

# **Vocational/Skill Development Course**

**On**

**“Cosmetics and Perfumes  
Chemistry”**



**Sri Dev Suman Uttarakhand University, Badsahithaul,  
Tehri (Garhwal), Uttarakhand**

Curriculum Design Committee, Uttarakhand

<b>S. No.</b>	<b>Name &amp; Designation</b>
<b>1.</b>	Prof. N.K. Joshi Vice-Chancellor, Sridev Suman Uttarakhand University, New Tehri Chairman
<b>2.</b>	Vice-Chancellor, Kumaun University, Nainital Member
<b>3.</b>	Prof. Jagat Singh Bisht Vice-Chancellor, Soban Singh Jeena University Almora Member
<b>4.</b>	Prof. Surekha Dangwal Vice-Chancellor, Doon University, Dehradun Member
<b>5.</b>	Prof. O. P. S. Negi Vice-Chancellor, Uttarakhand Open University, Haldwani Member
<b>6.</b>	Prof. M.S.M. Rawat Advisor, Rashtriya Uchchatar Shiksha Abhiyan, Uttarakhand Member
<b>7.</b>	Prof. K. D. Purohit Advisor, Rashtriya Uchchatar Shiksha Abhiyan, Uttarakhand Member

## Vocational/Skill Development Courses

### Course title: Cosmetics and Perfumes Chemistry

**Course Outcomes:** Cosmetics are products designed to cleanse, protect and change the appearance of external parts of our bodies. The key ingredients present in most cosmetics include water, emulsifiers, preservatives, thickeners, moisturisers, colours and fragrances. Ingredients can be naturally occurring or artificial, but any potential impact on our health depends mainly on the chemical compounds they are made of.

Perfumes are the mixture of fragrant essential oils or aroma compounds (fragrances), fixatives and solvents, usually in liquid form, used to give the human body, animals, food, objects, and living-spaces a pleasant scent. Perfumes are essentially a blend of complementary ingredients and essential oils. Therefore, the perfumes are complex combinations of natural and/or man-made substances that are added to many consumer products to give them a distinctive smell.

The salient feature of this programme is the emphasis being laid on the overall development of student with major focus on cosmetics, advances in cosmetic product development, perfume chemistry, learning of analytical techniques used in cosmetic and perfume industries etc. Students will get many opportunities of interactions with experts in these fields during the course tenure. The students can gain hands on experience in the field while doing interactions with industries, research institutes, etc.

**Course Objectives:** To provide the learner with knowledge of cosmetics and perfumes with respect to the types of formulations, evaluation and regulatory aspects.

**Course Outcome:** Upon completion of the course, the learner shall be able to:

1. Understand general aspects of cosmetics and perfumes.
2. Discuss the various raw materials for cosmetics and perfumes.
3. Understand the preparation of various cosmetics and perfume products.
4. To know the various analysis methods used in cosmetics
5. Know the regulatory guidelines and sensorial assessment for cosmetics.

## Course title: Cosmetics and Perfumes Chemistry

<b>Programme/Class:</b> <b>Certificate in Science</b>	<b>Year: First</b>	<b>Semester: First</b>
<b>Paper- Theory Subject: Vocational/Skill Development Course</b>		
<b>Course Code:</b>	<b>Course Title: Cosmetics and Perfumes Chemistry</b>	

Credits : 03	Total number of hours
Max. Marks 25 + 75	45 Hrs

<b>Unit</b>	<b>Content</b>	<b>Number of Hours</b>
1	Introduction, history, classifications and sources of cosmetics and perfumes.	05
2	Surfactants and their types; Additives (thickeners, foam stabilizers, pearlescent agents, conditioning agents, etc.) Oil components; Waxes; Silicone oils; Cream bases; Emulsifiers; Humectants; Aerosol Propellants.	15
3	Chemistry and production of essential oils with special reference to the following; Eugenol, Geraniol, Sandalwood oil, Eucalyptus oil, Rose oil, Jasmone, Civetone and Muscone.	15
4	Psychological benefits, fragrance and mood, aromatic substances, types of aromatic substances, odours of substances from vegetable, animal and artificial origin	10

**Suggested Continuous Evaluation Methods:** Students can be evaluated on the basis of score obtained in a mid-term exam, together with the performance of other activities which can include short exams, in-class or online tests, home assignments, group discussions or oral presentations.

