University of CINCINNATI | ONLINE

COSMETIC SCIENCE

UNIVERSITY OF CINCINNATI COSMETIC SCIENCE PROGRAM
COSMETICS INNOVATION
50+ YEARS

MASTER OF SCIENCE IN COSMETIC SCIENCE

COSMETIC SCIENCE GRADUATE CERTIFICATE

HYGIENIC MANUFACTURING OF COSMETIC PRODUCTS


MASK
styling gel
procedure
Primary Water

OVERVIEW

Founded in 1973, our Master of Science in Cosmetic Science program is globally recognized as one of the country's oldest cosmetic science graduate programs. Our innovative curriculum equips students with the cosmetic science expertise needed to develop as tomorrow's industry leaders.

Our programs teach students how to appropriately use raw materials to make new products, then develop, formulate, and assess the safety and quality of the products for human use. Students graduate with an in-depth understanding of how safe, effective, and environmentally friendly products are scientifically formulated.

30 CREDIT HOURS
MASTER OF SCIENCE IN COSMETIC SCIENCE

12 CREDIT HOURS
COSMETIC SCIENCE GRADUATE CERTIFICATE

13 CREDIT HOURS
HYGIENIC MANUFACTURING OF COSMETIC PRODUCTS CERTIFICATE

PROGRAM HIGHLIGHTS

- 100% online — no campus visits required
- World-class faculty with real-world experience and extensive academic expertise
- Option for a concentrated, one-week, hands-on laboratory formulation session on campus
- Part-time flexibility — balance school, work, and life responsibilities
- Transformative curriculum — apply lessons learned immediately in the field

Course offerings cover the underlying physical, biophysical, colloidal and interfacial chemistry, and formulation science of skin and hair cosmetic products and OTC drug products.

AVAILABLE COURSE TOPICS

- Fundamentals of Beauty Marketing ***NEW!***
- Introduction to Cosmetic Ingredients ***NEW!***
- Skin Care and Hair Care Science
- Color Cosmetics
- Basic Pharmacology of OTC Drugs and Cosmetic Actives
- Formulation Science, including colloid, surface, and polymer science
- Advanced Pharmaceutics
- Formulation Tech: skin, hair, and oral care products; OTC topical drug products; color cosmetics
- Safety Assessment of Cosmetic Products
- Clinical and Instrumental Methods
- Cosmetic Regulations
- Cosmetic Microbiology
- Consumer Understanding
- Statistical Data Analysis
- Fragrance Science
- Hygienic Manufacturing

MASTER'S DEGREE & GRADUATE CERTIFICATE

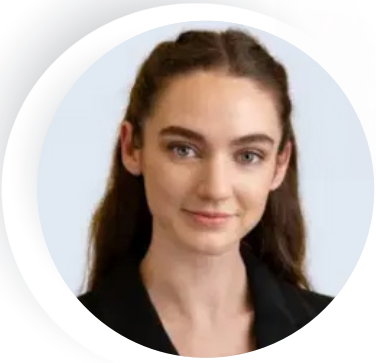
- Master of Science in Cosmetic Science (30 credit hours)
- Cosmetic Science Graduate Certificate (12 credit hours)

Faculty deliver virtual course content, allowing students the flexibility to access information at their convenience online. Students also have the opportunity to network and engage in discussion groups with their colleagues in the field.

Course offerings are designed to provide students with the know-how to develop cosmetic and personal care products that delight consumers and improve quality of life. This includes topics such as the physiology and pharmacology of pertinent therapeutic or the benefit systems of skin and hair, as well as those associated with approved over-the-counter drug categories.

Q: How long does it take to complete the master's degree and graduate certificate?

A: The certificate is typically completed in 3 semesters or 1 year, based on taking 2 courses per semester. The master's program is typically completed in 6 to 9 semesters or 2 to 3 years, also based on taking 2 courses a semester, which is the recommended pace.



"This program can be valuable to students from diverse backgrounds, including business, marketing, and educational professionals. I encourage people to consider both the cosmetic science graduate certificate and the master's program. There's something for everyone with the programs' focus on science and business. And if you work in the industry already, you can directly apply what you're learning online to your day job."

Margaret S.
Cosmetic Science Student

HYGIENIC MANUFACTURING OF COSMETIC PRODUCTS GRADUATE CERTIFICATE

This certificate program is designed to provide practical training in cosmetic formulation science, including preservation science, along with relevant plant engineering and hygienic manufacturing. Thus, plant engineers with a background in cosmetic science and cosmetic formulation chemists with a background in manufacturing can begin to address potential microbial contamination issues and ensure the production of hygienic products.

The certificate was created in response to findings from the Personal Care Products Council, which identified hygienic manufacturing of cosmetic products as a major challenge in the industry due to a shift toward more natural and less efficacious preservative systems.

