

GE2333: THE SCIENCE OF COSMETICS

Effective Term

Semester A 2024/25

Part I Course Overview

Course Title

The Science of Cosmetics

Subject Code

GE - Gateway Education

Course Number

2333

Academic Unit

Chemistry (CHEM)

College/School

College of Science (SI)

Course Duration

One Semester

Credit Units

3

Level

B1, B2, B3, B4 - Bachelor's Degree

GE Area (Primary)

Area 3 - Science and Technology

Medium of Instruction

English

Medium of Assessment

English

Prerequisites

Nil

Precursors

Nil

Equivalent Courses

Nil

Exclusive Courses

Nil

Part II Course Details

Abstract

This course empowers students to explore the social and scientific dimensions of human beauty, focusing on promoting a healthy lifestyle. Topics covered include human perception of beauty, the history and science of cosmetics, and cosmetic safety. Through interactive lectures and tutorials, students engage in active learning. They also gain practical experience by creating their own cosmetics (lipstick, hair cream, moisturizing serum, and sunblock) in laboratory sessions. Industry guest lectures provide insights into different facets of the cosmetic industry. The course culminates with group presentations on cosmetic use and production. Students will develop a deeper understanding of beauty, acquire experimental techniques, and explore the cosmetic industry's diverse aspects.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Demonstrate an in-depth understanding of the human perception system by explaining its mechanisms and how it influences our perception of beauty. Provide insightful observations and analyses, showcasing knowledge of the underlying processes.	20	x	x	
2	Compare and contrast the concept of beauty across different time periods and cultures, drawing meaningful connections and highlighting key differences. Offer well-supported observations, demonstrating a comprehensive understanding of the cultural and historical influences on beauty ideals.	20	x	x	
3	Articulate a comprehensive explanation of the fundamental chemistry and biology behind the production and application of cosmetics. Effectively communicate the key principles and processes involved, showcasing a strong grasp of the scientific concepts.	30	x	x	x
4	Conduct a thorough analysis of the advantages, disadvantages, and potential implications of utilizing various cosmetics, utilizing chemical and biological concepts. Present well-reasoned arguments, supported by scientific evidence, while effectively communicating the potential effects and risks associated with different cosmetic products.	15	x	x	x
5	Evaluate safety issues associated with cosmetic use, applying critical thinking to identify potential risks and concerns. Utilize scientific knowledge and analytical skills to assess the safety aspects, and propose appropriate measures to mitigate potential risks.	15		x	

A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments

Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Learning and Teaching Activities (LTAs)

LTAs		Brief Description	CILO No.	Hours/week (if applicable)
1	Lecture	Students will engage in interactive lectures and participate in tutorial discussions to actively explore the cultural, social, and scientific dimensions of human beauty. These sessions will encourage discovery and understanding of the diverse aspects surrounding beauty.	1, 2, 3, 4, 5	3 hrs/wk
2	Group Project	Students will collaborate on interactive poster and video projects that will enrich learning experience by delving into the practical aspects of cosmetic use, production, and safety. These projects will develop a deeper understanding of cosmetic-related products.	1, 2, 3, 4, 5	3 hrs/wk for 2 weeks
3	Guest Lecture	Students will attend captivating lectures delivered by representatives from the international cosmetics industry, providing insights into the social and scientific complexities associated with cosmetic products. This firsthand account will enhance understanding of the broader industry landscape.	2, 3, 4, 5	One 2-hr lecture

4	Laboratory experiments / demonstrations	Students will engage in laboratory experiments and demonstrations that illustrate the production and safety considerations of cosmetic products, fostering a practical understanding of cosmetic production and emphasizing the importance of safety measures.	3, 4, 5	3 hrs/wk for 4 weeks
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Assessment Tasks / Activities (ATs)

ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Quizzes and Assignments	1, 2, 3, 4, 5	30
2	Laboratory Report Write-up	3, 4, 5	20
3	Group Project and Presentation	1, 2, 3, 4, 5	20

Continuous Assessment (%)

70

Examination (%)

30

Examination Duration (Hours)

1

Additional Information for ATs

Starting from Semester A, 2015-16, students must satisfy the following minimum passing requirement for courses offered by CHEM:

"A minimum of 40% in both coursework and examination components."

Details:

- Quizzes and Assignments: students need to finish short quizzes and assignments as a form of continuous assessment;
- Laboratory reports: students need to hand in a short laboratory report (two pages) after each laboratory section as a form of continuous assessment;
- Group project and presentation: Students will form groups of 3–4 and will select a topic related to the use, production, and safety of cosmetic related products; they will design an informational poster that is aimed at their fellow students, including presenting their topic and poster in a 10-minute presentation in class.

Assessment Rubrics (AR)**Assessment Task**

1. Quizzes and Assignment

Excellent (A+, A, A-)

Demonstrates excellent grasp of the important concepts to various aspects of the topic covered in this course, and can apply these concepts to solve problems with clear and logical explanations.

Good (B+, B, B-)

Able to describe and explain the important concepts to several aspects of the topic covered in this course.

Fair (C+, C, C-)

Student completes most of the assessment tasks and can describe some key elements on the topics covered in the course. Shows limited ability to apply concepts.