<b>Evaluation Method</b>	<b>Marks</b>
Mid-term exam/in-class or on-line tests/home assignments/group discussions/oral presentations.	15
Overall performance throughout the semester, Discipline, participation in different activities& Attendance	10

### **Suggested Readings:**

1. Earnest Guenther, "The Essential Oils" vol. I Robert E. Kreiger Publishing Co. Huntington, New York, 1972.

2. M.S. Balsem, S.D. Genshon, M.M. Rieger, E. Sagarin, S.J. Strianase, "Cosmetics, Science and Technology, Vol. I, II and III, Wiley-Interscience, A Division of John Wiley and Sons., Inc., New York, London, Sydney, Toronto, 1972, Ed. By M.S. Balsam and M.S. Sagarin.
3. Paul Z. Bedoukian, "Perfumery and Flavouring Synthetics" II Edn, Elsevier Publishing Co., Amsterdam, London, New York, 1967.
4. J. Stephan Jellinick," Formulation and Functions of Cosmetics", Wiley Interscience, a Division of John Wiley & Sons., Inc.
5. Mareel IBillot, F.V. Wells," Perfumery Technology" Ellis Harwood Ltd., Halrted Press, a Division of John Wiley & Sons., Inc. New York, London, 1975.
6. Chemistry and Technology of the Cosmetics and Toiletries Industry ed. By D.F. Williams & W.H., Schmitt, Blackie Academic & Professional, London, Ist Edn., 1992.
7. Harry's Cosmeticology, sixth edn. The principles and Practice of Modern cosmetics, Vol. I by R.G. Harry Chemical Publishing Co., Inc., New York, 1973.
8. H. Panda, Perfumes and Flavours Technology Handbook, Asia Pacific Business Press Inc., 2010, Delhi.
9. N. Board, Handbook on Herbal Products (Medicines, Cosmetics, Toiletries, Perfumes) National Institute of Industrial Research, 2000, New Delhi
10. M. Vimladevi Textbook of herbal Cosmetics, CBS Publishers and Distributers Pvt. Ltd.
11. Himadri Panda, HerbalcosmeticsHandbook.3<sup>rd</sup>revised edition.
12. W.A. Wani, P.F. Iqbal and M.N. Lone, Chemistry of cosmetics and perfumes, Lifestyle & Personal Style Guides.
13. Krik Othmer, Chemical Technology of cosmetics, John Wiley.
14. A.M. Dar and B.A. Dar, Chemistry of cosmetics & Perfumes, Kalyani Publications.

<b>Programme/Class:</b> <b>Certificate in Science</b>	<b>Year: First</b>	<b>Semester: Second</b>
<b>Paper- Theory Subject: Vocational/Skill Development Course</b>		
<b>Course Code:</b>	<b>Course Title: Cosmetics and Perfumes Chemistry</b>	

Credits : 03	Total number of hours
Max. Marks 25 + 75	45 Hrs

Unit	Content	Number of Hours
1	Developmental and role of natural products in cosmetic and medicine. Herbs description and morphology of organized and un-organized herbs.	08
2	Different systems of classification of natural excipients, their merits and demerits.	10
3	Adulteration of Natural products: Quantitative & quantitative methods of detection of adulteration.	07
4	Fixatives: Introduction, sources, classification, chemical composition and uses of following – a. Animal Source - Civet, Musk, Ambergris b. Resinous Fixatives – Benzoin, Balsams, Myrrh, Cinnamyl alcohol, Orris, Vanillin. c. Essential Oils fixatives – Sandal wood, Lemon, Cinnamon, Patchouli oil, Phenyl acetaldehyde, Vanillin. d. Synthetics fixatives – Diethyl phthalate, Benzyl- Benzoate, Alcohols, Acetophenone, Musk-ketone, Musk- Ambrette, Heliotropin, Hydroxy citronellal, Indole.	20

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Evaluation Method	Marks
Mid-term exam/in-class or on-line tests/home assignments/group discussions/oral presentations.	15
Overall performance throughout the semester, Discipline, participation in different activities & Attendance	10

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1. Earnest Guenther, "The Essential Oils" vol. I Robert E. Kreiger Publishing Co. Huntington, New York, 1972.

