाषा एवं संप्रेषण के महत्व को समझाते हुए विद्यार्थियों को कॉस्मेटिक उद्योग में प्रभावी संवाद एवं ग्राहक संचार के लिए सक्षम बनाना। 2. विज्ञापन तथा रचनात्मक लेखन के माध्यम से विद्यार्थियों की लेखन एवं अभिव्यक्ति क्षमता का विकास करना। 3. कॉस्मेटिक उत्पादों के प्रचार-प्रसार, उपभोक्ता संचार तथा डिजिटल मार्केटिंग की अवधारणाओं से विद्यार्थियों को परिचित कराना। 4. उद्यमिता, नैतिक विपणन एवं उपभोक्ता संरक्षण के सिद्धांतों की समझ विकसित कर विद्यार्थियों में व्यावसायिक दृष्टिकोण का निर्माण करना।
Course Outcomes:	Co1. कॉस्मेटिक उद्योग में हिंदी भाषा का प्रभावी उपयोग करते हुए ग्राहक संवाद एवं संप्रेषण कौशल का प्रदर्शन कर सकेंगे। Co 2. विज्ञापन, स्लोगन, टैगलाइन एवं सोशल मीडिया सामग्री का सृजनात्मक लेखन कर सकेंगे। Co3. उत्पाद विवरण लेखन, ग्राहक प्रतिक्रिया प्रबंधन एवं शिकायत निवारण संबंधी संचार कौशल विकसित कर सकेंगे। Co4. डिजिटल मार्केटिंग, सोशल मीडिया प्रचार, कॉस्मेटिक उद्यमिता तथा उपभोक्ता संरक्षण के सिद्धांतों का व्यावहारिक उपयोग कर सकेंगे।

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	हिंदी संप्रेषण एवं कॉस्मेटिक उद्योग परिचय : हिंदी भाषा एवं संचार का महत्व, कॉस्मेटिक उद्योग का परिचय, कॉस्मेटिक विपणन में हिंदी की भूमिका , ग्राहक संवाद एवं संप्रेषण कौशल.	4 hrs.	6 Marks
II	विज्ञापन एवं प्रचार लेखन: विज्ञापन लेखन की अवधारणा, कॉस्मेटिक उत्पादों के लिए विज्ञापन लेखन, स्लोगन एवं टैगलाइन निर्माण, सोशल मीडिया पोस्ट लेखन, उत्पाद प्रचार हेतु रचनात्मक लेखन.	4 hrs	6 Marks
III	उपभोक्ता संचार: उपभोक्ता व्यवहार का परिचय , उत्पाद विवरण (Product Description) लेखन, ग्राहक प्रतिक्रिया एवं शिकायत निवारण.	4 hrs.	6 Marks
IV	डिजिटल मार्केटिंग एवं उद्यमिता: डिजिटल मार्केटिंग की मूल अवधारणाएँ, सोशल मीडिया मार्केटिंग, कॉस्मेटिक स्टार्टअप एवं उद्यमिता, विपणन में नैतिकता एवं उपभोक्ता संरक्षण.	3 hrs.	7 Marks

Recommended Book:
1. राघव पब्लिकेशन नागपूर .

B.TECH. (COSMETIC) SEM III
Vertical –F Field Project/CES/ Co-Curricular (CC)
Subject code –399311 &399312
Course Name – Field Project/ Co-Curricular (CC)

Level	Semester	Course Code	Course Name	Credits
5	3	399311	Field Project (Project)	2
5	3	399312	Co-Curricular (CC) (Outdoor)	2

All the students shall undertake a project under the supervision of a teacher and submit a report. The project report shall be submitted in triplicate (typed & bound copy not more than 25 pages).

Sant Gadge Baba Amravati University, Amravati
Faculty of Science and Technology
B.TECH. (COSMETIC) SEM IV

Mode of Teaching	Ver. No.	The Vertical	Types of Course	Course Code	Course Name	Credit	Workload (Hrs/ weeks)	Vertical Workload (Hrs/ weeks)
Classroom0 Teaching /Outdoor/ Field	A.	Major	Theory-14	399401	Cosmetic Technology -IV	2	2	10
			Practical- 11	399402	Cosmetic Technology -IV Practical	2	4	
			Theory-15	399403	Perfume and Colors-II	2	2	
			Theory-16	399404	Cosmetic Business Management	2	2	
	B.	Minor	Theory- 17	399405	Cosmetic Chemistry-II	2	2	6
			Practical - 12	399406	Cosmetic Chemistry-II Practical	2	4	
	C.	Generic Open Elective (OE)	Theory-18	399407	Cosmetology	2	2	2
	D.	Vocational Skill Courses (VSC)	Practical - 6	399408	Beauty Culture-III Practical	2	4	4
	E.	Ability Enhancement courses (AEC-English)	Theory	399409	Communication Skill – English-IV	1	1	4
		Ability Enhancement courses- Modern Indian Language (AEC- MIL)	Theory	399410	Communication Skill -Hindi -II	1	1	
	F.	Field Project/ community Engagement and Service (FP/ CES)	Project	399411	Outdoor	2	4	8
		Co- curricular Courses (CC) (Health& wellness, yoga education activities, NSS/NCC &Fine/Applied/Visual/ Performing Art	Outdoor	399412	Outdoor	2	4	
		Total				22	32	32

B.TECH. (COSMETIC) SEM IV
Vertical –A Major/ Theory 14
Subject code - 399401
Course Name –Cosmetic Technology- IV

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal + External)
5	4	399401	Cosmetic Technology-IV	2	30	2 hrs	(20+30) Total 50

Course Objective:	1. Understand formulation principles of hair care and body care products. 2. Study hair structure, growth cycle, and hair-related problems. 3. Learn formulation and evaluation of shampoos, conditioners, and hair styling products. 4. Understand manufacturing and evaluation of body care cosmetics.
Course Outcomes:	Co1. Explain the structure and physiology of hair and scalp. Co2. Formulate and evaluate hair care cosmetic products. Co3. Describe formulation requirements for body care products. Co4. Analyze cosmetic ingredients used in hair and body care formulations.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Cosmeceutical Formulation Building Blocks Perfumes, Controversial ingredients.	8 Hrs	8 Marks
II	Hair Care Cosmetics Basic structure of hair.Hair growth cycle.Roles of hair care cosmetics.Hair damage and its causes, Split hairs.	7 Hrs.	7 Marks
III	Hair Care Cosmetics Formulations Shampoos: Classification of Shampoo, Raw materials for shampoo, Formulation and evaluation of shampoo. (Clear liquid shampoo, Aerosol shampoo, Acid balanced shampoo). Hair Tonics and Conditioners: Classification of Hair tonics and conditioners, Raw materials for hair tonics and conditioners, Formulation and evaluation of hair tonics and conditioners. (Medicated and Non- medicated hair tonics and conditioners). Hair Setting: Classification of hair Settings, Raw materials for settings, Formulation and evaluation of hair settings. (Men's and Women's hair dressing, Hair lotion, Hair sprays, and brilliantine's).	8 Hrs.	8 Marks
IV	Body Cosmetics: Types and functions of body cosmetics. Soaps: Classification of Soaps, Raw materials for soaps, Formulation and evaluation of soaps. Body Shampoo: Classification of bath shampoo, Raw materials for bath shampoo, Formulation and evaluation of bath shampoo. Foam Baths: Classification of Foam baths, Raw materials for	7 hrs.	7 Marks

	foam baths, Formulation and evaluation of foam baths.		
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Recommended Book:

1. New Cosmetic Science by Takeo Mitsui.
2. Textbook of Cosmetology by Harry's.
3. A Handbook of Cosmetics by B M Mithal.
4. Cooper and Gun Dispensing For Pharmaceutical students.
5. Soap, Detergent And Perfume Industry by SB Srivastava.
6. Handbook of Cosmetic Science and Technology by Andre O'Barel.

B.TECH. (COSMETIC) SEM IV
Vertical –A Major / Practical- 11
Subject code - 399402
Course Name –Cosmetic Technology- IV Practical

Level	Semester	Course Code	Course Name	Credits	Practical Hours	Exam Duration	Max. Marks (Internal + External)
5	4	399402	Cosmetic Technology- II Practical	2	60	4 hrs.	(25+25) Total 50

Course Objective:	1. Develop practical formulation skills for hair and body care products. 2. Understand evaluation procedures for cosmetic formulations. 3. Gain hands-on experience in product development. 4. Apply quality assurance practices in cosmetic preparation.
Course Outcomes:	Co1. Prepare and evaluate body and hair care cosmetic products. Co2. Select suitable ingredients for desired cosmetic performance. Co3. Conduct quality control tests on cosmetic formulations. Co4. Demonstrate good laboratory practices during product development.

Practical	Content
1	Preparation and Evaluation of Compact Powder.
2	Preparation and Evaluation of Herbal Soap.
3	Preparation and Evaluation of Foot cream, Scrub.
4	Preparation and Evaluation of Hair care product (Hair Serum, Shampoo conditioner)
5	Preparation and Evaluation of Face wash.
6	Preparation and Evaluation of Hand and Body lotion.
7	Preparation and Evaluation of Soild brilliantine.
8	Preparation and Evaluation of Bath oil.

Recommended Books:

Recommended Book:

1. Soap, Detergent and Perfume Industry by SB Srivastava.
2. Handbook of Cosmetic Science and Technology by Andre O'Barel.

