

## 课程详述

### COURSE SPECIFICATION

以下课程信息可能根据实际授课需要或在课程检讨之后产生变动。如对课程有任何疑问，请联系授课教师。

The course information as follows may be subject to change, either during the session because of unforeseen circumstances, or following review of the course at the end of the session. Queries about the course should be directed to the course instructor.

1.	课程名称 <b>Course Title</b>	化妆品化学与配方 <b>Cosmetic Chemistry and Formula</b>
2.	授课院系 <b>Originating Department</b>	化学系 Department of Chemistry
3.	课程编号 <b>Course Code</b>	CH410
4.	课程学分 <b>Credit Value</b>	3
5.	课程类别 <b>Course Type</b>	专业选修课 Major Elective Courses
6.	授课学期 <b>Semester</b>	秋季 Fall
7.	授课语言 <b>Teaching Language</b>	中英双语 English & Chinese
8.	授课教师、所属学系、联系方式（如属团队授课，请列明其他授课教师） <b>Instructor(s), Affiliation &amp; Contact</b> (For team teaching, please list all instructors)	汪君 Jun Wang 助理教授 Assistant Professor 0755-88018317 <a href="mailto:wangj@sustech.edu.cn">wangj@sustech.edu.cn</a> 房芳, 化学系 Fang Fang, Chemistry <a href="mailto:fangf@sustech.edu.cn">fangf@sustech.edu.cn</a> 0755-8801-8738 于月娜, 化学系 Yu Yuena, Chemistry <a href="mailto:yuyn@sustech.edu.cn">yuyn@sustech.edu.cn</a> 0755-8801-8378
9.	实验员/助教、所属学系、联系方式 <b>Tutor/TA(s), Contact</b>	无 NA
10.	选课人数限额(可不填) <b>Maximum Enrolment</b>	

(Optional)					
11. 授课方式 Delivery Method	讲授 Lectures	习题/辅导/讨论 Tutorials	实验/实习 Lab/Practical	其它(请具体注明) Other (Please specify)	总学时 Total
学时数 Credit Hours	32		32		64
12. 先修课程、其它学习要求 Pre-requisites or Other Academic Requirements	有机化学实验 (CH208)				
13. 后续课程、其它学习规划 Courses for which this course is a pre-requisite	无 NA				
14. 其它要求修读本课程的学系 Cross-listing Dept.	无 NA				

### 教学大纲及教学日历 SYLLABUS

#### 15. 教学目标 Course Objectives

化妆品化学与配方是由化学系开设，面向化学专业大四学生的选修课程。课程主要讲述化妆品的化学配方、合成和天然原料、分类法规；化妆品的开发程序、化妆品的安全评价标准；全面介绍化妆品的化学与工业原理以及配方原理、典型配方实例等。修完本课程，将对化妆品科学有一个比较全面的了解。

Cosmetics chemistry and formula was an elective course opened by department of chemistry. The course was oriented to senior student majored chemistry. The course mainly talks about the chemical formula of synthetic and natural ingredients of cosmetics; classifications and regulations; development procedure of cosmetics and safety evaluation criteria for cosmetics; the comprehensive introduction of the chemical, industrial and formula principles of cosmetics and the typical examples of the formula. After completing this course, a comprehensive understanding of cosmetic science will be obtained.

#### 16. 预达学习成果 Learning Outcomes

1. 了解化妆品的分类、法规
2. 了解化妆品的开发程序、化妆品的安全评价标准
3. 了解化妆品的化学与工业原理以及配方原理
4. 通过实际操作配制化妆品。
1. Understanding the classifications and regulations of cosmetics.
2. Understanding the development procedure and safety evaluation criteria of cosmetics.
3. Understanding the chemical, industrial and formula principles of cosmetics.
4. Making cosmetics through experiments.

#### 17. 课程内容及教学日历 (如授课语言以英文为主, 则课程内容介绍可以用英文; 如团队教学或模块教学, 教学日历须注明主讲人)

**Course Contents (in Parts/Chapters/Sections/Weeks. Please notify name of instructor for course section(s), if this is a team teaching or module course.)**