2. M.S. Balsem, S.D. Genshon, M.M. Rieger, E. Sagarin, S.J. Strianase, "Cosmetics, Science and Technology, Vol. I, II and III, Wiley-Interscience, A Division of John Wiley and Sons., Inc., New York, London, Sydney, Toronto, 1972, Ed. By M.S. Balsam and M.S. Sagarin.
3. Paul Z. Bedoukian, "Perfumery and Flavouring Synthetics" II Edn, Elsevier Publishing Co., Amsterdam, London, New York, 1967.
4. J. Stephan Jellinick," Formulation and Functions of Cosmetics", Wiley Interscience, a Division of John Wiley & Sons., Inc.
5. Mareel IBillot, F.V. Wells," Perfumery Technology" Ellis Harwood Ltd., Halrted Press, a Division of John Wiley & Sons., Inc. New York, London, 1975.
6. Chemistry and Technology of the Cosmetics and Toiletries Industry ed. By D.F. Williams & W.H., Schmitt, Blackie Academic & Professional, London, Ist Edn., 1992.
7. Harry's Cosmeticology, sixth edn. The principles and Practice of Modern cosmetics, Vol. I by R.G. Harry Chemical Publishing Co., Inc., New York, 1973.
8. H. Panda, Perfumes and Flavours Technology Handbook, Asia Pacific Business Press Inc., 2010, Delhi.
9. N. Board, Handbook on Herbal Products (Medicines, Cosmetics, Toiletries, Perfumes) National Institute of Industrial Research, 2000, New Delhi
10. M. Vimladevi Textbook of herbal Cosmetics, CBS Publishers and Distributers Pvt. Ltd.
11. Himadri Panda, HerbalcosmeticsHandbook.3<sup>rd</sup> revised edition.
12. W.A. Wani, P.F. Iqbal and M.N. Lone, Chemistry of cosmetics and perfumes, Lifestyle & Personal Style Guides.
13. Krik Othmer, Chemical Technology of cosmetics, John Wiley.
14. A.M. Dar and B.A. Dar, Chemistry of cosmetics & Perfumes, Kalyani Publications.
15. R.S. Gaud, Natural Excipients, Nirali Prakashan

<b>Programme/Class: Certificate in Science</b>	<b>Year: Second</b>	<b>Semester: Third</b>
<b>Paper-I Theory Subject: Vocational/Skill Development Course</b>		
<b>Course Code:</b>	<b>Course Title: Cosmetics and Perfumes Chemistry</b>	

Credits : 03	Total number of hours
Max. Marks 25 + 75	45 Hrs

<b>Unit</b>	<b>Content</b>	<b>Number of Hours</b>
1	Skin Care -General anatomy and physiology of skin, structure of skin, growth and nutrition. Cosmetics used for skin- Creams (Cold, Vanishing and Shaving creams). Hair Care- Structure of hair, growth of hair. Cosmetics used for hair – Shampoos, conditioners, bleaches, hair dyes, hair gels. Nail Care- Structure of nail. Cosmetics used for nail – Nail lacquer, nail polish remover, manicure and pedicure, nail care techniques. Eye Care- Cosmetics used for eye – eye brow pencil, eye liner, eye shadows, mascaras.	10
2	Physical Properties of materials potentially used in cosmetics. Preparation of Standard solutions: 1 Normal, 1 Molar, % w/v solution, % v/v solution. Standardization of volumetric apparatus.	08
3	Analysis of heavy metals- Lead and Mercury. Determination of chlorides and sulphates.	07
4	Preparation and uses of the following: Hair dye; hair spray; shampoo; suntan lotions; Face powder; Lipstick, Kajal, Talcum powder; Nail enamel; Creams (Cold, Vanishing and Shaving creams. Preparation and evaluation of different herbal formulations (face powder, cream, lotion, shampoo etc).	20

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<b>Evaluation Method</b>	<b>Marks</b>
Mid-term exam/in-class or on-line tests/home assignments/group discussions/oral presentations.	15
Overall performance throughout the semester, Discipline, participation in different activities & Attendance	10