B.TECH. (COSMETIC) SEM IV
Vertical –B Minor / Theory 15
Subject code - 399403
Course Name – Perfume and Colors-II

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal + External)
5	4	399403	Perfume and Colors-II	2	30	2 hrs.	(20+30) Total 50

Course Objective:	1. Understand sources and extraction of perfumery raw materials. 2. Study resins, gums, balsams, and isolates used in fragrances. 3. Learn aerosol technology and perfume packaging. 4. Understand incorporation of fragrances into cosmetic products.
Course Outcomes:	Co1. Explain extraction methods used for essential oils and flower oils. Co2. Describe the properties and uses of perfumery raw materials. Co3. Discuss aerosol formulation and packaging principles. Co4. Apply fragrance incorporation techniques in cosmetic products.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Sources of Perfumery Raw materials and their use in Formulation Essential Oils: - Theory and Principle of Distillation. Production equipment 's required to extract Essential Oils, methods of installation of steam and water Distillation Assembly. Apparatus used for treatment of condensate water after distillation. Flower Oils: - Methods of extraction with Cold fat and Hot fat alcoholic extracts, absolutes of effleurages and chassiss. Extraction with volatile solvent, selection of solvents and extraction apparatus. Merits and Demerits of extraction methods used to extract flower oils.	8 Hrs	8 Marks
II	Resins, Gums and Exudates Extraction Processes like Maceration, Percolation and Continuous Extraction methods. Resins:- Rosin and Shellac Oleo Resins :- Ginger Oleo Resins Oleo Gum Resins :- Gum storax , gum benzoin Balsams :- Types of balsams, Myrrh Isolates :- Methods of Isolation , properties and uses of Eugenol ,Pinene , Linal citrate ,Giraniol.	7 Hrs.	7 Marks
III	Packaging of Perfumes with special emphasis on Aerosol products Aerosol :- principle and mechanism Method of preparation: - Cold fill method and Press fill	8 Hrs.	8 Marks

	method Packaging components.		
IV	Revision, adaptation of incorporation of Perfumes in cosmetic products Creams, lotions, Powders, eye make-up preparations, Hair care preparations, Lip Care preparations, Oral care preparations, Body care preparations and Toiletries products.	7 hrs.	7 Marks

Recommended Books:

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| 1) Perfume, Flowers and Essential Oil industries By S.B. Shrivastava. |
| 2) Manufacture of Perfume, Cosmetics and Detergents By Giriraj Prasad. |
| 3) Cosmetics—Science and Technology BySagarin. |
| 4) Industrial Pharmacy By Leon Lachman. |
| 5) Essential Oil Vol. I ByGaunther. |
| 6) Perfume, Soaps and cosmetics By Poucher. |

B.TECH. (COSMETIC) SEM IV
Vertical –A Major / Theory 16
Subject code - 399404
Course Name –Cosmetic Business Management

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal + External)
5	4	399404	Cosmetic Business Management	2	30	2 hrs.	(20+30) Total 50

Course Objective:	1.Understand fundamental principles of management. 2. Study marketing concepts relevant to cosmetic industries. 3. Learn production and quality management systems. 4. Develop understanding of financial management practices.
Course Outcomes:	Co1. Explain management principles and organizational functions. Co2. Analyze marketing strategies for cosmetic products. Co3. Apply production and quality management concepts. Co4. Interpret financial information for business decision-making.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Introduction Introduction, definition of Management, Principle of management, Functions of Management, It's Art / Science.	8 Hrs.	8 Marks
II	Marketing Management Consumer behaviour, International marketing, Digital marketing, Managerial Economics, Supply chain Management, Cosmetic Marketing Management.	7 Hrs.	7 Marks
III	Production Management Quality control, Product design, Supply Chain Management.	8 Hrs.	8 Marks
IV	Financial Management Financial Accounting, Investment planning, Risk Management, Financial Modeling, International Finance, Corporate Finance.	7 Hrs.	7 Marks

Recommended Books:
1. Production and operation management by R.Paneer Selvan 3 rd edition.
2. Fundamentals of management by Stephen p. Robbins pearson 11 th edition.
3. Fundamentals of management by Ricky Griffin Principles of marketing by Philip kotler, Pearson 19 th edition.
4. Marketing management by Philip Kotler, Jagishn. Sheth.
5. Financial management by I. M. Pandey.
6. Financial risk management by Angelo Corelli.

7. Drug store and business management by R. M. Mehta.
8. Drug store and business management by Dr. M. D. Burande.
9. Drug store and business management by Atul Kabra.
10. Drug store and business management by Neelam Mahajan.

B.TECH. (COSMETIC) SEM IV
Vertical –B Minor / Theory-17
Subject code - 399405
Course Name- Cosmetic Chemistry-II

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal + External)
5	4	399405	Cosmetic Chemistry-II	2	30	2 hrs.	(20+30) Total 50

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Course Objective:	1. Understand organic compounds commonly used in cosmetics. 2. Study acids, bases, buffers, and pH concepts. 3. Learn properties and applications of topical agents. 4. Understand impurity testing and laboratory safety.
Course Outcomes:	Co1. Describe the chemistry of important organic compounds used in cosmetics. Co2. Explain buffer systems and pH control in formulations. Co3. Identify and evaluate topical pharmaceutical agents. Co4. Perform impurity assessment and follow laboratory safety practices.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Structure Nomenclature: Preparation and reaction of following groups in cosmetic - Alkanes, Alkenes, Alkynes, Cycloalkanes, Dienes, Alkyl halides.	8 Hrs	8 Marks
II	Acid, Bases, Buffers: Introduction, Theories of acid base indicators, classification of acid base titrations. Buffers, Properties, Buffer action, Isotonic Buffers, types, Concept of pH. Definition, Determination of pH by pH indicators.	7 Hrs.	7 Marks
III	Topical Agents: Monography Introduction, Astringent- Zinc oxide, Zinc Sulphate, Potash alum. Antimicrobial agent- Introduction, Classification & Ideal properties Hydrogen Peroxide, Chlorinated Lime, Potassium Permanganate, Boric acid, Iodine. Protective and Adsorbents: Talc, Calamine.	8 Hrs.	8 Marks
IV	Impurities in cosmetic Substances and Limit Tests: Sources of Impurity, Test for Purity, Limit Test Chloride, Sulphate, Iron, lead, Heavy metal, Arsenic. Hazards in chemistry laboratories and necessary precautions.	7 hrs.	7 Marks

Recommended Book:
1. Pharmaceutical Inorganic Chemistry, Dr. S. B. Bhushan, Dr. S. G. Walode Nirali Prakashan.
2. Organic chemistry by R. T. Morrison , R. N. Boyd.
3. The chemistry and Manufacture of cosmetics Vol. I & II
4. A. I. Vogel Text book of Quantitative Inorganic Analysis.
5. Pharmacopoeia.
6. Organic Chemistry by R. T. Morrison, R. N. Boyd and Bhattacharjee.

B.TECH. (COSMETIC) SEM IV
Vertical –B Minor / Practical-12
Subject Code - 399406
Course Name- Cosmetic Chemistry-II Practical

Level	Semester	Course Code	Course Name	Credits	Practical Hours	Exam Duration	Max. Marks (Internal + External)
5	4	399406	Cosmetic Chemistry- II Practical	2	60	4 hrs.	(25+25) Total 50

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Course Objective:	1. Develop analytical skills for cosmetic chemical testing. 2. Learn identification and purity testing procedures. 3. Gain practical knowledge of inorganic preparations. 4. Understand assay methods used in quality control.
Course Outcomes:	Co1. Perform identification tests for cosmetic chemicals. Co2. Conduct limit tests for impurities. Co3. Prepare inorganic compounds using standard procedures. Co4. Carry out assay methods for quality evaluation.

Practical	Content
1	(Each of Three) To Perform Identification testing for - Magnesium hydroxide, Ferrous sulphate Sodium bicarbonate, Calcium gluconate, Copper sulphate.
2	To Perform Limit Test for- Chloride, Sulphate, Iron, Arsenic, Heavy metal.
3	To Perform Preparations for - Potash Alum, Potassium Permanganate, Sodium Chloride, Magnesium Sulphate, Boric acid.
4	To Perform Assay for- Ammonium Chloride, Ferrous sulphate, Copper Sulphate, Calcium gluconate, Hydrogen Peroxide, Sodium Benzoate, Sodium Chloride.

Recommended Books:
1. Organic chemistry by R. T. Morrison , R. N. Boyd.
2. The chemistry and manufacture of cosmetics Vol. I & II
3. Quantitative Inorganic analysis by Vogel.
4. Pharmacopeia.