Marginal (D)

Student has little participation and interest, and demonstrates limited ability in analysis.

Failure (F)

Student has no participation, interest or original thought.

Assessment Task

2. Laboratory Report Write-up

Excellent (A+, A, A-)

Demonstrates excellent grasp of the important concepts to various aspects of the topic covered in the laboratory sessions. Reports are well-written with clear and logical explanations.

Good (B+, B, B-)

Able to describe and explain the important concepts to several aspects of the topic covered in the laboratory sessions.

Fair (C+, C, C-)

Student completes most of the assessment tasks and can describe some key elements on the topics covered in the course. Shows limited ability to apply concepts.

Marginal (D)

Student has little participation and interest, and demonstrates limited ability in analysis.

Failure (F)

Student has no participation, interest or original thought.

Assessment Task

3. Group Project and Presentation

Excellent (A+, A, A-)

Excellent logical structure with coverage and relevance. The work is presented in an accurate and concise fashion. Fluent language with a formal tone. Good timing. Provides detailed answers to all questions.

Good (B+, B, B-)

Good logical structure with coverage and relevance. The work is presented in an accurate fashion. Appropriate use of language. Good timing. Can answer all questions in detail.

Fair (C+, C, C-)

Acceptable logical structure with coverage and relevance. The work is presented in an acceptable fashion. Reading from single-page notes or cue cards. Either too short or overruns by only one to two minutes. Can answer most questions.

Marginal (D)

No structure with no/little coverage and relevance. Very easy to find mistakes in the presented work. Very poor timing Fails to answer most questions and has difficulty understanding many of them.

Failure (F)

Zero contribution in the whole presentation, including information research, data processing, preparation works and presentation.

Assessment Task

4. Examination

Excellent (A+, A, A-)

Demonstrates a deep understanding of selected topic and able to critically analyse the issues of the question.

Good (B+, B, B-)

Demonstrates a good understanding of selected topic and able to reasonably analyse the issues of the question.

Fair (C+, C, C-)

Demonstrates a limited understanding of selected topic and does not go beyond a standard description of the issues of the question.

Marginal (D)

Demonstrates a weak understanding of selected topic and presents limited perspective of the topic.

Failure (F)

Does not present evidence of a reasonable understanding of the question and omits key issues of the question.

Part III Other Information

Keyword Syllabus

- Week 1 What is beauty? (Lecturer: Prof. C.-Y. Wong, CHEM)
- Week 2 The science of sensation and perception (Lecturer: Prof. H. Y. Sun, CHEM)
- Week 3 The structure of human tissue and hair (Lecturer: Prof. H. Y. Sun, CHEM)
- Week 4-6 Chemistry of important components in cosmetics (e.g. solvents, surfactants, fragrances, antioxidants, emollients, emulsifiers, humectants, etc.) (Lecturer: Prof. C.-Y. Wong, CHEM)
- Week 7 Making your own cosmetics (Experiment 1: Gloss Lipstick) (Lecturer: Prof. C.-Y. Wong, CHEM)
- Week 8 Making your own cosmetics (Experiment 2: Hair Cream) (Lecturer: Prof. C.-Y. Wong, CHEM)
- Week 9 Making your own cosmetics (Experiment 3: Moisturizing Serum) (Lecturer: Prof. C.-Y. Wong, CHEM)
- Week 10 Making your own cosmetics (Experiment 4: Sun Block) (Lecturer: Prof. C.-Y. Wong, CHEM)
- Week 11 Selected topic by guest lecturer (Lecturer: Guest Lecturer)
- Week 12 Group presentation
- Week 13 Group presentation

Reading List

Compulsory Readings

Title	
1	Beginning Cosmetic Chemistry 3rd Edition (ISBN-13: 978-1932633535)

Additional Readings

Title	
1	Chemistry and Manufacture of Cosmetics: Science 4th edition (ISBN-13: 978-1932633474)
2	*The above readings have been ordered and will be deposited in the CityU library.

Annex (for GE courses only)

A. Please specify the Gateway Education Programme Intended Learning Outcomes (PILOs) that the course is aligned to and relate them to the CILOs stated in Part II, Section 2 of this form:

Please indicate which CILO(s) is/are related to this PILO, if any (can be more than one CILOs in each PILO)

PILO 1: Demonstrate the capacity for self-directed learning

1, 2, 3, 4, 5

PILO 3: Demonstrate critical thinking skills

1, 2, 3

PILO 4: Interpret information and numerical data

3, 4, 5

PILO 5: Produce structured, well-organised and fluent text

1, 2, 5

PILO 6: Demonstrate effective oral communication skills

1, 5

PILO 7: Demonstrate an ability to work effectively in a team

2, 3, 4

PILO 8: Recognise important characteristics of their own culture(s) and at least one other culture, and their impact on global issues

2

PILO 9: Value ethical and socially responsible actions

5

PILO 10: Demonstrate the attitude and/or ability to accomplish discovery and/or innovation

3, 4, 5

B. Please select an assessment task for collecting evidence of student achievement for quality assurance purposes. Please retain at least one sample of student achievement across a period of three years.

Selected Assessment Task

Group project and presentation on a selected topic related to cosmetic use and production, and the cultural and social aspects of human beauty.