**Suggested Readings:**

1. Perry Romanowski, Beginning Cosmetic Chemistry, Allured Pub Corp.2009.

2. Dr. Ramesh Kumari, Chemistry of Cosmetics, Prestige Publisher
3. Vogel's text book of Quantitative Analysis (Longman ELBS Edition)
4. F. G. Mann & B. C. Saunders, Practical Organic Chemistry
5. V. K. Ahluwalia, Comprehensive Practical Organic Chemistry Qualitative Analysis by
6. A.I. Vogel (Third Ed.), A Text Book of Quantitative Inorganic Analysis Including Elementary Instrumental Analysis.
7. Stocchi: Industrial Chemistry, Vol -I, Ellis Horwood Ltd. UK. P.C. Jain, M. Jain
8. Paul Z. Bedoukian, "Perfumery and Flavouring Synthetics" II Edn, Elsevier Publishing Co., Amsterdam, London, New York, 1967.
9. J. Stephan Jellinick," Formulation and Functions of Cosmetics", Wiley Interscience, a Division of John Wiley & Sons., Inc.
10. Mareel IBillot, F.V. Wells," Perfumery Technology" Ellis Harwood Ltd., Halrted Press, a Division of John Wiley & Sons., Inc. New York, London, 1975.
11. Chemistry and Technology of the Cosmetics and Toiletries Industry ed. By D.F. Williams & W.H., Schmitt, Blackie Academic & Professional, London, Ist Edn., 1992.
12. Harry's Cosmeticology, sixth edn. The principles and Practice of Modern cosmetics, Vol. I by R.G. Harry Chemical Publishing Co., Inc., New York, 1973
13. Textbook of cosmetics – Rajesh Kumar Nema, Kamal Singh Rathore, Balkrishna Dubey
14. Manufacture of perfumes, cosmetics, detergents –Gir Raj Prasad (from Small Industry research Institute)
15. J. Mendham Vogel's Quantitative Chemical Analysis, Pearson, 2009.
16. S.M. Khopkar, Basic concepts of analytical chemistry, New Age International Publisher, 2009.
17. A.K. Nad, B. Mahapatra and A. Ghoshal, An advanced course in practical Chemistry, New Central Book Agency (P) Ltd
18. Anju Goyal and Harish Kumar, Advanced Techniques of Analytical Chemistry, Bentham Books.
19. Jagdamba Singh, R.K.P. Singh, Jaya Singh, L.D.S. Yadav, I.R. Siddiqui and Jaya Shrivastava, Advanced Practical Chemistry, Pragati Prakashan
20. Krik Othmer, Chemical Technology of cosmetics, John Wiley.
21. A.M. Dar and B.A. Dar, Chemistry of cosmetics & Perfumes, Kalyani Publications.

<b>Programme/Class:</b> Certificate in Science	<b>Year: Second</b>	<b>Semester: Fourth</b>
<b>Paper-I Theory Subject: Vocational/Skill Development Course</b>		
<b>Course Code:</b>	<b>Course Title: Cosmetics and Perfumes Chemistry</b>	

Credits : 03	Total number of hours
Max. Marks 25 + 75	45

Unit	Content	Number of Hours
1	Composition and preparation of rose, jasmine, apple and pineapple flavour's.	10
2	Determination of pH, surface tension and viscosity, Determination & significance of saponification value.	05
3	Packaging as a Marketing Tool, Regulatory Provisions relation to manufacture of cosmetics, Import & Export of Herbal/natural cosmetics, Industries involved in the production of Herbal/natural cosmetics. Introduction to product branding and market considerations.	10
4	Industrial Training for 07 days (a brief report with certificate of completion to be submitted for evaluation) Or Project work/Dissertation	20

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Evaluation Method	Marks
Mid-term exam/in-class or on-line tests/home assignments/group discussions/oral presentations.	15
Overall performance throughout the semester, Discipline, participation in different activities & Attendance	10

**Suggested Readings:**

1. William Evans, Trease & Erans, Text Book of Pharmacognosy, Elsevier
2. K. L. Yam, The Wiley Encyclopaedia of Packaging Technology, 3rd ed., Wiley, 2009
3. W. Soroka, Fundamentals of Packaging Technology, 4th ed., Institute of Packaging Professionals (IoPP), 2009
4. J. F. Hanlon, Handbook of Package Engineering, 3rd ed., CRC Press, 1998
5. F. A. Paine, The Packaging User's Handbook, Springer, 1990
6. J. Mendham Vogel's Quantitative Chemical Analysis, Pearson, 2009.

7. S.M. Khopkar, Basic concepts of analytical chemistry, New Age International Publisher, 2009.
8. R.S. Gaud, Natural Excipients, Nirali Prakashan
9. K. Nad, B. Mahapatra and A. Ghoshal, An advanced course in practical Chemistry, New Central Book Agency (P) Ltd
10. Anju Goyal and Harish Kumar, Advanced Techniques of Analytical Chemistry, Bentham Books.
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