B.TECH. (COSMETIC) SEM IV
Vertical –C Generic Open Elective /Theory-18
Subject code - 399407
Course Name –Cosmetology

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal)
5	4	399407	Cosmetology	2	30	2 hrs.	Total 50

Course Objective:	1. Understand the scope and principles of cosmetology. 2. Study cosmetic and cosmeceutical products and their ingredients. 3. Learn formulation concepts of skin and hair care products. 4. Understand common cosmetic problems and their management.
Course Outcomes:	Co1. Explain the principles and applications of cosmetology. Co2. Differentiate cosmetic and cosmeceutical products. Co3. Describe formulation approaches for skin and hair care products. Co4. Analyze common skin and hair problems and their cosmetic management.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Scope of Cosmetic Science Definition Cosmetic Science, History of Cosmetic, Principle, Formulation, Development, and Evaluation of cosmetic Products, their functions.	8 Hrs	8 Marks
II	Cosmeceutical Products Classification of cosmetic and cosmeceutical products, Definition of cosmetics, evolution of cosmeceuticals from cosmetics. Cosmetic excipients: Surfactants, Rheology Modifiers, Humectants, Emollients, Preservatives. Classification and application.	7 Hrs.	7 Marks
III	Skin and Hair Care Principles of formulation and building blocks of skin care products Face wash, Moisturizing cream, Cold Cream, Vanishing cream and their advantages and disadvantages. Application of these products in formulation of cosmeceuticals. Antidepressants & deodorants: Actives & mechanism of action. Sun protection, Classification of Sunscreens and SPF. Role of herbs in cosmetics Skin Care: Aloe and turmeric Hair care: Henna and amla. Principles of formulation and building blocks of Hair care products, Conditioning Shampoo, Hair conditioner, Anti-dandruff shampoo, Hair oils Chemistry and formulation of Para phylene diamine-based hair dye.	8 Hrs.	8 Marks
IV	Cosmetic problems Oily and dry skin, causes leading to dry skin, skin moisturization. Basic understanding of the terms	7 hrs.	7 Marks

	Comedogenic, dermatitis. Hair and scalp: Dandruff, Hair fall causes Skin: blemishes, wrinkles, acne, prickly heat and body odor. Antiperspirants and Deodorants- Actives and mechanism of action.		
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Recommended Book:
1. Harry's Cosmeticology, Wilkinson, Moore, Seventh Edition, George Godwin.
2. Cosmetics – Formulations, Manufacturing and Quality Control, P.P. Sharma, 4th Edition, Vandana Publications Pvt. Ltd., Delhi.
3. Textbook of cosmetology by Sanju Nanda & Roop K. Khar, Tata Publishers.
4. Textbook of Cosmetics by M. Vimaladevi.

B.TECH. (COSMETIC) SEM IV
Vertical –D Vocational Skill Course / Practical- 13
Subject code - 399408
Course Name –Beauty Culture–III Practical

Level	Semester	Course Code	Course Name	Credits	Practical Hours	Exam Duration	Max. Marks (Internal)
5	4	399408	Beauty Culture-III Practical	2	60	4 hrs.	Total 50

Course Objective:	1. Develop advanced skills in hair care and styling. 2. Learn modern nail care and nail art techniques. 3. Gain proficiency in advanced makeup applications. 4. Enhance professional beauty service skills.
Course Outcomes:	Co 1. Perform hair spa, nourishing, and advanced hair styling procedures. Co 2. Execute basic and advanced nail art techniques. Co 3. Apply advanced makeup methods for various occasions. Co 4. Demonstrate professional beauty culture practices and client care.

Practical on	Content
1	Haircuts and its care - Hair Spas, Hair nourishing.
2	Hair styling: Roller setting, French braid plait, formal style, back combing.
3	Nail Art basic and advanced, Nail shaping, filing, buffing, Gel and acrylic nail.
4	Advance Make up technique and cosmetic: Foundation, Rouge, Trend makeup, Airbrush Day and Evening Makeup.

Recommended Books:
1. Meladay's cosmetic
2. Rama bans –Health & beauty.
3. A beauty culture : a Practical handbook on the care by William A. Woodbury.

B.TECH. (COSMETIC) SEM IV
Vertical –E Ability Enhancement Course / Theory
Subject code - 399409
Course Name – Communication Skill- English IV

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal)
5	4	399409	Communication Skill -English - IV	1	15	1 hrs.	Total 25

Course Objective:	1. Develop professional written communication skills. 2. Learn business correspondence techniques. 3. Enhance workplace communication abilities. 4. Improve documentation and reporting skills.
Course Outcomes:	Co1.Draft formal letters, circulars, and memos effectively. Co2. Prepare professional e-mails and meeting documents. Co3. Demonstrate workplace communication competence. Co4. Produce clear and professional business documents.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Formal Letters, Formal Circulars Memo Writing.	4 Hrs.	6 Marks
II	Formal E- mail, writing Agenda, Minutes of Meeting and Action Taken Report.	4 Hrs.	6 Marks
III	Report Writing, Notice Writing, Press Release Writing, Business Correspondence	4 Hrs.	6 Marks
IV	Presentation Skills, Group Discussion, Interview Skills, Professional Communication and Etiquette	3 Hrs.	7 Marks

Recommended Book:
1. English Grammar and Communication Skills, Prof. Sakina Raja Prashant Publications.
2. Communication Skills VivekKayade, Prashan Publications.
3. Business Communication Anil Patil and Hemantkumar, Prashant Publications.

B.TECH. (COSMETIC) SEM IV
Vertical –E Ability Enhancement Course / Theory
Subject code - 399410
Ability Enhancement Course - Modern Indian Language
Course Name – Communication Skill- Hindi- II

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal)
5	4	399410	Communication Skill-Hindi -II	1	15	1 hr.	Total 25

Course Objective:	इस पाठ्यक्रम के अध्ययन के पश्चात् विद्यार्थी: 1. कार्य एवं जीवन के संतुलन के महत्व को समझकर व्यक्तिगत तथा व्यावसायिक जीवन में उसका प्रभावी अनुप्रयोग कर सकेंगे। 2. मानवीय मूल्यों, सामाजिक उत्तरदायित्व तथा परोपकार की भावना का विकास करेंगे। 3. हिंदी भाषा में टिप्पणी लेखन तथा विचार विस्तार लेखन की तकनीकों को समझकर प्रभावी लेखन कौशल विकसित करेंगे। 4. संप्रेषण एवं अभिव्यक्ति कौशल को सुदृढ़ बनाते हुए विचारों को स्पष्ट, सुसंगत एवं रचनात्मक रूप से प्रस्तुत कर सकेंगे।
Course Outcomes:	इस पाठ्यक्रम के अध्ययन के पश्चात् विद्यार्थी: 1. कार्य एवं जीवन के संतुलन के महत्व को समझकर व्यक्तिगत तथा व्यावसायिक जीवन में उसका प्रभावी अनुप्रयोग कर सकेंगे। 2. मानवीय मूल्यों, सामाजिक उत्तरदायित्व तथा परोपकार की भावना का विकास करेंगे। 3. हिंदी भाषा में टिप्पणी लेखन तथा विचार विस्तार लेखन की तकनीकों को समझकर प्रभावी लेखन कौशल विकसित करेंगे। 4. संप्रेषण एवं अभिव्यक्ति कौशल को सुदृढ़ बनाते हुए विचारों को स्पष्ट, सुसंगत एवं रचनात्मक रूप से प्रस्तुत कर सकेंगे।

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	कॉस्मेटिक उद्योग का परिचय : सौंदर्य प्रसाधन उद्योग का परिचय, भारतीय एवं वैश्विक कॉस्मेटिक बाजार , कॉस्मेटिक उत्पादों का वर्गीकरण कॉस्मेटिक उद्योग में हिंदी की भूमिका.	4 hrs.	7 Marks
II	उपभोक्ता व्यवहार एवं विपणन कौशल: उपभोक्ता व्यवहार की अवधारणा , ग्राहक संतुष्टि एवं प्रतिक्रिया , ग्राहक शिकायत निवारण, बिक्री संवर्धन तकनीकें , ग्राहक संबंध प्रबंधन. (CRM)	4 hrs.	6 Marks
III	कार्य का जीवन संतुलन - डॉ. नेहा भांडारकर. दुसरो के लिये जिना - भुवेंद्र त्यागी .	4 hrs.	6 Marks
IV	टिप्पणी लिखाना : एनिमेशन लिखाना और विस्तार - शुबी दाधिच.	3 hrs.	6 Marks

Recommended Book:

1. विचारशोधभाग: राघव पब्लिकेशन, नागपुर प्रथम आवृत्ती२०२४.
2. ज्ञानदीपभाग: १ संपादक - डॉ. निभाउपाध्य, डॉ. तीर्थराजराय, डॉ. सुशांतठोक.
3. प्रयोजनमूलक हिंदी: डॉ. पूरनचंद टंडन.
4. व्यावसायिक हिंदी: डॉ. हरिमोहन.
5. विज्ञापन और जनसंचार: डॉ. कृष्ण कुमार रत्नू.

B.TECH. (COSMETIC) SEM IV
Vertical –F Field Project /CES/ Co-Curricular
(Health &wellness, yoga education activities, NSS/NCC & Fine /applied /Visual
/Performing Art)
Subject code –399411& 399412
Course Name – Field Project/CES/ Co-Curricular (Outdoor)

Level	Semester	Course Code	Course Name	Credits
5	4	399411	Field Project /CES (Outdoor)	2
5	4	399412	Co-Curricular (CC) (Outdoor)	2

All the students shall undertake a project under the supervision of a teacher and submit a report. The project report shall be submitted in triplicate (typed & bound copy not more than 25 pages).