1. 化妆品的化学原料（理论）：

1.1 合成原料：由各种油脂或原料经过加工合成的改性的油脂和蜡。讲述常用的合成原料：角鲨烷、羊毛脂衍生物、聚硅氧烷、脂肪酸、脂肪醇、脂肪酸酯等。（12 个学时）

1.2 天然成分原料：由植物、动物以及原生物中提取的成分。讲述常用抗氧、防晒、增白等功能的成分：四羟基芪，柚皮苷，红桔素等。（10 个学时）

2. 化妆品管理法律和法规：讲述我国化妆品研发、生产、流通等全环节的一系列法规。（理论，2 个学时）

3. 化妆品制造的化学原理：包括膏霜类、美容类、香水类等的制造原理。（理论，4 个学时）

4. 化妆品的配方：讲述配方设计原理和配方实例。（理论，4 个学时）

5. 制备化妆品实验：（实验，32 个学时）

(a) 植物精油的提取：通过合适的实验路线，提取植物精油（4 个学时）；通过 GC-MS 分析检测精油成分（4 个学时）。

(b) 香水的配置：以植物精油为主要成分，结合基础精油和无水乙醇或蒸馏水等配制成具有某种性能香水（4 个学时）；对香水质量和功效进行检测（4 个学时）。

(c) 防晒乳液的制备：制备含有芦荟提取成分的防晒乳液（4 个学时）；用红外光谱检测防晒性能（4 个学时）。

(d) 唇膏的制备：将食用的酸碱指示剂添加到唇膏的制作中，制备可以变色的唇膏（4 个学时）；对唇膏质量和功效进行检测（4 个学时）。

1. Chemical ingredients of chemistry:

1.1 Synthetic ingredients: modified oil and wax synthesized by raw oil and raw materials. Commonly used synthetic ingredients will be introduced, such as squalene, lanolin fatty acid derivatives, polysiloxane fat fatty acids and fatty alcohols. (12 hours)

1.2 Natural ingredients: the ingredients extracted from plants, animals and protozoa. The ingredients commonly used for anti-oxygen, sunscreen and whitening will be introduced, such as tetrahydroxy stilbene, naringin, and red orange. (10 hours)

2. Cosmetics management laws and regulations: a series of laws and regulations on the development and production of cosmetics in China will be introduced. (2 hours)

3. The chemical principle of cosmetic manufacture: including the manufacture principle of cream, beauty, perfume, etc. (4 hours)

4. Formula of cosmetics: the formula design principle and typical formula examples. (4 hours)

5. Experiments of cosmetic chemistry: (32 hours).

(a) Extraction of plants essential oil: extracting plants essential oil with base essential through proper procedure (4 hours); detecting the content of essential oil by GC-MS (4 hours).

(b) Preparation of perfume: mixing the plants essential oil with base essentials oils, solvent and other additives to obtain a special kind of perfume (4 hours); quality and efficacy detection of perfume (4 hours).

(c) Preparation of sunscreen cream: preparing sunscreen cream containing extraction product of aloe (4 hours); using

UV spectroscopy to evaluate the sunscreen effect (4 hours)

(d) Preparation of lipstick: lipsticks which could change color was prepared by adding a special kind of edible acid-base indicator (4 hours); quality and efficacy detection of lipstick (4 hours).

**18. 教材及其它参考资料 Textbook and Supplementary Readings**

美容化妆品学——李利，人民卫生出版社；

化妆品-原理，配方，生成工艺——王培义，化学工业出版社，第三版；

化妆品天然成分原料手册——王建新，孙婧，化学工业出版社。

化妆品监管法规——刘志芳，黄佑，戎菊梅，中国医药科技出版社。

Cosmetology, Li Li, People's Medical Publishing House

Cosmetics—principles, formula and process, Pei-Yi Wang, Chemical Industry Press, 3rd Edition.

Handbook on Natural Ingredients of Cosmetics, Jian-Xin Wang, Jing Sun, Chemical Industry Press.

Cosmetics Regulation, Zhi-Fang Liu, You Huang, Jv-Mei Rong, China Medical Science Press.

**课程评估 ASSESSMENT**

19. 评估形式 Type of Assessment	评估时间 Time	占考试总成绩百分比 % of final score	违纪处罚 Penalty	备注 Notes
出勤 Attendance		10		
课堂表现 Class Performance				
小测验 Quiz				
课程项目 Projects				
平时作业				

Assignments			
期中考试 Mid-Term Test			
期末考试 Final Exam			
期末报告 Final Presentation	50		
其它（可根据需要 改写以上评估方 式） Others (The above may be modified as necessary)	40		实验部分 Experiments

20. 记分方式 GRADING SYSTEM

- A. 十三级等级制 Letter Grading  
 B. 二级记分制（通过/不通过） Pass/Fail Grading

课程审批 REVIEW AND APPROVAL

21. 本课程设置已经过以下责任人/委员会审议通过  
 This Course has been approved by the following person or committee of authority

化学系教学指导委员会  
 Teaching committee of the chemistry department