Required Courses

- Manufacturing Hygiene – Microbiology, Product/Package Design, and Quality Assurance
- Manufacturing Hygiene – Facilities, Utilities, and Plant Engineering
- Cosmetic Microbiology
- Intro to Surface, Colloid, and Membrane Science
- Intro to Skin and Hair
- Skin, Hair, and Oral Products

HYBRID PROGRAM
BS-MS COSMETIC SCIENCE

4+1

The bachelor's to master's Cosmetic Science (Hybrid) program was developed by the UC James L. Winkle College of Pharmacy and the UC College of Arts and Sciences to offer a 4+1 pathway. This allows students to graduate with a Bachelor of Science in Chemistry, Biology, or Chemical Engineering and a Master of Science in Cosmetic Science in a total of 5 years.

The BS-MS program is hybrid, meaning the majority of classes are taken in person and on campus in Cincinnati, Ohio, with the master's portion provided online.

Benefits of Our Dual Degree Program:

Our accelerated dual degree program is made possible by allowing students to start taking select cosmetic science-relevant courses during their undergraduate years.

Additionally, the program includes a co-op experience for the undergraduate students during their junior and senior years. Chemical Engineering students participate in a co-op experience as part of their bachelor's degree that can be guided toward cosmetic science to meet the cosmetic science requirements.

SAMPLE CURRICULUM

PCEU8010: Skin Care Science
Lectures and homework assignments cover basic skin anatomy, epidermis and dermis, dermatological terminology, basic biophysical methods for evaluation of skin, structure of the stratum corneum (SC) and SC barrier homeostasis, skin penetration, skin immune system, skin color, sunscreens, phototoxicity, skin moisturizers and anti-aging products, and surfactant skin interactions.

PCEU8024: Introduction to Surface, Colloid, and Membrane Science
This introductory course focuses on fundamentals underpinning cosmetic formulations including wetting, spreading, contact angle, surface excess and adsorption, interfacial and solution chemistry of surfactants, surface tension, micellization, mixed surfactant systems, silicone surfactants, basic rheology, polymers and polyelectrolytes, silicone polymers, foams, foam stability and rheology, solid-liquid interface, and an intro to bilayers and stratum corneum membrane.

PCEU8030: Hair Care Science
This course covers the science of hair and hair care products. Topics include hair growth, morphological and macromolecular structure of hair, physical properties of hair, reducing agents, reactions and kinetics, permanent waving, straightening and depilation, hair coloring and bleaching, shampoos and conditioners, laboratory and consumer testing methods for evaluating hair properties, hair damage and repair, hair fixatives, dandruff.

PCEU8051: Skin, Hair, and Oral Products
The class is designed to provide a practical overview of the formulation approaches used for cosmetic and selected OTC drug products broadly intended for use in skin care, hair care, and oral care, including stability and performance evaluations. Sufficient background information regarding the anatomy and physiology of the skin and associated appendages, the hair, and the oral cavity, as well as solution and colloid (emulsion) chemistry, will be provided for appropriate understanding of the contexts of the formulation approaches. The course also provides an overview of pertinent FDA regulations concerning cosmetic and OTC products, as well as descriptions of the products' development processes, record-keeping, and intellectual property protection.

PCEU 7010
Biostatistics & Research Methods
The course begins with basic statistical concepts, introduces essential descriptive and inferential statistical tests, demonstrates some data analysis tools and collection instruments, then discusses common research methodology for pharmaceutical and cosmetic sciences. Students learn how to use statistics and research designs to evaluate scientific evidence to make individual and population-based decisions. Students conduct some simple statistical analysis based on given data sets and interpret the results, as well review clinical research literature.

OPTIONAL IN-PERSON LABS

While the master's and certificate programs are completed fully online, students may take advantage of concentrated, one-week, hands-on laboratory formulation sessions.

1: **PCEU 8021L Formulation**
This laboratory course teaches formulation principles and give the students hands-on experience in making skin and hair care products and testing their stability.

2: PCEU 8046L Cosmetic Color Science

The laboratory course introduces students to experimental techniques for characterizing physical and chemical properties of colorants and evaluating properties like hue, value, and chroma, including conducting studies of color mixing and matching. It covers methods for processing and incorporating color additives in product development for various formats like lipstick, nail lacquers, pressed powders, and water-based personal care products. Students get hands-on experience in characterizing color additive properties and formulation strategies, familiarizing students with common classes of color additives such as dyes, pigments, and effect pigments.

3: PCEU 8170L Fragrance Science Lab *NEW!*

In this laboratory course, students learn basic olfactive understanding for formulating cosmetic products, combining both the art and science required to launch successful scents. This includes olfactive language and fragrance families, basic raw materials, stability, and dosing and regulatory considerations. Students will also learn consumer expectations by cosmetic format, as well as global fragrance preferences and how they differ by culture, region, climate, and target consumer.

FACULTY

Learn from faculty with real-world experience.

The expertise of our faculty members, combining industrial experience with academic expertise, significantly enhances the training capabilities and strength of the program.