**Sant Gadge Baba Amravati University,
Amravati**
Faculty of Science and Technology
Teaching and Learning scheme for the Degree of
B. Tech (Cosmetic) THRID YEAR: SEMESTER -V

Mode of Teaching	Ver. No.	The Vertical	Types of Course	Course Code	Course Name	Credit	Workload (Hrs/ weeks)	Workload (Hrs/ weeks)
Classroom Teaching /Outdoor/ Field	A.	Major	Theory - 19	399501	Cosmetic Technology-V	2	2	16
			Practical -14	399502	Cosmetic Technology-V Practical	2	4	
			Theory -20	399503	Physical Cosmetic -I	2	2	
			Theory -21	399504	Perfume & Colors-III	2	2	
		Major – Elective	Theory-22	399505	Cosmetic Analysis-I	2	2	
			Practical-15	399506	Cosmetic Analysis-I Practical	2	4	
	B.	Minor	Theory - 23	399507	Cosmetic Engineering-I	2	2	6
			Practical -16	399508	Cosmetic Engineering-I Practical	2	4	
	D.	Vocational Skill courses (VSC)	Practical - 17	399509	Physical Cosmetic -I Practical	2	4	6
		Skill Enhancement courses (SEC)	Theory	399510	AI in Cosmetic Technology	2	2	
	F.	Field Project / community Engagement and Service (FP/ CES)	Project	399511	Project	2	4	4
		Total				22	32	32

B.TECH. (COSMETIC) SEM V
Vertical –A Major/ Theory 19
Subject code - 399501
Course Name –Cosmetic Technology- V

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal + External)
5.5	5	399501	Cosmetic Technology- V	2	30	2 hrs.	(20+30) Total 50

Course Objective:	1. To understand formulation and evaluation of gels, emulgels, ointments, and pastes. 2. To study foot care products and their cosmetic applications. 3. To learn the role and selection of antioxidants in cosmetic formulations. 4. To develop knowledge of preparation, stability, and quality assessment of semisolid dosage forms.
Course Outcomes:	CO1. Explain formulation principles of gels, emulgels, ointments, and pastes. CO2. Formulate and evaluate foot care cosmetic products. CO3. Select suitable antioxidants for cosmetic formulations. CO4. Assess quality, stability, and performance of semisolid cosmetic preparation.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Gel and Emulgels: Gel-Purposes & Function of Gels, Main ingredients of Gel, Emulgels -Definition and concept, Advantages of emulgels Formulations methods, Components of emulgels, Applications in cosmetics and dermatology. Evaluation of Gels and Emulgels.	8 Hrs	8 Marks
II	Foot Preparations: Introduction, Influence of foot wear foot Ailments, Foot Care & Hygiene, Bathing, The feet, Foot Powders, Foot Sprays, Foot Creams, Corn & Cullus preparations, Chillbern preparation, Athlete's Foot preparations and their Evaluation	7 Hrs.	7 Marks
III	Ointment and paste: Onitment-Definition, advantages& disadvantages, Ideal Properties of ointment base, Types of Ointment Bases, Preparation Methods Ointments. Pastes: Types, Preparation methods, Stability, Packing and evaluation parameters of Ointments and Paste.	8 Hrs.	8 Marks
IV	Antioxidants: Definition, Role, and Important, General Oxidative theory, classification of Antioxidants, Mechanism of Antioxidants, Application in cosmetic, evaluation parameter and Choice of Antioxidant.	7 hrs.	7 Marks

Recommended Books:
1. New Cosmetic Science by Takeo Mitsui.
2. Textbook of Cosmetology by Harry's.
3. A Handbook of Cosmetics by B. M. Mithal.
4. Soap, Detergent And Perfume Industry by S.B. Srivastava.
5. Handbook of Cosmetic Science and Technology by Andre O'Barel.
6. Handbook of Cosmetic Science and Technology – Barel, Paye & Maibach
7. Theory and Practice of Industrial Pharmacy – Lachman et al.
8. Remington: The Science and Practice of Pharmacy
9. Handbook of Cosmetic Formulating – Kunjappu & Krishnan

B.TECH. (COSMETIC) SEM V
Vertical –A Major / Practical- 14
Subject code - 399502
Course Name –Cosmetic Technology- V Practical

Level	Semester	Course Code	Course Name	Credits	Practical Hours	Exam Duration	Max. Marks (Internal + External)
5.5	5	399502	Cosmetic Technology- V Practical	2	60	4 hrs.	(25+25) Total 50

Course Objective:	1. To provide hands-on training in formulation of gels, ointments, pastes, and foot care products. 2. To perform evaluation tests for semisolid cosmetic preparations. 3. To study antioxidant activity and cosmetic product performance. 4. To develop laboratory skills in cosmetic formulation.
Course Outcomes:	After successful completion of the course, students will be able to: CO1. Prepare cosmetic gels, ointments, and pastes. CO2. Evaluate physical properties of semisolid formulations. CO3. Formulate and assess foot care preparations. CO4. Perform antioxidant activity testing and interpret results.

Practical on	Content
1	Preparation and evaluation of Herbal Containing plant extract
2	Preparation and evaluation of carbapol gel and aloe vera gel.
3	Formulation and evaluation foot powder and foot spray.
4	Preparation of Ointment by fusion method.
5	Preparation and evaluation of Zinc Oxide Paste.
6	Evaluation of Ointments and Pastes (consistency, homogeneity, spreadability, washability, viscosity).
7	Preparation and Determination of antioxidant activity of Vitamin C.
8	Preparation and evaluation of Protective Foot Cream for cracked heels.

Recommended Books:
1. Handbook of Cosmetic Science and Technology – Barel, Paye & Maibach
2. Theory and Practice of Industrial Pharmacy – Lachman et al.
3. Remington: The Science and Practice of Pharmacy
4. Handbook of Cosmetic Formulating – Kunjappu & Krishnan
5. Handbook of Cosmetic Science and Technology – Barel, Paye & Maibach

B.TECH. (COSMETIC) SEM V
Vertical –A Major / Theory 20
Subject code - 399503
Course Name –Physical Cosmetic-I

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal + External)
5.5	5	399503	Physical Cosmetic-I	2	30	2 hrs.	(20+30) Total 50

Course Objective:	1. To understand interfacial phenomena and adsorption principles. 2. To study cosmetic complexes and their applications. 3. To learn rheological behavior and viscosity measurement. 4. To understand micromeritic properties of powders used in cosmetics.
Course Outcomes:	After successful completion of the course, students will be able to: CO1.Explain interfacial phenomena and adsorption mechanisms. CO2.Describe different complexes and their cosmetic applications. CO3.Measure and interpret rheological properties of cosmetic systems. CO4. Evaluate particle characteristics and powder flow behavior.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Interfacial Phenomena: Spreading coefficient, work of cohesion, work of adhesion. Adsorption at liquid interfaces, Adsorption at solid Interface, adsorption at solid / Gas Interface. Adsorption Isotherms & its types, adsorption at solid - liquid interface, electrical properties at interface.	8 Hrs	8 Marks
II	Metal complexes, organic complexes, molecular complexes, inclusion complexes, methods of analysis of complexes. Applications in cosmetics.	7 Hrs.	7 Marks
III	Rheology: Types of Flow behaviour. Thixotropy, Negative Thixotropy. Measurement of Thixotropy. Determination of flow properties, capillary Viscometer. Falling sphere viscometer, cup & Bob viscometer. Cone & plate viscometer.	8 Hrs.	8 Marks
IV	Micromeritics : Definition, Particle size determination methods, surface area methods , Derived properties of powders, porosity in Powder, Flow Properties of Powders . Applications in cosmetics technology.	7 hrs.	7 Marks

Recommended Books:
1) Physical pharmacy by Alfred Martin, James Swarbrick.
2) Burger & Lee – Physical & Technical pharmacy
3) Rawlins Bentley's Text Book of Pharmaceutics
4) Shotton & Ridgway : Physical pharmaceutics.

B.TECH. (COSMETIC) SEM V
Vertical –A Major / Theory -21
Subject code - 399504
Course Name- Perfume and Colors-III

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal + External)
5.5	5	399504	Perfume and Colors- III	2	30	2 hrs.	(20+30) Total 50

Course Objective:	The course aims to: 1. Develop advanced understanding of fragrance chemistry and cosmetic colouring systems. 2. Train students in formulation and stabilization of perfumes and colour cosmetics. 3. Introduce modern synthetic aroma chemicals and natural aromatic ingredients. 4. Study cosmetic pigments, lakes, dyes, and regulatory standards. 5. Provide industrial exposure to fragrance evaluation and colour matching techniques. 6. Develop practical skills in perfume blending and colour cosmetic formulation.
Course Outcomes:	After successful completion of the course, students will be able to: Co1. Explain chemistry and classification of perfume materials and cosmetic colours. Co2. Formulate perfumes, deodorants, and coloured cosmetic products. Co3. Evaluate stability, compatibility, and safety of fragrance and colour ingredients. Co4. Apply regulatory standards related to cosmetic perfumes and colorants. Co5. Perform sensory evaluation and colour matching techniques. Co6. Analysed industrial applications of fragrance and colouring technologies.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Advanced Perfume Formulation and Fragrance Families: Classification of fragrance families: Floral, Citrus, Woody, Oriental, Chypre, Fougere, Gourmand, Aquatic. Fragrance notes and perfume structure: Top Notes, Middle Notes, Base Notes, Principles of perfume formulation, Fragrance accords and blending techniques. Perfume concentration categories: Perfume. Eau de Perfume, Eau de Toilette, Eau de Cologne. Evaluation of perfume performance: Longevity, Diffusion, Silage.	8 Hrs	8 Marks
II	Modern Fragrance Ingredients and Technologies: Synthetic aroma chemicals and their role in perfumery, Chemistry, properties and applications of: Vanillin,	7 Hrs.	7 Marks

	Coumadin, Linalool, Geranial, Citronellal. Nature-identical fragrances, Green and sustainable fragrance materials. Fragrance encapsulation technologies: Microencapsulation, Nano encapsulation, Controlled release fragrance systems.		
III	Cosmetic Color Technology: Fundamentals of Color science. Classification of cosmetic colorants: Natural colors, Synthetic colors, Mineral pigments, Dyes, pigments and lakes, Pearlescent and special effect pigments, Color matching and shade development, Applications of colors in: Lipsticks, Foundations, Eye make-up, Nail products, Hair cosmetics.	8 Hrs.	8 Marks
IV	Quality Control, Safety, Regulatory Aspects and Emerging Trends: Quality control of perfumes and cosmetic colors, Sensory evaluation of fragrances, Stability testing of perfumes and colored cosmetic products. Fragrance allergens and safety assessment, IFRA standards and regulations, BIS specifications for perfumes and cosmetic colors. Recent advances: Personalized perfumes, AI-assisted fragrance development, Smart pigments, Sustainable and clean beauty products.	7 hrs.	7 Marks

Recommended Books:
1. Perfume and Flavour Chemicals
2. Harry's Cosmetology
3. Cosmetic Science and Technology
4. Perfume: The Art and Science of Scent
5. Chemistry and Technology of Flavours and Fragrances

B.TECH. (COSMETIC) SEM V
Vertical – A Major -Elective / Theory-22
Subject code - 399505
Course Name- Cosmetic Analysis-I

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal + External)
5.5	5	399505	Cosmetic Analysis-I	2	30	2 hrs.	(20+30) Total 50

Course Objective:	1. To introduce electrochemical analytical techniques used in cosmetics. 2. To study refractometry and polarimetry. 3. To understand microbiological quality control of cosmetic products. 4. To familiarize students with quality assurance and validation practices.
Course Outcomes:	After successful completion of the course, students will be able to: CO1. Apply electrochemical methods for cosmetic analysis. CO2. Determine refractive index and optical rotation of cosmetic materials. CO3. Perform microbiological quality evaluation of cosmetics. CO4. Explain quality assurance and regulatory requirements.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Electrochemical Methods 1. Potentiometry: pH measurement: Definition, Determination of pH-by-pH indicators and Potentiometric method (pH meter), and potentiometry (reference and indicator electrodes, standard hydrogen, and glass electrodes) 2. Conductometry: Introduction, Principle, laws of conductance, specific conductance, equivalent conductance, molecular conductance. conductivity cells, instrumentation and applications 3. Polarography: Introduction, residual current, migration current, diffusion current and limiting current, DME, polarographic wave, Ilkovic's equation (Statement Only), and applications.	8 Hrs	8 Marks
II	Refractometry: Introduction to refractive index, theory and principle of Abbe's refractometer and its application.	7 Hrs.	7 Marks
III	Polarimetry: Introduction, optical activity, General Principles, instrumentation, application in the determination of optical rotation and specific optical rotation of liquid and solid substances.	8 Hrs.	8 Marks
IV	Cosmetic Microbiological Analysis: Microbial contamination, Microbial limit tests, Total bacterial count, Fungal count, specific pathogen tests, Preservative efficacy	7 hrs.	7 Marks

	testing, Safety requirements. Quality Assurance ISO, ICH Regulatory control, Validation of equipment's and analytical instruments.		
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Recommended Books:

1. Beckett, A.H. and Stenlake, J.B., Practical Pharmaceutical Chemistry. Part I & II.
2. London: The Athlone Press, University of London.
3. Vogel, A.I., Vogel's Textbook of Quantitative Chemical Analysis. Essex: Pearson Education Limited.
4. Indian Pharmacopoeia Commission, Indian Pharmacopoeia. Ghaziabad, India.
5. Ewing's Instrumental Methods of Analysis, Edited by Jack Cazes, Marcel Ddekker
6. BIS Standards for Cosmetics (IS 4707, IS 4011, etc.)
7. OECD Guidelines for Testing of Chemicals
8. ISO Standards: ISO 22716 (GMP), ISO 11930 (PET), ISO 24444 (SPF)

B.TECH. (COSMETIC) SEM V
Vertical –A Major -Elective /Practical- 15
Subject Code - 399506
Course Name- Cosmetic Analysis -I Practical

Level	Semester	Course Code	Course Name	Credits	Practical Hours	Exam Duration	Max. Marks (Internal + External)
5.5	5	399506	Cosmetic Analysis -I Practical	2	60	4 hrs.	(25+25) Total 50

Course Objective:	1. To understand the operation and calibration of analytical instruments used in cosmetic analysis. 2. To determine physicochemical properties of cosmetic products. 3. To perform potentiometric, conductometric, polarographic, and refractometric analyses. 4. To understand analytical method validation parameters. 5. To conduct microbiological quality testing of cosmetic products.
Course Outcomes:	After successful completion of the course, students will be able to: CO1: Operate and calibrate analytical instruments used in cosmetic laboratories. CO2: Analyze pH, conductivity, and refractive index of cosmetic products. CO3: Perform potentiometric, conductometric, and polarographic analyses. CO4: Evaluate analytical methods using validation parameters such as accuracy, precision, and linearity. CO5: Determine Total Bacterial Count (TBC) and assess the microbiological quality of cosmetic products.

Practical on	Content
1	To study calibration and operation of a digital pH meter.
2	To determine pH of cosmetic products (shampoo, face wash, cream, lotion) using pH meter.
3	To study and calibrate conductometer.
4	To determination the conductivity of distilled water, tap water, and cosmetic solutions using conductivity meter.
5	To demonstrate and study polarographic instrumentation and Dropping Mercury Electrode (DME).
6	To determine the end point of acid base titrations by conductometry.
7	To determination of concentration of analyte by polarographic method.
8	To determination of refractive index of oils, perfumes, and cosmetic ingredients using Abbe's Refractometer.
9	To demonstrate validation parameters: Accuracy, Precision, Linearity.
10	To determination the endpoint of acid base titration by potentiometric method.
11.	To determine the Total Bacterial Count (TBC) present in a cosmetic product by the Plate count Method.

Recommended Books:
1. Beckett, A.H. and Stenlake, J.B., Practical Pharmaceutical Chemistry. Part I & II.
2. London: The Athlone Press, University of London.
3. Vogel, A.I., Vogel's Textbook of Quantitative Chemical Analysis. Essex: Pearson Education Limited.
4. Indian Pharmacopoeia Commission, Indian Pharmacopoeia. Ghaziabad, India.
5. Ewing's Instrumental Methods of Analysis, Edited by Jack Cazes, Marcel Ddekker.
6. BIS Standards for Cosmetics (IS 4707, IS 4011, etc.)
7. OECD Guidelines for Testing of Chemicals.
8. ISO Standards: ISO 22716 (GMP), ISO 11930 (PET), ISO 24444 (SPF)

B.TECH. (COSMETIC) SEM V
Vertical –A Major-Elective / Theory-22
Subject code - 399507
Course Name – Cosmetic Engineering-I

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal+ External)
5.5	5	399507	Cosmetic Engineering-I	2	30	2 hrs.	(20+30) Total 50

Course Objective:	1. To understand pharmaceutical and cosmetic unit operations. 2. To study size reduction, mixing, filtration, and centrifugation equipment. 3. To learn humidity control and crystallization processes. 4. To understand industrial processing requirements in cosmetic manufacturing.
Course Outcomes:	After successful completion of the course, students will be able to: CO1. Explain principles of size reduction and separation. CO2. Select appropriate mixing and filtration equipment. CO3. Apply humidity and air-conditioning concepts in manufacturing. CO4. Describe crystallization and centrifugation processes.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Size Reduction: Objectives, Mechanisms & Laws governing size reduction, factors affecting size reduction, principles, construction, working, uses, merits and demerits of Hammer mill, ball mill, fluid energy mill, Edge runner mill & end runner mill. Size Separation: Objectives, applications & mechanism of size separation, official standards of powders, sieves, size separation Principles, construction, working, uses, merits and demerits of Sieve shaker, cyclone separator, Air separator, Bag filter & elutriation tank.	8 Hrs	8 Marks
II	Mixing: Objectives, applications & factors affecting mixing, Difference between solid and liquid mixing, mechanism of solid mixing, liquids mixing and semisolids mixing. Principles, Construction, Working, uses, Merits and Demerits of Double cone blender, twin shell blender, ribbon blender, Sigma blade mixer, planetary mixers, Propellers, Turbines, Paddles & Silverson Emulsifier Humidity & Air Conditioning: Humidity chart, wet bulb temperature, dry bulb temperature, wet bulb theory, factor influencing wet bulb temperature, uses of humidity chart, determination of humidity, dehumidifier. Dehumidification	7 Hrs.	7 Marks

	by indirect cooling.		
III	Filtration: Objectives, applications, Theories & Factors influencing filtration, filter aids, filter medias. Principle, Construction, Working, Uses, Merits and demerits of plate & frame filter, filter leaf, rotary drum filter, Meta filter & Cartridge filter, membrane filters and Seidtz filter. Centrifugation: Objectives, principle & applications of Centrifugation, principles, construction, working, uses, merits and demerits of Perforated basket centrifuge, Non-perforated basket centrifuge, semi continuous centrifuge & super centrifuge.	8 Hrs.	8 Marks
IV	Crystallization: Introduction, crystal froms, crystal habits, classification of crystallisers, vacuum crystallizers, Krystal crystallizers, Material balance, energy balance, uses of enthalpy, composition diagrams.	7 Hrs.	7 Marks

Recommended Books:
1. Introduction to chemical engineering – Walter L Badger & Julius Banchero, Latest edition.
2. Unit operation of chemical engineering – McCabe Smith, Latest edition.
3. Pharmaceutical engineering principles and practices – C.V.S Subrahmanyam et al., Latest edition.
4. Remington practice of pharmacy- Martin, Latest edition.
5. Theory and practice of industrial pharmacy by Lachmann., Latest edition.
6. Physical pharmaceutics- C.V.S Subrahmanyam et al., Latest edition.
7. Solid phase extraction, Principles, techniques and applications by Nigel J.K. Simpson- Latest edition.