Faculty of the Cosmetic Science program possess the corporate experience, expertise, and practical application needed to train award-winning students.

K.P. Ananth, PhD
Professor and Director of Cosmetic Science Programs, Ex Unilever, Surfactants, Colloids, Skin

Gary Kelm, PhD
Adjunct Professor, Ex Procter & Gamble, Cosmetic and OTC Drug Formulations

Jianfei Jeff Guo, PhD
Professor of Pharmaceutics, Biostatistics

Gerald Kasting, PhD
Professor of Pharmaceutics and Cosmetic Science, Ex Procter & Gamble, Transdermal Delivery

Harshita Kumari, PhD
Associate Professor of Pharmaceutics and Cosmetic Science, Nanoscience, Rheology

Kevin Li, PhD
Professor, Ocular Delivery, Dermal Delivery

Randall Wickett, PhD
Professor Emeritus, Ex Procter & Gamble and SCJ, Skin and Hair Science

Yuhang Zhang, PhD
Associate Prof of Pharmaceutics and Cosmetic Science, Molecular Biology of Skin

Greg Hillebrand, PhD
Associate Professor of Biochemistry and Cosmetic Science, Ex Procter & Gamble and Amway, Skin Biology, Clinical Methods, Skin Microbiome

PROGRAM DIRECTOR

Dr. K.P. Ananth (Ananthapadmanabhan) is a professor and the director of the Cosmetic Science programs at the James L. Winkle College of Pharmacy at the University of Cincinnati.

Ananth obtained his B. Tech from Indian Institute of Technology in Mumbai in 1974. He obtained his MS and D. Eng. Sci. degrees in 1976 and 1980 respectively from Columbia University in New York, specializing in surfactants and colloids. Ananth spent three years as a post-doctoral fellow and adjunct faculty at Columbia University and then joined Union Carbide Corporation at their Surface Chemistry Skill Center in Tarrytown, New York.

In 1990, Ananth moved to Unilver R & D, initially in Edgewater, New Jersey and then in Trumbull, Connecticut, and spent the next 26+ years in various capacities in the personal care area, including leading their longer-term skin-cleansing research. He is the author/co-author of over 125 publications and over 35 patents. He also co-edited a book titled *Interactions of Surfactants with Polymers and Proteins* with Dr. Desmond Goddard.

Career achievements include Unilever's Lifetime Achievement Award for Contributions to Science in 2016.

After retiring from Unilever in 2016, Ananth joined the College of Pharmacy as a professor and director of their Cosmetic Science programs.

ADMISSIONS FOR ALL COSMETIC SCIENCE PROGRAMS

Prerequisites

- A U.S. bachelor's degree from a regionally accredited college or university or an equivalent degree from a foreign country in a field of science such as chemistry, chemical engineering, or biology.
- A grade-point average (GPA) of at least 3.00 or foreign equivalent
- At least one semester of undergraduate coursework in organic chemistry and calculus
- For international students, a Test of English as a Foreign Language (TOEFL) of at least 90 (internet-based) or 235 (computer-based), or a Duolingo English Test of at least 110 is accepted.

Admissions Requirements

- Application: University of Cincinnati graduate school online application
- References: Two letters of reference from individuals who can attest to your academic and professional skills
- Resume: A professional and current resume
- Statement of Purpose: Provide two paragraphs on why you wish to pursue this program and how you plan to use this degree in your career.
- Transcripts: All college transcripts are required. Unofficial transcripts are sufficient to make offers of admission.

OUR STUDENTS AND ALUMNI

Over the years, our Cosmetic Science programs have prepared hundreds of students to excel in the cosmetics industry. Several recent alumni shared their experiences.

"You can do hands-on, but you still need to have some type of foundation as far as book education or book knowledge. I knew that I was going to be a part of that top tier by joining the University of Cincinnati's program."

Cynthia J.

"The cosmetic science program really helps you understand from a technical and from a chemistry perspective why a formulation works and how to approach formulation to make better cosmetic products. It's really the deep science behind making cool cosmetics and personal care products."

James N.

"I think that the program is extremely well-rounded and highly technical. Every class I took was applicable to something I was working on, so it really helped me grow and expand my technical breadth and depth. It's a really unique, fantastic program, and UC is doing really great things."

Christine T.

AT THE UNIVERSITY OF CINCINNATI, **OUR APPROACH IS SCIENTIFIC.** IT'S FOR THINKERS AND DOERS. FOR INVENTORS AND EXPLORERS. FOR PROFESSIONALS READY TO MAKE AN IMPACT IN ONE OF THE FASTEST-GROWING AND INCREASINGLY SCIENCE-DRIVEN FIELDS. AND IT'S DELIVERED BY **WORLD-RENOWNED FACULTY,** 100% ONLINE.

FOR MORE INFORMATION:
ONLINE.UC.EDU/COSMETIC-SCIENCE

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