B.TECH. (COSMETIC) SEM V
Vertical –B Minor /Practical - 16
Subject code - 399508
Course Name – Cosmetic Engineering-I Practical

Level	Semester	Course Code	Course Name	Credits	Practical Hours	Exam Duration	Max. Marks (Internal+ External)
5.5	5	399508	Cosmetic Engineering-I Practical	2	60	4 hrs.	(25+25) Total 50

Course Objective:	1. To perform experiments related to unit operations. 2. To study particle size reduction and filtration. 3. To evaluate crystallization and mixing processes. 4. To develop practical engineering skills for cosmetic production.
Course Outcomes:	After successful completion of the course, students will be able to: CO1. Determine humidity and particle size characteristics. CO2. Evaluate filtration and crystallization processes. CO3. Assess mixing efficiency of various systems. CO4. Interpret engineering data for cosmetic manufacturing

Practical on	Content
1	Determination of humidity of air – i) From wet and dry bulb temperatures –use of Dew point method.
2	Determination of particle size by sieving technique (at-least 3 different powders be used)
3	Experiments based on size reduction of solids.
4	Factors affecting Rate of Filtration. (at-least 3 different powders be used)
5	To study the effect of time on the Rate of Crystallization. (at-least 3 different powders be used)
6	Determination of mixing time for solid-solid mixing.
7	Determination of mixing of solid liquid mixture using sigma mixer/ propeller mixer.
8	Determination of humidity of air – i) From wet and dry bulb temperatures –use of Dew point method.

Recommended Book:

1. Pharmaceutical engineering principles and practices – C.V.S Subrahmanyam et al., Latest edition.

2. Remington practice of pharmacy- Martin, Latest edition.
3. Theory and practice of industrial pharmacy by Lachmann., Latest edition.
4. Physical pharmaceutics- C.V.S Subrahmanyam et al., Latest edition.
5. Cooper and Gunn's Tutorial pharmacy, S.J. Carter, Latest edition.

B.TECH. (COSMETIC) SEM V
Vertical –D Vocational Skill Course / Practical-17
Subject code – 399509
Course Name –Physical Cosmetic -I Practical

Level	Semester	Course Code	Course Name	Credits	Practical Hours	Exam Duration	Max. Marks (Internal)
5.5	5	399509	Physical Cosmetic -I Practical	2	60	4 hrs.	Total 50

Course Objective:	1. To perform measurements related to surface and interfacial phenomena. 2. To study viscosity and flow properties of cosmetic systems. 3. To evaluate powder characteristics. 4. To develop experimental skills in physical cosmetology.
Course Outcomes:	After successful completion of the course, students will be able to: CO1. Determine surface and interfacial tension. CO2. Measure viscosity using standard instruments. CO3. Evaluate powder flow properties and porosity. CO4. Analyze physical properties of cosmetic materials.

Practical on	Content
1	To determine surface tension of given sample by stalagmometer for at least 4 samples.
2	To determine viscosity by using Ostwald viscometers at room temperature at least 4 samples.
3	To determine interfacial tension and Spreading coefficient of given sample.
4	To determine hardness of given sample by complexometric analysis method.
5	To study effect of lubricating agent on the flow properties of powder at least 3 samples.
6	To study bulk density and porosity of powder.
7	To study determination of angle of repose.

Recommended Book:
1) Physical pharmacy by Alfred Martin, James Swarbrick.
2) Burger & Lee – Physical & Technical pharmacy
3) Rawlins Bentley's Text Book of Pharmaceutics

B.TECH. (COSMETIC) SEM V
Vertical –D Skill Enhancement Course /Theory
Subject code – 399510
Course Name – Artificial Intelligence in Cosmetic Technology

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal)
5.5	5	399510	AI in Cosmetic Technology	2	30	2 hrs.	Total 50

Course Objective:	1. To introduce the fundamentals of Artificial Intelligence (AI) and its applications in cosmetic technology. 2. To understand the role of AI in cosmetic formulation, skin analysis, and product personalization. 3. To familiarize students with AI tools used in cosmetic manufacturing, quality control, and marketing. 4. To develop awareness about ethical, safety, and regulatory aspects of AI in cosmetics.
Course Outcomes:	After successful completion of the course, students will be able to: Co1. Understand basic concepts and techniques of Artificial Intelligence. Co.2 Explain AI applications in cosmetic formulation and skin/hair diagnostics. Co.3 Analyze AI-based cosmetic manufacturing and quality control systems. Co.4 Demonstrate awareness of ethical, regulatory, and sustainability issues in AI-driven cosmetics.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Introduction to Artificial Intelligence and Cosmetic Technology Topics - Introduction to Artificial Intelligence: Definition, history, and scope - Types of AI: Narrow AI, General AI, Generative AI - Basics of Machine Learning and Deep Learning - Overview of cosmetic technology and cosmetic product categories - Overview of cosmetics industry challenges - AI tools and platforms	8 Hrs.	8 Marks
II	AI in Skin, Hair, and Cosmetic Product Analysis Topics - AI-based skin type and skin tone analysis - Computer vision in dermatological and cosmetic assessment - AI applications in acne detection, wrinkle analysis, pigmentation analysis - Hair and scalp diagnostics using AI - Sensor technologies and smart cosmetic devices - Image processing basics in cosmetic science	7 Hrs.	7 Marks
III	AI in Cosmetic Formulation and Manufacturing Topics	8 Hrs.	8 Marks

	• AI-assisted cosmetic formulation development • Ingredient selection using AI and databases • Predictive modeling for stability and efficacy of cosmetic products • AI in quality control and defect detection • Automation and robotics in cosmetic manufacturing • AI in supply chain management and inventory control • Sustainable and green cosmetic production using AI		
IV	Ethics, Safety, and Future Trends in AI Cosmetics Topics • Ethical considerations in AI-based cosmetic systems • Data privacy and consumer protection • Bias and fairness in AI-driven beauty recommendations • Regulatory guidelines for AI in cosmetics • AI in cosmetic marketing and consumer behavior analysis • Generative AI for cosmetic product design and branding • Future trends and innovations in AI-driven cosmetics.	7 Hrs.	7 Marks

Recommended Book:	
1.	Artificial Intelligence: A Modern Approach – Stuart Russell & Peter Norvig.
2.	Machine Learning for Beginners – Oliver Theobald.
3.	Cosmetic Science and Technology – Sreekala Mary Gopinath.
4.	Harry's Cosmeticology – Wilfried Umbach.
5.	Milady Standard Cosmetology
6.	Handbook of Cosmetic Science and Technology
7.	Deep Learning – Ian Goodfellow, Yoshua Bengio & Aaron Courville.
8.	Artificial Intelligence for Business – Doug Rose.
9.	Cosmetic Dermatology: Products and Procedures
10.	Latest Research articles

B.TECH. (COSMETIC) SEM V
Vertical –F Field Project / Community Engagement and Service
Subject code – 399511
Course Name – Field Project /Community Engagement and Service

Level	Semester	Course Code	Course Name	Credits
5.5	5	399511	Field Project	2

All the students shall undertake a project under the supervision of a teacher and submit a report. The project report shall be submitted in triplicate (typed & bound copy not more than 25 pages).

Sant Gadge Baba Amravati University, Amravati
Faculty of Science and Technology
B.TECH. (COSMETIC) SEM VI

Mode of Teaching	Ver. No.	The Vertical	Types of Course	Course Code	Course Name	Credit	Workload (Hrs/weeks)	Workload (Hrs/weeks)
Classroom Teaching /Outdoor/ Field	A.	Major	Theory – 24	399601	Cosmetic Technology-VI	2	2	16
			Practical -18	399602	Cosmetic Technology-VI Practical	2	4	
			Theory -25	399603	Physical Cosmetic-II	2	2	
			Theory -26	399604	Cosmetic Packaging	2	2	
		Major - Elective	Theory-27	399605	Cosmetic Analysis-I	2	2	
			Practical-19	399606	Cosmetic Analysis-I Practical	2	4	
	B.	Minor	Theory - 28	399607	Cosmetic Engineering-II	2	2	6
			Practical -20	399608	Cosmetic Engineering-II Practical	2	4	
	D.	Vocational Skill courses (VSC)	Practical -21	399609	Physical Cosmetic -II Practical	2	4	4
	F.	Internship/Apprenticeship corresponding to major on the job training (OBT)	Project	399610	Outdoor	2	8	8
		Total				22	34	34

B.TECH. (COSMETIC) SEM VI
Vertical –A Major/ Theory 24
Subject code -399601
Course Name –Cosmetic Technology- VI

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal + External)
5.5	6	399601	Cosmetic Technology-VI	2	30	2 hrs.	(20+30) Total 25

Course Objective:	1. To study baby care products and cosmetic fillers. 2. To understand formulation of nail and colored cosmetic products. 3. To learn stability testing methods for cosmetics. 4. To study formulation and evaluation of depilatory preparations.
Course Outcomes:	CO1. Explain formulation principles of baby care products. CO2. Formulate and evaluate nail cosmetic preparations. CO3. Perform stability studies of cosmetic formulations. CO4. Develop and assess depilatory products.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Skin products for Babies: Introduction, skin problems in babies, Function, Requirements of baby product safety of baby products example formulation. Fillers used in cosmetics & their definition, classification properties & significance in formulation, like surfactants. Hydrocolloid preservatives, Diluents. paste, bases, preparation.	8 Hrs	8 Marks
II	Coloured Cosmetics: Manicure preparations, Cuticle Remover, Nail Bleach, Nail Cream, Nail Strengthner, Nail Lacquer- Introduction, ingredients of Nail Lacquer, Formulation, Manufacture of Nail lacquer, Base coats & Top coats, Enamel remover, Nail driver, Plastic fingernails & Elongators, Nail mending compositions.	7 Hrs.	7 Marks
III	Stability of Cosmetics: Stability of Base Formulation & its Testing, General Preservation Test, General Performance & Effectiveness Test, Aerosol stability test, Accelerated stability test, stability of Mass-produced cosmetics, Stability Based on Usage Environment.	8 Hrs.	8 Marks
IV	Depilatories: Epilation & Depilation, formulation of depilatories using chemicals like thioglycolates, sulphide, enzymes. Evaluation of depilatories. Formulation of powder, cream, gel type depilatories & their stability aspect.	7 hrs.	7 Marks

Recommended Book:
1. New Cosmetic Science by Takeo Mitsui.
2. Textbook of Cosmetology by Harry's.
3. A Handbook of Cosmetics by B M Mithal.
4. Cooper and Gun Dispensing For Pharmaceutical students.
5. Soap, Detergent And Perfume Industry by SB Srivastava.
6. Handbook of Cosmetic Science and Technology by Andre O'Barel.

B.TECH. (COSMETIC) SEM VI
Vertical –A Major / Practical- 18
Subject code - 399602
Course Name –Cosmetic Technology- VI Practical

Level	Semester	Course Code	Course Name	Credits	Practical Hours	Exam Duration	Max. Marks (Internal + External)
5.5	6	399602	Cosmetic Technology- VI Practical	2	60	4 hrs.	(25+25) Total 50

Course Objective:	1. To formulate baby care and nail cosmetic products. 2. To prepare depilatory creams and gels. 3. To perform stability and compatibility studies. 4. To develop practical skills in cosmetic product evaluation.
Course Outcomes:	CO1. Prepare baby care cosmetic products. CO2. Formulate nail and depilatory preparations. CO3. Conduct stability and compatibility testing. CO4. Evaluate performance characteristics of cosmetic formulations.

Practical on	Content
1	Preparation and Evaluation of baby lotion, cream and oil.
2	Preparation Nail Polish Remover & Nail Strengtheners.
3	Preparation of Depilatory Cream.
4	Formulation containing calcium/potassium thioglycolate depilatory Gel.
5	Evaluation of Depilatory Preparations (Hair removal efficiency, Skin irritation test, pH determination, Spreadability and viscosity).
6	Formulation Accelerated Stability Testing of Cosmetic: (Storage at different temperatures, Monitoring color, odor, pH and viscosity changes).
7	Determination of emulsion stability test (Centrifugation).
8	Demonstration of Skin Compatibility Test.

Recommended Book:
1. Harry's Cosmeticology.
2. Cosmetic and Toiletry Formulations.
3. Handbook of Cosmetic Science and Technology.

4. Handbook of Cosmetic Testing.
5. Cosmetic Formulation of Skin Care Products.

B.TECH. (COSMETIC) SEM IV
Vertical –A Major / Theory 25
Subject code - 399603
Course Name – Physical Cosmetic -II

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal + External)
5.5	4	399603	Physical Cosmetic-II	2	30	2 hrs.	(20+30) Total 50

Course Objective:	1. To understand colloidal dispersions and their stability. 2. To study surfactants and solubilization mechanisms. 3. To learn emulsion and suspension systems. 4. To understand diffusion processes in cosmetic systems.
Course Outcomes:	CO1. Explain properties and stability of colloidal systems. CO2. Classify surfactants and determine HLB values. CO3. Evaluate physical stability of emulsions and suspensions. CO4. Apply diffusion principles to cosmetic formulations.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Colloidal Dispersion: Classification of colloidal Dispersion, Purification of colloidal dispersion. Stability of collids, sensitization and protective colloidal action. Optical properties, Kinetic properties & Electrical properties of colloids. Applications of colloids.	8 Hrs	8 Marks
II	Surface active agents: Classification Based on chemical nature & HLB scale, Determination of HLB, chemical nature & HLB Scale, determination of HLB, Surface activity, Bulk properties of surfactant solutions, factors affecting micelle formation. Solubilisation, factors affecting solubilization, application of solubilisation.	7 Hrs.	7 Marks
III	Emulsion: - Definition, classification of Emulsions Appearance & Identification. Thermodynamic causes for instability. physical Instability Markers, factors which improve physical stability, phase Inversion, Evaluation of physical stability of emulsions. Suspension: - Ideal characteristic of suspension, classification of suspension, particle particle, Interaction & Behaviour factors influencing setting physical stability-controlled flocculation flocculated suspension flocculation in structured vehicles.	8 Hrs.	8 Marks
IV	Diffusion: Definition, steady state diffusion Ficks first law, Fick's second Law. Methods and procedures to study diffusion.	7 Hrs.	7 Marks

Recommended Books:
1) Physical pharmacy by Alfred Martin, James Swarbrick.
2) Burger & Lee – Physical & Technical pharmacy.
3) Rawlins Bentley's Text Book of Pharmaceutics.

B.TECH. (COSMETIC) SEM VI
Vertical –A Major / Theory 26
Subject code - 399604
Course Name –Cosmetic Packaging

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal + External)
5.5	6	399604	Cosmetic Packaging	2	30	2 hrs.	(20+30) Total 50

Course Objective:	After successful completion of this course, students will be able to: 1. Understand the principles, functions, and significance of packaging in cosmetic products. 2. Identify and evaluate various packaging materials used in the cosmetic industry. 3. Understand packaging quality control, testing procedures, and regulatory requirements. 4. Explore sustainable, innovative, and consumer-oriented packaging technologies for cosmetic products.
Course Outcomes:	After completion of the course, students will be able to: CO1: Explain the importance, functions, and types of cosmetic packaging. CO2: Describe various packaging materials and their applications in cosmetic products. CO3: Apply quality control and testing methods for cosmetic packaging. CO4: Evaluate modern packaging technologies and sustainable packaging solutions in the cosmetic industry.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Introduction to Cosmetic Packaging Definition and importance of packaging. Functions of cosmetic packaging. Types of packaging: Primary, Secondary, and Tertiary. Packaging requirements for cosmetics. Packaging regulations and labeling requirements. Selection criteria for packaging materials.	8 Hrs	8 Marks
II	Packaging Containers and Testing Bottles, jars, tubes, sachets, and aerosol containers. Closures: Caps, pumps, sprays, and droppers. Packaging defects and quality control. Container-closure integrity testing. Physical and chemical testing of packaging materials.	7 Hrs.	7 Marks
III	Packaging Materials for Cosmetics Advantages- disadvantage and limitations. Glass packaging: Types. Plastic packaging: PE, PP, PET, PVC, etc. Metal packaging: Aluminum and tin containers.	8 Hrs.	8 Marks

	Paper and paperboard packaging. Flexible packaging materials. Compatibility of cosmetic products with packaging materials.		
IV	Modern Trends in Cosmetic Packaging Sustainable and eco-friendly packaging. Biodegradable and recyclable packaging materials. Smart and innovative packaging concepts. Packaging design and consumer appeal. Storage, transportation, and shelf-life considerations. Good Manufacturing Practice GMP: simple hygiene & quality rules.	7 hrs.	7 Marks

Recommended Books:	
1. Packaging Technology, Woodhead Publishing.	
2. The Wiley Encyclopedia of Packaging Technology, Wiley Publications.	
3. Handbook of Cosmetic Science and Technology, CRC Press.	
4. Cosmetics: Formulation, Manufacturing and Quality Control, Vandana Publications.	
5. Handbook of Package Engineering, CRC Press.	
6. Cosmetic and Toiletry Formulations, Noyes Publications.	
7. Packaging of Pharmaceuticals and Healthcare Products, Pharma Med Press.	
8. Fundamentals of Packaging Technology, Institute of Packaging Professionals.	
9. Packaging Materials, Technology and Science, CRC Press.	
10. Food and Beverage Packaging Technology, Wiley-Blackwell.	

B.TECH. (COSMETIC) SEM VI
Vertical –A Major-Elective / Theory-27
Subject code - 399605
Course Name- Cosmetic Analysis -II

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal + External)
5.5	6	399605	Cosmetic Analysis -II	2	30	2 hrs.	(20+30) Total 50

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Course Objective:	1. To understand instrumental methods used in cosmetic analysis. 2. To study UV, Visible, IR, and FTIR spectroscopy. 3. To learn fluorometric and atomic absorption techniques. 4. To understand chromatographic methods used in cosmetics.
Course Outcomes:	CO1. Explain principles of spectroscopic techniques. CO2. Apply instrumental methods for cosmetic quality assessment. CO3. Analyze cosmetic ingredients using advanced analytical tools. CO4. Perform chromatographic separation and identification.

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Introduction to Instruments used for cosmetic product analysis, Spectroscopy: Introduction, electromagnetic radiation- its properties and Electromagnetic spectrum. Colorimetric, UV and Visible spectroscopy - Basic Principles, Essential parts of spectrophotometers, uses and application of spectrophotometer. Spectrophotometric titration.	8 Hrs	8 Marks
II	IR/FTIR spectroscopy: Instrumentation, Application of IR/FTIR in Cosmetic (functional group identification, raw material authentication).	7 Hrs.	7 Marks
III	1. Fluorometric Analysis Theory, luminescence, factors affecting fluorescence, quenching. Instrumentation and cosmetic applications. 2. Flame Photometry and Atomic Absorption Spectrometry: Theory, nebulization, flame and flame temperature, interferences, instrumentation and cosmetic applications. 3. Nepheloturbidometry: Principle, instrumentation and application.	8 Hrs.	8 Marks
IV	Chromatography: Introduction, General Principles and classification of Chromatography, types of columns. Paper chromatography (PC) and Thin Layer Chromatography (TLC) and their applications.	7 hrs.	7 Marks

	High Performance Liquid Chromatography (HPLC) – principles and applications in cosmetics GLC, Ion exchange chromatography.		
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Recommended Book:

1. Instrumental methods of analysis . Willard, Merritt, Dean, Settle, Publisher, CBS; Edition, 7th
2. Ewing's Instrumental Methods of Analysis, Edited by Jack Cazes, Marcel Dekker.
3. Jeffery, G. H., Bassett, J., Mendham, J., & Denney, R. C. Vogel's textbook of quantitative chemical analysis (5th ed.). Longman Scientific & Technical.
4. Commercial Method of Analysis – Foster Dee Snell, Frank Biffen. McGraw-Hill Book Company.
5. Sharma, Y. R. Organic Spectroscopy. S. Chand.
6. Skoog, D. A., Holler, F. J. and Crouch, S. R. Principles of Instrumental Analysis. Cengage Learning.
7. Dyer, J. R. Applications of Absorption Spectroscopy of Organic Molecules. Prentice Hall.

B.TECH. (COSMETIC) SEM VI
Vertical –A Major -Elective / Practical-19
Subject Code - 399606
Course Name- Cosmetic Analysis -II Practical

Level	Semester	Course Code	Course Name	Credits	Practical Hours	Exam Duration	Max. Marks (Internal + External)
5.5	6	399606	Cosmetic Analysis -II Practical	2	60	4 hrs.	(25+25) Total 50

Course Objective:	1. To perform spectrophotometric and chromatographic analysis. 2. To determine λ_{max} and calibration curves. 3. To identify cosmetic ingredients using TLC and chromatography. 4. To develop instrumental analytical skills.
Course Outcomes:	CO1. Determine λ_{max} and prepare absorption curves. CO2. Operate UV-visible spectrophotometers. CO3. Perform TLC and chromatographic separations. CO4. Analyze cosmetic ingredients using instrumental methods.

Practical on	Content
1	Determination of λ_{max} , absorption curve of organic dyes by Colorimeter.
2	To calibration of UV Spectrophotometer.
3	Separation of amino acids by paper chromatography
4	Separation of mixture of components by thin layer chromatography
5	Demonstration experiment on GC, HPTLC, FTIR
6	Determination of official compounds by HPLC (anyone)
7	In-vitro Sun Protection Factor (SPF) determination by spectrophotometric method.
8	To identification of TLC colorants in cosmetics.

Recommended Books:
1. Determination of λ max and absorption curve of organic dyes.
2. To Calibrate a UV spectrophotometer.
3. Separation of amino acids by paper chromatography.
4. Separation of Cosmetic mixtures by TLC.
5. TLC identification of cosmetic colorants.
6. Demonstration experiment on GC, HPTLC, FTIR.
7. Determination of official compounds by HPLC (anyone)
8. In vitro determination of Sun Protection Factor (SPF) by spectrophotometric method.
9. Determination of concentration of organic dyes by Colorimeter and spectrophotometer.

B.TECH. (COSMETIC) SEM VI
Vertical –B Minor /Theory-28
Subject code - 399607
Course Name –Cosmetic Engineering-II

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks (Internal + External)
5.5	6	399607	Cosmetic Engineering-II	2	30	2 hrs.	(20+30) Total 50

Course Objective:	1. To study fluid flow and heat transfer operations. 2. To understand evaporation and distillation processes. 3. To learn drying operations and equipment. 4. To understand materials of construction and corrosion control.
Course Outcomes:	CO1. Apply principles of fluid flow and heat transfer. CO2. Explain evaporation and distillation operations. CO3. Select suitable drying equipment for cosmetic manufacturing. CO4. Evaluate materials of construction and corrosion prevention method

Unit System	Contents	Workload Allotted	Weightage of Marks Allotted
I	Flow of fluids: Types of manometers, Reynolds number and its significance, Bernoulli's theorem and its applications, Energy losses, Orifice meter, Venturimeter, Pitot tube and Rotometer. Heat Transfer: Objectives, applications & Heat transfer mechanisms. Fourier's law, Heat transfer by conduction, convection & radiation. Heat interchangers & heat exchangers.	8 Hrs	8 Marks
II	Evaporation: Objectives, applications and factors influencing evaporation, differences between evaporation and other heat process. principles, construction, working, uses, merits and demerits of Steam jacketed kettle, horizontal tube evaporator, climbing film evaporator, forced circulation evaporator, multiple effect evaporator& Economy of multiple effect evaporator. Distillation: Basic Principles and methodology of simple distillation, flash distillation, fractional distillation, distillation under reduced pressure, steam distillation & molecular distillation.	7 Hrs.	7 Marks

III	Drying: Objectives, applications & mechanism of drying process, measurements & applications of Equilibrium Moisture content, rate of drying curve. principles, construction, working, uses, merits and demerits of Tray dryer, drum dryer spray dryer, fluidized bed dryer, vacuum dryer, freeze dryer.	8 Hrs.	8 Marks
IV	Materials of pharmaceutical plant construction: Factors affecting during materials selected for Pharmaceutical plant construction, Ferrous and nonferrous metals, inorganic and organic non-metals. Corrosion and its prevention: Theories of corrosion, types of corrosion and there prevention.	7 hrs.	7 Marks

Recommended Book:
1. Introduction to chemical engineering – Walter L Badger & Julius Banchero, Latest edition.
2. Unit operation of chemical engineering – McCabe Smith, Latest edition.
3. Pharmaceutical engineering principles and practices – C.V.S Subrahmanyam et al., Latest edition.
4. Remington practice of pharmacy- Martin, Latest edition.
5. Solid phase extraction, Principles, techniques and applications by Nigel J.K. Simpson- Latest edition
6. Theory and practice of industrial pharmacy by Lachmann., Latest edition.
7. Physical pharmaceutics- C.V.S Subrahmanyam et al., Latest edition.
8. Cooper and Gunn’s Tutorial pharmacy, S.J. Carter, Latest edition

B.TECH. (COSMETIC) SEM VI
Vertical – B Minor / Practical- 20
Subject code - 399608
Course Name – Cosmetic Engineering- II Practical

Level	Semester	Course Code	Course Name	Credits	Practical Hours	Exam Duration	Max. Marks (Internal + External)
5.5	6	399608	Cosmetic Engineering -II Practical	2	60	4 hrs.	(25+25) Total 50

Course Objective:	1. To perform experiments on heat transfer and drying. 2. To study distillation and evaporation processes. 3. To evaluate moisture content and drying characteristics. 4. To develop engineering laboratory skills.
Course Outcomes:	CO1. Determine heat transfer and radiation parameters. CO2. Evaluate distillation and evaporation efficiency. CO3. Construct drying curves and calculate moisture content. CO4. Assess corrosion behavior of construction materials.

Practical on	Content
1	Determination of radiation constant of brass, iron, unpainted and painted glass.
2	Steam distillation – To calculate the efficiency of steam distillation.
3	To determine the overall heat transfer coefficient by heat exchanger.
4	Construction of drying curves (for calcium carbonate and starch).
5	Determination of moisture content and loss on drying.
6	Factors affecting Rate of Evaporation. (at-least 3 different powders be used)
7	Determination of boiling point of a pure volatile liquid and mixture of liquid using Boiling point diagram.
8	Study of corrosion susceptibility of aluminium metal foil.
9	Determination of radiation constant of brass, iron, unpainted and painted glass.

Recommended Books:
1. Introduction to chemical engineering – Walter L Badger & Julius Banchero, Latest edition.
2. Solid phase extraction, Principles, techniques and applications by Nigel J.K. Simpson- Latest edition.
3. Unit operation of chemical engineering – McCabe Smith, Latest edition.
4. Pharmaceutical engineering principles and practices – C.V.S Subrahmanyam et al., Latest edition.
5. Remington practice of pharmacy- Martin, Latest edition.
6. Theory and practice of industrial pharmacy by Lachmann., Latest edition.
7. Physical pharmaceutics- C.V.S Subrahmanyam et al., Latest edition.
8. Cooper and Gunn's Tutorial pharmacy, S.J. Carter, Latest edition

B.TECH. (COSMETIC) SEM VI
Vertical –D Vocational Skill Course / Practical - 21
Subject code - 399609
Course Name – Physical Cosmetic -II Practical

Level	Semester	Course Code	Course Name	Credits	Practical Hours	Exam Duration	Max. Marks (Internal)
5.5	6	399609	Physical Cosmetic -II Practical	2	60	4 hrs.	Total 50

Course Objective:	1. To study colloidal and dispersed systems experimentally. 2. To determine HLB, sedimentation, and particle size. 3. To perform diffusion and stability studies. 4. To develop practical skills in physical cosmetic analysis.
Course Outcomes:	CO1. Determine critical micelle concentration and HLB values. CO2. Evaluate emulsion and suspension characteristics. CO3. Perform diffusion and stability studies. CO4. Analyze colloidal behavior using experimental methods.

Practical on	Content
1	To determine critical miceller concentration of given surfactant.
2	To determine bulk density, true density & percentage porosity of given powder.
3	To determine the HLB value of glyceryl monostearate, Tween 80.
4	To determine sedimentation volume of given suspension.
5	To determine particle size of given suspension using microscopic method.
6	To determine globule size of emulsion by optical microscopy.
7	To prepare and carry out, diffusion study of antiageing cream.
8	Determination of Zeta potential of using given suspension & emulsion a demonstration.
9	Accelerated stability studies on emulsion & suspension.
10	To verify the holmister series for the flocculation of colloids.

Recommended Book:
1) Physical pharmacy by Alfred Martin, James Swarbrick.
2) Burger & Lee – Physical & Technical pharmacy
3) Rawlins Bentley's Text Book of Pharmaceutics

B.TECH. (COSMETIC) SEM VI

Vertical –F Field Project

Subject code – 399610

**Course Name – Internship/Apprenticeship corresponding to major on the job training
(Outdoor)**

Level	Semester	Course Code	Course Name	Credits
5.5	6	399610	Internship/Apprenticeship corresponding to major on the job training (Outdoor)	4